Appendix A – Wastewater Treatment for the Site

Site Characterisation & Assessment Report

Completed for

Kildare County Council

c/o BF Construction

Site @ Carbury
Carbury
Co Kildare
W91 A9FH

Completed by: Wastewater Technical Services Ltd.
Moyglare Rd, Kilcock, Co Kildare. Ph: 01 6287300

Scope of Report.

The findings of this report are the result of a desk study and geological field interpretation. Interpretations and conclusions included in the report are based on knowledge of the ground conditions following detailed investigations, as well as the regional soils, subsoils and bedrock geology, and the experience of the author. Wastewater Technical Services Ltd has prepared this report in line with the best current practice and with all reasonable skill, care and diligence in consideration of the limits imposed by the survey techniques used and resources devoted to it by agreement with the client. The interpretive basis of the conclusions contained in this report should be taken into account in any future use of this report.

Wastewater Technical Services Ltd accepts no responsibility for any matters arising if any recommendations contained in this document are not carried out, or are partially carried out, without further advice being obtained from Wastewater Technical Services Ltd.

Site Characterisation Form

APPENDIX B: SITE CHARACTERISATION FORM

File Reference:

1.0 GENERAL DETAILS (From planning application)

Prefix: First Name: Kildare Co Co Surname:

Address:

Site Location and Townland: Carbury, Co. Kildare
W91 A9FH

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): BminDW - Deep well drained mineral (Mainly basic)

Aquifer Category: Regionally Important ☐ Locally Important Lm Poor ☐

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

Bedrock Type: Dinantian Upper Impure Limestones

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

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

Groundwater Protection Response: R1

Presence of Significant Sites (Archaeological, Natural & Historical): None Within 250m

Past experience in the area: Well drained soil with good rates of percolation.

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: Flat site in area and flat land

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: 2 houses 35m to South West, 2 60m South West, 1 100m North West

Existing Land Use: Agriculture

Vegetation Indicators: None

Groundwater Flow Direction: Easterly

Ground Condition: Dry & firm underfoot

Site Boundaries: Post & Wire fence

Roads: R402 60m South West, R403 South East

Outcrops (Bedrock And/Or Subsoil): None within 250m

Surface Water Ponding: None within 250m Lakes: None within 250m

Beaches/Shellfish: None within 250m Areas/Wetlands: None within 250m

Karst Features: None within 250m

Watercourse/Stream*: None within 250m

Drainage Ditches*: None within 250m

Springs / Wells*: None within 250m

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): 2.00

Depth from ground surface to bedrock (m) (if present): 0.00

Depth from ground surface to water table (m) (if present): 0.00

Depth of water ingress: 0.00

Rock type (if present):

Date and time of excavation: 30/11/2018 14:10

Date and time of examination: 05/12/2018 08:15

	Depth of P/T Test*	Soil/Subsoil Texture & Classification**	Plasticity and dilatancy***	Soil Structure	Density/ Compactness	Colour****	Preferential flowpaths
0.1 m		TOPSOIL		Crumb	Firm	Brown	Some rootlets
0.2 m							
0.3 m							
0.4 m		Sandy CLAY	Threads- 4,5,4 Ribbons- 110, 110, 100 Dilatent- No	Massive	Firm	Brown	
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		Gravely SILT/CLAY Some cobbles	Threads - 2,2,3 Ribbons - 60,80,80 Dilatent- Difficult	Granular	Soft	Grey	
1.7 m							
1.8 m							
1.9 m							
2.0 m							
2.1 m		2.0m Base					
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							

Likely T value: 20.00

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.

3.2 **Trial Hole (contd.)** Evaluation:

No water table or mottling noted in the trial hole.

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)	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

Date and Time pre-soaking started	04/12/2018	13:00	04/12/2018	13:00	04/12/2018	13:00

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	05/12/2018	05/12/2018	05/12/2018
Time filled to 400 mm	08:30	08:30	08:30
Time water level at 300 mm	09:10	09:14	09:07
Time to drop 100 mm (T_{100})	40.00	44.00	37.00
Average T_{100}			40.33

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	09:10	09:52	42.00	09:14	10:02	48.00	09:07	09:47	40.00
2	09:53	10:40	47.00	10:03	10:55	52.00	09:48	10:30	42.00
3	10:41	11:34	53.00	10:56	11:55	59.00	10:31	11:20	49.00
Average Δt Value			47.33			53.00			43.67
	Average Δt/4 = [Hole No.1]		11.83 (t_1)	Average Δt/4 = [Hole No.2]		13.25 (t_2)	Average Δt/4 = [Hole No.3]		10.92 (t_3)

Result of Test: T = 12.00 (min/25 mm)

Comments:

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 290	300 x 295

Step 2: Pre-Soaking Test Holes

Date and Time pre-soaking started	04/12/2018	13:00	04/12/2018	13:00	04/12/2018	

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	05/12/2018	05/12/2018	05/12/2018
Time filled to 400 mm	08:40	08:40	08:40
Time water level at 300 mm	09:17	09:09	09:14
Time to drop 100 mm (P_{100})	37.00	29.00	34.00
Average P_{100}			33.33

If P_{100} > 300 minutes then P-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	09:17	09:56	39.00	09:09	09:40	31.00	09:14	09:50	36.00
2	09:57	10:40	43.00	09:41	10:17	36.00	09:51	10:29	38.00
3	10:41	11:26	45.00	10:18	10:58	40.00	10:30	11:11	41.00
Average Δp Value			42.33			35.67			38.33
	Average Δp/4 = [Hole No.1]		10.58 (p_1)	Average Δp/4 = [Hole No.2]		8.92 (p_2)	Average Δp/4 = [Hole No.3]		9.58 (p_3)

Result of Test: P = 9.69 (min/25 mm)

Comments:

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:

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, bedrock.
3. North point should always be included.
4. (a) 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. Cross sectional drawing of the site and the proposed layout[1] should be submitted.
6. Photographs of the trial hole, test holes and site (date and time referenced).

