SITE SUITABILITY ASSESSMENT REPORT

In Accordance with the Environ mental Protection Agency Manual Code of Practice – Domestic Waste Water Treatment Systems (Population Equivalent ≤10)

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PROJECT PARTICULARS:

Project Description	Site Suitability Assessment for the location of On-Site Wastewater Treatment and Management at Derrigimlagh, Ballyconneely, Clifden, Co Galway, H71TF86.
OMC Project #	1425
Status	Final Report

Document Title	Site Suitability Assessment for the location of On-Site Wastewater Treatment and Management at Derrigimlagh, Ballyconneely, Clifden, Co Galway, H71TF86.
Client	Mr. George Melville
Date of Issue	August 2025
Prepared for	Mr. George Melville
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REFERENCES:

Environmental Protection Agency – Code Of Practice - Domestic Waste Water Treatment Systems (Population Equivalent ≤ 10).
Environmental Protection Agency – Wastewater Treatment Manuals Treatment Systems for Single Houses, published in the year 2000.
Groundwater Protection Schemes - Department of Environment and Local Government, Environmental Protection Agency, and Geological Survey of Ireland, 1999.
Groundwater Protection Responses for On-Site Wastewater Systems for Single Houses.
Geological Survey of Ireland Groundwater Viewer

1.0 SITE LOCATION

The subject site is located in the townland of Derrigimlagh approximately 3.2km south west of Clifden in County Galway.

Grid Reference

L 65014 47564M 20714 33337

X (Easting) :	Y (Northing) :	X (ITM):	Y (ITM):
065014	247564	464976	747587
Latitude :	Longitude :	X (UTM):	Y (UTM):
53.461015	-10.033374	431391	5924053

Figure One
Site Location – Satellite Image Bing Maps

1.0 CERTIFICATION

OMC, confirm that a Site Suitability Assessment has been completed on this site, located as per section 2.0 Site Location, at the following address:

Derrigimlagh, Ballyconneely, Clifden, Co Galway, H71TF86.

This assessment has been completed at the request of the applicant:

Mr. George Melville.

Although contracted by the client / client's agent, this report is prepared independently and is not subject to external influences.

The Site Suitability Assessment completed on this site has been carried out in strict accordance with the requirements of the Environmental Protection Agency "Environmental Protection Agency - CODE OF PRACTICE - Domestic Waste Water Treatment Systems (Population Equivalent ≤ 10).

All opinions, conclusions, and recommendations contained in this report are based on existing site conditions, knowledge acquired during the desk study, and on-site investigation works. We cannot take into account the impact of future variations in site conditions which may alter this site's current characteristics. These possible variations may occur as a result of a specific activity carried out on site, or on neighbouring lands.
Results obtained are specific to the area tested and more specifically to the percolation rate in the Surface / Subsurface test pits.
No comment or liability is made or accepted for variations in ground conditions or in percolation rates outside the test area.

It is the responsibility of the client / client's agent to ensure the test excavations, and more specifically the trial pit which is used to determine the water table and / or bedrock level is a true reflection of the water table and / or bedrock level on site; and more specifically in the proposed location on site to accommodate the wastewater treatment and disposal system and associated polishing filter and / or percolation area. No test excavation or pit should be tampered with in any way in an effort to distort the assessment of this site.

Variations in water table and / or bedrock level on site during times of construction and / or installation of the wastewater treatment and system and associated polishing filter bed; are not the responsibility of OMC. This report has been prepared in line with current best practice and with all reasonable skill, care and diligence in consideration of the limits imposed by the survey techniques used and the resources devoted to it in agreement with the client.

All variations in ground conditions or perceived percolation values encountered on site during construction should be reported immediately to the professional personnel responsible for the certification of construction and installation of the wastewater treatment and disposal system.

Please note, that the recommendations outlined in this site suitability assessment report are subject to the installation of the specified treatment procedure only. Any deviation from the specified wastewater treatment system, wastewater design or the proposed location on site; renders the conclusion and recommendations of this report null and void.

It is the responsibility of the client / client's agent to ensure the proposed wastewater treatment system and associated polishing filter can be accommodated on site, and that all required separation distances are achievable on site; should the proposed site layout plan deviate in any way from what was discussed and relayed during the site suitability assessment procedure.

Appendix A
Site Characterisation Form - Environmental Protection Agency - Code Of Practice - Domestic Waste Water Treatment Systems (Population Equivalent ≤10)

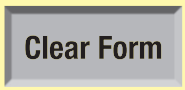
SITE CHARACTERISATION FORM
COMPLETING THE FORM

Note: This form requires the latest version of Adobe Acrobat Reader

and on PC's Windows 7 or later. Windows XP produces errors in calculations

Step 1:

Goto Menu Item **File, Save As** and save the file under a reference relating to the client or the planning application reference if available.



Use the **Clear Form** button to clear all information fields.

Notes:

All calculations in this form are automatic.

Where possible information is presented in the form of drop down selection lists to eliminate potential errors.

Variable elements are recorded by tick boxes. In all cases only one tick box should be activated.

All time record fields must be entered in twenty four hour format as follows: HH:MM

All date formats are DD-MM-YYYY.

All other data fields are in text entry format.

This form can be printed out fully populated for submission with related documents and for your files. It can also be submitted by email.

Section 3.2 In this section use an underline _____ across all six columns to indicate the depth at which changes in classification / characteristics occur.

Section 3.4 Lists supporting documentation required.

Section 4 Select the treatment systems suitable for this site and the discharge route.

Section 5 Indicate the system type that it is proposed to install.

Section 6 Provide details, as required, on the proposed treatment system.

APPENDIX A: SITE CHARACTERISATION FORM

File Reference: 1425 - George Melville

1.0 GENERAL DETAILS (From planning application)

Prefix: Mr First Name: George Surname: Melville

Address: Derrigimlagh, Ballyconneely, Clifden, County Galway.

Site Location and Townland: Derrigimlagh, Ballyconneely, Clifden, Co Galway, H71TF86

Number of Bedrooms: 3 Maximum Number of Residents: 5

Comments on population equivalent

Based on the provision of 3 number bedrooms the maximum population equivalent is 5 P.E.

The design of the proposed domestic waste water treatment and disposal system will be based on a 5 P.E.

Proposed Water Supply:

Mains ✔ Private Well/Borehole ☐ Group Well/Borehole ☐

2.0 GENERAL DETAILS (From planning application)

Soil Type, (Specify Type): Parent Material Name - Parent Material -
Soil Group -

Subsoil, (Specify Type): Lithology - Bedrock outcrop or subcrop Quaternary Sediment - Rck

Bedrock Type: Rock Unit Code - OV Description - Ordovician Volcanics

Aquifer Category: Regionally Important | Locally Important | Poor Pl

Vulnerability: Extreme ✔ High ☐ Moderate ☐ Low ☐

Groundwater Body: IE_WE_G_0017 Clifden Castlebar Status Good

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

Source Protection Area: ZOC ☐ SI ☐ SO ☐ Groundwater Protection Response: R2[1]

Presence of Significant Sites (Archaeological, Natural & Historical): The Twelve Bens/Garraun SAC is located adjacent to the site.

Past experience in the area: Septic tanks and Domestic Waste Water Treatment Systems are in use in the general locality.

