



SOIL CHARACTERISATION AND
SITE SUITABILITY ASSESSMENT REPORT
TE REF: 23/447 TE

COILLTE CGA
GLENFARNE WOODS
GLENFARNE
CO. LEITRIM

IN ACCORDANCE WITH
EPA CODE OF PRACTICE WASTEWATER
TREATMENT AND DISPOSAL SYSTEMS SERVING
SINGLE HOUSES 2021 AND WASTEWATER
TREATMENT MANUALS - TREATMENT SYSTEMS
FOR SMALL COMMUNITIES, BUSINESS, LEISURE
CENTRES AND HOTELS 2000



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SITE CHARACTERISATION FORM FOR AN ON-SITE WASTEWATER TREATMENT SYSTEM

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1.0 GENERAL DETAILS (From planning application)

Name(S)	Coillte CGA		
Address of Correspondance	Site Location and Townland		
c/o Spentide Architecture Unit 2, Broderick St Coolbawn, Midleton Co. Cork	Glenfarne Woods Glenfarne Co. Leitrim		
Number of Bedrooms	N/A	Maximum Number of Residents:	N/A
Comments on population equivalent			
200 users in total (200 users of the site per day)			

Proposed Water Supply:

Mains: Private Well/Borehole Group Well/Borehole

2.0 GENERAL DETAILS (From planning application)

Soil Type, (Specify Type):	Soil Association 5 Blanket Peat (High Level)		
Subsoil, (Specify Type):	Silt/Clay		
Bedrock Type:	Dinantian Dolomited Limestone		
Aquifer Category:	Regionally Important <input type="checkbox"/>	Locally Important <input type="checkbox"/>	Poor <input checked="" type="checkbox"/>
Vulnerability:	Extreme <input type="checkbox"/>	High <input checked="" type="checkbox"/>	Moderate <input type="checkbox"/> Low <input type="checkbox"/>
Groundwater Body:	IE_NW_G_042	Status	Not at Risk
Name of Public/Group Scheme Water Supply within 1km:	Unknown		
Source Protection Area:	ZOC <input type="checkbox"/> n/a	SI <input type="checkbox"/> n/a	SO <input type="checkbox"/> n/a
Groundwater Protection Response:	R1		
Presence of Significant sites (Archaeological, natural and historical):	None evident within the locality		
Past experience in the area:	Variable percolation characteristics of the topsoil and subsoil materials. The area is heavily forested.		

R1 = Acceptable subject to normal good practice. Site may be suitable for discharge to ground, if the minimum depths are met on the site and if there exists suitable percolation. As the soil type in the area is Blanket Peat (100% of the land area), and as the area is mapped as 'High' Vulnerability. Groundwater as a resource will be at risk if the minimum depths required are not achieved on the site, or if the percolation rate is too rapid. Older wells in the area may also be at risk, if the minimum separation distances are not adhered to. Groundwater and wells are therefore the main targets, following the desk study. Given the response and the aquifer type, the site is potentially suitable for a conventional septic tank system if the minimum depths required are met on the site, if the minimum separation distances can be met, and if the percolation rate is adequate.

3.0 ON-SITE ASSESSMENT

3.1 Visual Assessment

Landscape Position	<i>Relatively Flat</i>			
Slope	<i>Steep <1:5</i>	<i>Shallow 1.5 to 1.20</i>	✓	<i>Relatively Flat</i>
Slope Comment	<i>Sloping in Southeast direction</i>			

Surface features within a minimum of 250 metres (Distances to features should be noted in metres)

Houses	<i>No Neighbouring house located within 100m from the proposed percolation area (ppa).</i>
Existing Land Uses	<i>Forestry area</i>
Vegetation Indicators	<i>Trees are present throughout the site.</i>
Groundwater Flow Directions	<i>Southeast Direction</i>
Ground Condition	<i>Ground conditions are best described as dry and firm in the ppa.</i>
Site Boundaries	<i>Trees are located is located to the north, south & west of the ppa. Roadway located to the east of the ppa.</i>
Roads	<i>There is a road located >10m east from the ppa.</i>
Outcrops (Bedrock and/or subsoil)	<i>None evident or identified on site.</i>
Surface water ponding	<i>No Surface water ponding evident in the ppa when examined on 08.09.23. It must be noted that weather conditions prior to the site assessment taking place was generally dry and mild conditions.</i>
Lakes	<i>None occur within 10m of the ppa.</i>
Beaches/Shellfish Areas	<i>None occur within 200m of the ppa.</i>
Wetlands	<i>None occur within 200m of the ppa.</i>
Karst Features	<i>None occur within 200m of the ppa.</i>
Watercourses/Streams	<i>None occur within 10m of the ppa.</i>
Drainage Ditches	<i>None occur within 10m of the ppa.</i>
Springs	<i>None occur within 50m from the ppa.</i>

Wells

If a well is to be bored onsite it should be located at least 30m up-gradient from the ppa; this will therefore be outside the minimum separation distances of the Groundwater Protection Responses of GSI/EPA/DoELG and the EPA Code of Practice (2021).

As all the wells in the locality will therefore meet the required separation distances of the Groundwater Protection Responses of GSI/EPA/DoELG and the EPA Code of Practice (2021), none are deemed to be at risk from the proposed polishing filter's installation.

Integrate the information above in order to comment on:

1. The potential suitability of the site:

The site still seems suitable for discharge to ground.

2. Potential targets at risk:

Following the desk study surface water was thought not to be at risk; this was corroborated during the visual assessment.

There appears to be few issues with respect to impermeability. From this, surface water does not seem to be a potential target,

Groundwater is still a target following the visual assessment, unless the minimum depths required are met on the site and there exists adequate percolation.

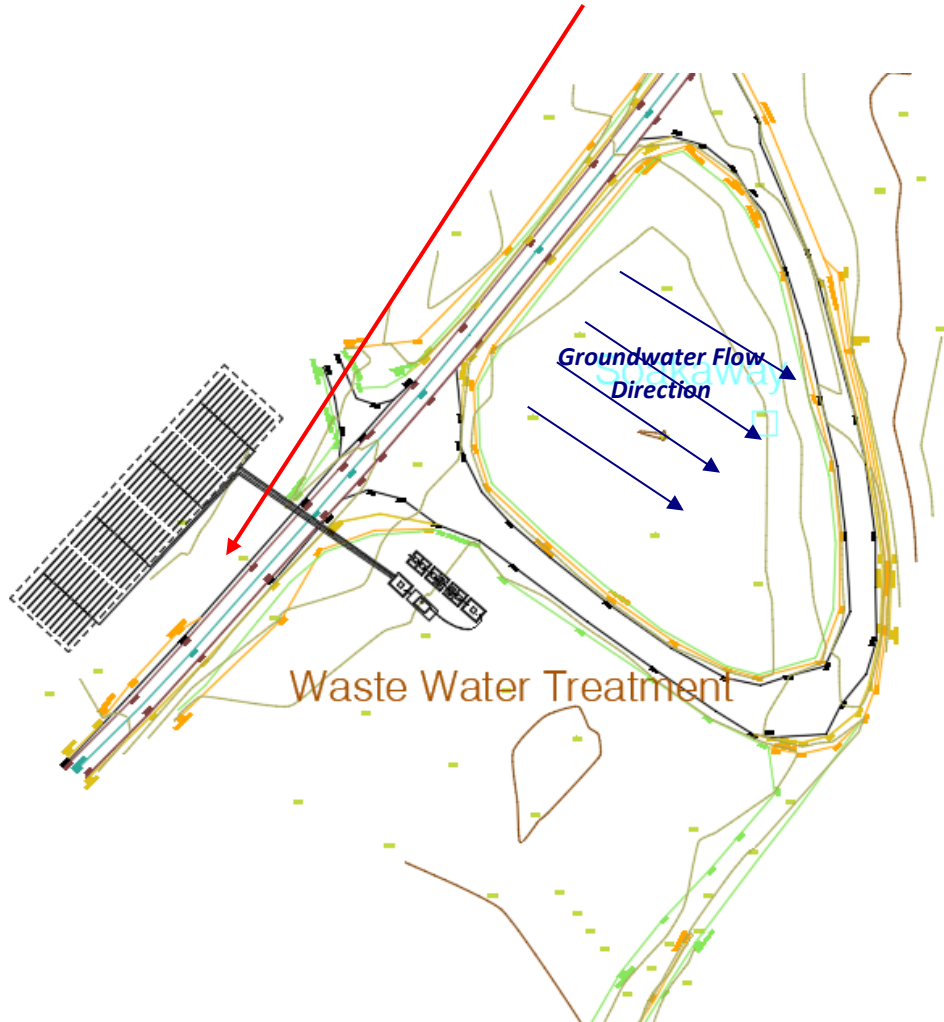
3. The suitability of the site to treat the wastewater:

Following the visual assessment it is seen that all appropriate separation distances can be met and the site seems well drained, and pending confirmation of the presence of adequate depths of unsaturated soil and subsoil within the percolation area, as well as sufficient percolation rates under the site, the site should be suitable for treating wastewater adequately.

Sketch of site showing measurement to Trial Hole location and Percolation test Hole locations, wells and direction of ground water flow, proposed house (incl. distances from boundaries) adjacent houses, watercourses, significant sites and other features. North point should always be included.