[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.

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)	Yes	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:

and discharge to: Ground Water

Trench Invert level (m):

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

This test was carried out as a feasibility measure to see if the site is suitable for discharge to ground.
No Population equivalent was provided.

The site is suitable for discharge to ground of treated effluent from a Septic tank or Sewage treatment system.

Any designs should be based on a T Value of 12 and no water table or mottling was found above 2m BGL.

The polishing filter is to be located a minimum of 30m from any well, 10m from any ditch, 10m from the house , 3m from boundary and 4m from any trees.

Only grey and foul water should enter the sewage treatment system. Rainwater & Storm water should be directed to soak pits.

[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	
	Streamline BAF System
Capacity PE	
Sizing of Primary Compartment	
	m^3

SYSTEM TYPE: Tertiary Treatment System

Polishing Filter: Surface Area (m^2)*

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 * ($l/m^2.d$)	
Surface Water **		Discharge Rate (m^3/hr)	

TREATMENT STANDARDS:

Treatment System Performance Standard (mg/l)	BOD	SS	NH_4 - N	Total N	Total P
As per IS EN12566-3 & S.R.66 2015					

QUALITY ASSURANCE:

Installation & Commissioning	On-going Maintenance
Sepcon Moyglare Road Kilcock Co. Kildare	Sepcon Moyglare Road Kilcock Co. Kildare

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

** Water Pollution Act discharge licence required

7.0 SITE ASSESSOR DETAILS

Company: Waste Water Technical Services Ltd

Prefix: Mr. First Name: Ken Surname: Lannery

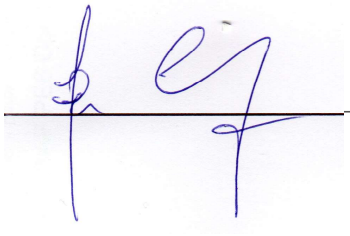
Address:
Moyglare Road
Kilcock,
Co. Kildare

Qualifications/Experience: QQI Site Suitability for Waste Water Treatment

Date of Report: 17/12/2018

Phone: 087 2889381 Fax: N/A e-mail wastewaterts@gmail.com

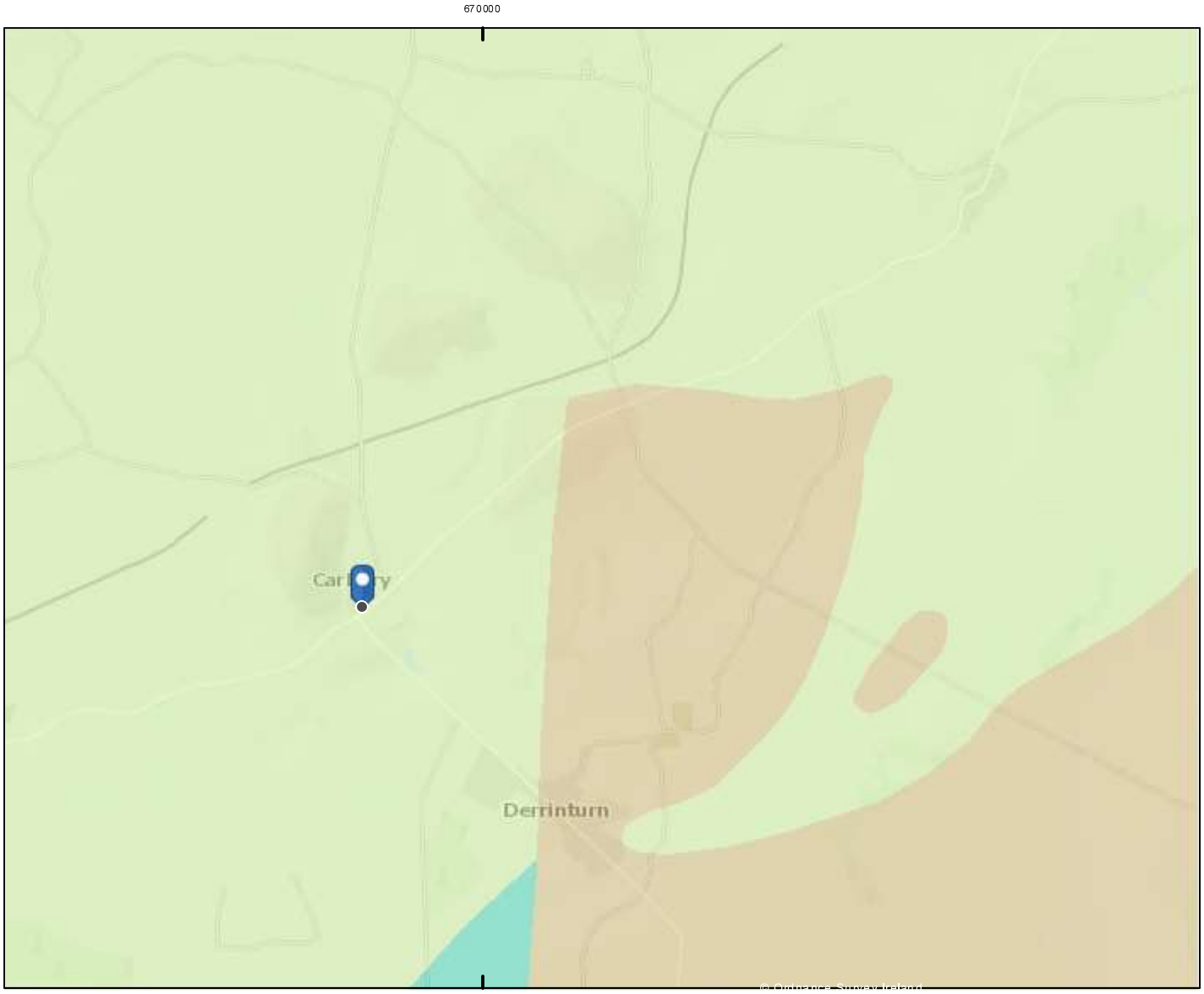
Indemnity Insurance Number: PI/C/12392/18/1

