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
[ ]

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).
[ ]

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:

Existing Land Use:

Vegetation Indicators:

Groundwater Flow Direction:

Ground Condition:

Site Boundaries:

3.1 Visual Assessment (contd.)

Roads:

Outcrops (Bedrock And/Or Subsoil):

Surface Water Ponding:

Lakes:

Beaches/Shellfish Areas:

Wetlands:

Karst Features:

Watercourses/Streams:*

*Note and record water level

3.0 ON-SITE ASSESSMENT

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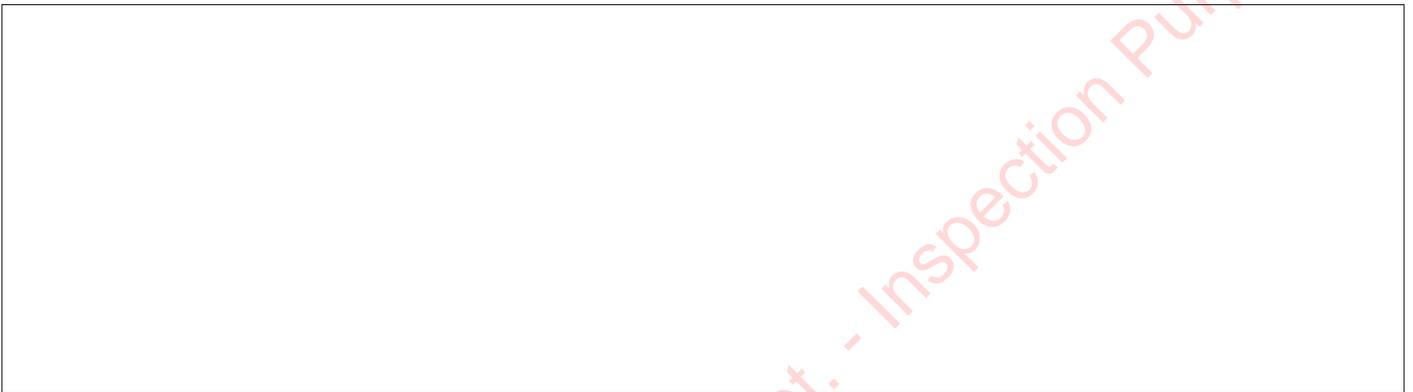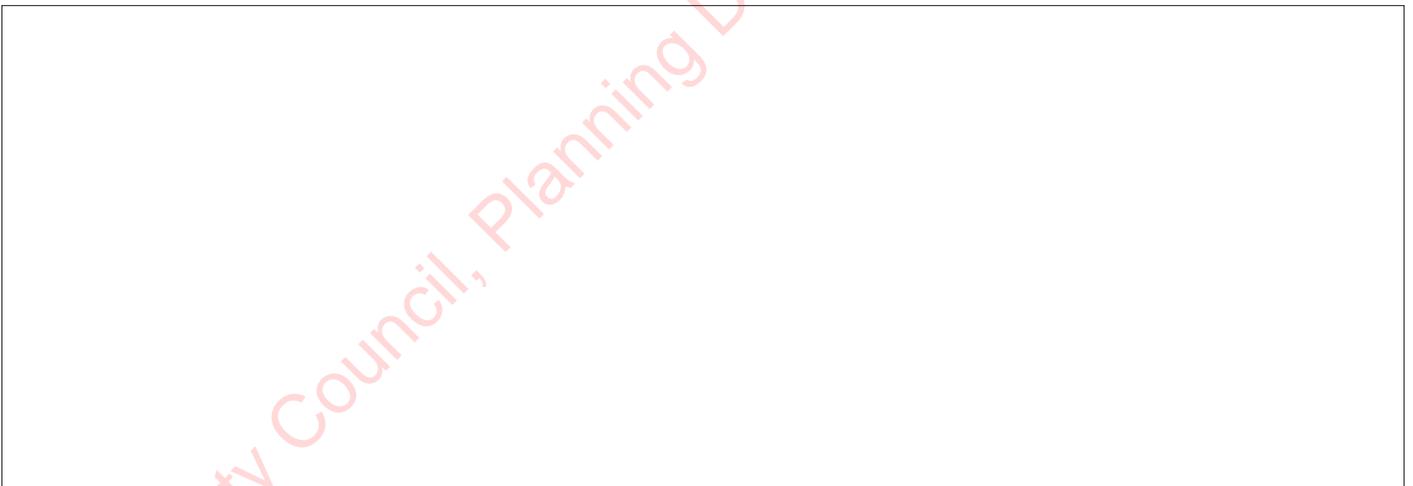21 / 09 / 2022

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3.1 Visual Assessment (contd.)