SITE LAYOUT DRAWING SHOWING TEST HOLE LOCATIONS

*Approximate Location of Trial Hole & Percolation
Test Holes Examined on 08.09.23*



3.2 Trial Hole

Should be a minimum 2.10m deep

Depth of Trial Hole	2.10m BGL	
Depth from Ground Surface to bedrock (m) if Present	None Encountered	Depth from Ground Surface to Water Table (m) if Present
Depth of water ingress	0.70m BGL	Rock Type if Present
Date and Time of Excavation	06.09.23	11.00
Date and Time of Examination	08.09.23	11.30
		None Encountered

	Depth of surface & subsurface Test	Soil/Subsoil Texture Classification	Plasticity and Dilatancy	Soil Structure	Density Compactness	Colour	Preferential Flowpaths
0.1m	Depth of surface Test	Silt/Clay	Ribbons 50.50.60 2,3,4Threads	Blocky	Medium	Brown	Roots present
0.2m							
0.3m							
0.4m							
0.5m	Depth of subsurface Test	Clay intermixed with stone	Ribbons 80.90.100 3,3,4Threads	Blocky	Medium	Brown	
0.6m							
0.7m							
0.8m							
0.9m							
1.0m							
1.1m							
1.2m	GWT						
1.3m							
1.4m							
1.5m							
1.6m							
1.7m							
1.8m							
1.9m							
2.0m							
2.1m							

EVALUATION:

Weather conditions: Dry and Mild

According To The Flowchart For Describing Subsoil's based on BS5930:1999, the subsoil is best described as Clay intermixed with stone

Groundwater was encountered in the trial hole at a depth of 1.10m BGL. Winter groundwater is expected to be up to 0.70m BGL. Bedrock was not Encountered in the trial hole.

Step 1 Test Hole Preparation

Percolation Test Hole	1	2	3
Depth from ground surface to top of hole (mm) (A):	200	200	200
Depth from ground surface to base of hole (mm) (B):	600	600	600
Depth of hole (mm) (B-A):	400	400	400
Dimensions of hole [length x breadth (mm)]:	300 x 300	300 x 300	300 x 300

Step 2 Pre-Soaking Test Holes

Pre-soak start	Date	07.09.23	07.09.23	07.09.23
	Time	10.00	10.00	10.00
2nd pre-soak start	Date	07.09.23	07.09.23	07.09.23
	Time	15.50	15.50	15.50

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

Step 3 Measuring T₁₀₀

Percolation Test Hole	1	2	3
Date of Test	08.09.23	08.09.23	08.09.23
Time Filled to 400mm	10.00	10.00	10.00
Time Water Level at 300mm	14.34	14.38	14.41
Time to drop 100mm (T ₁₀₀)	274.00	278.000	281.00
Average T ₁₀₀			277.60

If T₁₀₀ > 480mins then Subsurface Percolation value > 120 – site unsuitable for discharge to ground
 If T₁₀₀ ≤ 210mins then go to Step 4
 If T₁₀₀ ≥ 210mins then go to Step 5

Step 4 Standard Method (where $T_{100} \leq 210\text{min}$)

Percolation Test Hole	1			2			3		
	Start Time at 300mm	Finish Time at 200mm	Δt (min)	Start Time at 300mm	Finish Time at 200mm	Δt (min)	Start Time at 300mm	Finish Time at 200mm	Δt (min)
1									
2									
3									
Average Δt									
	Average $\Delta t/4 =$ [Hole No. 1]			Average $\Delta t/4 =$ [Hole No. 2]			Average $\Delta t/4 =$ [Hole No. 2]		
Result of Test: Subsurface Percolation Value:									min/25mm
Comments									

Step 5 Modified Method (where $T_{100} > 210\text{min}$)

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	14.35	17.15	160	0.05	87.90
250 – 200	9.7	17.16	20.05	169	0.06	77.53
200 – 150	11.9	20.06	22.58	172	0.07	64.32
150 - 100	14.1	22.59	01.53	174	0.08	54.91
Average	T-Value	T-Value Hole 1 = (T_1)				71.17

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	14.39	17.22	163	0.05	89.55
250 – 200	9.7	17.23	20.14	171	0.06	78.45
200 – 150	11.9	20.15	23.12	177	0.07	66.19
150 - 100	14.1	23.13	02.13	180	0.08	45.81
Average	T-Value	T-Value Hole 2 = (T_2)				72.75

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	14.42	17.30	168	0.05	92.30
250 – 200	9.7	17.31	20.38	177	0.05	81.20
200 – 150	11.9	20.29	23.33	184	0.06	68.81
150 - 100	14.1	23.34	02.36	182	0.08	57.44
Average	T-Value	T-Value Hole 3 = (T_3)				74.94

Result of Test: Subsurface Percolation Value = 72.95min/25mm.

Comments

Average Percolation Characteristics of the Subsoil Material.

3.3b Surface Percolation for Soil

Step 1 Test Hole Preparation

Percolation Test Hole	1	2	3
Depth from ground surface to top of hole (mm) (A):	0	0	0
Depth from ground surface to base of hole (mm) (B):	400	400	400
Depth of hole (mm) (B-A):	400	400	400
Dimensions of hole [length x breadth (mm)]:	300 x 300	300 x 300	300 x 300

Step 2 Pre-Soaking Test Holes

Pre-soak start	Date	07.09.23	07.09.23	07.09.23
	Time	10.05	10.05	10.05
2nd pre-soak start	Date	07.09.23	07.09.23	07.09.23
	Time	16.00	16.00	16.00

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

Step 3 Measuring T₁₀₀

Percolation Test Hole	1	2	3
Date of Test	08.09.23	08.09.23	08.09.23
Time Filled to 400mm	10.05	10.05	10.05
Time Water Level at 300mm	13.29	13.33	13.40
Time to drop 100mm (T ₁₀₀)	204.00	208.00	215.00
Average T ₁₀₀	209.00		

If T₁₀₀ > 480 minutes then Surface Percolation value > 90 – site unsuitable for discharge to ground
 If T₁₀₀ ≤ 210mins then go to Step 4
 If T₁₀₀ ≥ 210mins then go to Step 5

Step 4 Standard Method (where $T_{100} \leq 210\text{min}$)

Percolation Test Hole	1			2			3		
	Start Time at 300mm	Finish Time at 200mm	Δt (min)	Start Time at 300mm	Finish Time at 200mm	Δt (min)	Start Time at 300mm	Finish Time at 200mm	Δt (min)
1	13.30	16.56	206.00	13.34	17.04	210.0	13.41	17.18	217.00
2	16.57	20.26	209.00	17.05	20.38	213.00	17.19	21.04	225.00
3	20.27	23.59	212.00	20.39	00.18	219.00	21.05	00.59	234.00
Average Δt			209.00			214.00			225.30
	Average $\Delta t/4 =$ [Hole No. 1]		52.25	Average $\Delta t/4 =$ [Hole No. 2]		53.50	Average $\Delta t/4 =$ [Hole No. 2]		56.30
Result of Test : Surface Percolation Value	54.01		min/25mm						

Comments
Result of Test: Surface Percolation Value = 54.01min/25mm. Average Percolation Characteristics of the Topsoil

4.0 CONCLUSIONS 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	1.200
Are all minimum separation distance met?	Yes
Depth of unsaturated soil and/or subsoil beneath invert of gravel (or drip tubing in the case of drip dispersal system)	0.90m
Percolation test results: Surface: 54.01min/25mm Sub-surface: 72.95min/25mm	
Not suitable for Development <input type="checkbox"/>	Suitable for Development <input checked="" type="checkbox"/>

Identify all suitable options	Discharge Route
1. Septic tank System (Septic tank and percolation area) (Chapter 7) <input type="checkbox"/>	Groundwater
2. Secondary Treatment System (Chapters 8 and 9) and soil polishing filter (Section 10.1) <input checked="" type="checkbox"/>	
3. Tertiary Treatment System and Infiltration/treatment area (Section 10.2) <input checked="" type="checkbox"/>	

5.0 RECOMMENDATION:

Propose to install	<i>Traynor Environmental recommends that an O' Reilly Oakstown EN Treatment system (50PE System) or similar EN Certified System, Ecoflo Coco Filter and gravel Pressurised bed is installed in accordance with EPA guidelines 2021.</i>
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And discharge to	<i>Groundwater</i>
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Invert level of the trench/bed gravel or drip tubing (m)	<i>0.50m Above Ground Level (AGL)</i>
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Site Specific Conditions (if any) e.g. special works, Site Improvement Works, Testing etc.
<p><i>The tests showed that the site has a Sub-surface value rating of 72.95min/25mm indicating average percolation characteristics of the Sub-surface. A surface value rating of 54.01 min/25mm was attained indicating average percolation characteristics of the surface. Groundwater was encountered in the trial hole at a depth of 1.10m BGL. Winter groundwater is expected to be up to 0.70m BGL. Bedrock was not Encountered in the trial hole. The gravel pressurised bed should be constructed to ensure that there is a minimum of 0.90m of suitable percolating material between the base of the lowest part of the gravel Pressurised bed and Groundwater at all times. The gravel Pressurised bed will be bedded on 300mm depth of crushed stone (20-30mm in sizes). The distribution pipes used in this system will be smooth walled, have a diameter of 25mm, have 4-6mm holes drilled, and each pipe should be spaced parallel and 600mm apart centre to centre.</i></p> <p><i>Traynor Environmental Ltd also recommends that the O' Reilly Oakstown EN Treatment system (50PE System) or similar EN Certified System, Ecoflo Coco Filter and gravel Pressurised bed construction is overseen by a suitable qualified and accredited person. The location was chosen due to the poor percolation characteristics on the main site and this was the most suitable location for the proposed polishing filter and associated treatment system. As the depth to bedrock is not deemed to be extreme it is the professional opinion of Traynor Environmental Ltd that the presence of a small amount of roots outside of the polishing filter will not be an issue in terms of the overall treatment of effluent on site. Traynor Environmental Ltd also recommends as a precaution that at the time of when the installation of the polishing filter taking place that any roots present close to the polishing filter are removed.</i></p>