Signature: 

Supporting Documentation

1. Aquifer Category Map
2. Bedrock Type Map
3. Soil Type Map
4. Groundwater Vulnerability Map
5. Site Location & Groundwater Direction
6. Photos of test holes & trial hole
7. Site Specific Report for proposed sewage system & percolation

Kildare Co Co - W91 A9FH - Aquifer Map



Bedrock Aquifer

- Rkc - Regionally Important Aquifer - Karstified (conduit)
- Rkd - Regionally Important Aquifer - Karstified (diffuse)
- RK - Regionally Important Aquifer - Karstified
- Rf - Regionally Important Aquifer - Fissured bedrock
- Lm - Locally Important Aquifer - Bedrock which is Generally Moderately Productive
- Lk - Locally Important Aquifer - Karstified
- Ll - Locally Important Aquifer - Bedrock which is Moderately Productive only in Local Zones
- Pl - Poor Aquifer - Bedrock which is Generally Unproductive except for Local Zones
- Pu - Poor Aquifer - Bedrock which is Generally Unproductive
- Lake

Scale: 1:50,000

Geological Survey Ireland

PSI Licence

0 0.35 0.7 1.4 mi

0 0.5 1 2 km

Map Centre Coordinates (ITM) 670,925 735,041

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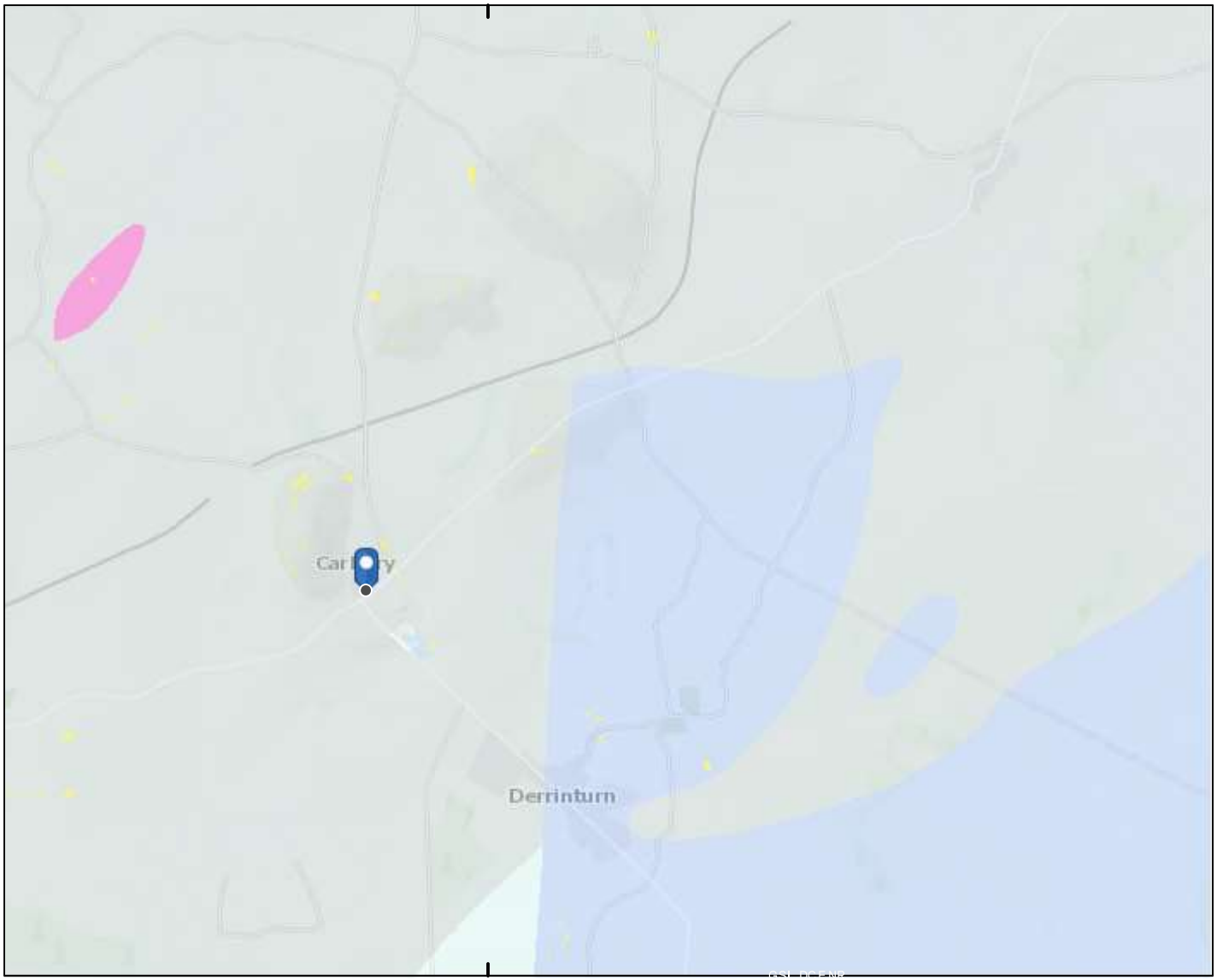
Kildare Co Co - W91 A9FH - Bedrock Map



