

# SITE CHARACTERISATION FORM

File Reference:

## 1.0 GENERAL DETAILS (From planning application)

Prefix:  First Name:  Surname:

Address:

Site Location and Townland:

Telephone No:  Fax No:

E-Mail:

Maximum no. of Residents:  No. of Double Bedrooms:  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):

Aquifer Category: Regionally Important  Locally Important  Poor

Vulnerability: Extreme  High  Moderate  Low  High to Low  Unknown

Bedrock Type:

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

Groundwater Protection Scheme (Y/N):  Source Protection Area: 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)

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:  Roads:

Outcrops (Bedrock And/Or Subsoil):

Surface Water Ponding:  Lakes:

Beaches/Shellfish:  Areas/Wetlands:

Karst Features:  Watercourse/Stream\*:

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).

Ground conditions are dry despite very heavy rainfall in previous days.  
There is an existinnng 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):

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 P/T Test* | Soil/Subsoil Texture & Classification**        | Plasticity and dilatancy***                            | Soil Structure | Density/ Compactness | Colour**** | Preferential flowpaths  |
|--------------------|--|--|----------------|----------------------|------------|-------------------------|
| 0.1 m              | <input type="text" value="P"/> Top soil - loam | dilatant   | Crumb          | Firm                 | Black      | Rootlets Roots of trees |
| 0.2 m              | <input type="text" value="P"/>                 |  |                |                      |            |                         |
| 0.3 m              | <input type="text" value="P,"/>                |  |                |                      |            |                         |
| 0.4 m              | <input type="text" value="P,T1,3"/> CLAY       | Poorly Dilatent<br>Trds= 11,9,11<br>Ribs = 110,110,110 | Blocky         | Firm                 | Brown      |                         |
| 0.5 m              | <input type="text" value="T1-3"/>              |  |                |                      |            | None                    |
| 0.6 m              | <input type="text" value="T1-3"/>              |  |                |                      |            |                         |
| 0.7 m              | <input type="text" value="T1-3"/>              |  |                |                      |            |                         |
| 0.8 m              | <input type="text" value="T2"/>                |  |                |                      |            |                         |
| 0.9 m              | <input type="text"/>                           |  |                |                      |            |                         |
| 1.0 m              | <input type="text"/> Rock and Base of trench   |  |                |                      |            |                         |
| 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"/>                           |  |                |                      |            |                         |
| 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"/>                           |  |                |                      |            |                         |

Evaluation:

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

Likely T value:

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<br>(at 300 mm)                             | Finish Time<br>(at 200 mm) | $\Delta t$ (min) | Start Time<br>(at 300 mm)                             | Finish Time<br>(at 200 mm) | $\Delta t$ (min) | Start Time<br>(at 300 mm)                             | Finish Time<br>(at 200 mm) | $\Delta t$ (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 $\Delta t$ Value | 89.67   |                            |                  | 93.67   |                            |                  | 100.33  |                            |                  |
|                          | Average $\Delta t/4 =$<br>[Hole No.1] 22.42 ( $t_1$ ) |                            |                  | Average $\Delta t/4 =$<br>[Hole No.2] 23.42 ( $t_2$ ) |                            |                  | Average $\Delta t/4 =$<br>[Hole No.3] 25.08 ( $t_3$ ) |                            |                  |

Result of Test:  $T =$   (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<br>$= T_f$          | Time of fall (mins)<br>$= T_m$ | $K_{15} = T_f / T_m$ | T-Value<br>$= 4.45 / K_{15}$ | Time Factor<br>$= T_f$          | Time of fall (mins)<br>$= T_m$ | $K_{15} = T_f / T_m$ | T-Value<br>$= 4.45 / K_{15}$ | Time Factor<br>$= T_f$          | Time of fall (mins)<br>$= T_m$ | $K_{15} = T_f / T_m$ | T-Value<br>$= 4.45 / K_{15}$ |
| 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:  $T =$   (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<br>(at 300 mm)                             | Finish Time<br>(at 200 mm) | $\Delta p$ (min) | Start Time<br>(at 300 mm)                             | Finish Time<br>(at 200 mm) | $\Delta p$ (min) | Start Time<br>(at 300 mm)                             | Finish Time<br>(at 200 mm) | $\Delta p$ (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 $\Delta p$ Value | 95.00   |                            |                  | 98.33   |                            |                  | 107.33  |                            |                  |
|                          | Average $\Delta p/4 =$<br>[Hole No.1] 23.75 ( $p_1$ ) |                            |                  | Average $\Delta p/4 =$<br>[Hole No.2] 24.58 ( $p_2$ ) |                            |                  | Average $\Delta p/4 =$<br>[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<br>$= T_f$          | Time of fall (mins)<br>$= T_m$ | $K_{15} = T_f / T_m$ | P-Value<br>$= 4.45 / K_{15}$ | Time Factor<br>$= T_f$          | Time of fall (mins)<br>$= T_m$ | $K_{15} = T_f / T_m$ | P-Value<br>$= 4.45 / K_{15}$ | Time Factor<br>$= T_f$          | Time of fall (mins)<br>$= T_m$ | $K_{15} = T_f / T_m$ | P-Value<br>$= 4.45 / K_{15}$ |
| 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 <sup>1</sup>