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).

Integrating the above information the potential suitability of this particular site appears to be good.

Surface waters may be at risk if the minimum separation distances cannot be achieved or are not adhered to.

On site assessment and on site testing will further determine the potential suitability of this particular location and may identify potential site restrictions that may need to be addressed within the final design of the proposed Domestic Waste Water Treatment System.

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:	Rural Costal Site, located on a level site.		
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 an existing established dwelling on site.

There are a number of one off dwellings in the vicinity of the site.

The dwellings in the vicinity of the proposed site are all one off stand alone units.

Please refer to the associated planning site layout and planning site location maps.

Existing Land Use:

Existing site with an existing constructed dwelling in use on site.

Vegetation Indicators:

Rough grasslands with a mix of established trees and hedges and also some rush growth with willow trees adjacent to a watercourse.

Groundwater Flow Direction: Groundwater flow direction is undetermined at this time.

Ground Condition:

The ground condition is firm and dry on dates of inspection an assessment but may be yielding in certain places and certain times of the year.

Site Boundaries:

Existing site boundaries are post and wire, and stone walls.

3.0 ON-SITE ASSESSMENT

3.1 Visual Assessment (contd.)

Roads:

The existing site is divided by a Local road (L-5132-67).

Road segment: L-5132-67 Road Class:LS Road Type: L Road Name: L-5132

Outcrops (Bedrock And/Or Subsoil):

There is bedrock outcropping visible on site and on lands surrounding the site.

Surface Water Ponding:

No surface water ponding was visible on site during dates of inspection and assessment.

Lakes:

Lough Nagap is due south east approximately 0.55km away.

Beaches/Shellfish Areas:

The property is bounded by Mannin Bay and forms the Western site boundary

Wetlands:

There no Wetland areas in the vicinity of this site.

Karst Features:

There are no Karst Features on site or in the immediate vicinity of the site to my knowledge.

Watercourses/Streams:*

There is a watercourse located along the North Western site boundary.

***Note and record** water level

3.0 ON-SITE ASSESSMENT

3.1 Visual Assessment (contd.)

Drainage Ditches:*

There are generally drainage ditches within the locality.

Springs:*

There are no Springs on site or in the immediate vicinity of the site to my knowledge, consultation had with the client.

Wells:*

The existing dwelling is serviced by an existing water supply due north of the existing dwelling, consultation had with the client.

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 potential suitability of this site is reasonable.

This particular site will be suitable to discharge the treated effluent to ground if a portion of the proposed site has acceptable soil of sufficient depth.

Following visual assessment groundwater, adjacent watercourse and adjacent lake appear to be the main potential targets at risk.

The suitability of this site to treat and dispose of domestic wastewater is yet to be fully determined, Percolation Testing and Trial Pit Assessment will determine if there are limiting factors in place on this proposed site.

***Note and record** water level

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

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

Depth of trial hole (m): 0.610

Depth from ground surface to bedrock (m) (if present): 0.610

Depth from ground surface to water table (m) (if present): 0

Depth of water ingress: 0

Rock type (if present): granite

Date and time of excavation: 13-Aug-2025 10:00

Date and time of examination: 27-Aug-2025 10:00

Depth of Surface and Subsurface Percolation Tests	Soil/Subsoil Texture & Classification**	Plasticity and dilatancy***	Soil Structure	Density/ Compactness	Colour****	Preferential flowpaths
0.1 m	0.00 - 0.15m CLAY	6 # Threads 105mm Ribbons	Blocky	Firm	Brown	Grassland Rootlets
0.2 m						
0.3 m						
0.4 m	0.15 - 0.61m silty GRAVEL	n/a	Granular	Firm	Brown	Cobbles and Stones
0.5 m						
0.6 m						
0.7 m						
0.8 m						
0.9 m						
1.0 m						
1.1 m		End	of	Trial Pit @ -0.61m		
1.2 m						
1.3 m						
1.4 m						
1.5 m						
1.6 m						
1.7 m						
1.8 m						
1.9 m						
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: 10-65

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 pit which was excavated to a depth of 0.610m below existing ground level.

No water table was encountered within the trial pit.

Bedrock was recorded within the trial pit at a depth of 0.610m below existing ground level.

There is no signs to indicate a fluctuating or high winter water table level exists on this site.

Percolation testing will further determine if further restrictions exist on this site.

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)			
Depth from ground surface to base of hole (mm) (B)			
Depth of hole (mm) [B - A]	0	0	0
Dimensions of hole [length x breadth (mm)]	x	x	x

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}

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

If T_{100} > 480 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			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 Δt/4 = [Hole No.1] 0.00 (t_1)

Average Δt/4 = [Hole No.2] 0.00 (t_2)

Average Δt/4 = [Hole No.3] 0.00 (t_3)

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

Comments:

Based on the test hole excavations on this site and in particular the Trial Pit excavation with an elevated bedrock level encountered; it is proposed to install a raised polishing filter bed on site and thus a surface percolation test is the most appropriate percolation test as the treated effluent will be discharged at existing ground level.

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. 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 = 0.00 (min/25 mm)

Percolation Test Hole No. 3

Fall of water in hole (mm)	Time Factor = T_f	Start Time hh:mm	Finish Tim§e 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_2)			0.00

Comments:

(Please note: A particle size distribution test was not carried out on this site)

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)	400	400	400
Depth of hole (mm)	400	400	400
Dimensions of hole [length x breadth (mm)]	300 x 300	300 x 300	300 x 300

Step 2: Pre-Soaking Test Holes

		1	2	3
Pre-soak start	Date	26-Aug-2025	26-Aug-2025	26-Aug-2025
	Time	10:00	10:00	10:00
2nd pre-soak start	Date	26-Aug-2025	26-Aug-2025	26-Aug-2025
	Time			

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	27-Aug-25	27-Aug-25	27-Aug-2025
Time filled to 400 mm	08:41	08:49	08:54
Time water level at 300 mm	10:09	09:51	10:10
Time to drop 100 mm (T_{100})	88.00	62.00	76.00
Average T_{100}			75.33

If T_{100} > 480 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	10:09	11:51	102.00	09:51	11:13	82.00	10:10	11:44	94.00
2	11:51	14:09	138.00	11:13	13:18	125.00	11:44	13:36	112.00
3	14:09	16:47	158.00	13:18	16:23	185.00	13:36	16:35	179.00
Average ΔT Value			132.67			130.67			128.33
	Average ΔT/4 = [Hole No.1]		33.17 (T_1)	Average ΔT/4 = [Hole No.2]		32.67 (T_2)	Average ΔT/4 = [Hole No.3]		32.08 (T_3)

Result of Test: Surface Percolation Value = 32.64 (min/25 mm)

Comments:

Surface Percolation Test = 32.64 (min/25mm) is between 3 & 120 (min/25mm) and thus is a pass in accordance with the environmental protection agency - COP Domestic Waste Water Treatment Systems.
This indicates that the existing soil on the site will successfully receive and treat the wastewater on site.

