



SITE SUITABILITY ASSESSMENT

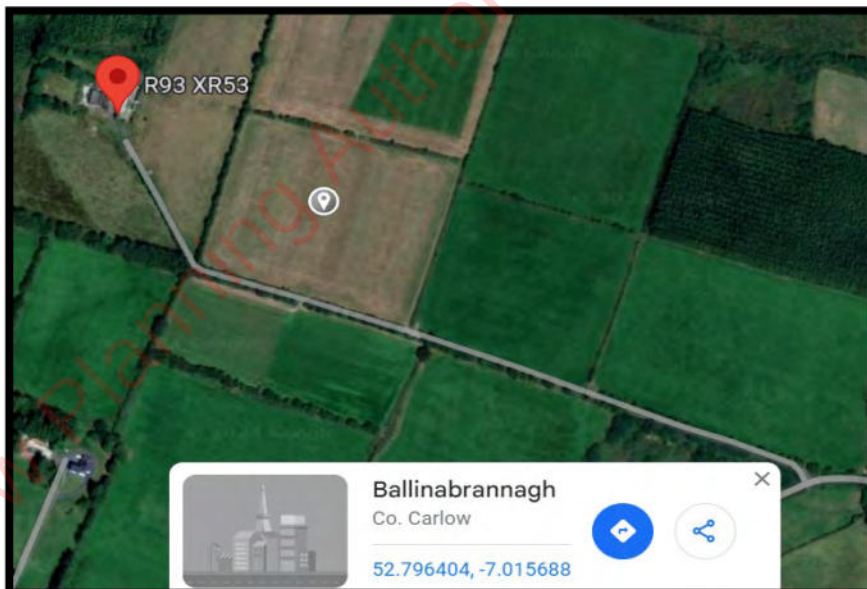
Desk top study Prepared for:



Reference Eircode: **350m East from R93XR53**

Global Positioning System Reference: 52,796404, -7.015688

Site location.



SEWAGE TREATMENT SYSTEMS

Margester - Tricel - WPL - CLF - Harlequin - Conder - Kae Services



**Drainpower
Environmental
Services Ltd**

John Fanning,
Pallasmore,
Newtown,
Nenagh,
Co. Tipperary.
E45PR23.

00353 86 0505454.

Info@siteassessment.ie

Design

Supply

Install

Commission

Monitor

Service



Contact : Mob 086 050 5454 Email : info@siteassessment.ie Website : www.siteassessment.ie

The information included in this report details the site suitability for a waste water treatment tank and percolation system for single houses less than or equal to 10PE. This report has been completed in accordance with the EPA CoP 2021.

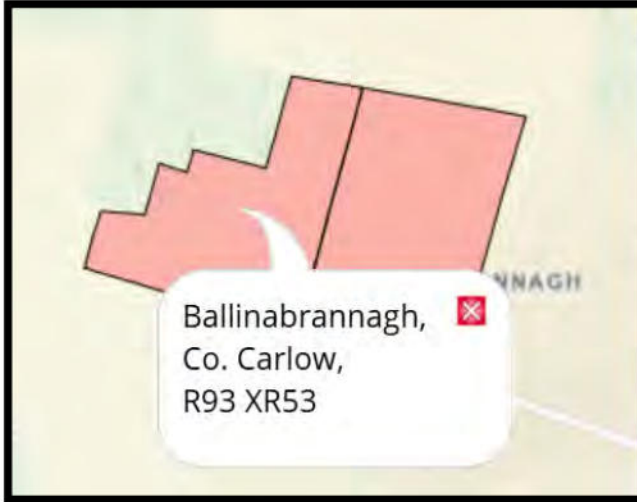


SEWAGE TREATMENT SYSTEMS

Klargester - Tricel - WPL - CLF - Harlequin - Conder - Kee Services



Site details



Ballinabrannagh,
Co. Carlow,
R93 XR53

Folio Number	CW1141F
Title Level	Freehold
Plan Number	17
Property Number	1
Area of selected plans	23.68 hectares.
Number of Plans on this folio:	3
Address	Not Available

[Highlight All Plans](#)

[Add to Basket](#)

[Create Alert](#)

Housing density



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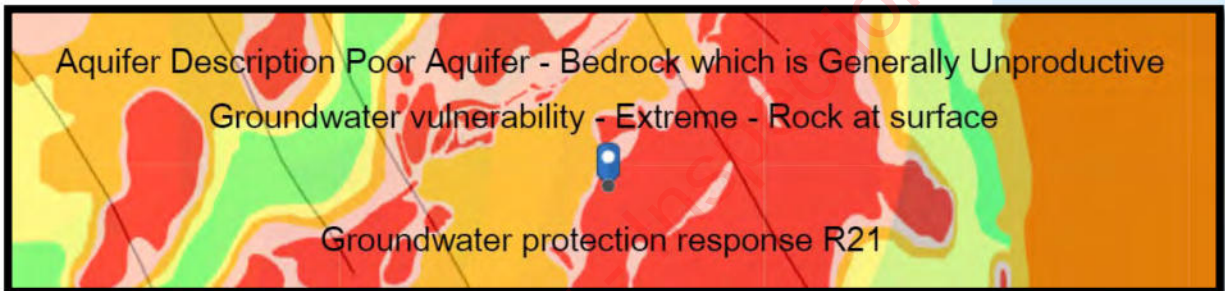
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Bedrock and soil details.



Ground Water protection Response : R21

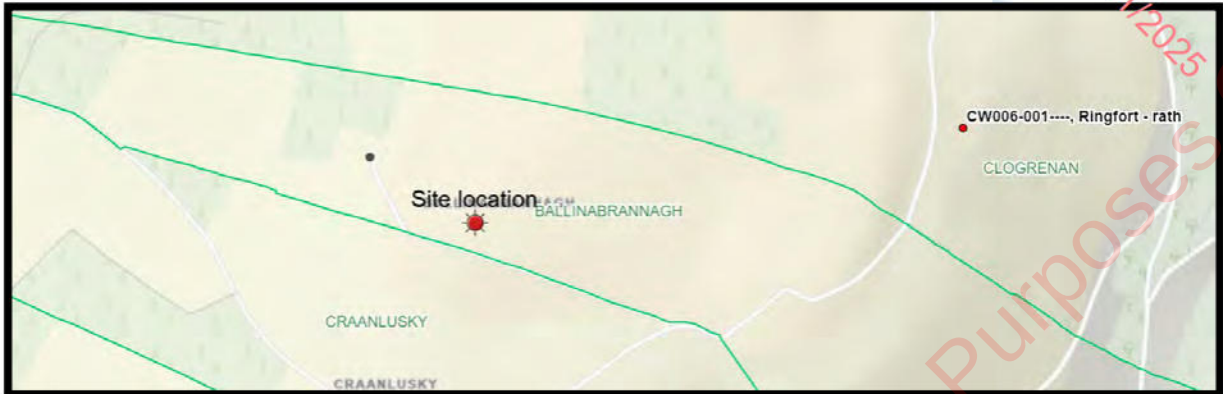


Wells and Surface water features.