- |   |                              |
|---|------------------------------|
| 1. Septic tank system (septic tank and percolation area)                      | <input type="checkbox"/> No  |
| 2. Secondary Treatment System   |                              |
| a. septic tank and filter system constructed on-site and polishing filter; or | <input type="checkbox"/> Yes |
| b. packaged wastewater treatment system and polishing filter                  | <input type="checkbox"/> Yes |

Discharge Route

## 5.0 RECOMMENDATION

Propose to install:

and discharge to:

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  $Area = 0.125 \times T \times PE$ .

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 =  $0.125 \times 24 \times 76 \text{ m}^2 = 18\text{m}^2$ . It is recommended to double to about 50m<sup>2</sup>. The sand filter can be loaded at up to 60 litres/m<sup>2</sup> - thus requiring 15m<sup>2</sup> 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 the rear of the site.

<sup>1</sup> note: more than one option may be suitable for a site and this should be recorded

<sup>2</sup> 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 <sup>3</sup> ) | <input type="text"/> | Percolation Area       |                      | Mounded Percolation Area |                      |
|                                 |                      | No. of Trenches        | <input type="text"/> | No. of Trenches          | <input type="text"/> |
|                                 |                      | Length of Trenches (m) | <input type="text"/> | Length of Trenches (m)   | <input type="text"/> |
|                                 |                      | Invert Level (m)       | <input type="text"/> | Invert Level (m)         | <input type="text"/> |

### SYSTEM TYPE: Secondary Treatment System

#### Filter Systems

| Media Type          | Area (m <sup>2</sup> )* | Depth of Filter      | Invert Level         |
|---------------------|-------------------------|----------------------|----------------------|
| Sand/Soil           | <input type="text"/>    | <input type="text"/> | <input type="text"/> |
| Soil                | <input type="text"/>    | <input type="text"/> | <input type="text"/> |
| Constructed Wetland | <input type="text"/>    | <input type="text"/> | <input type="text"/> |
| Other               | <input type="text"/>    | <input type="text"/> | <input type="text"/> |

#### Package Treatment Systems

|                               |  |
|-------------------------------|--|
| Type                          | <input type="text" value="Oakstown BAF P6"/>     |
| Capacity PE                   | <input type="text" value="6.00"/>                |
| Sizing of Primary Compartment | <input type="text" value="3.50"/> m <sup>3</sup> |

### SYSTEM TYPE: Tertiary Treatment System

|   |                                    |  |                      |
|---|------------------------------------|--|----------------------|
| Polishing Filter: Surface Area (m <sup>2</sup> )* | <input type="text" value="15.00"/> | Package Treatment System: Capacity (pe)              | <input type="text"/> |
| or Gravity Fed:                                   |                                    | Constructed Wetland: Surface Area (m <sup>2</sup> )* | <input type="text"/> |
| No. of Trenches                                   | <input type="text"/>               |  |                      |
| Length of Trenches (m)                            | <input type="text"/>               |  |                      |
| Invert Level (m)                                  | <input type="text"/>               |  |                      |

### DISCHARGE ROUTE:

|                  |                                     |  |                                    |
|------------------|-------------------------------------|--|------------------------------------|
| Groundwater      | <input checked="" type="checkbox"/> | Hydraulic Loading Rate * (l/m <sup>2</sup> .d) | <input type="text" value="60.00"/> |
| Surface Water ** | <input type="checkbox"/>            | Discharge Rate (m <sup>3</sup> /hr)            | <input type="text"/>               |

### TREATMENT STANDARDS:

| Treatment System Performance Standard (mg/l) | BOD                                | SS                                 | NH <sub>3</sub>                    | Total N              | Total P                            |
|--|------------------------------------|------------------------------------|------------------------------------|----------------------|------------------------------------|
| <input type="text"/>                         | <input type="text" value="20.00"/> | <input type="text" value="30.00"/> | <input type="text" value="20.00"/> | <input type="text"/> | <input type="text" value="10.00"/> |

### QUALITY ASSURANCE:

#### Installation & Commissioning

Installation supervised and Certified by qualified assessor or a suitably qualified person familiar with the EPA Code of Practice 2009.