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. 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: Surface Percolation Value = 0.00 (min/25 mm)

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_2)			0.00

Comments:

3.4 The following associated Maps, Drawings and Photographs should be appended to this site characterisation form.

1. Discovery Series 1:50,000 Map indicating overall drainage, groundwater flow direction and housing density in the area.	-----
2. Supporting maps for vulnerability, aquifer classification, soil, subsoil, bedrock.	Included
3. North point should always be included.	
4. (a) Scaled sketch of site showing measurements to Trial Hole location and	Included
(b) Percolation Test Hole locations,	Please refer to the
(c) wells and	Planning Maps
(d) direction of groundwater flow (if known),	Planning Drawings
(e) proposed house (incl. distances from boundaries)	and Planning
(f) adjacent houses,	Documents
(g) watercourses,	
(h) significant sites	
(i) and other relevant features.	
5. Site specific cross sectional drawing of the site and the proposed layout[1] should be submitted.	Included
6. Photographs of the trial hole, test holes and site including landmarks (date and time referenced).	Included
7. Pumped design must be designed by a suitably qualified person.	To be Supplied by the WWTS system supplier

[1] The calculated percolation area or polishing filter area should be set out accurately on the site layout drawing in accordance with the code of practice's requirements.

4.0 CONCLUSION of SITE CHARACTERISATION

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

Slope of proposed infiltration / treatment area: 0

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) 0.90

Percolation test result: Surface: 32.64 Sub-surface:

Not Suitable for Development ☐ **Suitable for Development** ✔

Identify all suitable options

1. Septic tank system (septic tank and percolation area) **(Chapter 7)** — No
2. Secondary Treatment System **(Chapters 8 and 9)** and soil polishing filter **(Section 10.1)** — Yes
3. Tertiary Treatment System and Infiltration / treatment area **(Section 10.2)** — Yes

Discharge Route [1]

5.0 SELECTED DWWTS

Propose to install: Tertiary Treatment System and Infiltration /treatment area

and discharge to: Ground Water

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

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

Discharge to Ground Water Based on the trial pit assessment and the percolation test results achieved on this site it is proposed to install a wastewater treatment system which will include the following stages:

1) Advanced Mechanical Waste Water Treatment Systems, which then pumps the treated effluent to a

2) Sand polishing filter bed, which polishes and treats the effluent to a very high degree

3) The treated effluent is discharged to ground via a stone dispersal pad.

The installation of the package wastewater treatment systems and the construction of the polishing filter bed shall be in full accordance with the environmental protection agency code of practice manual.

[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: Advanced Mechanical

Capacity PE: 5

Sizing of Primary Compartment: ____ m^3

Polishing Filter*: (Section 10.1)

Surface Area (m^2)*

Option 1 - Direct Discharge
Surface area (m^2)

Option 2 - Pumped Discharge
Surface area (m^2): 20.00

Option 3 - Gravity Discharge
Trench length (m)

Option 4 - Low Pressure
Pipe Distribution
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
Tertiary treatment systems provide additional treatment of waste water from secondary treatment systems	Tertiary treatment systems can offer additional treatment over and above primary and secondary treatment and can aid in the reduction of nutrients and pathogens in sensitive areas.	A sand polishing filter used as a form of tertiary treatment shall be 20 Square m system.

DISCHARGE ROUTE:

Groundwater ✔ — Hydraulic Loading Rate * ($l/m^2.d$): 37.50 — Surface area (m^2): 20.00

Surface Water ** ☐ — Discharge Rate (m^3/hr)

* 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 and commissioning of the waste water treatment and disposal systems should be undertaken by the waste water treatment system supplier and or an appointed contractor.
The relevant inspections and certification relating to the installation, construction and commissioning of the waste water treatment systems and the construction of the associated polishing filter unit, should be issued on completion of the works.
All variations in ground conditions or perceived percolation values encountered on site during construction should be reported immediately to the professional personnel responsible for the certification of construction and installation of the wastewater treatment and disposal system.
Please note; the recommendations outlined in this site suitability assessment report are subject to the installation of the specified treatment procedure only. Any deviation from the specified wastewater treatment system, wastewater design or the proposed location on site; renders the conclusion and recommendations of this report null and void.

On-going Maintenance

It is recommended that the client enter into an on-going maintenance contract with the suppliers of the waste water treatment systems to guarantee the performance of the systems.

De sludging of the installed waste water treatment systems should be completed on an on-going basis at intervals determined by the suppliers of the waste water treatment system.

De sludging of the installed waste water treatment systems should be under taken by a professional registered waste disposal contractor to ensure the safe and acceptable disposal of the waste material.

7.0 SITE ASSESSOR DETAILS

Company: OMC Group

Prefix: First Name: Enda Surname: O'Malley

Address: Ross House,
Eyre Square,
Galway, H91 FPK5

Qualifications/Experience: B. Eng, Dip Eng, NCEA, MIEI, GSI/EPA Assessor

Date of Report: 27-Aug-2025

Phone: +353 (0) 91 394 185 E-mail info@omcgroup.ie

Indemnity Insurance Number: On Request

Signature: _____

Appendix B

Photographic Evidence of Assessment
Site & Test Excavation(s) Log

Photograph One
Site Location – Northern Direction

Photograph Two
Site Location – Southern Direction

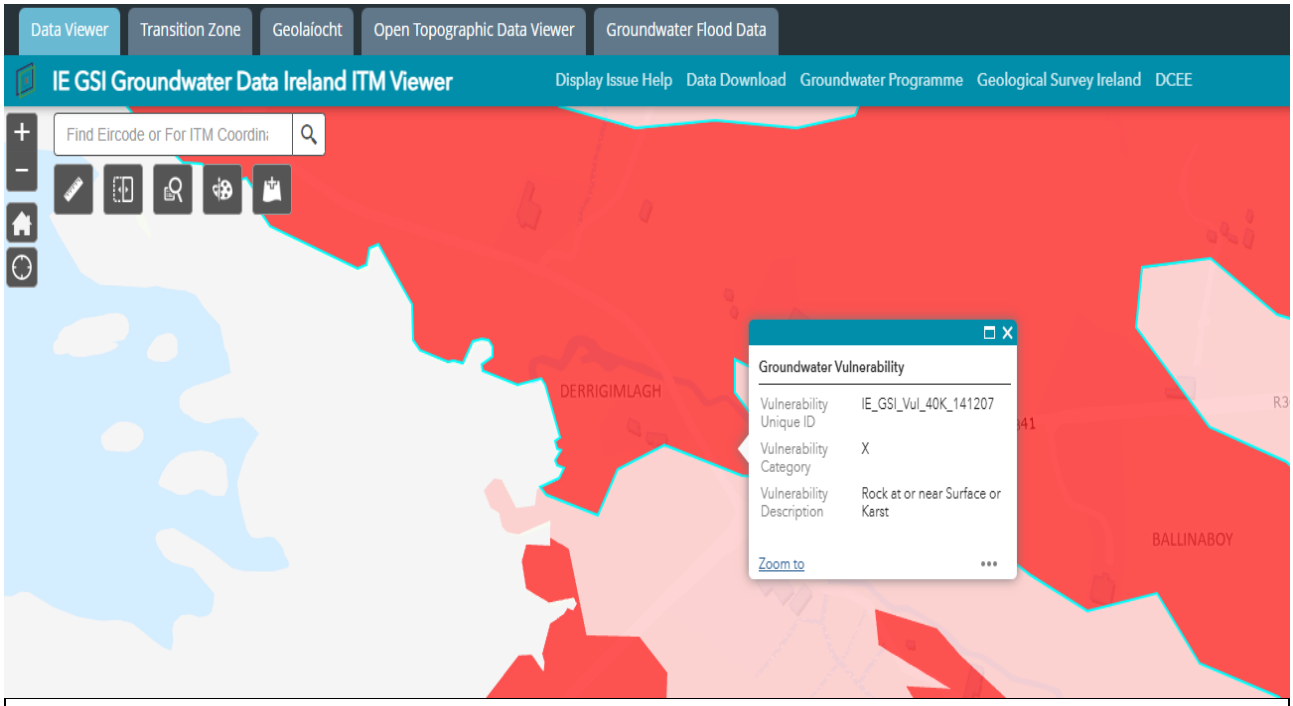
Photograph Three
Site Location – Eastern Direction