Scale: 1:50,000

Geological Survey Ireland

PSI Licence

0 0.35 0.7 1.4 mi

0 0.5 1 2 km

Map Centre Coordinates (ITM) 670,925 735,041

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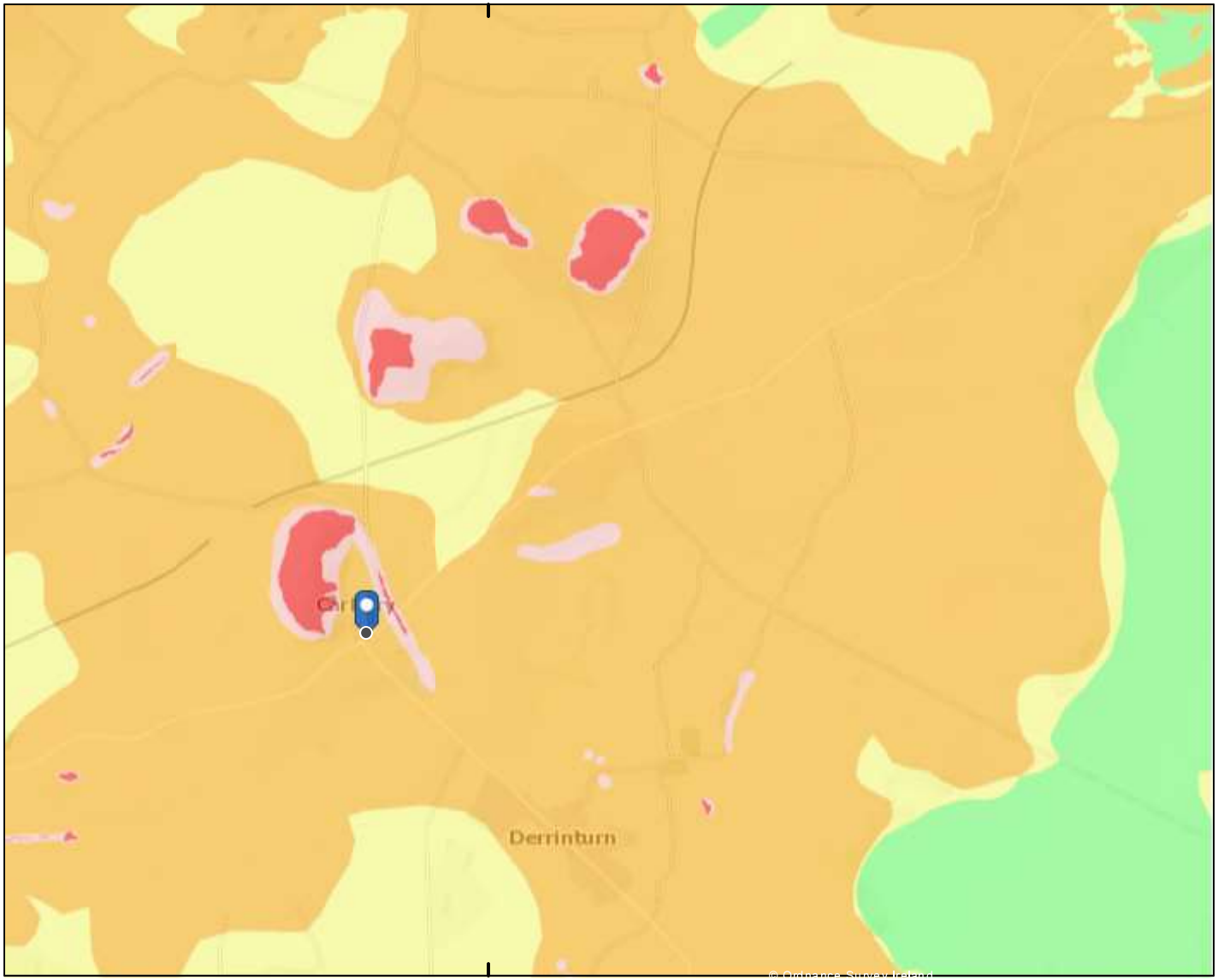
Legend

Outcrop

Generalised Bedrock (Rock Unit Groups)

- Basalts & other Volcanic rocks
- Permo-Triassic Sandstones
- Permo-Triassic Mudstones and Gypsum
- Westphalian Sandstones
- Westphalian Shales
- Namurian Shales
- Namurian Sandstones
- Namurian Undifferentiated
- Dinantian Shales and Limestones
- Dinantian Mixed Sandstones, Shales and Limestones
- Dinantian Sandstones
- Dinantian Pure Bedded Limestones
- Dinantian Upper Impure Limestones
- Dinantian Dolomitised Limestones
- Dinantian Pure Unbedded Limestones
- Dinantian Lower Impure Limestones
- Dinantian (early) Sandstones, Shales and Limestones
- Dinantian Mudstones and Sandstones (Cork Group)
- Devonian Kiltorcan-type Sandstones
- Devonian Old Red Sandstones
- Granites & other Igneous Intrusive rocks
- Silurian Metasediments and Volcanics
- Ordovician Metasediments
- Ordovician Volcanics
- Cambrian Metasediments
- Precambrian Quartzites, Gneisses & Schists
- Precambrian Marbles