6.0 TREATMENT SYSTEM DETAILS

SYSTEM TYPE: Septic Tank System (Chapter 7)

Tank Capacity (m ²)	N/A	<i>Percolation Area</i>	<i>Mound Percolation Area</i>
		<i>No. of Trenches</i>	<i>No. of Trenches</i>
		<i>Length of Trenches (m)</i>	<i>Length of Trenches (m)</i>
		<i>Invert Level (m)</i>	<i>Invert Level (m)</i>

SYSTEM TYPE: Secondary Treatment System (Chapters 8 and 9) and polishing filter (Section 10.1)

Secondary Treatment Systems receiving septic tank effluent (Chapter 8)

Media Type	Area (m ²)	Deep of Filter (m)	Invert Level (m)
Sand/Soil	N/A	N/A	N/A
Soil	N/A	N/A	N/A
Constructed Wetland	N/A	N/A	N/A
Other	N/A	N/A	N/A

Package Treatment Systems

receiving raw wastewater (Chapter 9)

Type	O' Reilly Oakstown Treatment System
Capacity PE	50
Sizing of Primary Compartment	
	8 m ²

Polishing Filter: (Section 10.1)

Surface Area Sand Filter (m ²)	N/A	<i>No. of Trenches</i>	N/A
Option 1 – Direct Discharge Surface area (m ²)	N/A	<i>Length of Trenches (m)</i>	N/A
Option 2 – Pumped Discharge Surface Area (m ²)	400	<i>Invert Level (m)</i>	0.50m AGL

SYSTEM TYPE: O'Reilly Oakstown 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
	O' Reilly Oakstown EN Treatment system (50PE System) or similar EN Certified System, Ecoflo Coco Filter and gravel Pressurised bed	

DISCHARGE ROUTE:

Groundwater	<input checked="" type="checkbox"/>	Hydraulic Loading Rate (l/m ² .d)	3000	Surface Area (m ²)	
Surface Water	<input type="checkbox"/>	Discharge Rate (m ³ /hr)	0.028		

QUALITY ASSURANCE:

Installation & Commissioning	On-going Maintenance
Recommend to be overseen by plant supplier.	Maintain and de-sludge annually

7.0 SITE ASSESSOR DETAILS

Company:

Traynor Environmental Ltd

Prefix:

Mr.

First Name:

Nevin

Surname:

Traynor

Address:

Belturbet Business Park,
Creeny,
Belturbet,
Co. Cavan.

Qualifications/Experience:

BSc. Env, H.Dip I.T, Cert SHWW, EPA/FAS Course Certified
Professional Indemnity Insurance Holder (€1 million cover)

Date of Report:

12.10.23

Phone:

049 9522236

Fax:

049 9522808

E-mail:

nevin@traynorenvironmental.com

Indemnity Insurance Number:

22/1/01633 (Renewed 12th July 2023)

Signed:

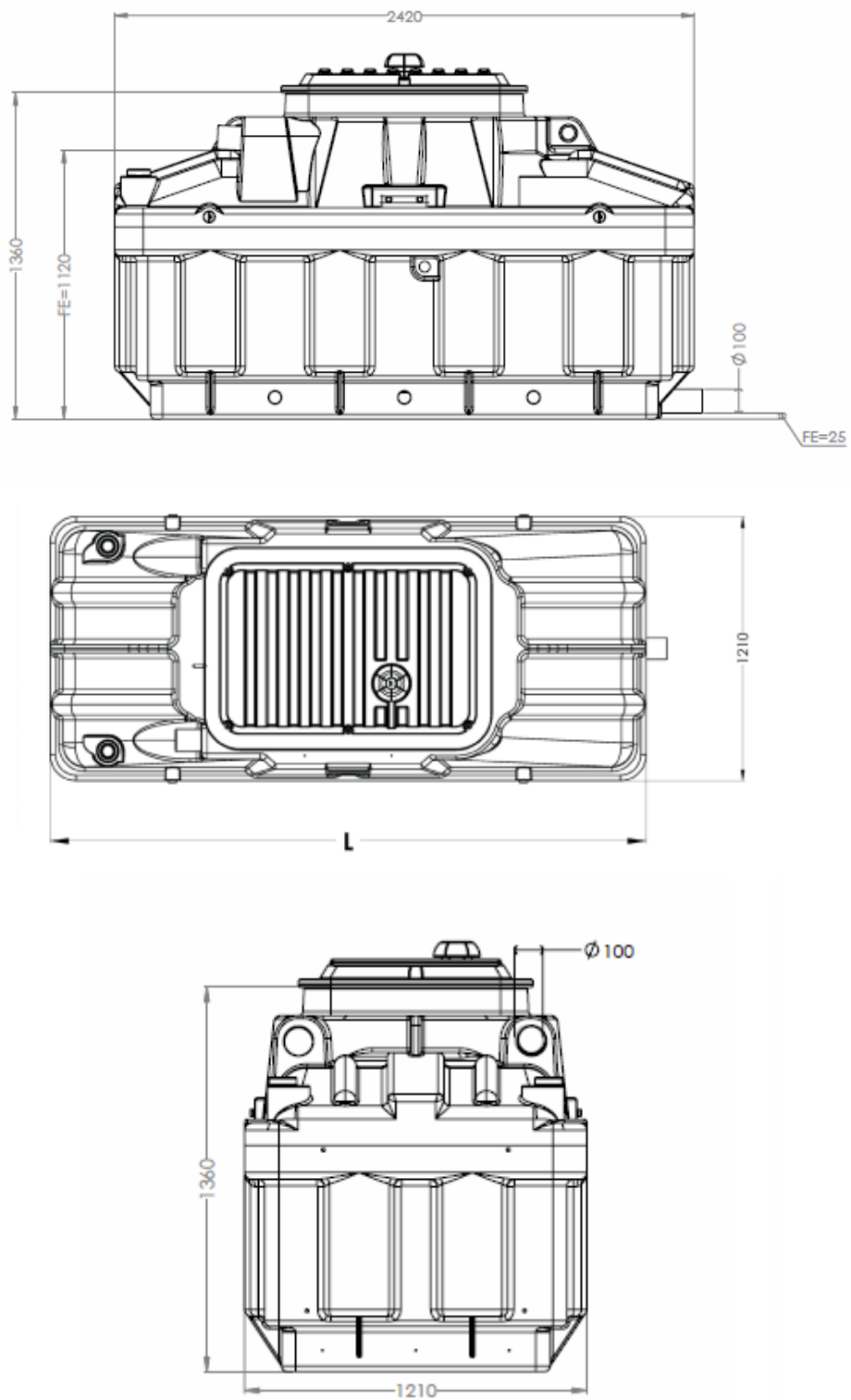


Nevin Traynor

BSc. Env, H.Dip I.T, Cert SHWW, EPA/FAS Cert.