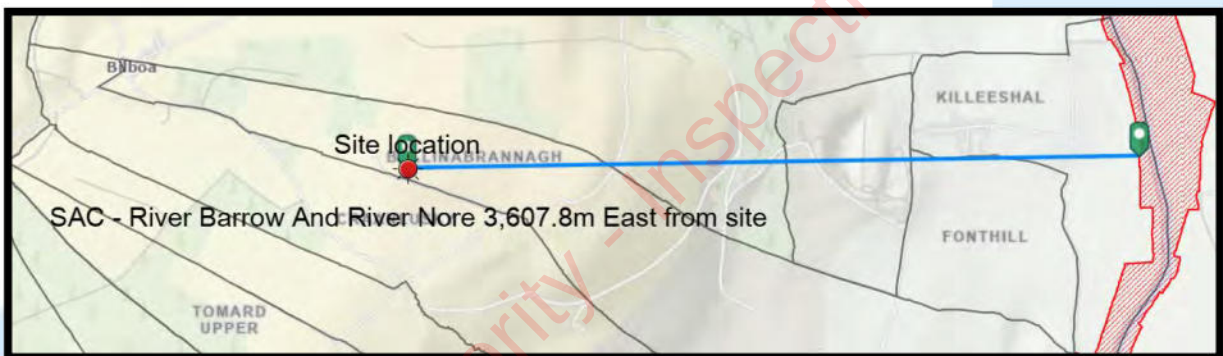




Monuments and historical details.



SAC and NHA locations surrounding the site.



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SEWAGE TREATMENT SYSTEMS

Klargester - Tricel - WPL - CLF - Harlequin - Conder - Kee Services



4



Company: Info@siteassessment.ie

Notes: Trial hole 2.1m deep 0.3m TS

1.8m Silt SHALE

Date & time: 2024.11.13 08:25 a.m.

ED50: 52.79773, -7.01262

Altitude: 155m

Address: Unnamed Road, Co. Carlow



Company: Info@siteassessment.ie

Notes: No water ingress after 48 hours

Date & time: 2024.11.15 08:39 a.m.

ED50: 52.79777, -7.01258

Altitude: 155m

Address: Unnamed Road, Co. Carlow

Contact : Mob 086 050 5454 Email : info@siteassessment.ie Website : www.siteassessment.ie

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SEWAGE TREATMENT SYSTEMS

Klargester - Tricel - WPL - CLF - Harlequin - Conder - Kee Services



5



Company: Info@siteassessment.ie

Notes: Subsurface hole 500mm deep
bgl

Date & time: 2024.11.14 08:05 a.m.

ED50: 52.79773, -7.01233

Altitude: 155m

Address: Unnamed Road, Co. Carlow



Company: Info@siteassessment.ie

Notes: Subsurface hole 400mm
presoak @ 0804am

Date & time: 2024.11.14 08:04 a.m.

ED50: 52.79757, -7.01304

Altitude: 155m

Address: Unnamed Road, Co. Carlow

Contact : Mob 086 050 5454 Email : info@siteassessment.ie Website : www.siteassessment.ie

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SEWAGE TREATMENT SYSTEMS

Klargester - Tricel - WPL - CLF - Harlequin - Conder - Kee Services



6



Company: Info@siteassessment.ie

Notes: Subsurface hole 400mm @ 0815am

Date & time: 2024.11.15 08:15 a.m.

ED50: 52.79776, -7.01247

Altitude: 155m

Address: Unnamed Road, Co. Carlow



Company: Info@siteassessment.ie

Notes: Subsurface hole 300mm @ 0823am

Date & time: 2024.11.15 08:23 a.m.

ED50: 52.79774, -7.01241

Altitude: 367m

Address: Unnamed Road, Co. Carlow

Contact : Mob 086 050 5454 Email : info@siteassessment.ie Website : www.siteassessment.ie

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SEWAGE TREATMENT SYSTEMS

Klargester - Tricel - WPL - CLF - Harlequin - Conder - Kee Services



7



Company: Info@siteassessment.ie

Notes: Subsurface hole 200mm @
0834am

Date & time: 2024.11.15 08:34 a.m.

ED50: 52.79771, -7.01234

Altitude: 363m

Address: Unnamed Road, Co. Carlow



Company: Info@siteassessment.ie

Notes: South aspect of site

Date & time: 2024.11.13 08:30 a.m.

ED50: 52.79761, -7.01265

Altitude: 366m

Address: Unnamed Road, Co. Carlow

Contact : Mob 086 050 5454 Email : info@siteassessment.ie Website : www.siteassessment.ie

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SEWAGE TREATMENT SYSTEMS

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8



Company: Info@siteassessment.ie

Notes: SILT and shale spoil from trial hole

Date & time: 2024.11.13 08:25 a.m.

ED50: 52.79776, -7.0124

Altitude: 155m

Address: Unnamed Road, Co. Carlow



Company: Info@siteassessment.ie

Notes: North aspect of the site

Date & time: 2024.11.13 08:31 a.m.

ED50: 52.79741, -7.01265

Altitude: 364m

Address: Unnamed Road, Co. Carlow

Contact : Mob 086 050 5454 Email : info@siteassessment.ie Website : www.siteassessment.ie

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SEWAGE TREATMENT SYSTEMS

Klargester - Tricel - WPL - CLF - Harlequin - Conder - Kee Services



RECEIVED: 03/11/2025

9



Company: Info@siteassessment.ie

Notes: East aspect of site

Date & time: 2024.11.13 08:31 a.m.

ED50: 52.79756, -7.01273

Altitude: 366m

Address: Unnamed Road, Co. Carlow



Company: Info@siteassessment.ie

Notes: West aspect of site

Date & time: 2024.11.13 08:29 a.m.

ED50: 52.79752, -7.01244

Altitude: 360m

Address: Unnamed Road, Co. Carlow

Contact : Mob 086 050 5454 Email : info@siteassessment.ie Website : www.siteassessment.ie

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SEWAGE TREATMENT SYSTEMS

Klargester - Tricel - WPL - CLF - Harlequin - Conder - Kee Services



RECEIVED: 03/11/2025

10



Company: Info@siteassessment.ie

Notes: Trial and test hole locations

Date & time: 2024.11.15 08:43 a.m.

ED50: 52.79767, -7.01267

Altitude: 376m

Address: Unnamed Road, Co. Carlow

Contact : Mob 086 050 5454 Email : info@siteassessment.ie Website : www.siteassessment.ie

The information included in this report details the site suitability for a waste water treatment tank and percolation system for single houses less than or equal to 10PE. This report has been completed in accordance with the EPA CoP 2021.

Sources of Effluent	Allowances per head per 24 hours			Relevant number of users	Totals		
	Hydraulic Loading Litres/Hd/Day	Organic Loading Gms/Hd/Day	Ammonia as N Gms/Hd/Day		Hydraulic Loading Litres/Hd/Day	Organic Loading Gms/Hd/Day	Ammonia Loading Gms/Hd/Day
Residential							
Domestic dwelling and/or residential building	150	60	8	0	0	0	0
					0	0	0
Caravan sites					0	0	0
Touring	50	35	8		0	0	0
Static not serviced	75	35	8		0	0	0
Static fully serviced	150	55	8	8	1200	440	64
Tenting sites	50	35	8		0	0	0
				Sub total	1200	440	64

3 Bed dwelling - 4 persons
4 Bed dwelling - 5 persons
5 Bed dwelling - 6 persons

Totals

1200	440	64
8.00	7.33	8.00

Population equivalent

Carlow Planning Authority - Inspection Purposes Only!