Kildare Co Co - W91 A9FH - Groundwater Map



Groundwater Vulnerability

- X - Rock at or near surface or Karst
- E - Extreme
- H - High
- M - Moderate
- L - Low
- W - Water

Scale: 1:50,000

Geological Survey Ireland

PSI Licence

0 0.35 0.7 1.4 mi

0 0.5 1 2 km

Map Centre Coordinates (ITM) 670,925 735,365

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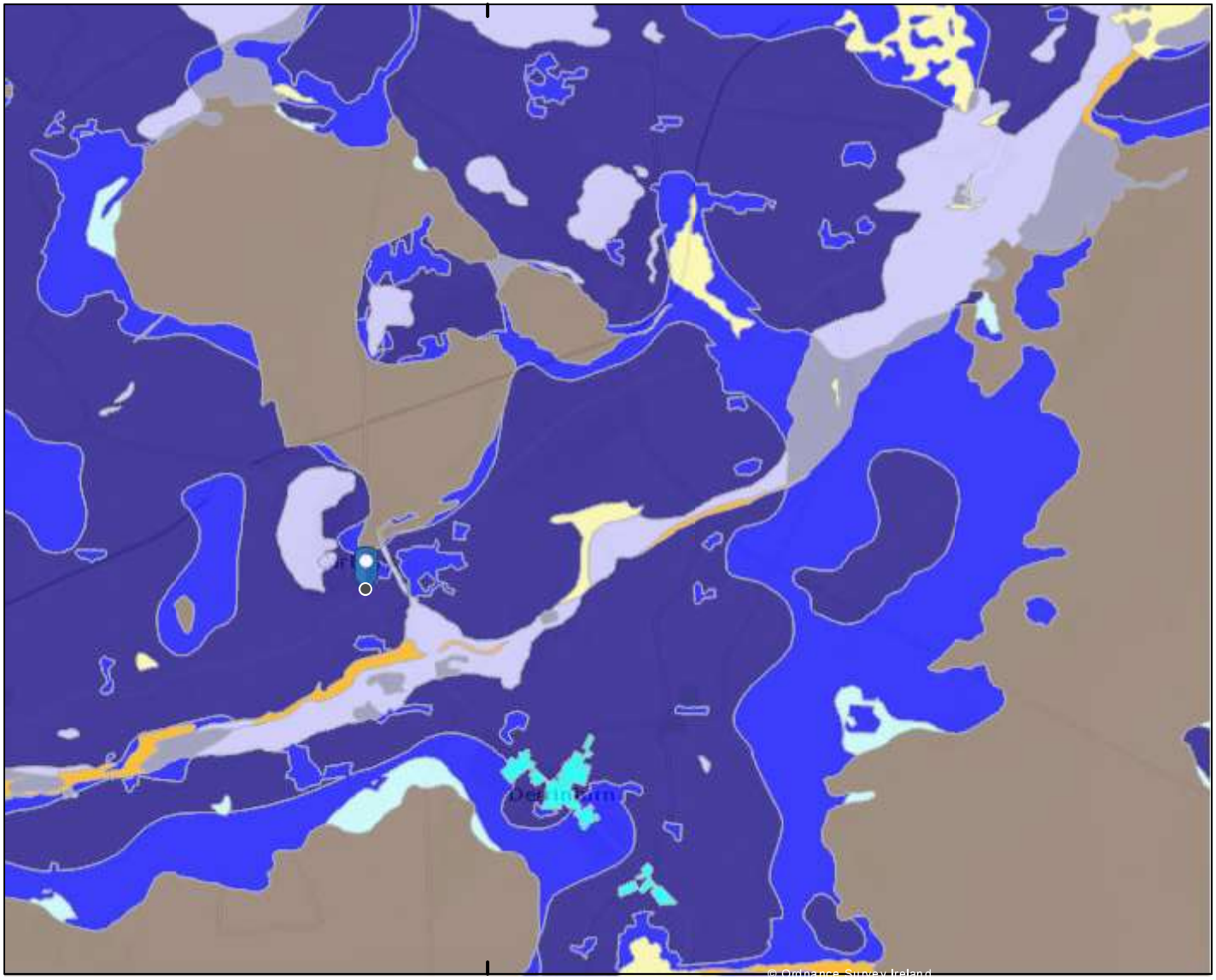
Kildare Co Co - W91 A9FH - Subsoil Map



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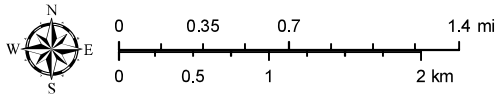

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Teagasc Soils

- AminDW - Deep well drained mineral (Mainly acidic)
- AminPD - Mineral poorly drained (Mainly acidic)
- AminPDPT - Peaty poorly drained mineral (Mainly acidic)
- AminSW - Shallow well drained mineral (Mainly acidic)
- AminSP - Shallow poorly drained mineral (Mainly acidic)
- AminSPPT - Shallow peaty poorly drained mineral (Mainly acidic)
- AminSRPT - Shallow, rocky, peaty/non-peatymi... complexes (Mainly acidic)
- BminDW - Deep well drained mineral (Mainly basic)
- BminPD - Mineral poorly drained (Mainly basic)
- BminPDPT - Peaty poorly drained mineral (Mainly basic)
- BminSW - Shallow well drained mineral (Mainly basic)
- BminSP - Shallow poorly drained mineral (Mainly basic)
- BminSPPT - Shallow peaty poorly drained mineral (Mainly basic)
- BminSRPT - Shallow, rocky, peaty/non-peatymi... complexes (Mainly basic)
- BktPt - Blanket peat
- FenPt - Fen peat
- RsPt - Raised Peat
- Cut - Cutover/cutaway peat
- AlluvMIN - Alluvial (mineral)
- AlluvMRL - Alluvial (marl)
- Lac - Lacustrine type soils
- Scree - Scree
- AeoUND - Aeolian undifferentiated
- MarSands - Marine sand and gravel
- MarSed - Marine/estuarine sediments
- Made - Made ground
- Water - Water
- Unclass