For Traynor Environmental Ltd

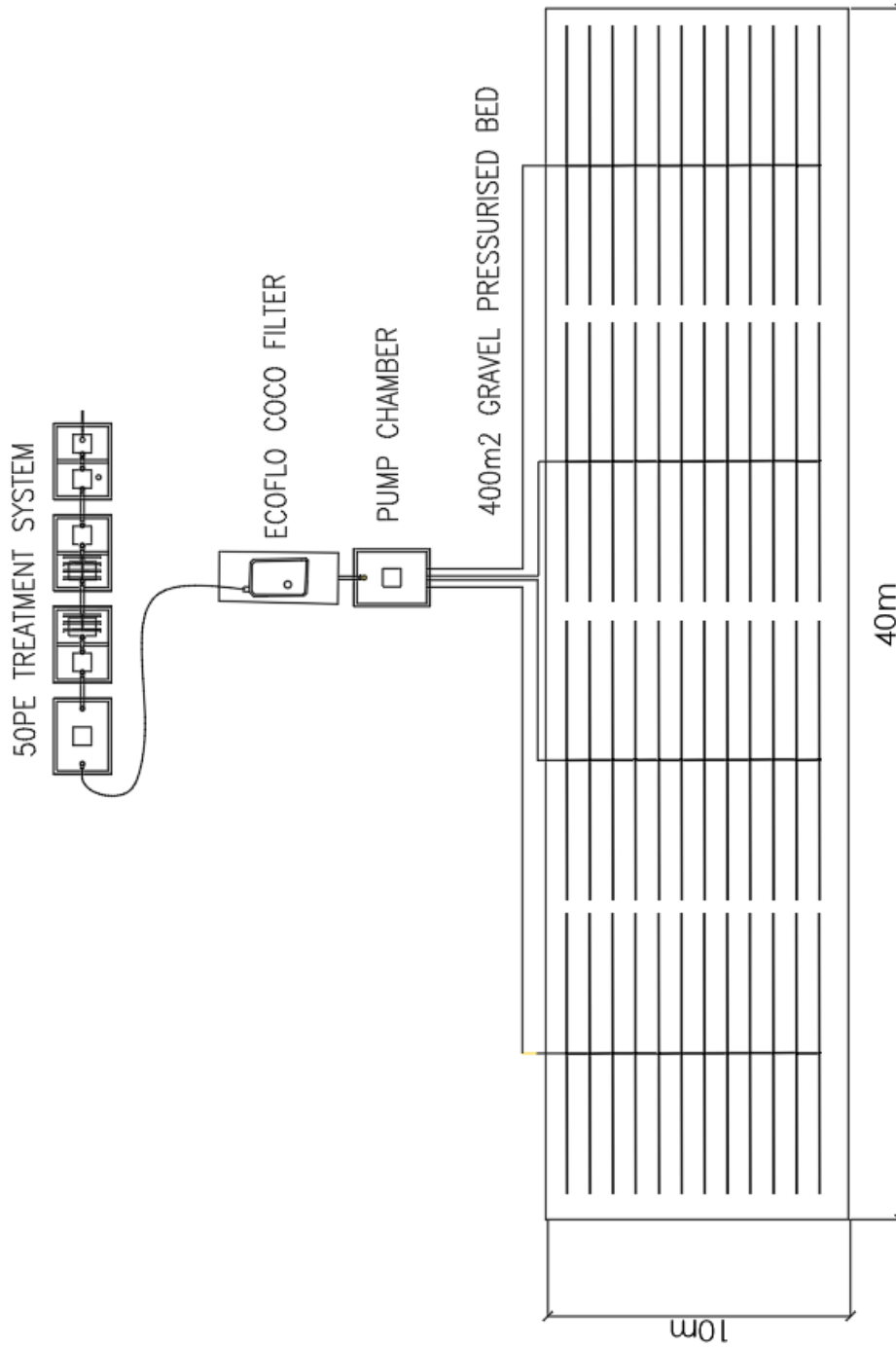
Figure – Ecoflo Co co Filter Detail



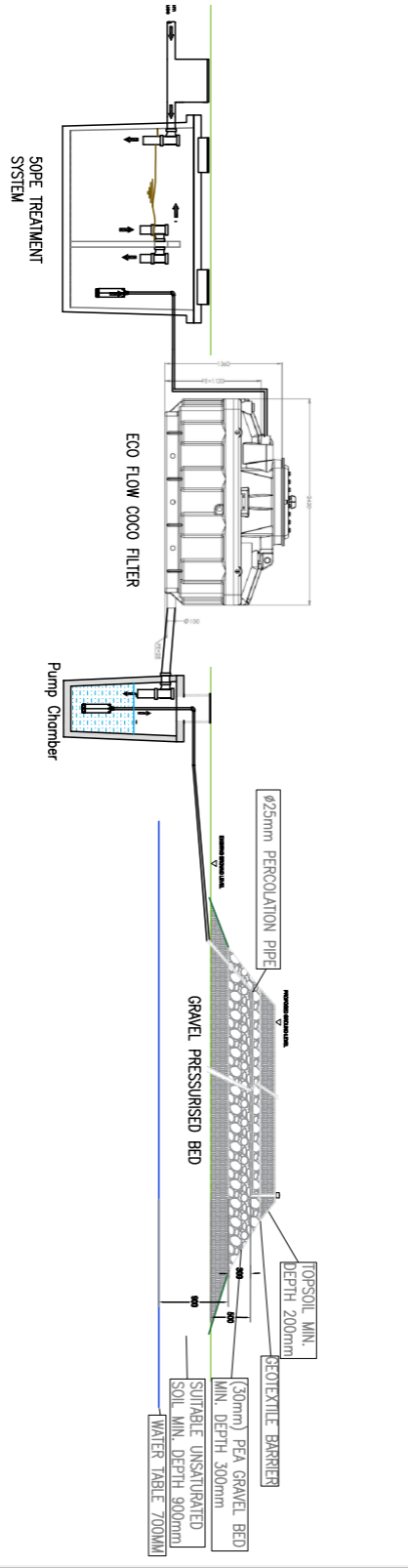
Photograph – Example of Ecoflo Co co Filter Under Construction