[illegible]

APPENDIX A: SITE CHARACTERISATION FORM

File Reference: [REDACTED]

1.0 GENERAL DETAILS (From planning application)

Prefix: Ms First Name: [REDACTED] Surname: [REDACTED]

Address:

[REDACTED]

Site Location and Townland:

Ballinabrannagh R93XR53
52,796404, -7.015688

Number of Bedrooms: 6 Maximum Number of Residents: 8

Comments on population equivalent

The applicant proposes to build 4 x 1 bed glamping pods on a green field site. The person Equivalent will be 8

Proposed Water Supply:

Mains ☐ Private Well/Borehole ☒ Group Well/Borehole ☐

2.0 GENERAL DETAILS (From planning application)

Soil Type, (Specify Type): Teagasc soils - RckNCa bedrock at surface non-calcareous

Subsoil, (Specify Type): As above

Bedrock Type: Bedrock - CNBREG Bregaun Flagstone Formation, Thick, flaggy, sandstone and siltstone

Aquifer Category: Regionally Important | Locally Important | Poor PI

Vulnerability: Extreme ☒ High ☐ Moderate ☐ Low ☐

Groundwater Body: Stream 203.9m South from site Status: Poor

Name of Public/Group Scheme Water Supply within 1 km: Clogrenan Borehole x 2 5.5m deep, 448.2m North East from site

Source Protection Area: ZOC ☐ SI ☐ SO ☐ Groundwater Protection Response: R21

Presence of Significant Sites
(Archaeological, Natural & Historical): SAC - Riiver Barrow and River Nore 3,607.8m East from site

Past experience in the area:

[REDACTED]

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).

The protection response is R21 therefore the site is expected be suitable to percolate, attenuate and treat the waste water generated from the dwelling house. the subsurface value is expected to be high. 1.2m unsaturated subsoil depth over bedrock will be required for a septic tank and 0.9m unsaturated subsoil for a WWT unit ad soil polishing filter. There is a green field site 23.68 hectares in size, the folio number is CW1141F

Note: Only information available at the desk study stage should be used in this section.

3.0 ON-SITE ASSESSMENT

3.1 Visual Assessment

Landscape Position:

Slope: Steep (>1:5) ☐ Shallow (1:5-1:20) ☐ Relatively Flat (<1:20) ☐

Slope Comment

Surface Features within a minimum of 250m (Distance To Features Should Be Noted In Metres)

Houses:

There is no dwelling on this site and the site owner proposes to build a 16 P.E glamping site
There is a functioning septic tank 200m West from the site

Existing Land Use:

Grazing farmland.

Vegetation Indicators:

None

Groundwater Flow Direction:

Ground Condition:

Firm and well drained.

Site Boundaries:

Natural hedgerow on all other boundaries.

3.0 ON-SITE ASSESSMENT

3.1 Visual Assessment (contd.)

Roads:

Access laneway to the North

Outcrops (Bedrock And/Or Subsoil):

None within 250m.

Surface Water Ponding:

None

Lakes:

None

Beaches/Shellfish Areas:

None

Wetlands:

None

Karst Features:

None within 250m from the proposed site.

Watercourses/Streams:*

Stream 205m South from the site. Access to the stream was restricted to determine the depth and flow direction.

*Note and record water level

3.0 ON-SITE ASSESSMENT

3.1 Visual Assessment (contd.)

Drainage Ditches:*

There are dry drains surrounding the site.

Springs:*

None

Wells:*

Clogrenan Borehole x 2 5.5m deep, 448.2m North East from site

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).

The desk study and visual inspection of the site indicate that there are no inhibiting factors in commissioning a waste water system and a soil polishing filter on site.

There is sufficient space on the site to comply with all current separation distances.

The risks are groundwater, and the River located 210m South from the site. The desk study and analyzing local assessments indicate the soil will have low attenuation rates and hydraulic properties.

Water will be supplied from a deep bored well located on applicants nearby dwelling.

*Note and record water level

3.2 Trial Hole (should be a minimum of 2.1m deep (3m for regionally important aquifers))

To avoid any accidental damage, a trial hole assessment or percolation tests should not be undertaken in areas which are at or adjacent to significant sites, (e.g. NHAs, SACs, SPAs, and/or Archaeological etc.), without prior advice from National Parks and Wildlife Service or the Heritage Service.

Depth of trial hole (m):

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

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

Depth of water ingress: Rock type (if present):

Date and time of excavation: Date and time of examination:

Depth of
Surface and

Subsurface Percolation Tests	Soil/Subsoil Texture & Classification**	Plasticity and dilatancy***	Soil Structure	Density/ Compactness	Colour****	Preferential flowpaths
0.1 m	Topsoil	Threads 3,3,4 Ribbons 60,60,60	Crumb	Uncompacted	Brown	Grass roots
0.2 m						
0.3 m						
0.4 m	SILT Shale	Threads 2 2 2 Ribbons 20,20,20 Dilatant Yes	Granular Coarse grit	Firm	Brown	Abundance of angular stones 50 to 100mm in size
0.5 m						
0.6 m						
0.7 m						
0.8 m						
0.9 m						
1.0 m SST 2 3						
1.1 m						
1.2 m						
1.3 m						
1.4 m						
1.5 m						
1.6 m						
1.7 m						
1.8 m						
1.9 m	No Water ingress					
2.0 m						
2.1 m						
2.2 m						
2.3 m						
2.4 m						
2.5 m						
2.6 m						
2.7 m						
2.8 m						
2.9 m						
3.0 m						
3.1 m						
3.2 m						
3.3 m						
3.4 m						
3.5 m						

Likely Subsurface Percolation Value:

Likely Surface Percolation Value:

Note: *Depth of percolation test holes should be indicated on log above. (*Enter Surface or Subsurface at depths as appropriate).

** See Appendix E for BS 5930 classification.

*** 3 samples to be tested for each horizon and results should be entered above for each horizon.

**** All signs of mottling should be recorded.

3.2 Trial Hole (contd.) Evaluation:

The trial hole indicated that there is 1.8m of unsaturated topsoil and subsoil under 300mm loam topsoil.

There was no mottling or water ingress in the trial hole which was left open for 2 days.

The GWPR for this site is R21 and subsequently there is a requirement for 0.9 unsaturated soil under a 300mm stone drainage bed if a secondary waste water system is commissioned. A 1.2m deep soil polishing filter will be required for a septic tank.

This location will be suitable for treatment and disposal of waste water from a secondary treatment unit.

3.3(a) Subsurface Percolation Test for Subsoil

Step 1: Test Hole Preparation

Percolation Test Hole

	1	2	3
Depth from ground surface to top of hole (mm) (A)	500	500	500
Depth from ground surface to base of hole (mm) (B)	1,000	1,000	1,000
Depth of hole (mm) [B - A]	500	500	500
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	14-Nov-2024	14-Nov-2024	14-Nov-2024
	Time	08:04	08:04	08:04
2nd pre-soak start	Date	14-Nov-2024	14-Nov-2024	14-Nov-2024
	Time	11:20	11:25	11:23

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

Step 3: Measuring T_{100}

Percolation Test Hole No.

	1	2	3
Date of test	15-11-2024	15-11-2024	15-11-2024
Time filled to 400 mm	08:15	08:15	08:15
Time water level at 300 mm	08:23	08:55	08:56
Time (min.) to drop 100 mm (T_{100})	8.00	40.00	41.00
Average T_{100}	3		29.67

If $T_{100} > 300$ minutes then Subsurface Percolation value >120 – site unsuitable for discharge to ground

If $T_{100} \leq 210$ minutes then go to Step 4;

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

Step 4: Standard Method (where $T_{100} \leq 210$ minutes)

Percolation Test Hole	1			2			3		
Fill no.	Start Time (at 300 mm)	Finish Time (at 200 mm)	Δt (min)	Start Time (at 300 mm)	Finish Time (at 200 mm)	Δt (min)	Start Time (at 300 mm)	Finish Time (at 200 mm)	Δt (min)
1	08:23	08:34	11.00	08:55	09:52	57.00	08:56	09:57	61.00
2	08:34	08:51	17.00	09:52	10:58	66.00	09:57	11:06	69.00
3	08:51	09:15	24.00	10:58	12:24	86.00	11:06	12:38	92.00
Average Δt Value			17.33			69.67			74.00
	Average $\Delta t/4 =$ [Hole No.1] 4.33 (t_1)			Average $\Delta t/4 =$ [Hole No.2] 17.42 (t_2)			Average $\Delta t/4 =$ [Hole No.3] 18.50 (t_3)		

Result of Test: Subsurface Percolation Value = 13.42 (min/25 mm)

3

Comments:

The Subsurface test was completed between at 1000mm BGL and the result of 13.42 indicates that the subsurface soil is suitable to successfully treat the waste water.