Photograph Four
Site Location – Western Direction

Photograph Five & Six
Trial Pit Test Excavation & Soil Heap

Appendix C

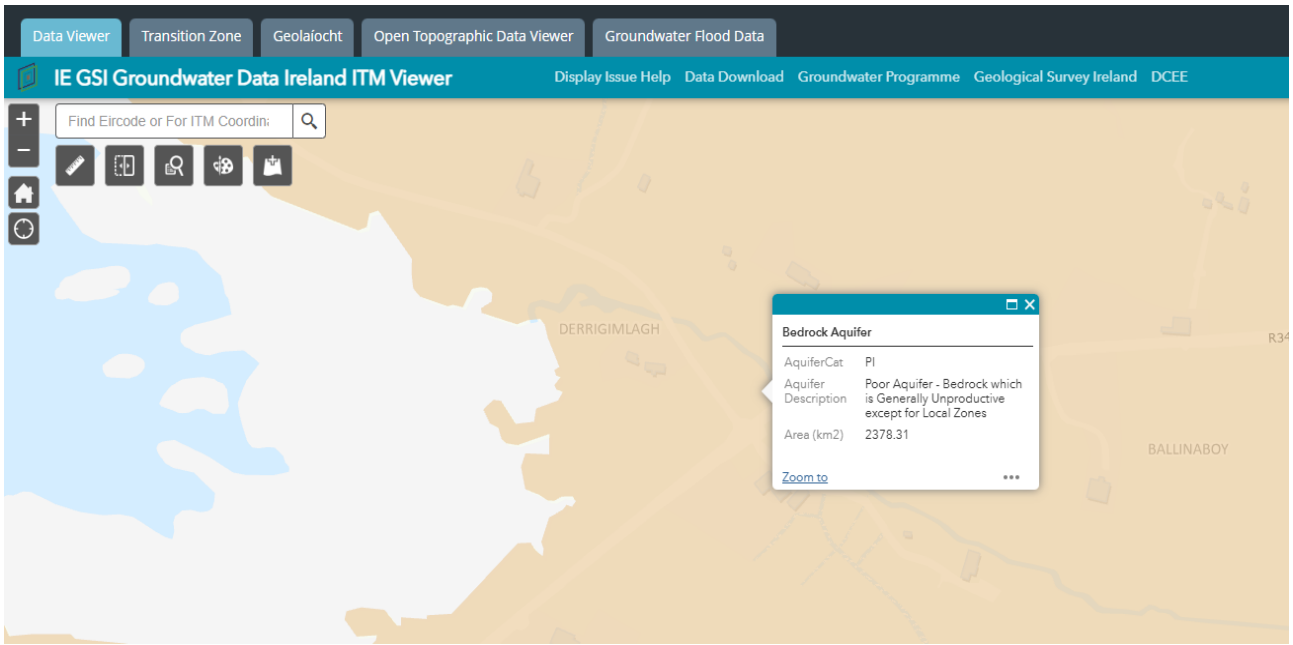
Geo Scientific Maps



Map One

Groundwater Vulnerability – Category: X

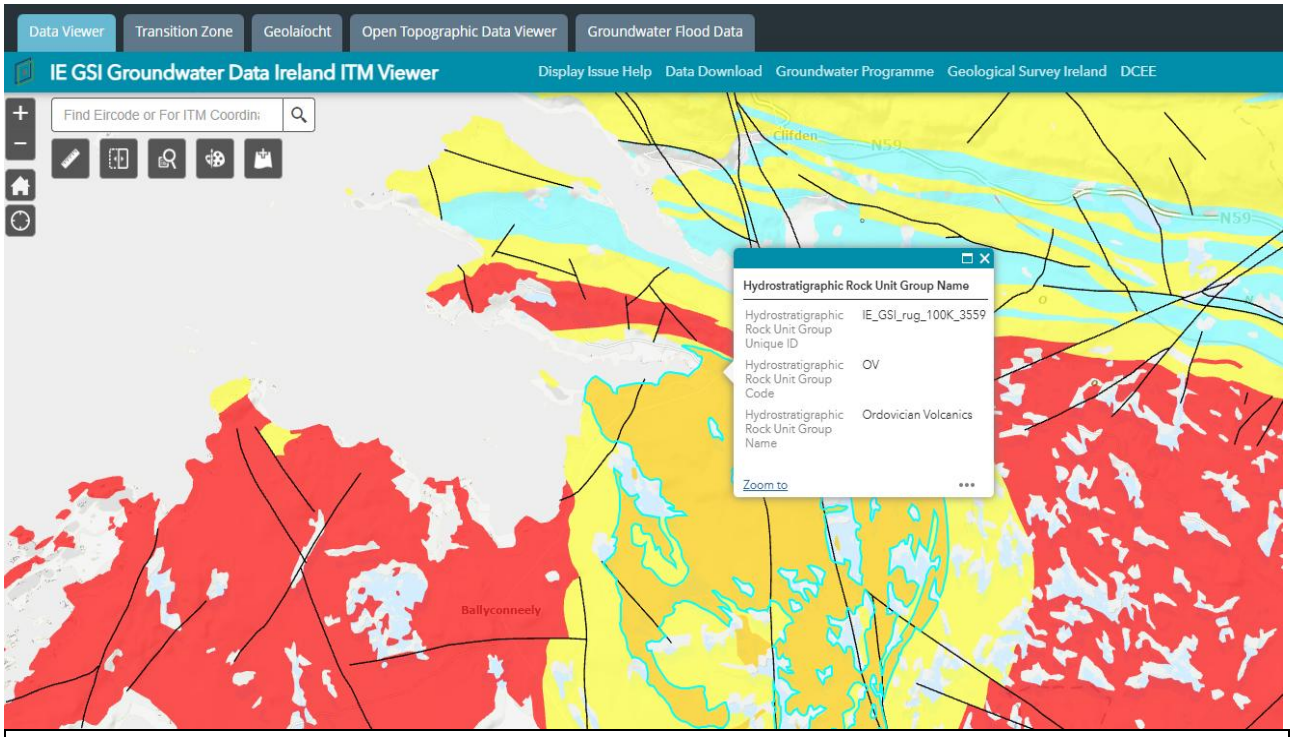
Description: Rock at or near Surface Karst