Plan View



Cross Section



8.0 SITE PHOTOGRAPHS

*Facing East From the
Trial Hole Excavation*



*Facing South From the
Trial Hole Excavation*



Trial Hole – Front View

*Facing West From the
Trial Hole Excavation*



Trial Hole – Side View



Percolation ("Sub-surface") Test 1



Percolation ("Sub-surface") Test 2



Percolation ("Sub-surface") Test 3



Percolation ("surface") Test 1



Percolation ("surface") Test 2

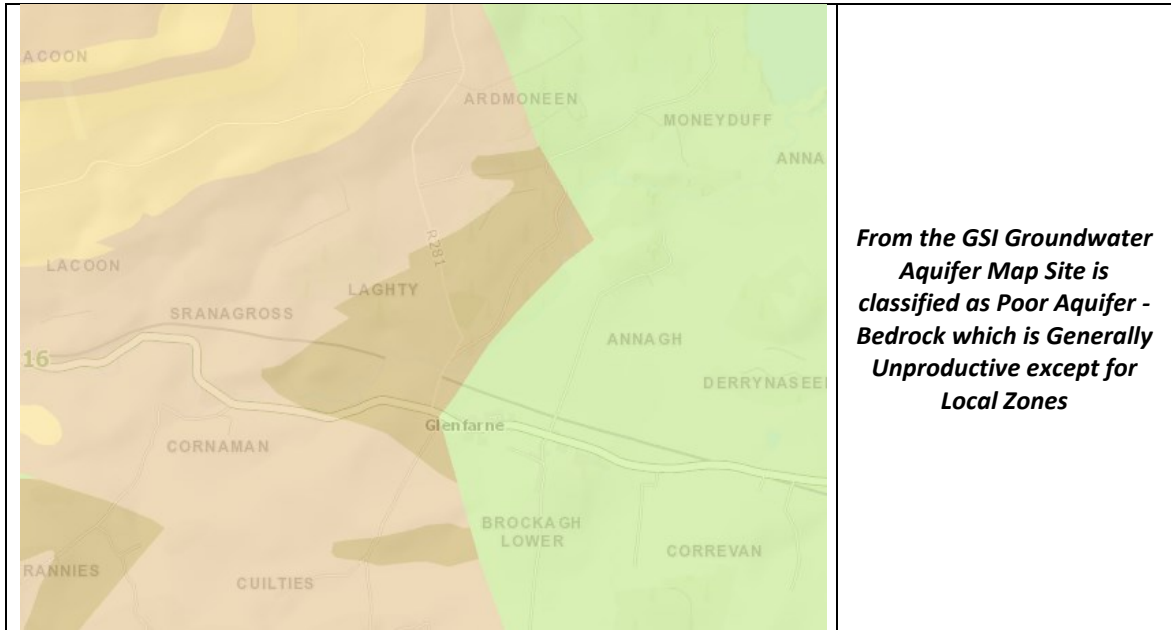


Percolation ("surface") Test 3

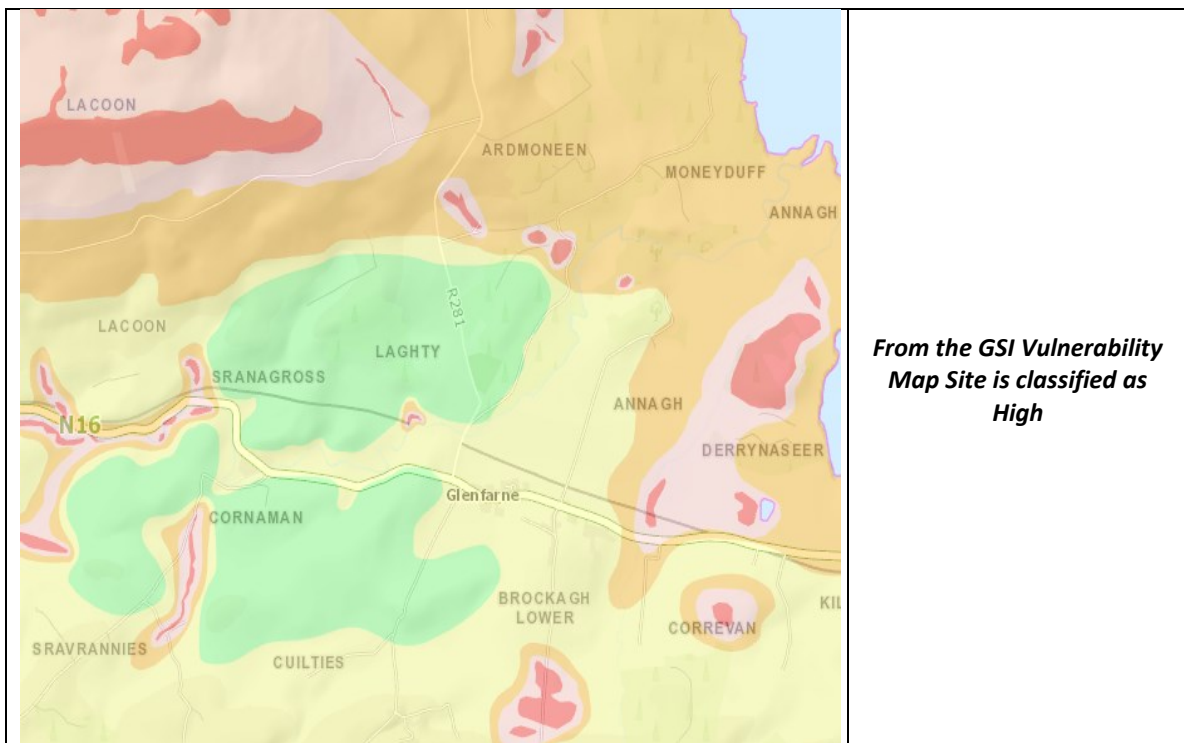


Maps Used As Part of the EPA Site Suitability Assessment

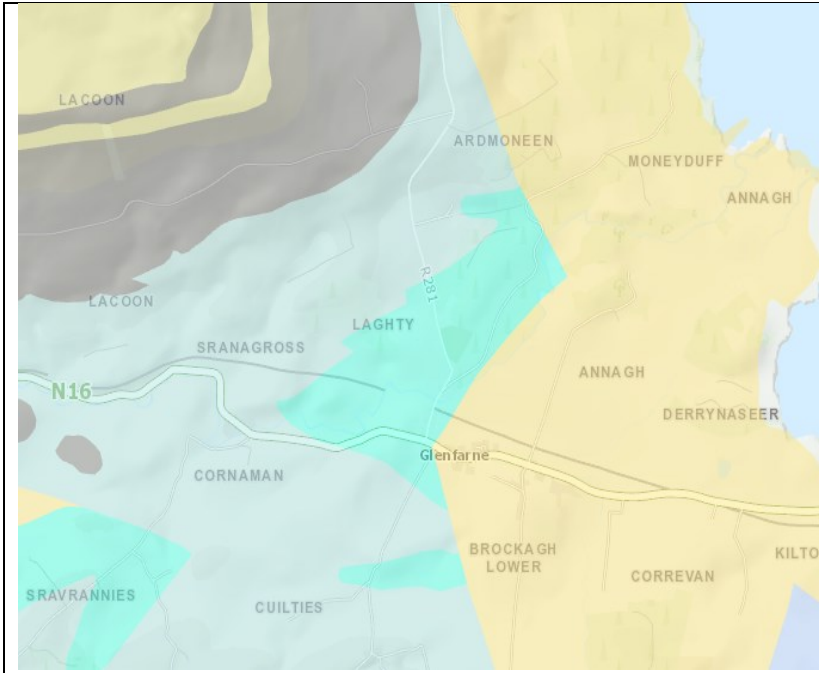
Groundwater/Aquifer Map



Vulnerability Map

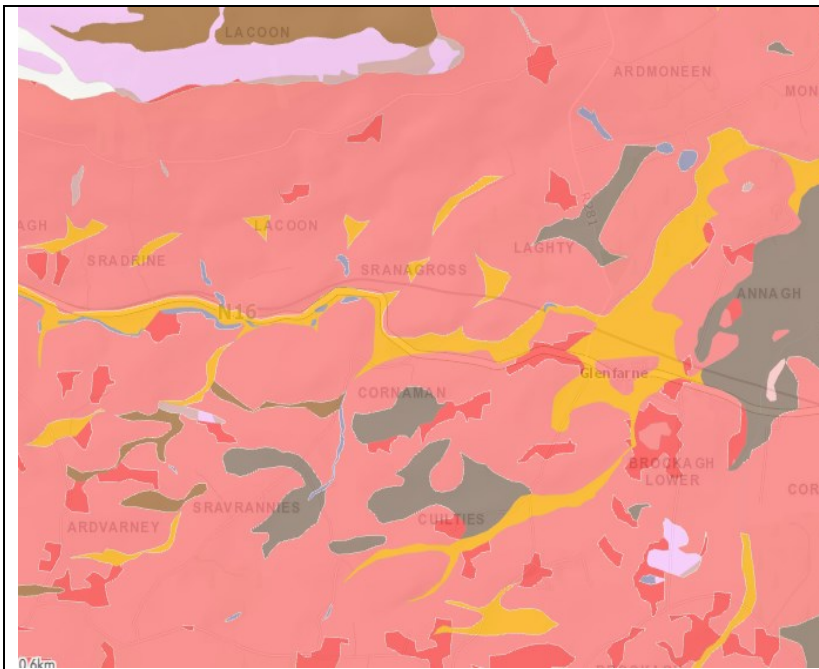


Bedrock Map



***From the GSI Bedrock Map
Site is classified as
Dinantian Dolomited
Limestone***

Teagasc Subsoil Map



***From the Teagasc Subsoil
Map Site is classified as
AminDW- Deep well
drained mineral***



10.0 P.I INSURANCE

Griffiths & Armour Europe DAC

Frascati Hall
Sweetman's Avenue
Blackrock
Co. Dublin



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info@griffithsandarmour.com
griffithsandarmour.com

Griffiths &
Armour

PROFESSIONAL INDEMNITY INSURANCE

We confirm the following details relating to our client's Professional Indemnity Insurance:

Insured: Traynor Environmental Ltd

Address: Belturbet Business Park
Creeny
Belturbet
Co. Cavan
H14AY94

Lead Insurer(s): Axis Specialty Europe SE

Period of Insurance: 12 July 2023 to 11 July 2024

Policy Number: 22/1/01633

Limit of Indemnity: €1,500,000 any one claim and unlimited in the period of insurance

Signed:



Graeme Tinney
Chief Executive Officer
Griffiths & Armour Europe DAC

Date: 05 July 2023

The policy is subject to the Insuring agreements, exceptions, exclusions, limitations, conditions and declarations contained therein. The above is accurate at the date of signature. No obligation is imposed herein on the signatory to advise of any alteration.

Directors: G Tinney C Evans (UK) D J Whalley (UK) T Cosgrove (Non-Executive)

Registered in Ireland No. 832288

Registered Office: Floor 3 Paramount Court, Corrig Road, Sandyford Business Park, Dublin 18, D18 R9C7, Ireland

Griffiths & Armour Europe Designated Activity Company, trading as Griffiths & Armour is regulated by the Central Bank of Ireland

Disclosure

PROPOSAL

FOR

A

O'REILLY OAKSTOWN TREATMENT SYSTEM

PREPARED

FOR

COILLTE CGA

GLENFARNE WOODS

GLENFARNE

CO. LEITRIM

TRAYNOR ENVIRONMENTAL LTD

EPA SEWAGE LOADING SIZING CHART - COILLTE CGA

Situation	Source	Litres/day Person	BOD5 g/d Person	PE Organic Loading	Number of Persons	Population (Organic)	Hydraulic Loading (Lit)	Organic Loading (gr)	Population (Hydraulic)
Domestic	Normal Resident	150	60	1.00		0	0	0	0.00
Industrial	Office and/or factory without canteen	30	20	0.33		0	0	0	0.00
	Office and/or factory with canteen	60.0	30.0	0.5		0	0	0	0.00
	Open Industrial Site e.g. Quarry	40.0	25.0	0.4		0	0	0	0.00
School	Non- residential with cooking on-site Students	60.0	30.0	0.5		0	0	0	0.00
6hr Shock	Non-residential with no-cooking on site	35	20	0.33		0	0	0	0.00
Football clubs	Players incl. showers	30	20	0.33		0	0	0	0.00
	Spectators - Toilet blocks	8	10	0.17		0	0	0	0.00
Amenity Sites	Restaurants	15	15	0.25	200	50	3000	3000	16.67
	Function rooms	10	10	0.17		0	0	0	0.00
	Toilet blocks (per use)	8	10	0.17		0	0	0	0.00
	Toilet blocks (long stay car parks)	10	15	0.25		0	0	0	0.00
	Golf clubs	25	15	0.25		0	0	0	0.00
	Squash, with club house	25	15	0.25		0	0	0	0.00
	Swimming	10	10	0.17		0	0	0	0.00
						50	3000	3000	16.67

Loadings	
Population Org	50PE
Hydraulically	16.67PE

Treatment System Proposed: O' Reilly Oakstown EN Treatment system or similar EN Certified System Ecoflo coco and polishing filter

Proposal for the Supply and Installation of a 50PE Super BAF Wastewater Treatment System



O'Reilly Oakstown Ltd

Oakstown, Trim, Co. Meath, C15 X499, Ireland

Ph: +353 (0) 46 943 1389

www.oreillyoakstown.com

Reference no	Coillte (Glenfarne)
Project	50PE Super BAF WWTS
Client name	Coillte
Submitted by	O'Reilly Oakstown Ltd

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1. General

O Reilly Oakstown Environmental have been asked to prepare a technical proposal to manufacture and install a 50 Population Equivalent Super BAF Wastewater Treatment System for a development at Glenfarne Woods

2. Wastewater Flowrate and Specification

2.1 Design Basis

Population Equivalent	50 PE
Per Capita Demand	150L per person per day
WWTS Capacity	7,500L/D

2.2. Range of raw wastewater influent characteristics

Parameter	Typical concentration(mg/ltr)
COD (as O ₂)	300-900
BOD ₅ (as O ₂)	150-00
Suspended solids	200-700
Ammonium nitrogen (NH ₄ -N)	22-80
Total phosphorus	5-20
Total coliforms (MPN/100 ml) ¹	10 ⁶ -10 ⁹

2.3. Range of wastewater effluent characteristics

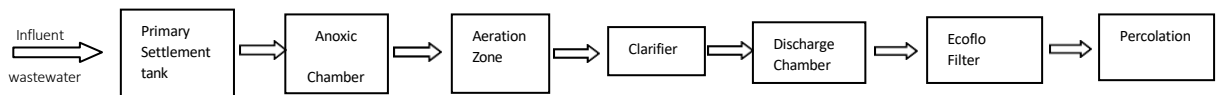
Parameter	Typical concentration(mg/ltr)
BOD ₅	≤20
Suspended solids	≤30
Ammonium nitrogen (NH ₄ -N)	≤20

3. Process scheme & Description.

The Oakstown wastewater treatment system uses BAF (Biological Aerated Filtration) Technology. Across its range of domestic and commercial treatment systems BAF Technology is widely regarded as the most reliable, efficient, and effective means of treating wastewater. Due to its low maintenance requirements, it ensures lifelong peace of mind.

Our systems comprise of 5 individual chambers which combine both anaerobic and aerobic digestion. This unique aspect to our system ensures unrivalled final effluent quality with low running costs.

Based on the Raw Wastewater/ Treated effluent characteristics the following treatment scheme is suggested:



Process Flow Diagram

Primary Settlement Tanks:

Primary Settlement works based on sedimentation where solids separate from the water in chambers 1 and 2 allowing for anaerobic digestion over an extended period of time.