Drainage Ditches:*

Springs:*

Wells:*

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).

*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						
0.2 m						
0.3 m						
0.4 m						
0.5 m						
0.6 m						
0.7 m						
0.8 m						
0.9 m						
1.0 m						
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						
3.1 m						
3.2 m						
3.3 m						
3.4 m						
3.5 m						

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:

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)			
Depth from ground surface to base of hole (mm) (B)			
Depth of hole (mm) [B - A]			
Dimensions of hole [length x breadth (mm)]	x	x	x

Step 2: Pre-Soaking Test Holes

		1	2	3
Pre-soak start	Date			
	Time			
2nd pre-soak start	Date			
	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			
Time filled to 400 mm			
Time water level at 300 mm			
Time (min.) to drop 100 mm (T_{100})			
Average T_{100}			

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									
2									
3									
Average Δt Value									

Average $\Delta t/4$ = [Hole No.1] _____ (t_1) Average $\Delta t/4$ = [Hole No.2] _____ (t_2) Average $\Delta t/4$ = [Hole No.3] _____ (t_3)

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

Comments:

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					
250 - 200	9.7					
200 - 150	11.9					
150 - 100	14.1					
Average	T- Value		T- Value Hole 1 = (T_1)			

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					
250 - 200	9.7					
200 - 150	11.9					
150 - 100	14.1					
Average	T- Value		T- Value Hole 2 = (T_2)			

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

Comments:

Percolation Test Hole No. 3						
Fall of water in hole (mm)	Time Factor = T_f	Start Time hh:mm	Finish Tim§e hh:mm	Time of fall (mins) = T_m	K_{fs} = T_f / T_m	T – Value = 4.45 / K_{fs}
300 - 250	8.1					
250 - 200	9.7					
200 - 150	11.9					
150 - 100	14.1					
Average	T- Value		T- Value Hole 3 = (T_2)			

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)			
Depth from ground surface to base of hole (mm)			
Depth of hole (mm)			
Dimensions of hole [length x breadth (mm)]	x	x	x

Step 2: Pre-Soaking Test Holes

		1	2	3
Pre-soak start	Date			
	Time			
2nd pre-soak start	Date			
	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			
Time filled to 400 mm			
Time water level at 300 mm			
Time to drop 100 mm (T_{100})			
Average T_{100}			

If T_{100} > 300 minutes then Surface Percolation value >90 – site unsuitable for discharge to ground
If T_{100} ≤ 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									
2									
3									
Average ΔT Value									

Average $\Delta T/4 =$ [Hole No.1] _____ (T_1) Average $\Delta T/4 =$ [Hole No.2] _____ (T_2) Average $\Delta T/4 =$ [Hole No.3] _____ (T_3)

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

Comments:

_____

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					
250 - 200	9.7					
200 - 150	11.9					
150 - 100	14.1					
Average	T- Value		T- Value Hole 1 = (T_1)			

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					
250 - 200	9.7					
200 - 150	11.9					
150 - 100	14.1					
Average	T- Value		T- Value Hole 2 = (T_2)			

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					
250 - 200	9.7					
200 - 150	11.9					
150 - 100	14.1					
Average	T- Value		T- Value Hole 3 = (T_2)			

Comments:

_____

3.4 The following associated Maps, Drawings and Photographs should be appended to this site characterisation form.

1. Discovery Series 1:50,000 Map indicating overall drainage, groundwater flow direction and housing density in the area.

2. Supporting maps for vulnerability, aquifer classification, soil, subsoil, bedrock.

3. North point should always be included.

4. (a) Scaled sketch of site showing measurements to Trial Hole location and

    (b) Percolation Test Hole locations,

    (c) wells and

    (d) direction of groundwater flow (if known),

    (e) proposed house (incl. distances from boundaries)

    (f) adjacent houses,

    (g) watercourses,

    (h) significant sites

    (i) and other relevant features.