Map Two

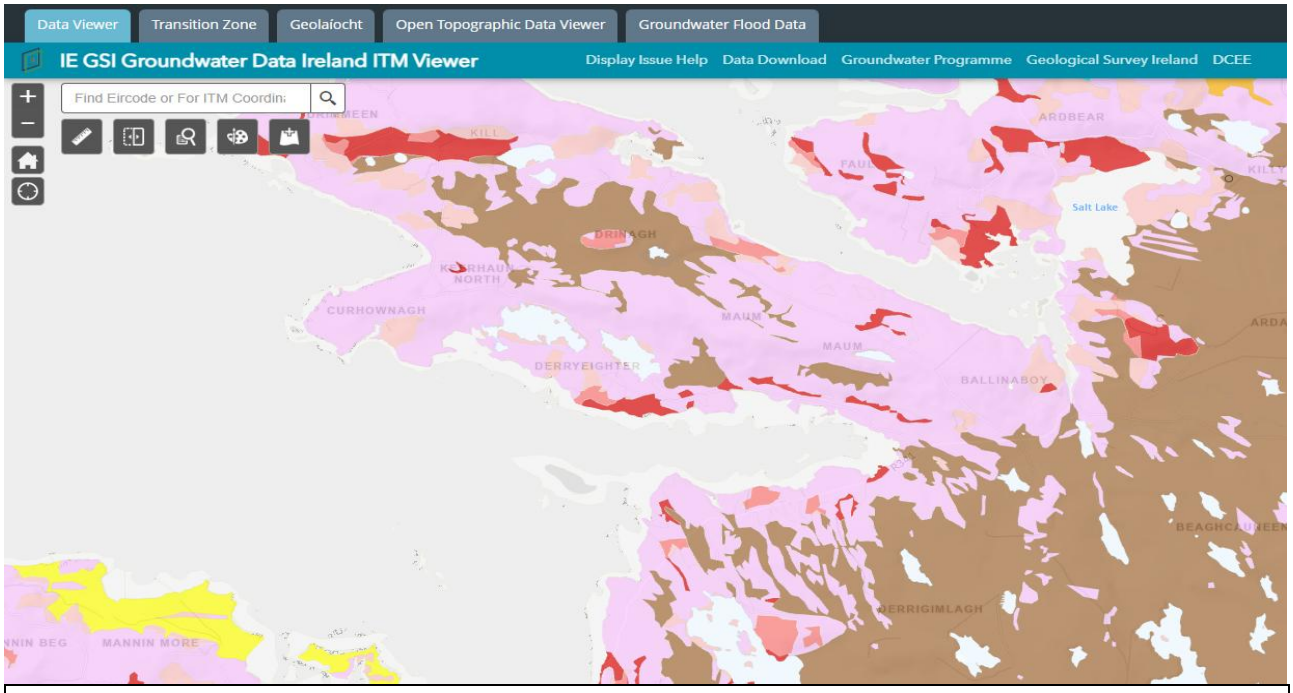
Bedrock Aquifer – Category: Pl

Description: Poor Aquifer – Bedrock which is Generally Unproductive except for Local Zones