Trial Hole

Site during test


T1


T2


T3

P1

P2

P3

QQI AWARD

Dámhachtain Breisoideachais agus Oiliúna
Further Education and Training Award

TEASTAS CUSPÓRA SHAINIÚIL LEIBHÉAL 6
LEVEL 6 SPECIFIC PURPOSE CERTIFICATE

i
in

Oiriúnacht Suíomh Láithreáin i gcomhair Cóireáil Fuoílluisce
Site Suitability for Wastewater Treatment

le Tuillteanas
with Merit

Bronnta ar
Awarded to

KENNETH LANNERY

ar
on

14 Deireadh Fómhair 2018
14 October 2018

Priomhfheidhmeannach
Chief Executive

6S2241
F1404712
38906N

FET Creidiúntí/Credits 10
NFQ Leibhéal/Level 6
EQF Leibhéal/Level 5

NFQ Ireland

www.QQI.ie

MARTIN
INSURANCE BROKERS
established 1980

Date: 04/09/2018 **Our Ref:** WAST03

COVER NOTE

To whom it may concern

Our Client: Waste Water Technical Services Ltd
Address: Moyglare Road, Kilcock, Co. Kildare

We act as insurance brokers for the above named client and are pleased to confirm that the following insurance cover is currently in force:

Professional Business: Percolation Testing & as described in proposal form dated 23/8/18 for the purposes of insurance.

Professional Indemnity Insurance Policy	
Insurance Company:	Lloyds
Policy Number:	TBA
Renewal Date:	31st August 2019
Limit of Indemnity:	€ 1,000,000
Excess:	€ 1,500
Territorial Limits:	Worldwide Excluding USA/Canada

All cover is subject to insurers policy terms, conditions and exclusions, a copy of which are available on request.
This letter is provided as a courtesy to our client as a matter of information only and confers no rights to the holder. We accept no duty of care or responsibility to any third party. This letter does not purport to set out all of the policy terms, conditions and exclusions. Full policy terms, conditions & exclusions are available on request.
Yours sincerely,

Michelle Kavanagh

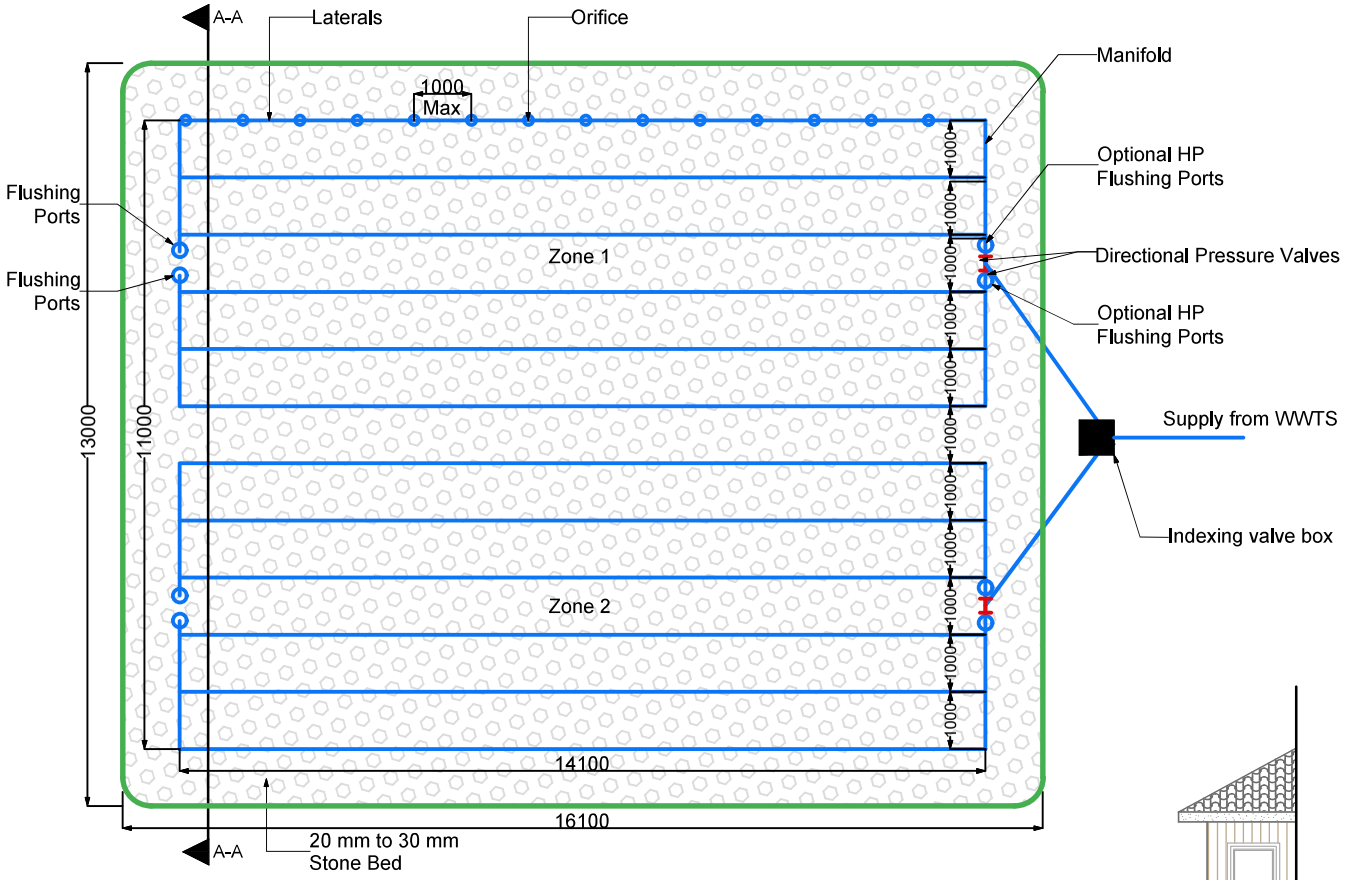
Michelle Kavanagh
Certified Insurance Practitioner
E: michelle.kavanagh@mib.ie
PH: 049 4327083