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

Percolation Test Hole No.	1					
Fall of water in hole (mm)	Time Factor = T_f	Start Time hh:mm	Finish Time hh:mm	Time of fall (mins) = T_m	$K_{fs} = T_f / T_m$	T - Value = $4.45 / K_{fs}$
300 - 250	8.1			0.00		
250 - 200	9.7			0.00		
200 - 150	11.9			0.00		
150 - 100	14.1			0.00		
Average	T- Value	T- Value Hole 1 = (T_1)				0.00

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			0.00		
250 - 200	9.7			0.00		
200 - 150	11.9			0.00		
150 - 100	14.1			0.00		
Average	T- Value	T- Value Hole 3 = (T_3)				0.00

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			0.00		
250 - 200	9.7			0.00		
200 - 150	11.9			0.00		
150 - 100	14.1			0.00		
Average	T- Value	T- Value Hole 2 = (T_2)				0.00

Result of Test: Subsurface Percolation Value =

2 0.00 (min/25 mm)

Comments:

3.3(b) Surface Percolation Test for Soil

Step 1: Test Hole Preparation

Percolation Test Hole

	1	2	3
Depth from ground surface to top of hole (mm)	0	0	0
Depth from ground surface to base of hole (mm)	0	0	0
Depth of hole (mm)	0	0	0
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			
	Time			
2nd pre-soak start	Date			
	Time			

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

Step 3: Measuring T_{100}

	1	2	3
Percolation Test Hole No.			
Date of test			
Time filled to 400 mm			
Time water level at 300 mm			
Time to drop 100 mm (T_{100})	0.00	0.00	0.00
Average T_{100}		2	0.00

If $T_{100} > 300$ minutes then Surface Percolation 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			0.00			0.00			0.00
2			0.00			0.00			0.00
3			0.00			0.00			0.00
Average ΔT Value			0.00			0.00			0.00
	Average $\Delta T/4 =$ [Hole No.1] 0.00 (T_1)			Average $\Delta T/4 =$ [Hole No.2] 0.00 (T_2)			Average $\Delta T/4 =$ [Hole No.3] 0.00 (T_3)		

Result of Test: Surface Percolation Value = 0.00 (min/25 mm)

2

Comments:

The surface test was not necessary as the subsurface soil has the ability to treat and dispose of the waste water.

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

Percolation Test Hole No.	1					
Fall of water in hole (mm)	Time Factor = T_f	Start Time hh:mm	Finish Time hh:mm	Time of fall (mins) = T_m	$K_{ts} = T_f / T_m$	T - Value = $4.45 / K_{ts}$
300 - 250	8.1			0.00		
250 - 200	9.7			0.00		
200 - 150	11.9			0.00		
150 - 100	14.1			0.00		
Average	T- Value	T- Value Hole 1 = (T_1)				0.00

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	$K_{ts} = T_f / T_m$	T - Value = $4.45 / K_{ts}$
300 - 250	8.1			0.00		
250 - 200	9.7			0.00		
200 - 150	11.9			0.00		
150 - 100	14.1			0.00		
Average	T- Value	T- Value Hole 2 = (T_2)				0.00

Result of Test: Surface Percolation Value =

2

0.00 (min/25 mm)

Comments:

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	$K_{ts} = T_f / T_m$	T - Value = $4.45 / K_{ts}$
300 - 250	8.1			0.00		
250 - 200	9.7			0.00		
200 - 150	11.9			0.00		
150 - 100	14.1			0.00		
Average	T- Value	T- Value Hole 3 = (T_3)				0.00

4.0 CONCLUSION of SITE CHARACTERISATION

Integrate the information from the desk study and on-site assessment (i.e. visual assessment, trial hole and percolation tests) above and conclude the type of system(s) that is (are) appropriate. This information is also used to choose the optimum final disposal route of the treated wastewater.

Slope of proposed infiltration / treatment area:

1:200

Are all minimum separation distances met?

✓

Depth of unsaturated soil and/or subsoil beneath invert of gravel (or drip tubing in the case of drip dispersal system)

1.65

Percolation test result: Surface:

Sub-surface:

13.42

Not Suitable for Development

Suitable for Development

Identify all suitable options

1. Septic tank system (septic tank and percolation area) (**Chapter 7**)
2. Secondary Treatment System (**Chapters 8 and 9**) and soil polishing filter (**Section 10.1**)
3. Tertiary Treatment System and Infiltration / treatment area (**Section 10.2**)

Discharge Route¹

Option 2 EPA CoP 2021 Table 10.1

7.5m² required per person.

8 PE x 7.5m² = 60m²

Waste water will be pumped to a 60m² low pressure bed to a soil polishing filter which will have at least 0.9m of unsaturated soil under the 300mm layer of washed 15mm to 32mm washed gravel.

5.0 SELECTED DWWTs

Propose to install:

Secondary Treatment System and soil polishing filter

and discharge to:

Ground Water

Invert level of the trench/bed gravel or drip tubing (m)

0.45

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

The percolation bed will be a minimum of 60m² x 0.45m deep.
A 300mm layer of 15mm-32mm washed stone will be placed 0.45m below ground level.
The low pressure piping will be placed on the 300mm gravel bed and covered with 150mm washed gravel for protection.
Geotextile (ENISO 10319) will be placed in the 150mm gravel to suppress weed growth.
Finally, a 250mm deep layer of topsoil will be placed on the gravel bed to finish the site at 250mm above existing ground level.
The invert level of the treated water will be 0.45m below ground level.
There will be 1.65mm of unsaturated soil under the 300mm layer of drainage stone.
It will be advised to encase the WWT unit in a lean mix of concrete.

The PIA approved WWT unit and percolation bed will be commissioned on site by a trained technician and a planning authority certificate will be available on completion.

¹ A discharge of sewage effluent to "waters" (definition includes any or any part of any river, stream, lake, canal, reservoir, aquifer, pond, watercourse or other inland waters, whether natural or artificial) will require a licence under the Water Pollution Acts 1977-90. Refer to Section 2.4.