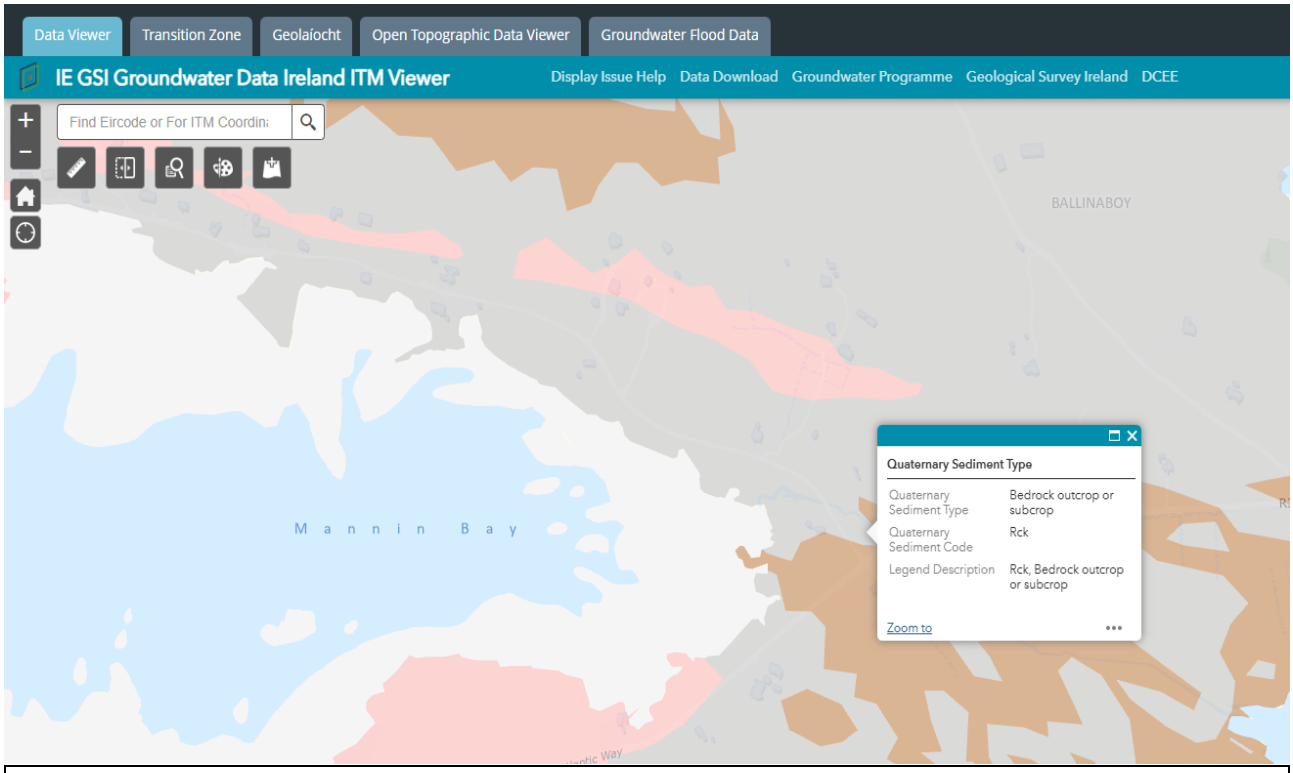
Map Three

Groundwater Rock Units – Rock Unit Code: OV
Description: Ordovician Volcanics



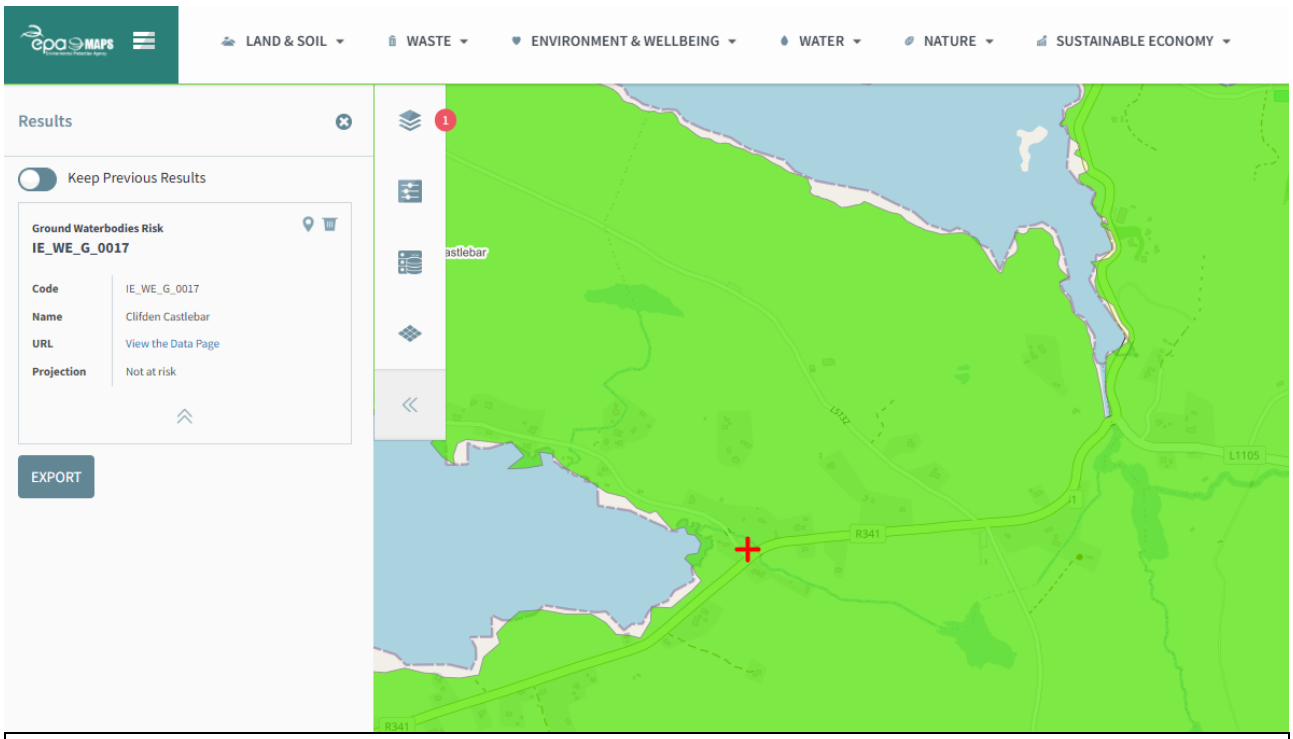
Map Four

Teagasc Soils – IFS Soil Code:
Parent Material Description:



Map Five

Sub Soils – Lithology: Bedrock outcrop or subcrop Quaternary Sediment: Rck



Map Six

Ground Waterbodies Risk - IE_WE_G_0017

Code:IE_WE_G_0008 Name: Clifden Castlebar

Appendix D

Associated Design Calculations

Hydraulic Loading Calculation:

As per the Environmental Protection Agency CODE OF PRACTICE Wastewater Treatment and Disposal Systems Serving Single Houses (p.e. ≤ 10).
The hydraulic Loading rate per population equivalent per day for the proposed development, shall be 150 litres per person per day.

Total Hydraulic loading	=	Population Equivalent	X	Hydraulic Loading Rate
(Litres/Day)		(P.E.)		(Litres/P.E./Day)

750	=	**5**	X	**150**
(Litres/Day)		(P.E.)		(Litres/P.E./Day)

=	**750 (Litres/Day)**

Organic Loading Calculation:

As per the Environmental Protection Agency CODE OF PRACTICE Wastewater Treatment and Disposal Systems Serving Single Houses (p.e. ≤ 10).
The Organic Loading rate per population equivalent per day for the proposed development, shall be 0.060kg of BOD5 per person per day

Total Organic loading	=	Population Equivalent	X	Organic Loading Rate
(Kg BOD_5/Day)		(P.E.)		(Kg BOD_5/P.E./Day)

0.30	=	5	X	0.06
(Kg BOD_5/Day)		(P.E.)		(Kg BOD_5/P.E./Day)

=	**0.30 (Kg BOD_5/Day)**

Proposed Stages of Wastewater Treatment and disposal:

A three-stage wastewater treatment and disposal system, consisting of:

Stage One –
Primary and Secondary Treatment Advanced Mechanical Wastewater Treatment Unit.
Stage Two –
Tertiary Treatment Polishing Filter Bed.
Stage Three –
Tertiary Treatment Dispersal Pad.

The proposed wastewater treatment and disposal system is a comprehensive wastewater solution and satisfies in full what is required for compliance with the regulatory document that is currently in place.

Stage One –
Primary and Secondary Treatment Advanced Mechanical Wastewater Treatment Unit:

Under EU regulations, all wastewater treatment plants must be tested in compliance with EN12566-3 CE certification, and the Tricel Novo has achieved this certification. The Tricel Novo treatment system will provide high quality wastewater treatment, and ensure compliance with all environmental protection regulations.
The Tricel Novo wastewater treatment system has three stages of treatment within the system. In the initial stage of wastewater treatment, anaerobic breakdown takes place in the primary settlement chamber. The wastewater is introduced and the solids drop to the bottom, becoming detached from the liquid.
The second stage of the wastewater treatment involves aerobic breakdown. This takes place in the aeration chamber, where masses of natural occurring bacteria inhabit specially designed filter media. These bacteria are sustained with air, which is continuously supplied from a purpose-built pump in the unit's top section. As the liquid moves, slowly through the filter media, the bacteria feed on the waste and eliminate it from the liquid.

In the third stage of wastewater treatment, the wastewater flows from the aeration chamber into the final settlement chamber. Suspended sludge containing bacteria is carried with the liquid into the settlement chamber and settles to the bottom of the chamber. From there, a continuous sludge return system pumps it back to the primary settlement chamber.

The remaining treated liquid now meets the required standard to be safely passed out of the Tricel system, and onto the next stage of treatment.