#### On-going Maintenance

Annual maintenance contract - including desludging

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

\*\* Water Pollution Act discharge licence required

**7.0 SITE ASSESSOR DETAILS**

Company:

Prefix:  First Name:  Surname:

Address:

Qualifications/Experience:

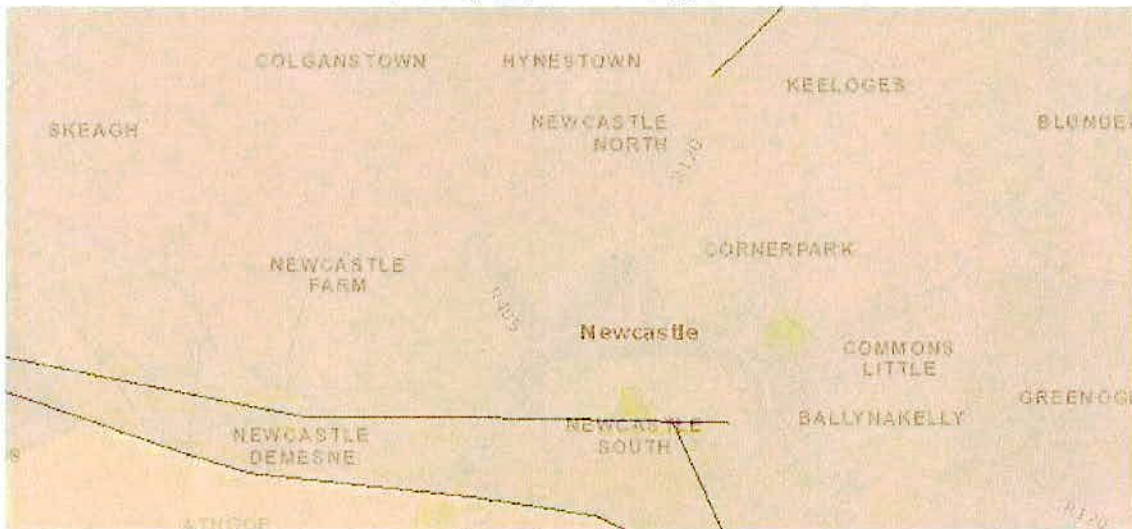
Date of Report:

Phone:  Fax:  e-mail:

Indemnity Insurance Number:

Signature: 

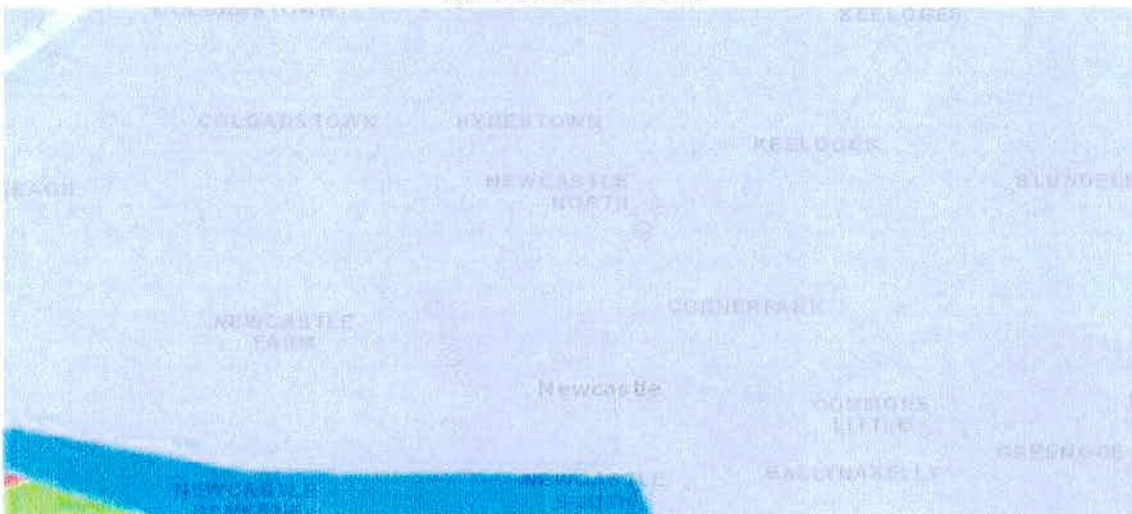
**Maps – Aquifer, Vulnerability, Bedrock**



**Aquifer is Li**



**Vulnerability is Extreme**



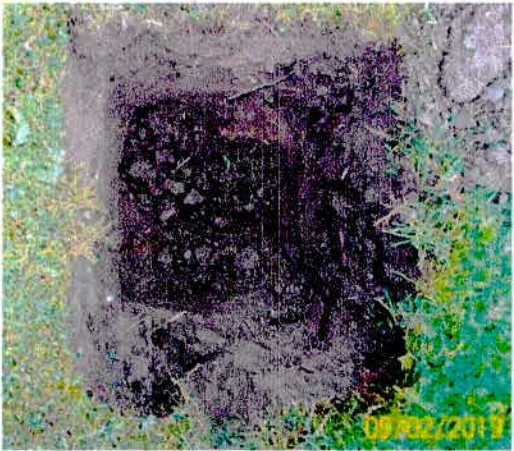
**Bedrock is Dinantian Upper Impure Limestone**

Photos

Row 1 - P1, P2



Row 2 - P3, T1



Row 3 - T2, T3



Trial Pit



Site overview



