2018

SITE SUITABILITY REPORT

Client: Kilkenny county council

Location: Shanganny, Jenkinstown,

Co.Kilkenny – Site A



William Bolger-Hynes

BOLGER -HYNES ARCHITECTURAL

DESIGN

12/23/2018

APPENDIX B: SITE CHARACTERISATION FORM

File Reference: SITE A
1.0 GENERAL DETAILS (From planning application)
Prefix: First Name: KILKENNY COUNTY COUNCIL Surname:
Address: Site Location and Townland:
HOUSING CAPITAL, KILKENNY COUNTY COUNCIL, SHANGANNY, JENKINSTOWN, CO.KILKENNY
Telephone No: Fax No:
E-Mail:
Maximum no. of Residents: 4 No. of Double Bedrooms: 2 No. of Single Bedrooms: 0
Proposed Water Supply: Mains Private Well/Borehole Group Well/Borehole
2.0 GENERAL DETAILS (From planning application)
Soil Type, (Specify Type): BEDCROP/OUTCROP/SUBCROP
Aquifer Category: Regionally Important Locally Important Poor PI
Vulnerability: Extreme ✓ High Moderate Low High to Low Unknown
Bedrock Type: NAMURIAN SANDSTONES
Name of Public/Group Scheme Water Supply within 1 km: NONE
Groundwater Protection Scheme (Y/N): Yes Source Protection Area: SI SO
Groundwater Protection Response: R21
Presence of Significant Sites (Archaeological, Natural & Historical):
Past experience in the area: NONE.
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).
Potential targets at risk are the PI aquifer. There are no apparent potential site restrictions at this stage. The ground water protection response R2¹ acceptable subject to normal good practice (i.e system selection, construction, operation and maintenance in accordance with EPA CoP. (Sources: www.gsi.ie, www.osi.ie, www.irishwater.ie, www.archaelogy.ie, kilkenny county council)

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: SIDE OF HILL.	
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: NEAREST DERELICT DWELLING APPROX. 45M UP GRADIENT IN A NORTHERLY DIRECTION.	
Existing Land Use: AGRICULTURAL - GRAZING.	
Vegetation Indicators: MAINLY GRASS WITH VARIBLE THISTLES.	
Groundwater Flow Direction: PROBABLE DIRECTION OF GROUNDWATER FLOW - NORTH EAST TO SOUTH WEST.	
Ground Condition: FIRM TO SOFT ON 14/12/18.	
Site Boundaries: SEE COMMENTS BELOW.	
Roads: LOCAL ROAD APPROX. 20M UP IN A EASTERLY DIRECTION.	
Outcrops (Bedrock And/Or Subsoil): NONE EVIDENT.	
Surface Water Ponding: NONE EVIDENT. Lakes: NONE EVIDENT.	
Beaches/Shellfish: NONE WITHIN 250M. Areas/Wetlands: NONE WITHIN 250M.	
Karst Features: NONE WITHIN 250M.	
Watercourse/Stream*: NONE EVIDENT.	
Drainage Ditches*: NONE EVIDENT.	
Springs / Wells*: NEAREST WELL WITHIN IN SITE APPROX. 35M UP GRADIENT NORTH.	
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 tre wastewater and the location of the proposed system within the site).	eat the
BOUNDARIES: EAST WEST- TIMBER POST AND WIRE FENCE WITH NATURAL HEDGEROW. NORTH - TIMBER POST AND WIRE FENCE WITH EXISTING DERELICT DWELLING. SOUTH - NATURAL HEDGEROW. (SEE OSI MAP ATTACHED) TARGETS AT RISK: THE NEAREST EXISTING WELL IS UP GRADIENT APPROX 35M IN A NORTHERLY DIRECTION AND IS THE DERELICT DWELLING. (BEYOND MINUMIM DISTANCE REQUIREMENTS) VEGETATION INDICATORS SUGGEST GROUND CONDITIONS COULD BE DRY.	PART OF