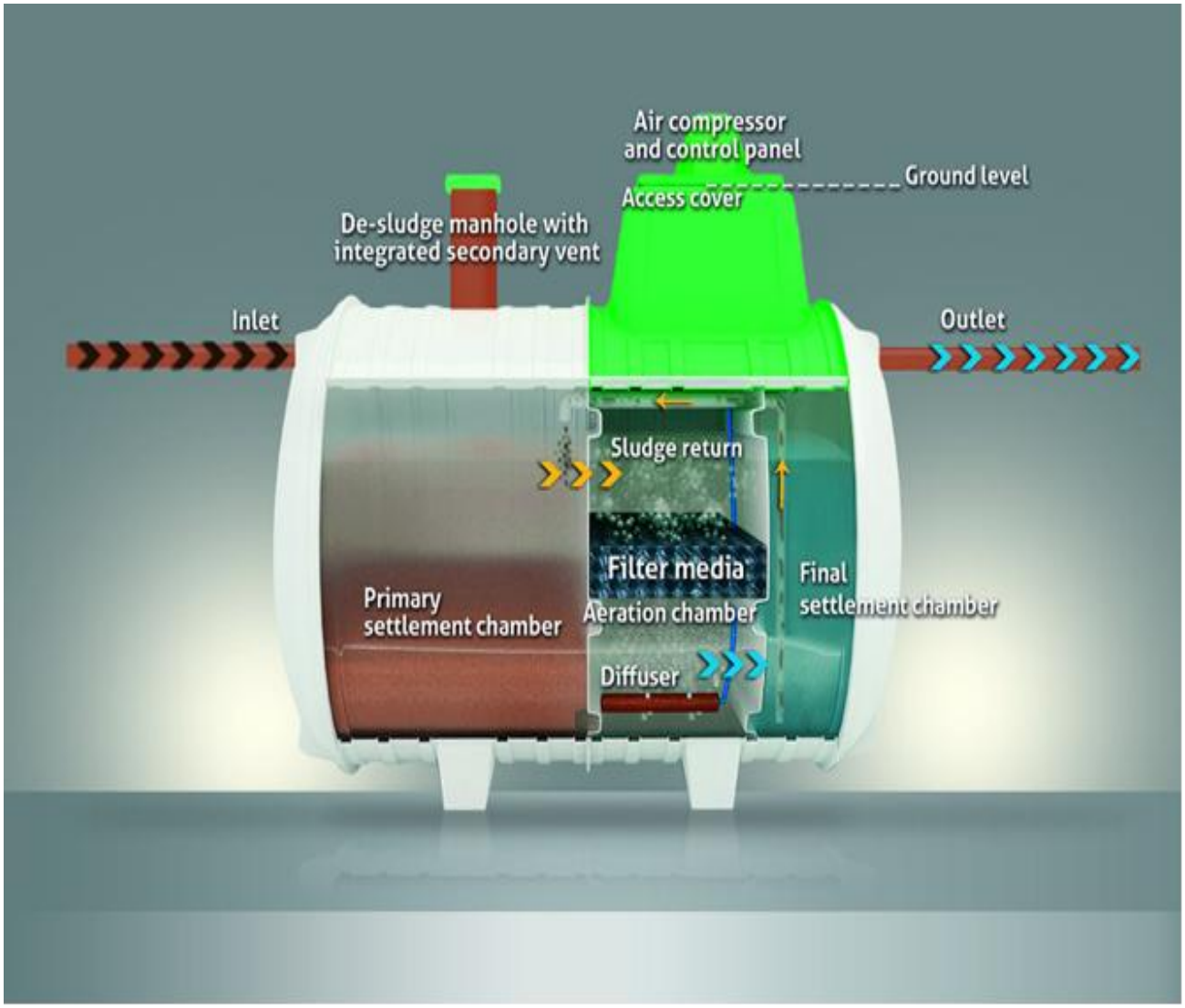


Figure Two
Stage One – Secondary Treatment – Advanced Mechanical Wastewater Unit

Stage Two –
Tertiary Treatment Polishing Filter Bed:

The highly treated wastewater effluent will then be delivered via a pumped discharge to a polishing filter bed, this will ensure further treatment and polishing to the effluent, and offer a safe and acceptable means of disposal on the proposed site.

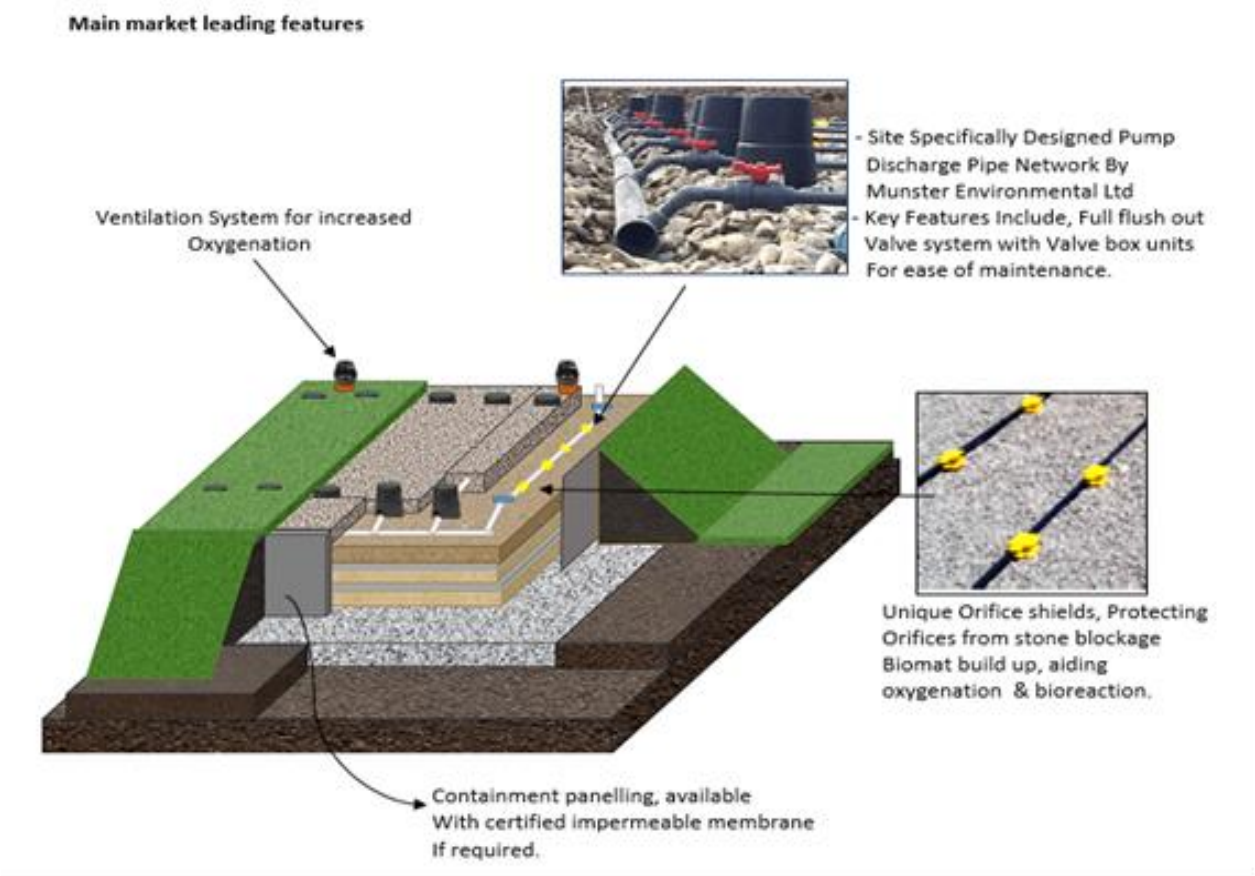
It is proposed to install a sand polishing filter bed on site. This sand polishing filter bed, will take the form of a sandcel treatment unit, which will be supplied by the wastewater treatment system supplier, ensuring a high-quality product for site. Sandcel is a sand polishing filter designed to “EPA Wastewater Treatment and Disposal Systems Serving Single Houses (p.e. ≤ 10) 2021" standards. Sand filters can be used for tertiary treatment. Such tertiary sand polishing filters are either monograde (single-layer) sand filters or stratified sand filters, and should be a minimum of 900 mm thick.

The hydraulic loading should not exceed 60 l/m2.d and the sand polishing filter can be soil covered with a maximum depth of 300 mm topsoil and sown with grass. For a typical stratified filter layout, three layers of sand comprising an upper layer of coarse sand and intermediate and lower layers of fine sand are separated from each other by a thin layer of washed pea-sized gravel or broken stone. Access for regular visual inspection of the media must be provided.