Anoxic Tank

The process involves the de-nitrification of waste streams using bacteria which breaks down the nitrate in the waste to use as an oxygen source.

Aeration / Biological Aerated Filters (BAF)

Wastewater continues to flow by gravity into chamber 3 where natural occurring micro-organisms form on our submerged biofilm filter and are oxygenated by a small air blower. Effluent is extensively treated in this chamber prior to gravity flow into chamber 4.

Clarifier

Final settlement takes place within our Clarifier Chamber where any remaining sediment gravitates to the bottom of the tank and is transferred back to the primary settlement chamber. This ensures only fully treated water enters the final chamber.

Discharge Chamber

Treated water is stored within the Discharge chamber and can be pumped to the Percolation area depending on the client's site requirements.

3.1. Proposed Sewage Treatment Plant

Based on the raw wastewater characteristics following treatment scheme is suggested:

- a) Primary treatment: Comprising of Settlements tank.
- b) Secondary/Biological treatment: Comprising of anoxic tank, aeration tank, Clarifier, Discharge Chamber, Polishing filter

3.1.1 Proposed Treatment Scheme for Wastewater.

- Primary Settlement
- Anoxic Tank
- Aeration Tank
- Clarifier
- Discharge Chamber
- Ecoflo Coco Filter
- Drip filtration system

4. Scope of Supply

4.1. Scope of Supply

Sr.No	Particulars	Quantity
1	Primary Settlement Tank	1
2	Anoxic tank and Aeration A	1
3	Aeration B	1
4	Clarifier	1
5	Discharge Chamber	1
6	Access Cover	7
7	Effluent Pump at Discharge chamber	1
8	Sludge Return Pump	1
9	Air Compressor	1
10	Control Kiosk	1
11	Diffusers	10
12	Media Blocks	1 (zone)
13	Pipes and Fittings	1 (Lot)
14	Miscellaneous	1

4.2. Termination Points.

- Air Blowers
- Effluent Pump
- Sludge Return Pump

4.3. Battery Limits

- Raw Wastewater – At the inlet of Collection tank.
- Treated water – At the outlet of Ecoflo filter.
- Power – At the incomer of Distribution Board.

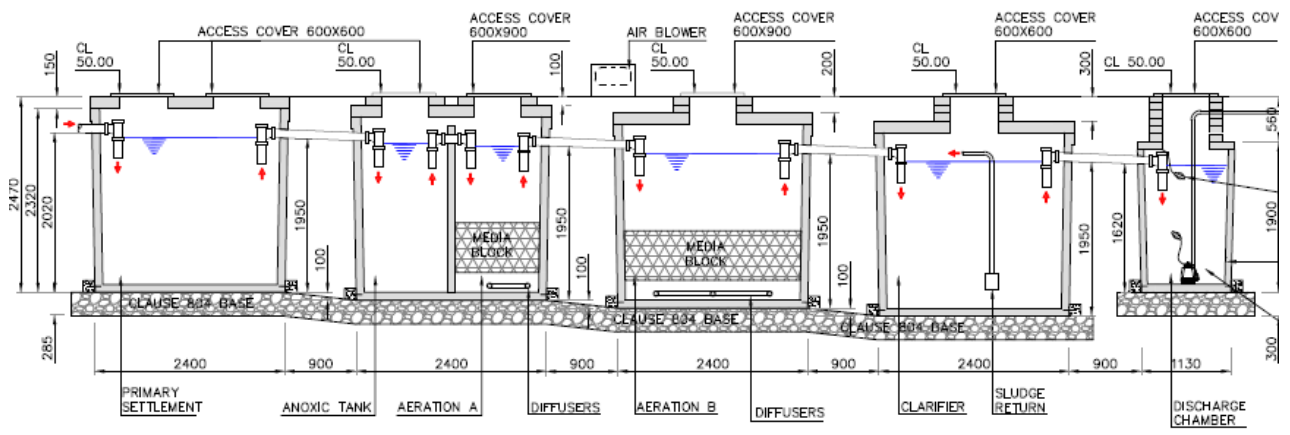
5. Tank Dimensions:

SI No	Tanks Description	Dimensions (LxWxH) in Mtr	Quantity
1	Consists of Primary Settlement & Anoxic tank, Aeration Tank, Clarifier	2.5x1.9x2.32	4
2	Discharge Chamber	1.2x1.2x1.9	1

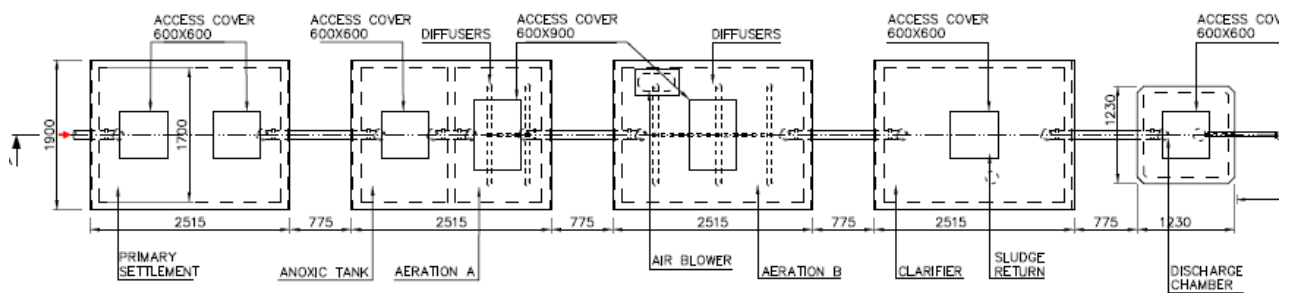
Note:

The above given capacities are tentative. It might change as the Influent quality at the inlet of the treatment system changes.

5.1 Preliminary Layout Plan and Section drawing for 50PE Super BAF WWTS.



SECTION A-A



LAYOUT PLAN

6. Percolation

Percolation depends upon the client requirement.

7. Electrical Load List

Sr.No	Equipment	Working Load	Connecting Load	Operation Hr/Day	Total
1	Air blower	__KW	__KW		__KW
2	Effluent Pump at Discharge chamber	__KW	__KW		
3	Sludge return Pump	__KW	__KW		

Note:

The Above Electrical load list is tentative. Actual drive list shall be provided during detailed engineering.

8. Included in Scope

- Supply of Precast Tanks, WWTS Pumps and Electrical control panel.
- Delivery of Wastewater Treatment Plant
- Positioning tanks with mobile crane.
- Onsite assembly of WWTS
- Supply of pipes, fittings, and all internal components from Inlet pipe at inspection chamber to outlet at pump chamber including all pipes, fittings and cable from kiosk to WWTS.
- Installation and commissioning of WWTS.

9. Schedule of exclusions.

- Site civil works
- Water supply for pumps testing
- Miscellaneous, i.e., Access Ladders, Railings, In Situ build concrete/Wooden structures
- Tanks filling/Re-filling, Concrete ballast, Water ingress control.
- Laying of Electrical SWA cables, mounting/wiring of the internal control panel in the plant room or running/connecting of MCB power supply and C.I covers.
- Ecoflo Coco Filters

10. Operation and Maintenance:

The client is responsible for the operation and Maintenance of the wastewater treatment system in accordance with the owner's manual supplied by O'Reilly Oakstown.

Quarterly Servicing is required for optimum efficiency of the treatment system.

Please do not hesitate to contact us if there are any further queries.

Yours sincerely,

General Manager

O' Reilly Oakstown Environmental



Institute for
Wastewater
Technology

PERFORMANCE RESULTS

O'Reilly Oakstown Environmental
Oakstown, Trim, Co. Meath, Ireland

EN 12566-3 Annex A, B, C
"Small wastewater treatment systems for up to 50 PT"

Small wastewater treatment system Oakstown BAF System
submerged aerated fixed film bioreactor

Nominal organic daily load	0.38	kg/d	
Nominal hydraulic daily load	1.20	m ³ /d	
Material	steel reinforced concrete		
Watertightness	pass		
Crushing resistance	pass		
Treatment efficiency (nominal sequences)		Efficiency	Effluent
	COD	93.0 %	46 mg/l
	BOD ₅	97.5 %	8 mg/l
	NH ₄ -N	61.0 %	13 mg/l
	SS	96.7 %	12 mg/l
Electrical consumption	2.0	kWh/d	

Performance tested by:

PIA - Prüfinstitut für Abwassertechnik GmbH
(PIA GmbH)
Hergenrather Weg 30
D-52074 Aachen

Certified according to
ISO 9001:2000



Notified Body number: 1739 

This document replaces neither the declaration
of conformity nor the CE marking.



Elmar Lancé

October 2011



Prüfinstitut für
Abwassertechnik
GmbH

TREATMENT PERFORMANCE RESULTS

Premier Tech Aqua Ltd.