^{*}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): 2.30							
Depth from ground surface to bedrock (m) (if present): Depth from ground surface to water table (m) (if present): 2.20								
Depth of water ingress: 2.20 Rock type (if present): OCCASIONAL SANDSTONE COBBLE								
Date and time of excavation: 12/12/2018								
Depth of P/T Test*		Plasticity and dilatancy***	Soil Structure	Density/ Compactness	Colour****	Preferential flowpaths		
0.1 m P1.2.3	TOP SOIL 0 - 0.2m		CRUMB	VERY SOFT	BROWN	FREQUENT GRASS ROOTLETS 0.3mm		
0.2 m 0.3 m 0.4 m	SUBSOIL 1 0.2m - 0.4m SLIGHTLY RASPY	T = 7 R = 140mm D = N	SUBANGULAR STRUCTURE- LESS	SOFT	LIGHT	VARIABLE GRAVELS		
0.5 m 0.6 m 0.7 m	Gravelly / CLAY SUBSOIL 2 0.4m -1.8m SLIGHTLY RASPY Gravelly / CLAY	T = 8 R = 160mm D = N	SUBANGULAR BLOCKY	SOFT TO FIRM	BROWN WITH VARIABLE GREY	VARIABLE GRAVELS & OCCASIONAL COBBLES		
0.8 m 0.9 m 1.0 m						EVIDENCE OF MOTTLING FROM 0.3m- 1.7m		
1.1 m 1.2 m 1.3 m								
1.4 m T1.2.3 1.6 m	SUBSOIL 3 1.6m - 2.3m SLIGHTLY GRITTY GRAVELLY/ SIIt Clay	T = 2 R = 50mm D = Slightly	SUBANGULAR STRUCTURE- LESS	SOFT	ORANGE BROWN			
1.7 m 1.8 m 1.9 m								
2.0 m								
2.2 m 2.3 m	BOTTOM OF TRIAL HOLE 2.3M	NO BEDROCK		W.T.L PRESENT @				
2.4 m 2.5 m	NOLE 2.5M	PRESENT @ 2.3M		2.2M on 14/12/18		A		
2.6 m								
2.8 m								
2.9 m]							

Likely T value: 40.00

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.

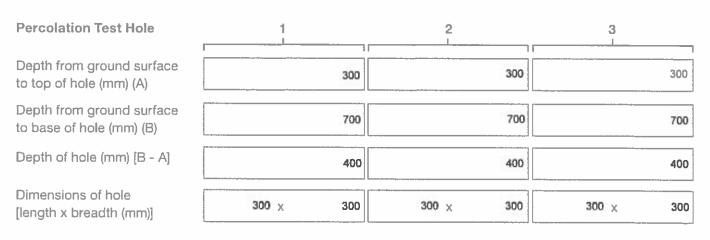
^{****} All signs of mottling should be recorded.

3.2 Trial Hole (contd.) Evaluation:

THERE ARE SIGNS OF MOTTLING FROM 0.3M - 1.5M. THE TRIAL HOLE INCIDATES THAT SUBSOIL 3 IS THE MOST SUITABLE SOIL FOR PERCOLATION PURPOSES.

3.3(a) Percolation ("T") Test for Deep Subsoils and/or Water Table

Step 1: Test Hole Preparation

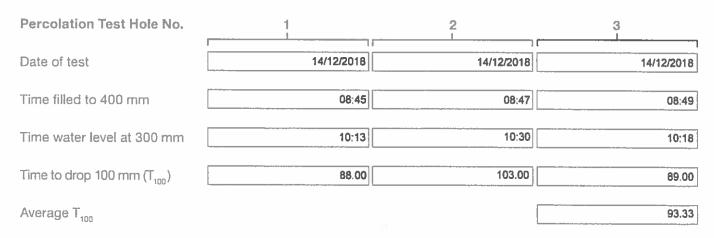


Step 2: Pre-Soaking Test Holes

Date and Time pre-soaking started 13/12/2018 09:00 13/12/2018 09:02 13/12/2018 09:04

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

Step 3: Measuring T_{ten}



If T₁₀₀ > 300 minutes then T-value >90 - site unsuitable for discharge to ground

If $T_{too} \le 210$ minutes then go to Step 4;

If $T_{100} > 210$ minutes then go to Step 5;

Step 4: Standard Method (where $T_{100} \le 210$ 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	10:15	12:00	105.00	10:32	12:38	126.00	10:20	12:08	108.00
2	12:04	14:34	150.00	12:40	15:10	150.00	12:10	14:34	144.00
3	14:40	17:42	182.00	15:12	18:20	188.00	14:36	18:00	204.00
Average ∆t Value			145.67			154.67			152.00
	Average Δt. [Hole No.1]	/4 =	36.42 (t ₁)	Average At [Hole No.2]		38.67 (t ₂)	Average \(\Delta \) [Hole No.3		38.00 (t ₃)
Result of Te	st: T =		37.69 (m	in/25 mm)					
Comments:									
T-TEST PASSI	ES. THIS INDIC	CATES SUBS	OIL 1 IS SUITA	ABLE FOR PEF	RCOLATION P	URPOSES.		Managara,	