6.0 TREATMENT SYSTEM DETAILS

SYSTEM TYPE: Septic Tank Systems (Chapter 7)

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

Secondary Treatment Systems receiving septic tank effluent (Chapter 8)

Media Type	Area (m ²)*	Depth of Filter	Invert Level
Sand/Soil			
Soil			
Constructed Wetland			
Other			

Packaged Secondary Treatment Systems receiving raw wastewater (Chapter 9)

Type	
SR Compliant and PIA approved V	
Capacity PE	20
Sizing of Primary Compartment	4.70 m ³

Polishing Filter*: (Section 10.1)

Surface Area (m ²)*		Option 3 - Gravity Discharge	
Option 1 - Direct Discharge		Trench length (m)	
Surface area (m ²)		Option 4 - Low Pressure	
Option 2 - Pumped Discharge		Pipe Distribution	
Surface area (m ²)	60.00	Trench length (m)	
		Option 5 - Drip Dispersal	
		Surface area (m ²)	

SYSTEM TYPE: Tertiary Treatment System and infiltration / treatment area (Section 10.2)

Identify purpose of tertiary treatment

Provide performance information demonstrating system will provide required treatment levels

Provide design information

DISCHARGE ROUTE:

Groundwater	☒	Hydraulic Loading Rate * (l/m ² .d)	20.00	Surface area (m ²)	60.00
Surface Water **	☐	Discharge Rate (m ³ /hr)	0.05		

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

** Water Pollution Act discharge licence required

6.0 TREATMENT SYSTEM DETAILS

QUALITY ASSURANCE:

Installation & Commissioning

Installation will be completed by relevant competent personnel and overseen by an approved site assessor. An appropriately trained and qualified person shall document and photograph the works and submit a commissioning cert on completion.
All materials used in the commissioning of this system will be Building regulations compliant. ie Building Regulations 2010 and all subsequent amendments and the relevant TGDs and in particular TGD - H drainage and waste water disposal 2016.

On-going Maintenance

Desludging will be completed by a licenced waste collection company which holds a current WCPO licence. This desludging process will be completed on a 3 yearly cycle and disposal certs will be retained by the house holder.
Only biological waste will be allowed to be processed in the unit.
The home owner has a responsibility to ensure that the Waste water treatment unit is well maintained and does not over fill or overflow to the surrounding area.

7.0 SITE ASSESSOR DETAILS

Company: Drainpower Environmental Services Ltd

Prefix: Mr ☒ First Name: John Surname: Fanning

Address: Pallasmore, Portroe, Nenagh, Co Tipperary

Qualifications/Experience: EPA Approved site assessor FETAC Level 6

Date of Report: 29-Oct-2025

Phone: 0860505454

E-mail: info@siteassessment.ie

Indemnity Insurance Number:

Signature: John Fanning EPA Site assessor.



**Drainpower
Environmental
Services Ltd**

John Fanning,
Pallasmore,
Newtown,
Nenagh,
Co. Tipperary.
E45PR23.

00353 86 0505454.
Info@siteassessment.ie

SITE SUITABILITY ASSESSMENT

Desk top supporting documentation.

Table 10.1: Infiltration/treatment area and trench length design for tertiary treatment, per PE

Percolation values (PVs)	Pumped or underlying gravity discharge (Options 1 and 2)	Gravity discharge into 500 mm wide trenches (Option 3)	Low-pressure pipe distribution into 300 mm wide trenches (Option 4)	Drip dispersal system (Option 5)	Tertiary infiltration area (Option 6)
	Area required per person (m ²)	Trench length required per person (m)	Trench length required per person (m)	Area required per person (m ²)	Area required per person (m ²)
3 ≤ PV ≤ 20	≥7.5	≥6	≥6	≥5	≥3.75
21 < PV ≤ 40	≥15	≥12	≥12	≥14	≥7.5
41 < PV ≤ 50	≥30	≥17	≥17	≥16	≥15
51 < PV ≤ 75	≥50	≥19	≥19	≥22	≥25
76 < PV ≤ 90	–	–	≥28	≥34	–
91 < PV ≤ 120	–	–	–	≥54	–

Design

Supply

Install

Commission

Monitor

Service



Contact : Mob 086 050 5454 Email : info@siteassessment.ie Website : www.siteassessment.ie

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Attestation

Nr. 438.01A01

Coconut Fibre Tero System

Tertiary treatment unit

TRICEL (Killarney) Unlimited Company

Ballyspillane Ind. Est., Killarney, Co. Kerry, Ireland

Over a test period of 6 weeks (4 weeks nominal load, 2 weeks 50 % of nominal load), flow-proportional 24-hour composite samples were taken weekly (influent and effluent). The Tero was fed from a pump shaft which was connected to a small wastewater treatment plant (gravity flow mode). Dosing to the module took place in 20 litre portions and a flow of approx. 1 litre/s. Microbiological samples (E. coli) were taken as grab samples.



Performance details

Organic daily load (influent, nominal)	0.06 kg BOD ₅ /d		
Hydraulic daily load (nominal)	0.9 m ³ /d		
Treatment efficiency (nominal)		Efficiency (nominal / underload)	Effluent (nominal / underload)
		COD	73 mg/l / 78 mg/l
		BOD ₅	6 mg/l / 5 mg/l
		TN ₅ *	25.8 mg/l / -
		NH ₄ -N*	0.2 mg/l / -
		SS	4 mg/l / 3mg/l
		E.Coli	643 / 591 CFU/100 ml
Electrical consumption (nominal)	0.15 kWh/d		
Number of desludging (complete test – 6 weeks)	0		
Number of maintenance operations during the test	0		

* determined for temperatures $\geq 12^{\circ}\text{C}$ in the bioreactor

Tested by:
PIA – Prüfinstitut für Abwassertechnik GmbH
Hergenrather Weg 30
52074 Aachen, Germany

This document is for information purposes only.
The results relate only to the tested object.

PIA – Sustainable Certification

geprüft – tested – teste

February 2024, Dipl.-Ing. Gabriel Schatzki
Head of department "Wastewater Treatment"



Notified Body
No.: 1739



Certified according to
ISO 9001:2015



Tero Tertiary Module Specification.

2

TERO module

The Tricel TERO tertiary wastewater system further purifies the treated effluent from a packaged wastewater treatment plant resulting in a reduced area and depth of discharge bed.

Stage One:

TERO receives secondary treated effluent from a wastewater treatment plant. The TERO is designed to work seamlessly with the Tricel NOVO but can also be used with third-party products, providing that a pumped discharge with a dose limit is utilised.

Stage Two:

The pre-treated effluent is dispersed using an easily serviceable distribution network which ensures the effluent is distributed evenly and uniformly onto natural filter media. The effluent filters through the media and is treated by a combination of biological, chemical and physical processes. The treated water is transported to the soil at the base of the tank.

DIAGRAM INDEX

1. Tricel NOVO wastewater treatment plant
2. TERO Module
3. Inlet Pipe
4. Distribution Pipework
5. Coconut Fibre
6. Outlets
7. Gravel Bed

Tricel TERO Tertiary Treatment System



The environmental advantages of TERO

- Improved E.coli treatment efficacy. Test results show less than 1000 cfu/100ml, reducing soil depth requirements to 800mm.
- TERO is an environmentally friendly system that utilises natural, long-life renewable media. The repairable filtration properties of coconut fibre require no chemical additives in achieving exceptional results.
- The closed system design of TERO greatly reduces odour whilst ensuring high treatment efficiency of the wastewater.

Advantages for you

- Compact system - one module meets requirements for 6PE.
- The modular design of TERO makes it ideal for retrofit upgrades, extensions etc., and can be used with many existing treatment systems.
- The shallow profile of TERO makes it easy to incorporate into landscape design.
- Simple maintenance. No desludging required.
- No electrical components or power consumption used in the TERO system.

Advantages for installation

- Easy installation - Flat base for easy installation, one inlet connection from wastewater plant, reduced discharge depth and area, thus reducing contractor expense and costs.
- Plug and play system - assembled module with single input connector.

Simple installation, minimum maintenance

Easily installed by your contractor with full commissioning provided by qualified Technician. Annual maintenance recommended to extend life and performance of the system.