Quatertown Industrial Estate, Mallow, Co. Cork, Ireland

EN 12566-3

Results corresponding to EN 12566-3 and S.R. 66

PIA-SR66-1603-1042-3

ECOFLO
Media filter

Nominal organic daily load	0.24 kg/d		
Nominal hydraulic daily load	0.75 m ³ /d		
Material	Polyethylene		
Watertightness	Pass		
Structural behaviour (Pit Test)	Pass (also wet conditions)		
Durability	Pass		
Treatment efficiency (nominal sequences)		Efficiency	Effluent
	COD	92.2 %	59 mg/l
	BOD ₅	98.2 %	5.4 mg/l
	NH ₄ -N	91.1 %	5.5 mg/l
	SS	98.5 %	5.2 mg/l
Number of desludging	Not more than once		
Electrical consumption	0 kWh/d		

Performance tested by:

PIA – Prüfinstitut für Abwassertechnik GmbH

CERTIPRO – Service de certification et de contrôle, Vito

CSTB – Centre Scientifique et technique du Batiment

CERIB – Centre d'Etudes et de Recherche de l'INDUSTRIE du Béton

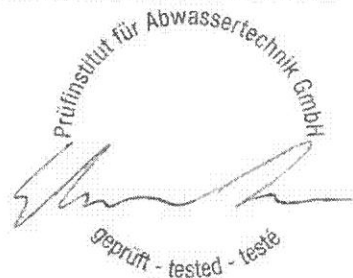
This document replaces neither the declaration of performance nor the CE marking.



Notified Body
No. 1739



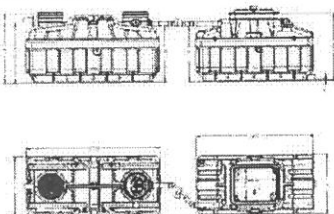
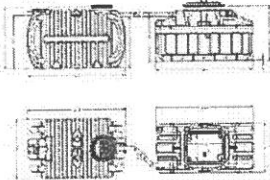
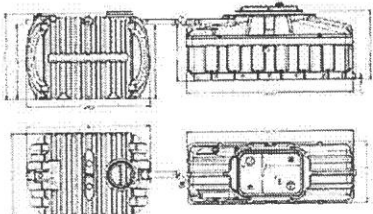
Certified according to
ISO 9001:2008



Elmar Lancé

July 2016

ECOFLO range and its referring test reports:

Population equivalent (PE)	Drawing of model of the range	Watertightness (EN 12566-3 Annex A)	Treatment Efficiency (EN 12566-3 Annex B)	Structural Behaviour (EN 12566-3 Annex C)	Durability
Initial Type Test (ITT) 5	<p>Model A (ITT) – 5PE (750 L/d)</p> 	<p>Pass</p> <p>CAPE-AT-13-250</p>	<p>Pass</p> <p>CAPE AT 16-024-1 - V1 (EN 12566-3)</p>	<p>Pass</p> <p>For wet ground conditions also, 0.51 m installation depth from inlet invert</p>	<p>Pass</p> <p>CAPE-AT-14-143</p>
5	<p>Model B – 6PE (750 L/d)</p> 	<p>Pass</p> <p>CAPE-AT-13-250</p> <p>BES/N9902/P P/pp/04.235</p>	<p>Pass</p> <p>Range conformity according to S.R. 66:2015</p>	<p>Pass</p> <p>For wet ground conditions also, 0.51 m installation depth from inlet invert</p>	<p>Pass</p> <p>CAPE-AT-14-143</p>
7	<p>Model C – 7PE (1050 L/d)</p> 	<p>Pass</p> <p>CAPE-AT-13-250</p> <p>BES/N9902/P P/pp/04.235</p>	<p>Pass</p> <p>Range conformity according to S.R. 66:2015</p>	<p>Pass</p> <p>BES/N9902 /PP/pp/04.2 35</p> <p>PIA2015-ST-PIT-1412-1074.01</p> <p>For wet ground conditions also, 0.51 m installation depth from inlet invert</p>	<p>Pass</p> <p>CAPE-AT-14-143</p>

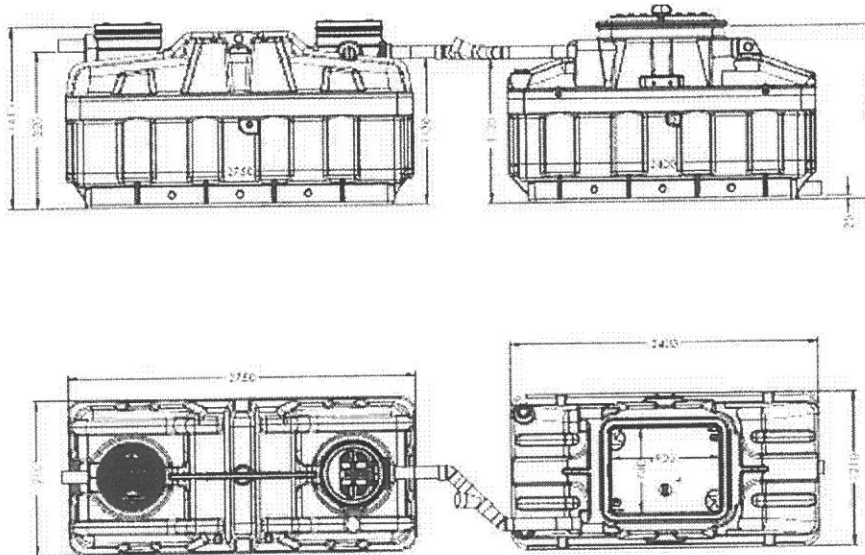


Population equivalent (PE)	Drawing of model of the range	Watertightness (EN 12566-3 Annex A)	Treatment Efficiency (EN 12566-3 Annex B)	Structural Behaviour (EN 12566-3 Annex C)	Durability
10	<p>Model D – 10PE (1500 L/d)</p>	<p>Pass</p> <p>CAPE-AT-13-250</p> <p>BES/N9902/P P/pp/04.235</p>	<p>Pass</p> <p>Range conformity according to S.R. 66:2015</p>	<p>Pass</p> <p>For wet ground conditions also, 0.51 m installation depth from inlet invert</p>	<p>Pass</p> <p>CAPE-AT-14-143</p>
14	<p>Model E – 14PE (2100 L/d)</p>	<p>Pass</p> <p>CAPE-AT-13-250</p> <p>BES/N9902/P P/pp/04.235</p>	<p>Pass</p> <p>Range conformity according to S.R. 66:2015</p>	<p>Pass</p> <p>For wet ground conditions also, 0.51 m installation depth from inlet invert</p>	<p>Pass</p> <p>CAPE-AT-14-143</p>
15	<p>Model F – 15PE (2250 L/d)</p>	<p>Pass</p> <p>CAPE-AT-13-250</p> <p>BES/N9902/P P/pp/04.235</p>	<p>Pass</p> <p>Range conformity according to S.R. 66:2015</p>	<p>Pass</p> <p>For wet ground conditions also, 0.51 m installation depth from inlet invert</p>	<p>Pass</p> <p>CAPE-AT-14-143</p>

ECOFLO® (EN 12566-3 systems)

Drawings

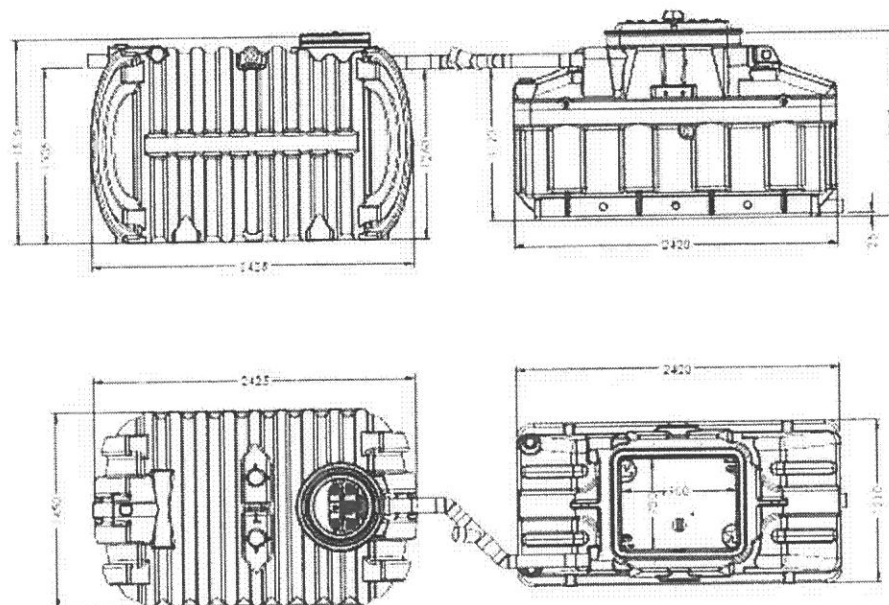
Model A (ITT) – 5PE (750 L/d)



ECOFLO® (EN 12566-3 systems)

Drawings

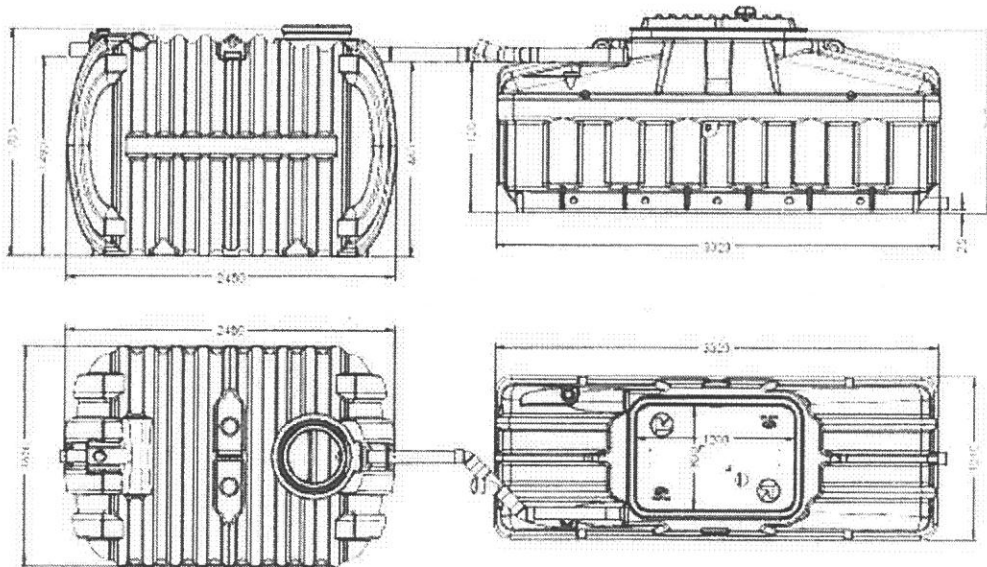
Model B – 5PE (750 L/d)