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

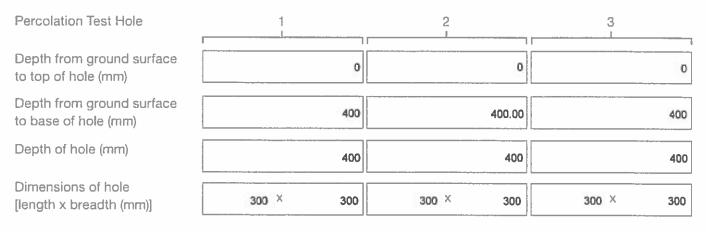
Percolation Test Hole No.		1				2				3		
Fall of water in hole (mm)	Time Factor = T,	Time of fall (mins) = T _m	K _{1k} = T ₁ / T _m	T – Value = 4.45 / K _{ts}	Time Factor = T,	Time of fall (mins) = T _m	K _{1a} = T ₁ / T _m	T Value = 4.45 / K ₁₆	Time Factor = T,	Time of fall (mins) = T _m	K _{fii} = T _t / 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	e 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



Step 2: Pre-Soaking Test Holes

Date and Time				
pre-soaking started	13/12/2018 09:1	0 14/12/2018	09:12	13/12/2018 09:15

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

Step 3: Measuring P₁₀₀

Percolation Test Hole No.	1	2	3
Date of test	14/12/2018	14/12/2018	14/12/2018
Time filled to 400 mm	08:55	08:57	09:00
Time water level at 300 mm	12:43	12:10	12:52
Time to drop 100 mm (P ₁₀₀)	228.00	193.00	232.00
Average P ₁₀₀			217.67

If $P_{100} > 300$ minutes then P-value >90 – site unsuitable for discharge to ground

If $P_{100} \le 210$ minutes then go to Step 4;

If P₁₀₀ > 210 minutes then go to Step 5;

Step 4: Standard Method (where $P_{100} \le 210$ 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			0.00			0.00			0.00
2			0.00			0.00			0.00
3			0.00			0.00			0.00
Average ∆p Value			0.00			0.00			0.00
	Average A		0.00 (p ₁)	Average . [Hole No.		0.00 (p ₂)	Average [Hole No		0.00 (p ₃)
Result of Te	st: P =		0.00 (min	1/25 mm)					
Comments:									
P-TEST PASS	ES. THIS INC	ICATES TOP	SOIL IS SUITAB	LE FOR PE	RCOLATION F	PURPOSES.			

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,	Time of fall (mins) = T _m	K ₁₆ = T ₁ / T _m	P – Value = 4.45 / K _{rs}	Time Factor = T ₁	Time of fall (mins) = T _m	K _{rs} = T _r / T _m	P – Value = 4.45 / K _{ts}	Time Factor = T,	Time of fall (mins) = T _m	K _{rs} = T, / T _m	P – Value = 4.45 / K _{rs}
300 - 250	8.1	168	0.05	92.30	8.1	156	0.05	85.70	8.1	160	0.05	87.90
250 - 200	9.7	195	0.05	89.46	9.7	185	0.05	84.87	9.7	210	0.05	96.34
200 - 150	11.9	235	0.05	87.88	11.9	227	0.05	84.89	11.9	255	0.05	95.36
150 - 100	14.1	280	0.05	88.37	14.1	305	0.05	96.26	14.1	310	0.05	97.84
Average P- Value Hole $1=(p_1)$ 89.50 P- Value Hole $1=(p_2)$ 87.93 P- Value Hole $1=(p_3)$ 94.36												