5. Site specific cross sectional drawing of the site and the proposed layout[1] should be submitted.

6. Photographs of the trial hole, test holes and site including landmarks (date and time referenced).

7. Pumped design must be designed by a suitably qualified person.

[1] The calculated percolation area or polishing filter area should be set out accurately on the site layout drawing in accordance with the code of practice's requirements.

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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)**

2. Secondary Treatment System **(Chapters 8 and 9)** and soil polishing filter **(Section 10.1)**

3. Tertiary Treatment System and Infiltration / treatment area **(Section 10.2)**

Discharge Route [1]

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.

[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 (m³) [   ]

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 (Chapters 8 and 9) and polishing filter (Section 10.1)

Secondary Treatment Systems receiving septic tank effluent (Chapter 8)

Packaged Secondary Treatment Systems receiving raw wastewater (Chapter 9)

Media Type	Area (m²)*	Depth of Filter	Invert Level	Type
Sand/Soil	[ ]	[ ]	[ ]	[ ]
Soil	[ ]	[ ]	[ ]	Capacity PE [ ]
Constructed Wetland	[ ]	[ ]	[ ]	Sizing of Primary Compartment
Other	[ ]	[ ]	[ ]	[ ] m³

Polishing Filter*: (Section 10.1)

Surface Area (m²)* [   ]

Option 1 - Direct Discharge Surface area (m²) [   ]

Option 2 - Pumped Discharge Surface area (m²) [   ]

Option 3 - Gravity Discharge Trench length (m) [   ]

Option 4 - Low Pressure Pipe Distribution Trench length (m) [   ]

Option 5 - Drip Dispersal Surface area (m²) [   ]

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 [ ]   Hydraulic Loading Rate * (l/m².d) [   ]   Surface area (m²) [   ]

Surface Water ** [ ]   Discharge Rate (m³/hr) [   ]

* 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

On-going Maintenance

7.0 SITE ASSESSOR DETAILS

Company:

Prefix: First Name: Surname:

Address:

Qualifications/Experience:

Date of Report:

Phone: E-mail

Indemnity Insurance Number:

Signature: _____

Figure 1. Trial Pit

Figure 2. Trial Pit

Figure 3. T – Trial Pit

Figure 4. T – Trial Pit

Figure 5. Trial Pit Arisings

Figure 6. T – Test 1

Figure 7. T – Test 2

Figure 8. T – Test 3

Figure 9. P – Test 1

Figure 10. P – Test 2

Figure 11. P – Test 3
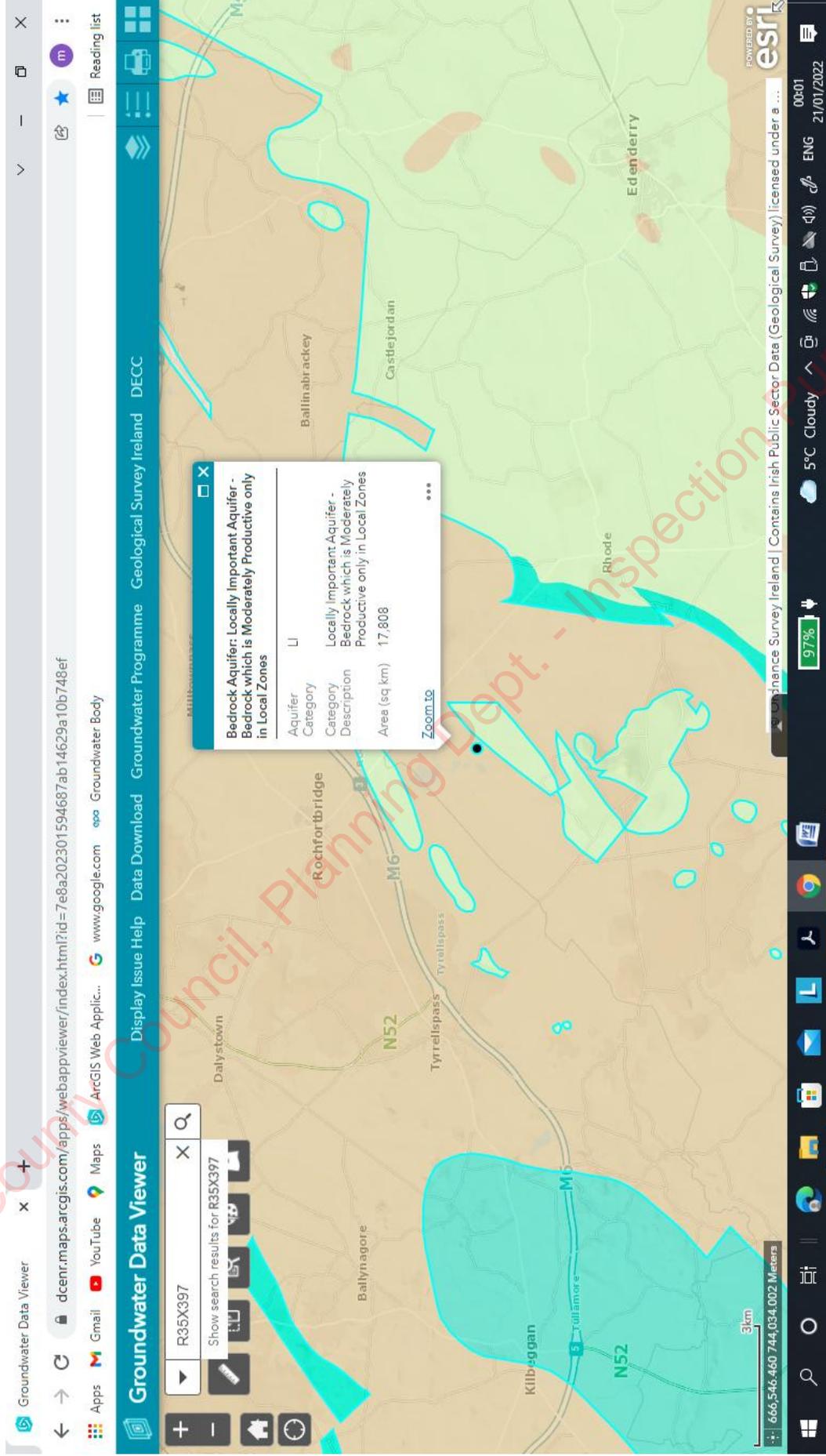

Figure 12. View of Site

OXIGEN SITE, DERRYARKIN
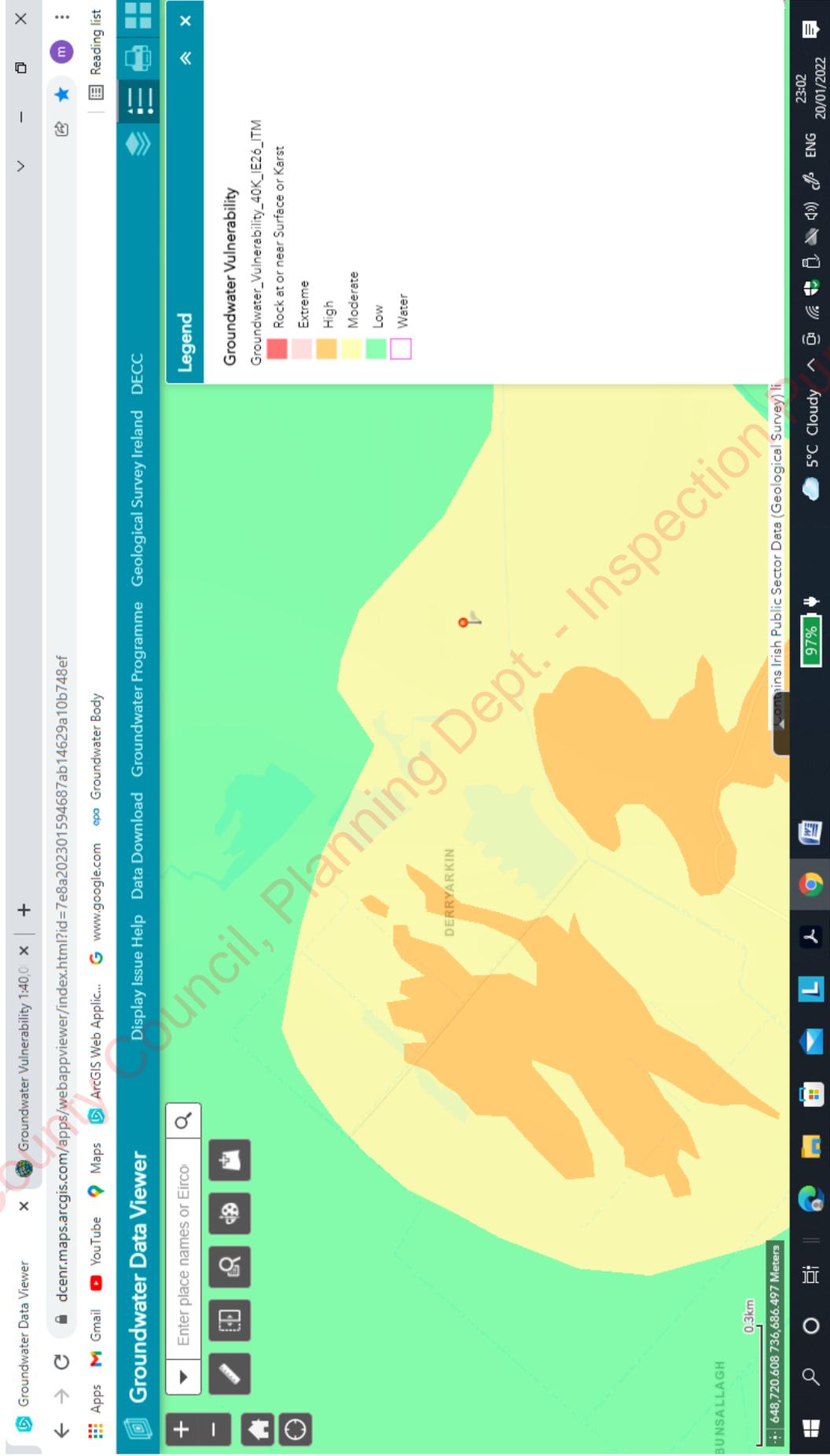
VULNERABILITY MAP

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OXIGEN SITE, DERRYARKIN

AQUIFER MAP

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OXIGEN SITE, DERRYARKIN

SOILS MAP

Teagasc Soils:

Parent Material	Cut
Parent Material Name	Peat
Parent Material Description	Cut Peat
Soil Group	Basin Peats, Blanket Peats (some)
IFS Soil Code	Cut
IFS Soil Description	Cutaway/cutover peat
County	OFFALY
Category	Cutover/cutaway peat
Legend	Cut - Cutover/cutaway peat

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OXIGEN SITE, DERRYARKIN

QUATERNARY SEDIMENTS MAP

OXIGEN SITE, DERRYARKIN