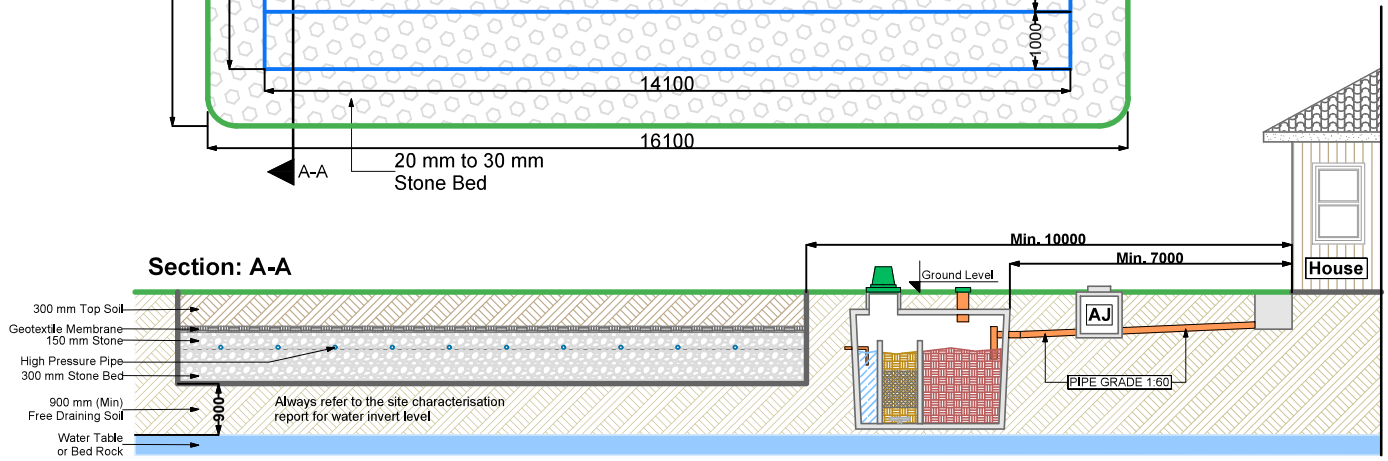
MARTIN INSURANCE LIMITED

Kildare Co. Co . Carbury Site

		Per Person / Per day		Totals - Per Day	
QTY	Source	Litres	BOD5 grams	Litres	BOD5 grams
	Domestic				
	1 Bed House / Apartment = 4 PE	150	60	**0**	**0**
2	2 Bed House / Apartment = 4 PE	150	60	**1200**	**480**
2	3 Bed House / Apartment = 5 PE	150	60	**1500**	**600**
	4 Bed House / Apartment = 6 PE	150	60	**0**	**0**
	5 Bed House / Apartment = 7 PE	150	60	**0**	**0**
	Industrial				
	Office and/or factory without canteen	30	20	**0**	**0**
	Office and/or factory with canteen	60	30	**0**	**0**
	Open industrial site e.g quarry (excluding canteen)	40	25	**0**	**0**
	Schools				
	Staff - Non- residential with cooking on site	60	30	**0**	**0**
	Staff - Non- residential with no canteen	40	20	**0**	**0**
	Pupils - Non- residential with cooking on site	60	30	**0**	**0**
	Pupils - Non- residential with no canteen	40	20	**0**	**0**
	Boarding school: (I) residents	180	20	**0**	**0**
	day staff (includes mid-day meal)	60	20	**0**	**0**
	Hotels				
	Guests	250	75	**0**	**0**
	Guests (no meals)	180	45	**0**	**0**
	Resident staff	180	60	**0**	**0**
	Day staff	60	30	**0**	**0**
	Conference	40	20	**0**	**0**
	Restaurant full meals:			**0**	**0**
	(I) luxury catering	25	25	**0**	**0**
	(II) prepared catering	15	15	**0**	**0**
	(III) snack bars	10	10	**0**	**0**
	(IV) function rooms incl. buffets	10	10	**0**	**0**
	(V) fast food	10	10	**0**	**0**
	Pubs & Clubs				
	Residents	200	60	**0**	**0**
	Day staff	60	30	**0**	**0**
	Bar drinkers	10	10	**0**	**0**
	Bar meals	10	10	**0**	**0**
	Amenity Sites				
	Restaurants	15	15	**0**	**0**
50	Function rooms	10	10	**500**	**500**
	Toilet blocks (per use)	5	10	**0**	**0**
	Toilet blocks (long stay car parks)	10	15	**0**	**0**
	Golf clubs	20	10	**0**	**0**
	Squash, with club house	25	15	**0**	**0**
	Swimming	10	10	**0**	**0**
	Football club	30	20	**0**	**0**
	Caravan Sites:				
	(I) Touring	50	35	**0**	**0**
	(II) Static not serviced	75	35	**0**	**0**
	(III) Static fully serviced	150	55	**0**	**0**
	(IV) Tent sites	50	35	**0**	**0**
	Hospitals				
	Residential elderly people	250	60	**0**	**0**
	Residential elderly people plus nursing	300	65	**0**	**0**
	Nursing homes (convalescent)	350	75	**0**	**0**
				Litres	**BOD5 grams**
			Cumulative Totals	**3200**	**1580**
			Population Equivalent	21	26
			Design Population Equivalent		28