Result of Test: P =	90.60	(min/25	mm
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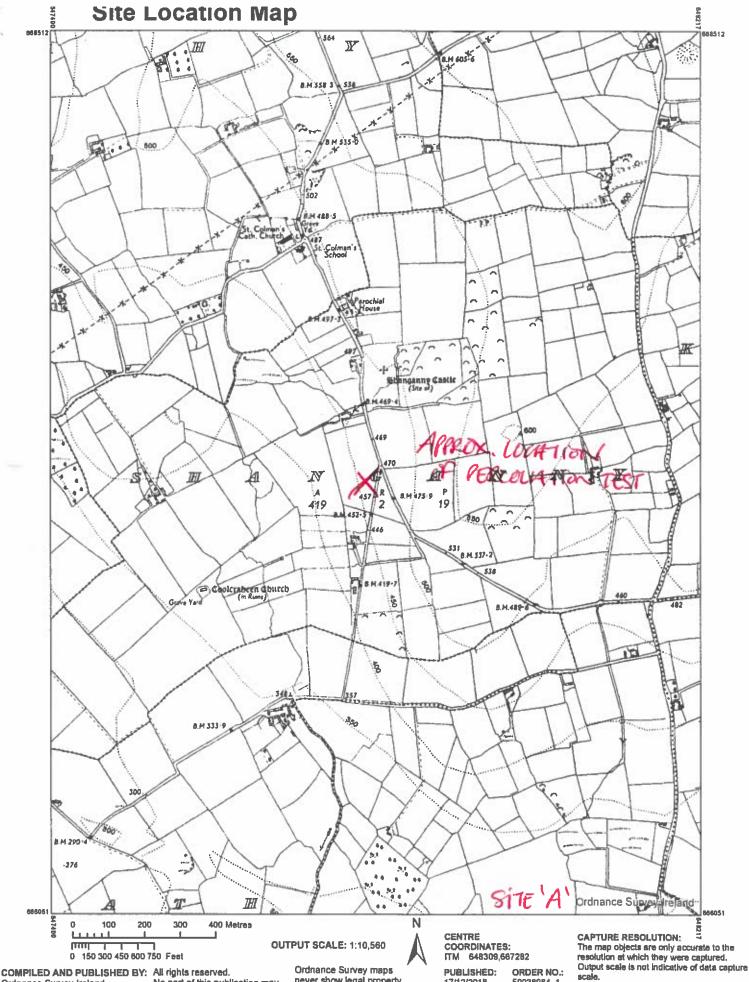
Comments:

P-TEST HAS FAILED. THIS INDICATES THAT TOPSOIL AND SUBSOIL 1 IS NOT UNSUITABLE FOR PERCOLATION PURPOSES.

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 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.



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17/12/2018

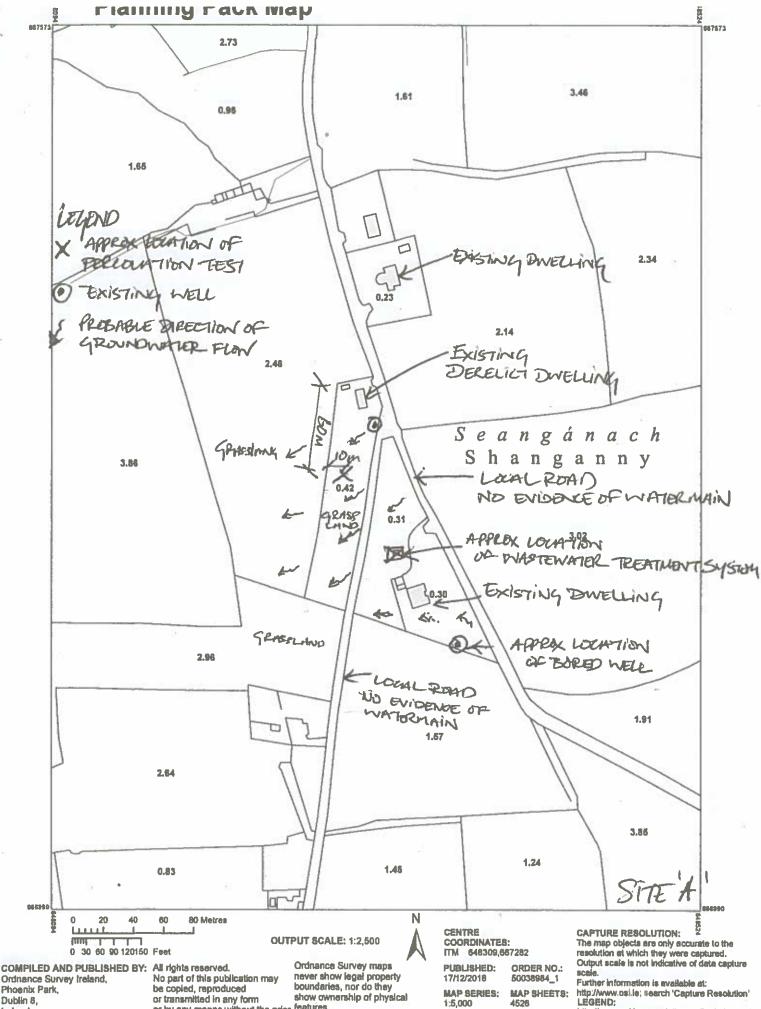
50038984_1 MAP SERIES: MAP SHEETS:

6 Inch Raster 9900-14 6 Inch Raster KK010

Further information is available at: http://www.osi.ie; search 'Capture Resolution'

http://www.osi.ie; search 'Large Scale Legend'





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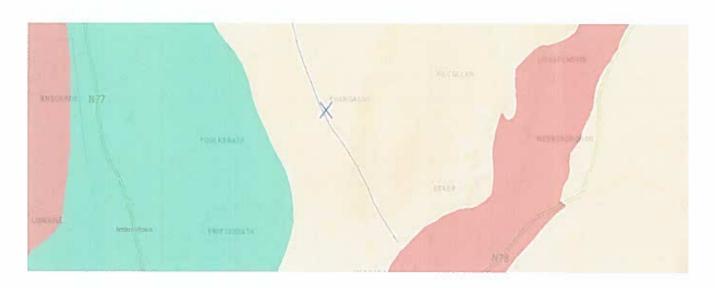
1:2,500 1:2,500

4526-A 4526-C

http://www.osi.ie, search 'Large Scale Legend'



GROUNDWATER AQUIFER MAP



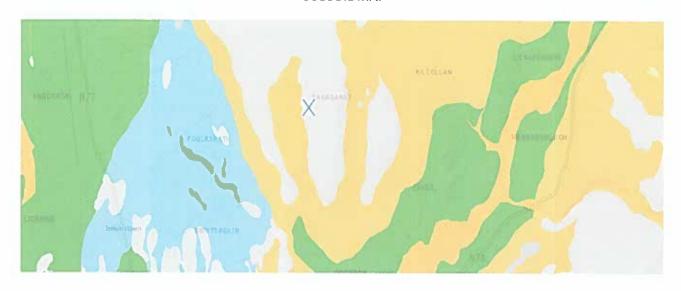
VULNERABILITY MAP



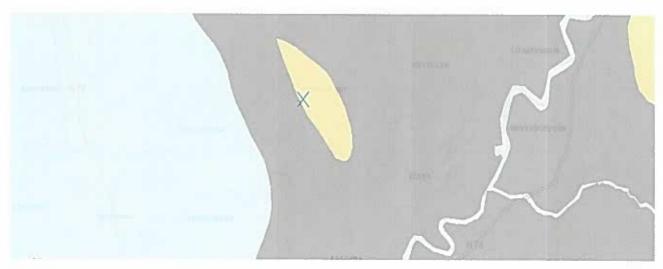
TOPSOIL MAP



SUBSOIL MAP



BEDROCK MAP



GROUNDWATER RECHARGE DATA MAP





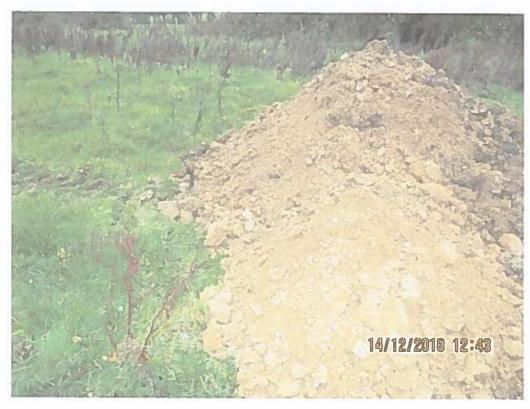
TRIAL HOLE



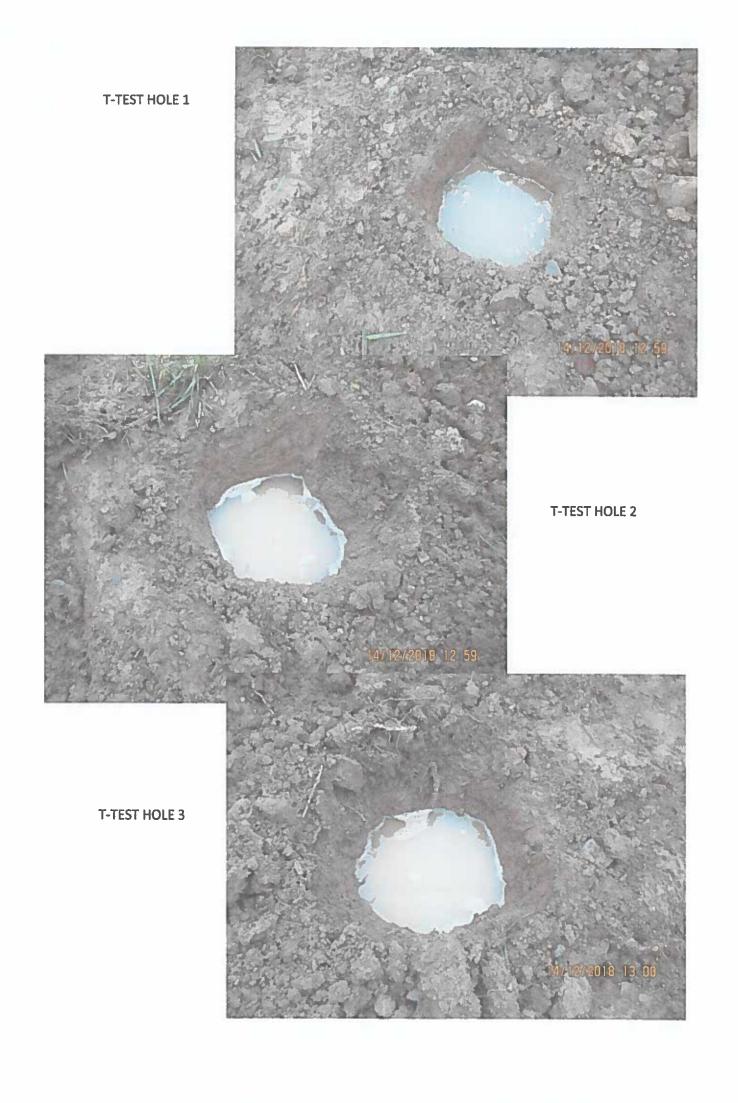
SIDE PROFILE OF TRIAL HOLE



SOIL/SUBSOIL FROM EXCAVATED TRIAL HOLE



SOIL/SUBSOIL FROM ECAVATED TRIAL HOLE





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 1. Septic tank system (septic tank and percolation area)	Discharge Route Discharge to Ground Water
2. Secondary Treatment System	
a. septic tank and filter system constructed on-site and polishing filter; or	
b. packaged wastewater treatment system and polishing filter	es
5.0 RECOMMENDATION	
Propose to install: Packaged wastewater treatment system and polishing filter	