Groundwater Data Viewer

Groundwater Rock Units:

Rock Unit Code	DUIL
Description	Dinantian Upper Impure Limestones

Zoom to

GROUNDWATER ROCK MAP

OXIGEN SITE, DERRYARKIN

BEDROCK MAP

Groundwater Data Viewer

Display Issue Help   Data Download   Groundwater Programme   Geological Survey Ireland   DECC

Apps   Gmail   YouTube   Maps   ArcGIS Web Applic...   www.google.com   Groundwater Body

dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=7e8a2023015946807ab14629a10b748ef

Groundwater Data Viewer

Bedrock Polygons 100k ITM 2018: Lucan Formation

New Code	CDLUCN
Unit Name	Lucan Formation
Sheet Number	15
Stratigraphic Code	LU
Lithological Code	
Description	Dark limestone & shale (Calp)"
Label	LU
Formation	Lucan Formation
Definition	Nolan (1989) first used the name and briefly described the formation which he had

Zoom to

Enter place names or Eirco

KNOCKDRIN

DERRYIRON

DERRYARKIN

BUNSALLAGH

RAHINCUILL

DERRYCOFFEY

RATTGARRETT

R400

0.6km

651,427.301 736,921.977 Meters

97%

5°C Cloudy   ENG   23:34   20/01/2022