Complementary products for the TERO residential system

- High Level Alarm(s)
- Sample Chambers
- Weatherproof GRP Enclosures & Kiosks

The TERO system has undergone a rigorous performance testing regime to achieve the highest results required. The tables below show the sizes and the wastewater treatment capability of a TERO. If you have any specific requirements, please contact the Tricel sales team who will be able to assist you with your enquiry.

Tertiary Treatment Performance

SYSTEM CHARACTERISTICS	PERFORMANCE
Nominal Organic Design Load	0.05 kg BOD ₅ /d
Nominal Hydraulic Design Load	0.90 l/d
COD	14 mg/l
BOD ₅	9 mg/l
SS	4 mg/l
NH ₄ ⁺	0.3 mg/l
Electrical Power Consumption	0.23 kWh/d
Number of desludging	0

* determined at temperature of 15°C

TERO module dimensions

Length	2.640m
Height	1.070m
Width	1.070m
Weight (max TERO module)	54.5kg

SEWAGE TREATMENT SIMPLIFIED

Sewage Treatment: Combination of physical and biological processes which break down the organic and inorganic sewage content which cause pollution to receiving waters.

Receiving Waters: All groundwaters and watercourses such as streams and rivers.

Population Equivalent (PE): A measure of the number of people the treatment plant serves.

Media: Coconut fibre.

Sludge: The solids that settle to the bottom of the tank chambers.

BOD: Biological Oxygen Demand measured in milligrams per litre (mg/l) is a relative measure of how polluting the sewage is.

SS: Suspended Solids measured in milligrams per litre (mg/l) includes all suspended matter both organic and inorganic. **E.coli bacteria:** commonly used as an indicator microorganism for faecal pollution, and the sanitary quality of foods and water, measured in (cfu/100ml).

Pathogenic Bacteria: Pathogenic Bacteria such as *Streptococcus* are bacteria which cause disease in humans and animals.

Tricel Nove Installation Procedures :

<https://tricelsiteassessor.ie/wp-content/uploads/2017/06/4.-Manual-Product-Manual-Novo-Ireland-6-50.pdf>

Contact : Mob 086 050 5454 Email : info@siteassessment.ie Website : www.siteassessment.ie

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Tricel Nove Certification and Specification

3

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WASTEWATER TREATMENT

Tricel® Novo

For Single Dwellings & Small Communities

Innovative design for superior performance

UK
* EXCLUDING NORTHERN IRELAND

CE
Certified to EN12566-3

MECHANICAL PARTS
3 years
WARRANTY

SAC STRUCTURE
20 years
WARRANTY

TRICEL
ENVIRONMENTAL

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SEWAGE TREATMENT SYSTEMS

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4

What is the Tricel Novo

Tricel Novo wastewater treatment plants are reliable, easy to install and simple to maintain for all wastewater requirements. These highly functional plants can cater for ranges from 2 to 50 PE (Population Equivalent).

The Tricel Novo submerged aeration plant is suitable for domestic and light commercial or communal applications and uses simple proven fixed bed technology. Each system comprises of three independent treatment zones, all fulfilling a different stage of the purification process.

The Tricel Novo treatment efficiencies are as follows:

BOD ₅	13 mg/l
SS	16 mg/l
NH ₄ -N	8mg/l

European Certification Requirements

All Tricel wastewater treatment plants have been tested to European certification EN 12566-3. This certification tests all plants for strength, water tightness, durability and treatment efficiency.

By using a wastewater treatment plant which is CE certified clients can rest assured that it has complied with tests and inspections which guarantee a high level of security and efficiency.

How a Tricel Novo works

These plants use a simple, proven technology, consisting of three treatment zones. In each zone a different stage of the treatment occurs.

1. Wastewater from the dwelling, toilets, sinks, shower etc., enters the plant.
2. Effluent enters the primary settlement chamber. Settlement occurs when the heavier solids drop out of the wastewater and settle to the bottom of the tank to create sludge, and the lighter solids float to the top of the water to create a scum. The top layer acts as a seal and stops odours escaping. This chamber separates up to 70% of the solids present.
3. Next is the aeration chamber, where masses of naturally occurring bacteria inhabit specially designed plastic filter media. The bacteria feed on the waste removing it from the liquid. A continuous supply of air from a low pressure, high volume compressor in the top section of the unit sustains these bacteria. Wastewater passes through the filter media over and over, ensuring a very high treatment efficiency.
4. The liquid then proceeds to the final settlement chamber. Any remaining minute bacterial particles separate from the liquid within this chamber before discharge from the plant. This process slows the liquid's velocity,

allowing for any final trace impurities to settle to the bottom of the tank section. A sludge return system then returns these impurities back to the primary settlement chamber.

5. The remaining treated liquid now meets the required standard and is safely passed out of the Tricel Novo plant system. This treated effluent is now ready for discharge to a suitably designed discharge area as required by the relevant local authority.



Tricel Novo wastewater treatment plant has an overall efficiency of 95.5% BOD removal

Key features & benefits

- Compression moulded SMC tank. The compression moulding process is one the most technologically developed processes available to manufacture structural composites. Components are manufactured under heat and high pressure and have unrivalled strength and durability over standard tanks or polyethylene tanks.
- SMC is unique in the wastewater treatment industry with Tricel SMC tanks operating in some of the harshest climatic conditions for over 50 years with no defects.
- Tricel's ceramic diffuser is unique in the domestic wastewater treatment plant market and will last twice as long as all standard competitors rubber equivalents. This saves money in both call out fees and replacement parts.
- No concrete backfill for installation on most sites saving up to £300 over lower quality GRP or polyethylene alternatives from competitors.
- Complies with Environment Agency general binding rules in England, Natural Resources Wales exemption criteria and SEPA requirements. Tricel advise consulting with your local agency on the level of effluent treatment required.
- No moving parts or pumps in the plant ensuring reliable operation and minimal maintenance and repair costs.
- Factory fitted alarm on selected PE's.
- Integrated pumped outlet available on all PE's.

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SEWAGE TREATMENT SYSTEMS

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11.1 Declaration of performance



- Declaration of Performance

DOP01CPRIRL03201414

1. Classification of Product:

Small wastewater treatment plant for up to 50PT – Packaged and/or Site Assembled Domestic Wastewater Treatment Plant as set out in EN12566 Part3

2. Name of Product:

Tricel Novo IE6 – IE50

3. Product Characteristics

Material	Glass Reinforced Plastic (GRP)
Technology	Submerged Aerated Filter combined with Activated Sludge
Shape	Horizontal Cylinder with domed ends. 620mm x 620mm and Ø200mm Access openings as required.

4. Intended for Use:

To treat domestic wastewater for up to 50 population equivalent.

5. Name, Address and Contact Information of Manufacturer:

Tricel (Killarney).
Ballyspillane Ind. Est.
Killarney,
Co.Kerry.
Tel: +353 (0) 64 6632421
Web:
www.ie.tricel.eu

6. Plant of Assessment of Verification as set out by the CPR, Annex V:

Plant 2+

7. Name, Address and Notified Body Number of Notified Body who carried out Initial Type Testing

Prüfinstitut für
Abwassertechnik GmbH
Hergenrather Weg 30
D-52074 Aachen
Germany
NB 1739

Contact : Mob 086 050 5454 Email : info@siteassessment.ie Website : www.siteassessment.ie

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8. Declared Performance: Treatment Performance

Essential Characteristic	Performance*		Harmonised Technical Specification
Nominal Organic Daily Load	0.36 kg/d		
Nominal Hydraulic Daily Load	0.90 m ³ /d		
COD	91.6%	52 mg/l	EN12566-3
BOD ₅	95.9%	11mg/l	
SS	95.3%	16 mg/l	
NH ₄ **	79.9%	8mg/l	
Electrical Power Consumption	1.1 kWh/d		

*Performance results obtained an average organic daily load of 0.26kg/d and a daily hydraulic load of 0.9m³/d

**Determined at temperatures $\geq 12^{\circ}$

Material Performance

Essential Characteristic	Method	Performance	Harmonised Technical Specification
Water Tightness	Vacuum Test	Pass	EN12566-3
Crushing Resistance	Pit Test	Pass (also wet conditions)	
Durability		Pass	
Reaction to Fire		Class E	

9. The performance of the product identified in points two conforms with the declared performance in Point eight. This declaration of performance is issued under the sole responsibility of the manufacturer identified in point 4.