and discharge to: Ground Water	
Trench Invert level (m): 99.45	
Site Specific Conditions (e.g. special works, site improvement works tes	ting etc.
IT IS PROPOSED TO HAVE A PACKAGED TREATMENT SYSTEM AND SOIL POLISHING THE INVERT LEVEL OF PERCOLATION PIPE SHOULD BE 0.550M BELOW THE HIGH DESIGN CRITERIA OF TANK: 4PE @ 150L/DAY = 500L/DAY . 750L+ 2000L = 2500L THEREFORE THERE IS A MINIM WASTEWATER TREAMENT TANK. DESIGN CRITERIA PERCOLATION AREA: THE TOPSOIL AND SUBSOIL 1 & 2 ARE UNSUITABLE FOR PERCOLATION. IT IS PROSOIL/SUBSOIL WITH P/T VALUES 10-30. THE IMPORTED SOIL MUST BE PLACED IN LAYER TO BE TESTED. REFER TO ANNEX F PAGE 96 EPA COPTHE TVALUE RESULT AT SUBSOIL 3 IS BETWEEN 21-40. THEREFORE THE LOADIN TOTAL REQUIRED LENGTH OF PERCOLATION SHALL BE 60M. THE MAX. RUN PERCOLATION TRENCH SHALL BE AN AIR VENT UPSTAND ATTACHED AT THE END OF EACH PERCOPERCOLATION TRENCH SHALL BE 0.5M. THERE SHALL BE A GRADIENT OF 1:200 FOR SEE DRAWINGS ATTACHED.	EST CONTOUR. UM 2500L CAPACITY REQUIRED FOR THE POSED TO REMOVE AND IMPORT IN SUITABLE LAYERS 300mm LIGHTLY COMPACTED. EACH G RATE ON TRENCH WILL BE 25L/M2/DAY. THE OLATION TRENCH PIPE 10M.