210 м² Pressurised Soil Polishing Filter





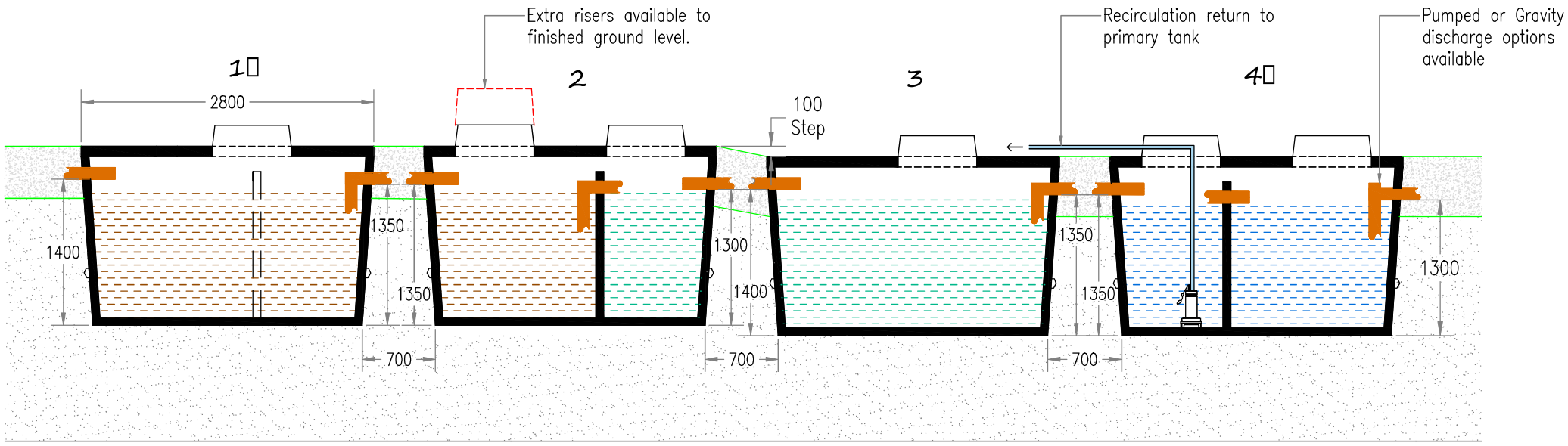
waste water services Sepcon

Moyglare Rd, Kilcock,Co Kildare
Ph: 01 6287300 **Email:** info@sepcon.ie
Web:www.sepcon.ie

Notes:

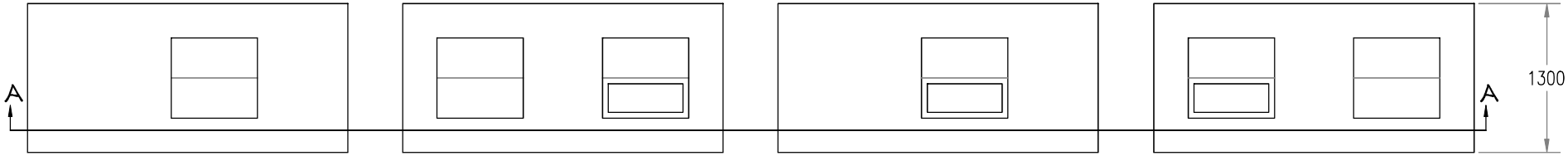
1. Drawings for illustration purposes only. Do not scale from this drawing.
2. Always refer to the site characterisation report for water invert level and further design info.
3. Ryan Civil Contracting Ltd t/a Sepcon assume no responsibility for any errors or ommissions in this drawing.

Project Name: 210м² Pressurised Soil Polishing Filter			
Drawing Title: STR-PB210			
Address:		Project No:	Client Ref:
Date:OCT 2016	Scale: N.T.S	Rev. no:	Dwg No.



SECTION A–A

Various tank configurations possible depending on site layout.



PLAN

waste water services Sepcon

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Notes:
1. Do not scale from this drawing.
2. Drawings are for illustration purposes only and are subject to change.
3. Observe all safety regulations in regard to excavation and lifting requirements.
4. Never leave tank lids uncovered or unattended at any time.
5. Refer to the site specific report for details of loadings and further design infomation.
6. The cross section drawing above shows the tanks in a straight series configuration only. Consult us for excavation requirements in different tank configurations.
7. Ground conditions for tank installation to be approved by clients engineer.

Project Name: Streamline Waste Water Treatment System			
*Drawing Title:*PE28 Sewage Treatment System - EN12566-3 & S.R.66:2015			
Address:		*Project No:*	*Client Ref:*
Date:OCT16	*Scale:* N.T.S	*Rev. no:*	*Dwg No:*STR-WWTS-PE28