ECOFLO® (EN 12566-3 systems)

Drawings

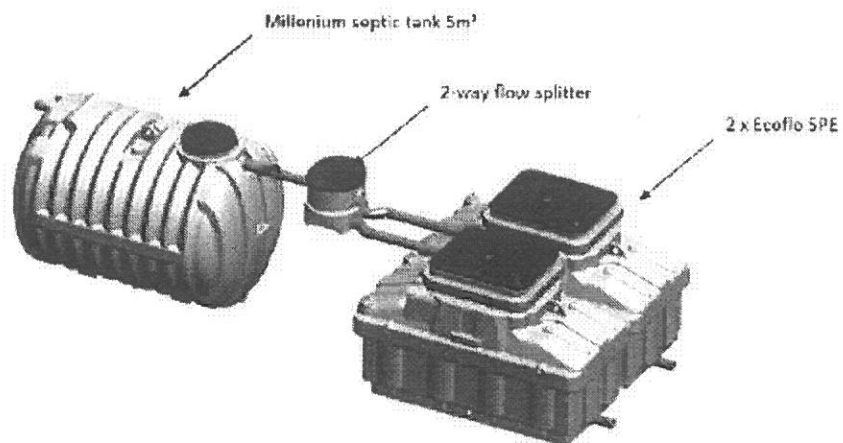
Model C – 7PE (1050 L/d)



ECOFLO® (EN 12566-3 systems)

Drawings

Model D – 10PE (1500 L/d)

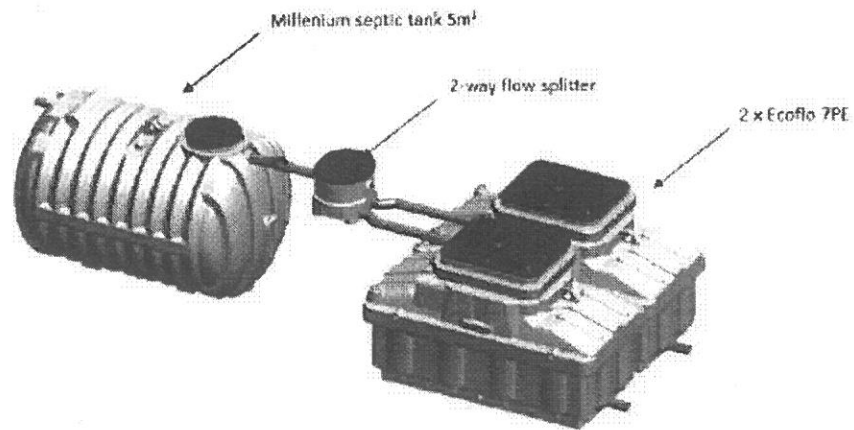




ECOFLO® (EN 12566-3 systems)

Drawings

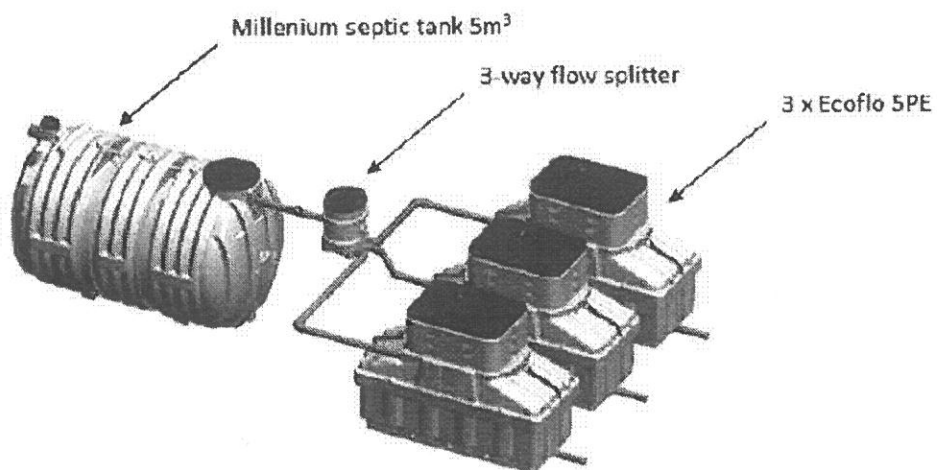
Model E – 14PE (2100 L/d)



ECOFLO® (EN 12566-3 systems)

Drawings

Model F – 15PE (2250 L/d)



Ecoflo[®] Coco Filter

Tertiary Treatment Filter

Domestic and commercial applications



WASTEWATER TREATMENT



A final treatment stage to further improve the effluent quality before it is discharged safely to the receiving environment.

Highest Performing

A reliable wastewater treatment system well adapted to all site conditions. Proven performances surpassing the strictest standards.

Sustainable

A permanent and ecological solution – no energy needed for the treatment. Pre-assembled, easy-to-handle units to ensure quality installations and less surplus material transported to sites.

Compact

Minimal final footprint – ideal when the available area for the installation is limited or if separation distances must be reduced.

Low-Cost

Delivered ready to be installed to minimize civil works and eliminate construction on site. No excavation or relocation at the end of the life cycle of the filtering media (up to 15 years).

PROTECT YOUR PROPERTY, YOUR ENVIRONMENT & YOUR INVESTMENT.

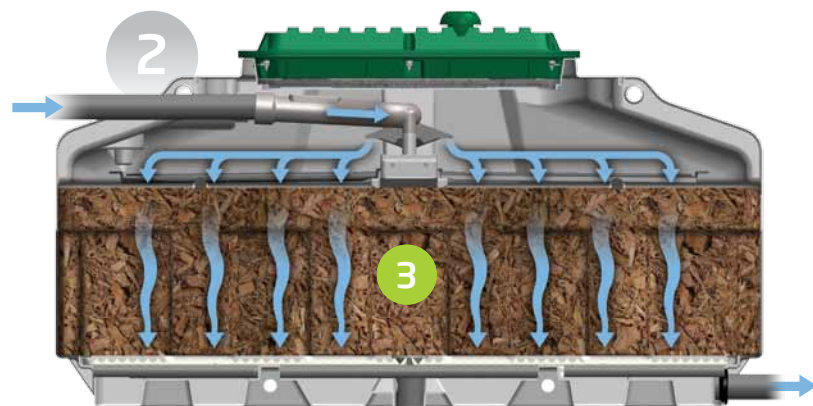
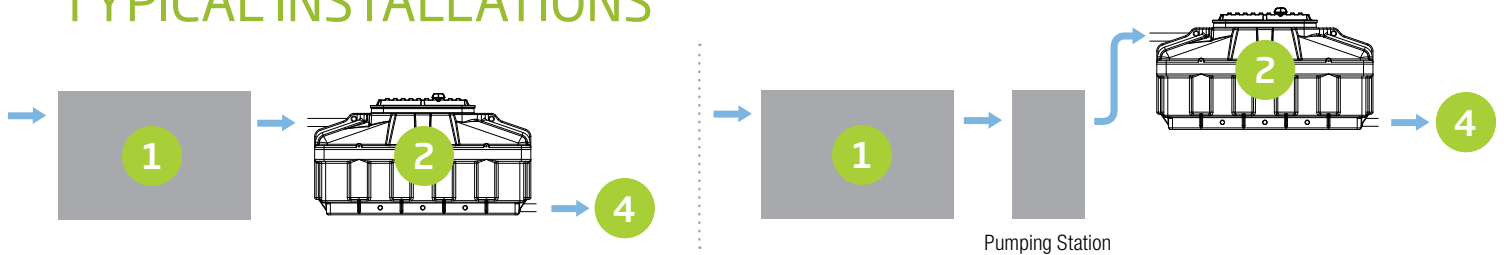
Ecoflo Coco Filter offers all the benefits of a truly proven and reliable tertiary treatment system. Designed for both principal and secondary residences as well as for new housing constructions and faulty system replacement projects. Also recommended for commercial projects.



THE BEST CHOICE MADE SIMPLE

- Send us a copy of your EPA Site Suitability Assessment and we will produce a design for you.
- If you don't have a copy, send us your planning number and we'll look it up for you on your local authority website.
- Send us the name of your engineer and we will liaise with them for you.
- We supply either a full kit of a Wastewater Treatment or only the Ecoflo Coco Filter – Tertiary Treatment Filter along with 15 m of interconnecting pipework and fittings.
- We will liaise with your grounds contractor to ensure proper installation.
- We provide a commissioning certificate for the system for full compliance with your planning.

TYPICAL INSTALLATIONS



- 1 Secondary Treatment System**
Treats domestic wastewater as per local regulations.
- 2 Ecoflo Coco Filter**
Provides a final treatment stage to further improve the effluent quality before it is discharged to the receiving environment. Spreads out the influent over the surface of the filtering media thanks to a patented distribution system comprised of a feed ramp, a tipping bucket and distribution plates.
- 3 Filtering Media**
The coco fragment-based filtering media is where the water is organically further treated and filtered and where pollutants are retained and degraded.
- 4 Final Discharge**
The treated wastewater is discharged directly to a gravel distribution bed installed below it.