¹ note more than one option may be suitable for a site and this should be recorded

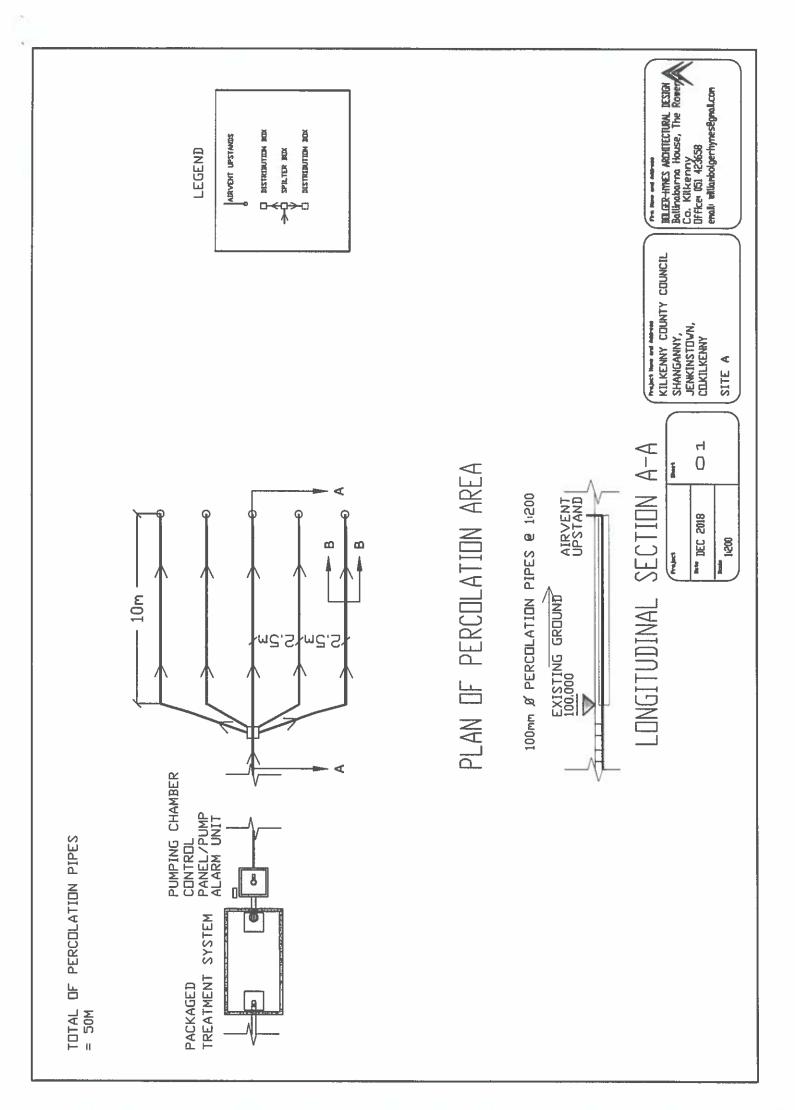
² A discharge of sewage effluent to "waters" (definition includes any or any part of any river, stream, lake, canal, reservoir, aquifer, pond, watercourse or other inland waters, whether natural or artificial) will require a licence under the Water Pollution Acts 1977-90. Refer to Section 2.6.2.