Michael Stack
Managing Director

27/03/2014



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7

	
Tricel (Killarney) Ballyspillane Ind Est Killarney Co. Kerry Ireland 13 DOPO1CPRIRLO3201414	
EN 12566-3 Packaged wastewater treatment plants for treatment of domestic wastewater - Product: Tricel Novo IE6 – IE50 Range of Wastewater Treatment Plants - Material: GRP	
Notified Body: Number.:	Prüfinstitut für Abwassertechnik GmbH Hergenrather Weg 30 52074 Aachen NB 1739
Treatment capacity	
- Nominal organic daily load: (BOD₅) - Nominal Hydraulic daily flow (Q_H)	As Set Out in Table CE for each Model
Effectiveness of treatment:	
Treatment efficiency ratios (at tested organic daily load BOD₅ of 0.26 kg/d and daily hydraulic flow of 0.9m³/d)	COD: 91.6 % BOD₅: 95.9 % SS: 95.3 % NH₄-N: 79.9 %
Water tightness: (Vacuum test)	
Crushing resistance: (Pit test)	Pass (also Wet conditions)
Durability	Pass
Fire Resistance	Class E

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Homeowners: individual domestic installation



► The lightweight design of the system makes for easy on-the-roadway.



► Ideal for big wet areas and large houses that charge and dilute your garden.



► Very low visual impact from fully installed units.

Larger projects: commercial installations up to 50 PE



► These plants are suitable for installation in housing estates, camping sites, hotels etc., and have low maintenance and running costs.



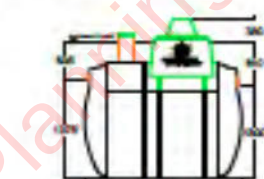
► Each wastewater treatment plant is constructed of lightweight SMC and is easy to transport with a specialist low loader or crane.



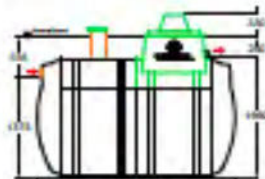
► Single or 2 tank installed 50 PE plant can treat 1000 litres of wastewater per day in a 3-4 day cycle.

Technical characteristics/ Plant dimensions

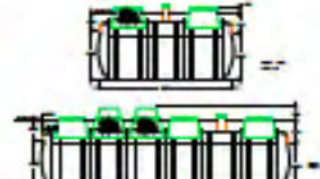
Design product	Plant model	Pe	Length	Width	Height	Weight	Volume	Flow rate	Flow rate	Flow rate	Flow rate
CLF 400 (1000L)	1-4	3000	2.2	1.66	1.24	110	270	1.575	1.3	0.855	50
CLF 600 (1500L)	1-6	4000	2.6	1.66	1.24	110	350	1.575	1.3	0.855	60
CLF 800 (2000L)	1-8	4750	3.2	1.66	1.24	110	475	1.575	1.3	0.855	80
CLF 1000 (2500L)	1-10	5500	3.6	1.66	1.27	110	550	1.575	1.3	0.855	100
CLF 1200 (3000L)	1-12	6250	4.0	1.66	1.27	110	625	1.575	1.3	0.855	120
CLF 1400 (3500L)	1-14	7000	4.4	1.66	1.27	110	700	1.575	1.3	0.855	140
CLF 1600 (4000L)	1-16	7750	4.8	1.66	1.27	110	775	1.575	1.3	0.855	160
CLF 1800 (4500L)	1-18	8500	5.2	1.66	1.27	110	850	1.575	1.3	0.855	180
CLF 2000 (5000L)	1-20	9250	5.6	1.66	1.27	110	925	1.575	1.3	0.855	200
CLF 2200 (5500L)	1-22	10000	6.0	1.66	1.27	110	1000	1.575	1.3	0.855	220
CLF 2400 (6000L)	1-24	10750	6.4	1.66	1.27	110	1075	1.575	1.3	0.855	240
CLF 2600 (6500L)	1-26	11500	6.8	1.66	1.27	110	1150	1.575	1.3	0.855	260
CLF 2800 (7000L)	1-28	12250	7.2	1.66	1.27	110	1225	1.575	1.3	0.855	280
CLF 3000 (7500L)	1-30	13000	7.6	1.66	1.27	110	1300	1.575	1.3	0.855	300
CLF 3200 (8000L)	1-32	13750	8.0	1.66	1.27	110	1375	1.575	1.3	0.855	320
CLF 3400 (8500L)	1-34	14500	8.4	1.66	1.27	110	1450	1.575	1.3	0.855	340
CLF 3600 (9000L)	1-36	15250	8.8	1.66	1.27	110	1525	1.575	1.3	0.855	360
CLF 3800 (9500L)	1-38	16000	9.2	1.66	1.27	110	1600	1.575	1.3	0.855	380
CLF 4000 (10000L)	1-40	16750	9.6	1.66	1.27	110	1675	1.575	1.3	0.855	400



► 1000L gravity outlet
Up to 4 PE domestic gravity flow outlet.



► 1000L pumped outlet
Up to 4 PE domestic pumped unit. Suitable for pumping to a central drainage area (sewer).

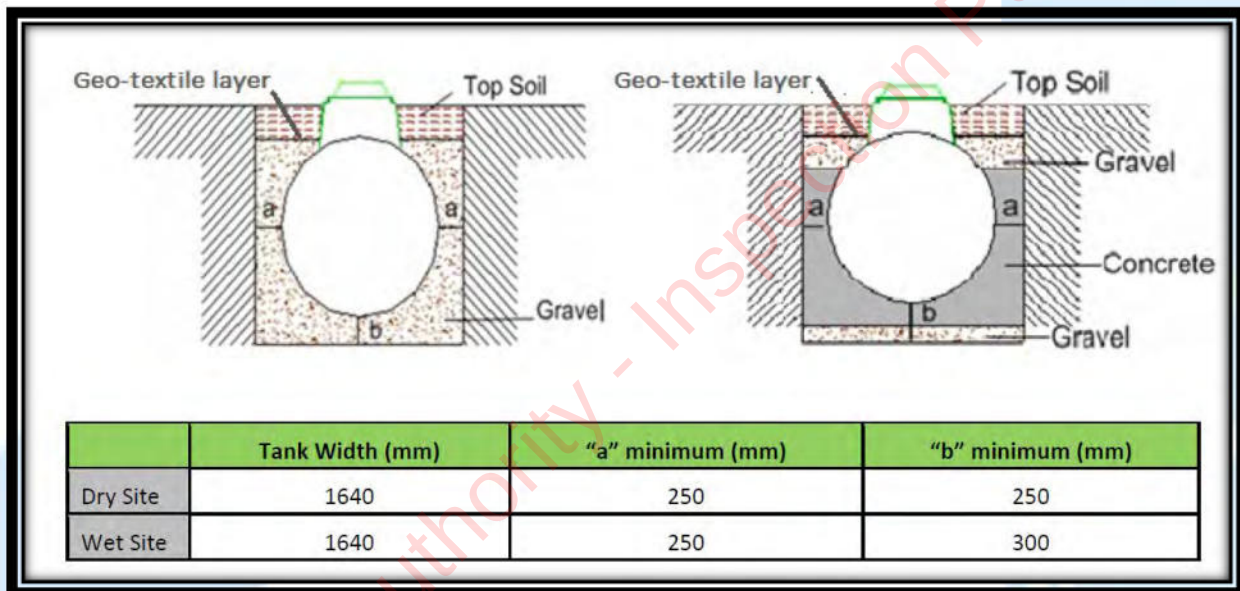


► 1000L gravity outlet
Suitable for commercial installations; covers for up to 10 people.