6.0 TREATMENT SYSTEM DETAILS

Tank Capacity (m³)	Pe	Percolation Area				Mounded Percolation Area			
		No. of Trenches			No.	No. of Trenches			
	Lei	Length of Trenches (Len	Length of Trenches (m)			
	Inv					Invert Level (m)			
SYSTEM TYPE: Secon	ndary Treatment	Svstem			3	·	,		
Filter Systems						Packa	age Treat	ment System	
Media Type	Area (m²)*	Depth of F	ilter -	Invert Lev	el i	Туре	9-11-11-		
Sand/Soil					BIOLOGICAL AERATION SYSTEM				
Sand/Soil		[*		BIOLO	GICAL AER	ATION SYSTEM	
Soil						Capac	ity PE		
Constructed Wetland						Sizing	of Primar	y Compartmer	
Other							4.00	m^3	
SYSTEM TYPE: Tertian	ry Treatment Sys	tem							
Polishing Filter: Surface			Packad	ge Treatm	ent Svs	tem: Ca	inacity (ne		
or Gravity Fed:	. , _							7	
No. of Trenches		10	Constr	ucted We	tland: S	urface /	Area (m²)*		
Length of Trenches (m)		5.00							
Invert Level (m)		99.45							
DISCHARGE ROUTE:									
Groundwater 🗸	Hydraulic L	oading Rate *	(l/m².d)		25.00				
Surface Water **	Discharge	Rate (m³/hr)							
TREATMENT STANDA	RDS:	, ,							
Treatment System Perfo	ormance Standa	rd (mg/l) B(OD	SS	NH	- N	Total N	Total P	
			15.00		5.00	5.00	20.		
QUALITY ASSURANC	E:								
Installation & Commissi	oning		On-g	oing Main	tenance	-			
INTALLATION AND COMMIS BY A QUALIFIED PERSONN MANUAL CODE OF PRACTI	IAL IN ACCORDANC	E WITH THE EPA	REGI	JLAR DE-SL		AND MAIN	TEANCE ON	N AN ANNUAL	

^{*} Hydraulic loading rate is determined by the percolation rate of subsoil

^{**} Water Pollution Act discharge licence required



100mm 150mm 300mm 300mm 150mm 300mm F-200mm TOPSOIL GRAVEL GRAVEL LIGHTLY COMPACT AND TEST S
REFER TO ANNEX F EPA COP OF EXISTING GROUND 100.000 (At highest contour) PLACE IN LAYERS OF 300mm 100mm Ø PERCOLATION PIPE GEDTEXTILE LAYER EN ISD 10319 SOIL/SUBSOIL WITH P/T P/T VALUES OF 10/-30 IMPORT IN SUITABLE SUBSOIL 3 EXISTING

SECTION B-B OF PERCOLATION TRENCH (Through one percolation trench)

Project Brew KILKENNY SHANGAN JENGAN JENGAN

KILKENNY CDUNTY CDUNCIL SHANGANNY, JENKINSTDWN, CDKILKENNY

Ballimbarra House, The Rovery
Co. Kilkenny
Iffice ISI 423638
enali willarboigerhynes@nal.con

2

7.0 SITE ASSESSOR DETAILS

Company: BOLGER HYNES ARCHITECTURAL DESIGN								
Prefix: Mr. First Name: WILLIAM Surname: BOLGER-HYNES								
Address: BALLINABARNA HOUSE, THE ROWER, CO.KILKENNY								
Qualifications/Experience: DIP IN CIVIL ENG. FETAC CERTIFICATION IN SITE SUITABILITY ASSESSMENT								
Date of Report: 23/12/2018								
Phone: 051 423658 Fax: 051 423658 e-mail williambolgerhynes@gmail.com								
Indemnity Insurance Number: FV481810R								
Signature: Will- Bolge Hyres								



Broker Reference: BOLG05PI01

27/04/2018

Date:

TO WHOM IT MAY CONCERN

Bolger-Hynes Architectural Design Ballinabarna House The Rower Co Kilkenny

We act as insurance broker for the above client and as such can confirm the following cover

Business Description

Engineer

Professional Indemnity Insurance

Limit of Indemnity

€ 1,000,000, any one claim

Policy Excess

€ 500 each and every claim

Period of Cover

26/04/2018 to 25/04/2019

Both days inclusive local standard time at above address

Insurers

Lloyds -Professional Indemnity

Policy No

API0002006

Note

The cover provided contains no unusual terms or conditions and is fully applicable to any work which the Insured Practice may be appointed in connection with his business description.

Policy extends to include PSDP cover

Donal Cronin

Arachas Corporate Brokers Limited

[&]quot;These statements have been made in good faith and are a resume of the insurance cover in force (which is subject to the full terms and conditions of the policy). We accept no responsibility whatsoever for any inadvertent or negligent act, error or omission on our part in preparing these statements or for any loss, damage or expense thereby occasioned to any recipient of this letter".