Concrete / Gravel commissioning

Factors that determine the required installation		Installation Required
Type of Site	Riser Required	
Dry	None	Gravel
Dry	250mm	Gravel
Dry	500mm & 750mm	Concrete
Wet	None	Concrete
Wet	250mm, 500mm & 750mm	Concrete





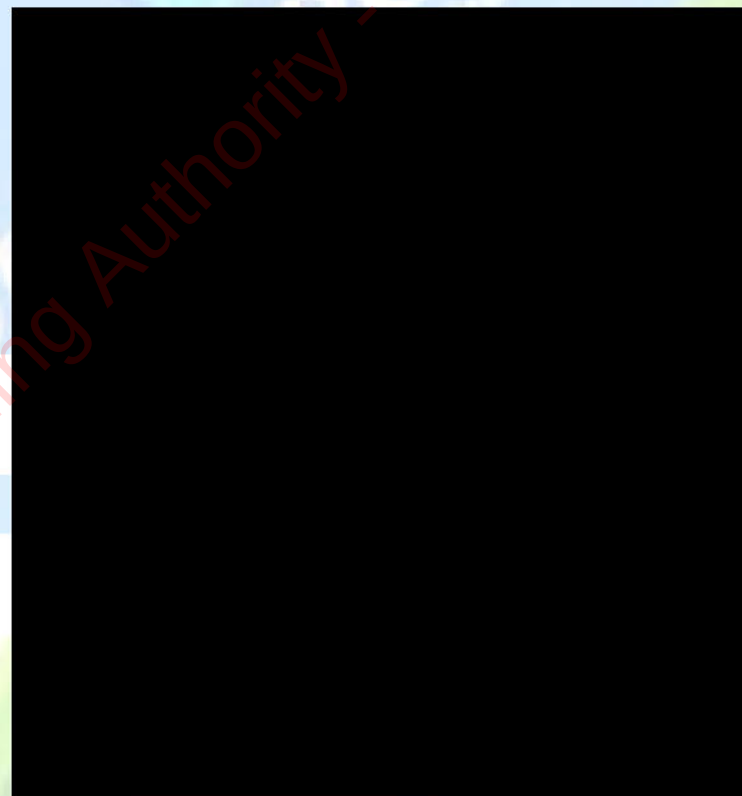
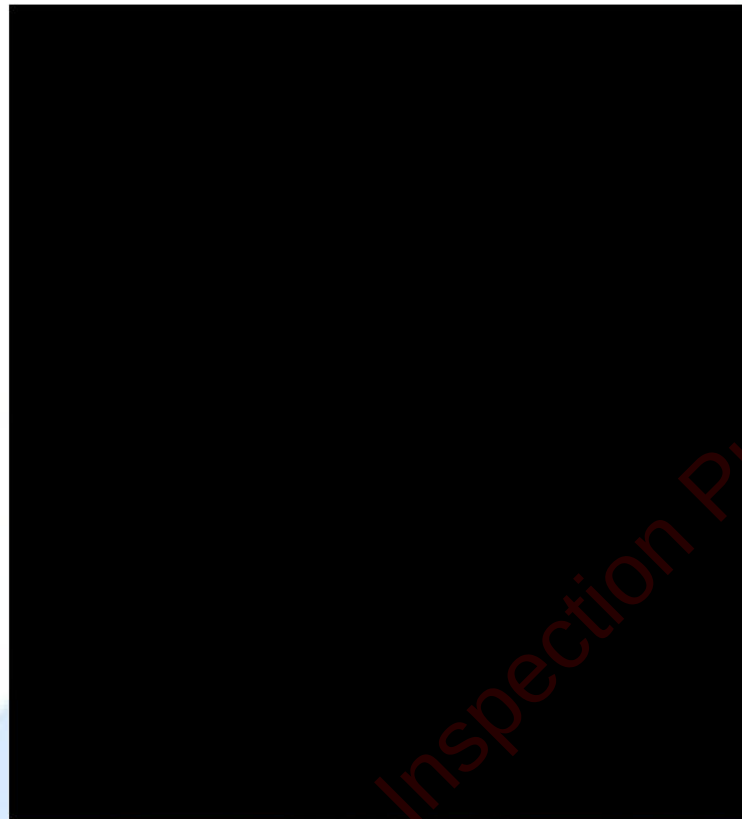
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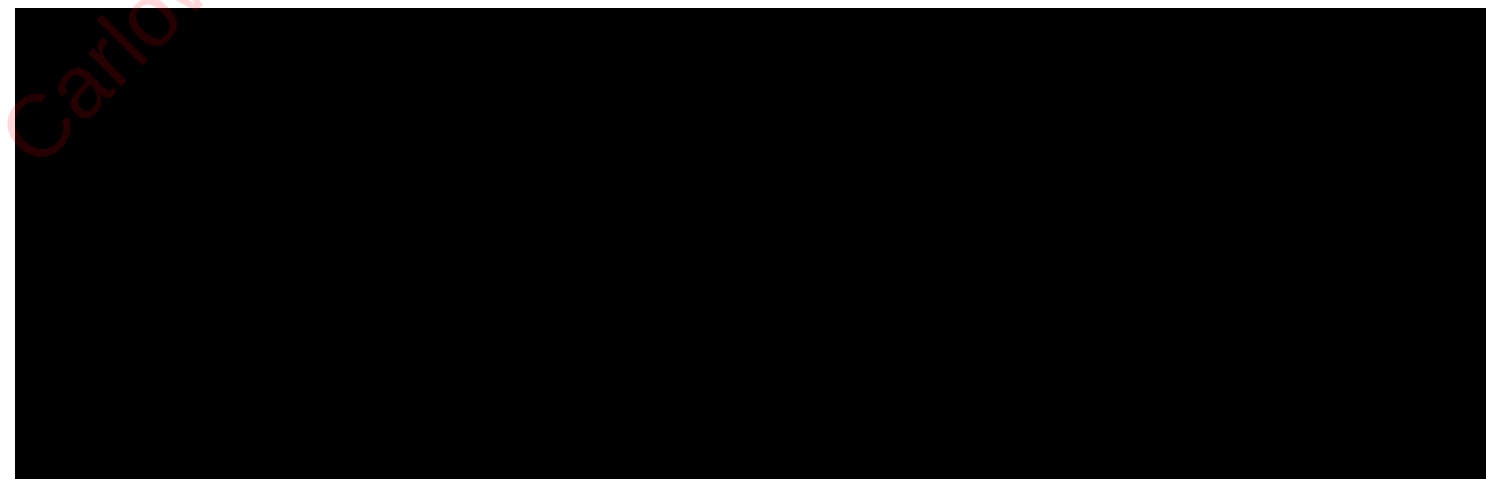
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