The proposed dwelling is a three-bedroom unit, which equates to a Population Equivalent of 5. The recorded Percolation value is 32.64.

Proposed for this particular site is a 15 square meter sand polishing filter bed.

As mentioned, the system provides a dual function of polishing the effluent from a wastewater treatment system and disposing of the treated liquid into groundwater. It incorporates an enclosed sand filter, which can be installed under or over ground at varying heights to suit all site conditions.



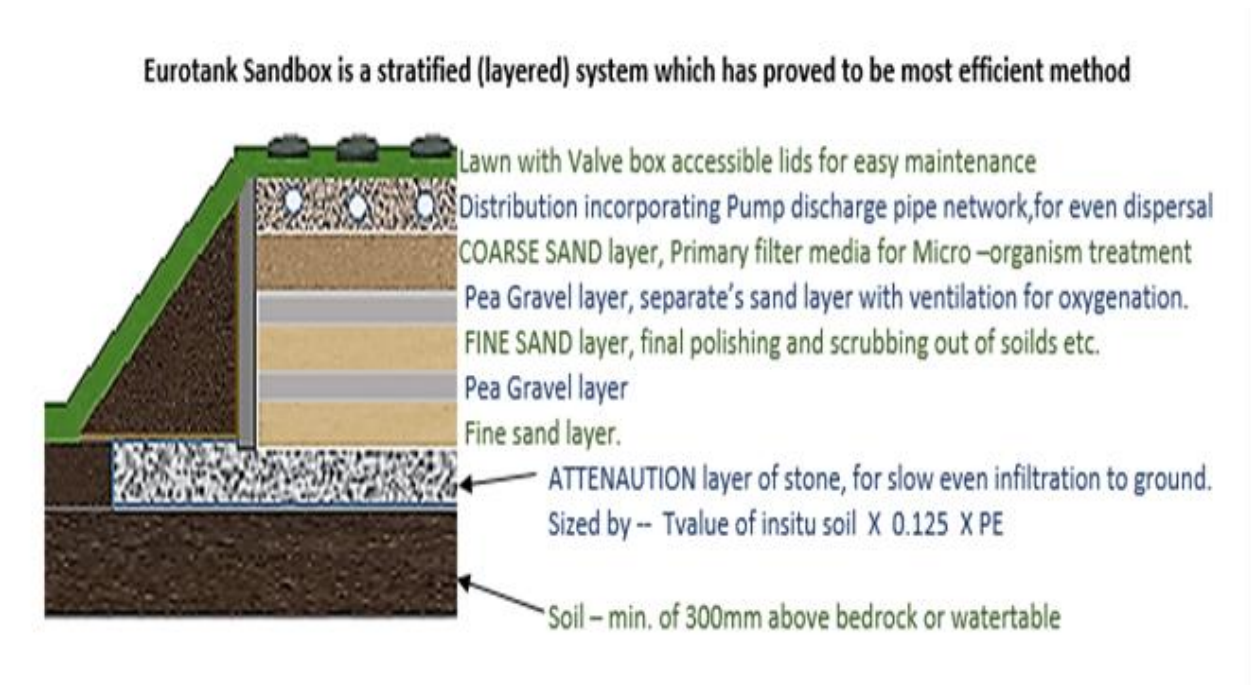


Figure Three & Four
Stage Two - Tertiary Treatment Polishing Filter bed.

Stage Three –
Tertiary Treatment Disposal Pad:

The tertiary sand polishing filter will require discharge to a tertiary infiltration area. Evenly discharging to a 300 mm deep gravel distribution area (pea gravel, 12–32 mm), sized according to Option 6 in Table10.1.

Thus, based on a Percolation value of 32.64 min the required minimum area for the tertiary infiltration area is 37.5 square meters.
7.5m2 x PE.5 = 37.5m2

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	–

Appendix E

Proposed Wastewater Treatment and
Disposal System Site Specific Details

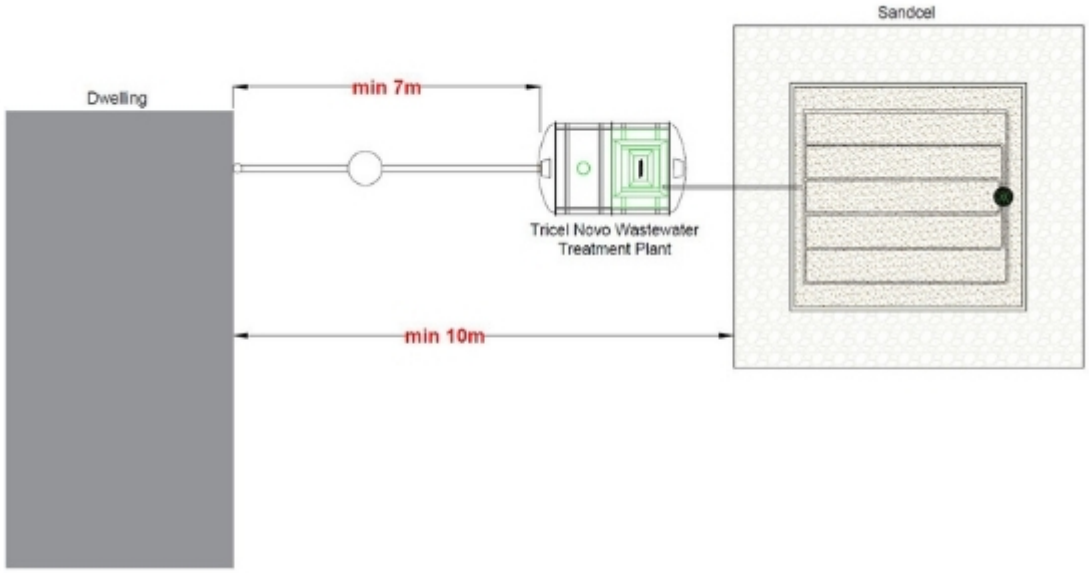
Tricel Site Recommendation Report
Tricel Novo Package Plant and Tricel Sand Polishing Filter

Date	01/09/2025
Report No:	TSA_G_18128
Client Name	George Melville
Site Location & Townland	Derrigimlagh, Ballyconneely, Clifden, Galway Tel: 0876873021 | Email: ohalloranengineering@gmail.com

Thank you for choosing Tricel for your wastewater treatment requirements. This report contains the following information for your site and is based on a population of 5 and a subsurface/surface value of between 21-40.

Based on the information provided to us and using SR66 and the EPA Code of Practice: Wastewater Treatment and Disposal Systems Serving Single Houses (p.e. ≤ 10), the appropriate solution for treating wastewater on your site is a Tricel Novo Package Plant and Tricel Sand Polishing Filter.

Typical layout of a Tricel Novo Package Plant and Tricel Sand Polishing Filter:



Note:
In the above named site, a substitute wastewater treatment system may not be put in place of the following recommendation.

This recommendation only applies to the above named site based on the information supplied to Tricel.

A Site Characterisation Form should accompany this report. Tricel cannot be responsible for misinformation due to misleading information being received by us from clients.

Section 1: Information on the Novo Package Plant

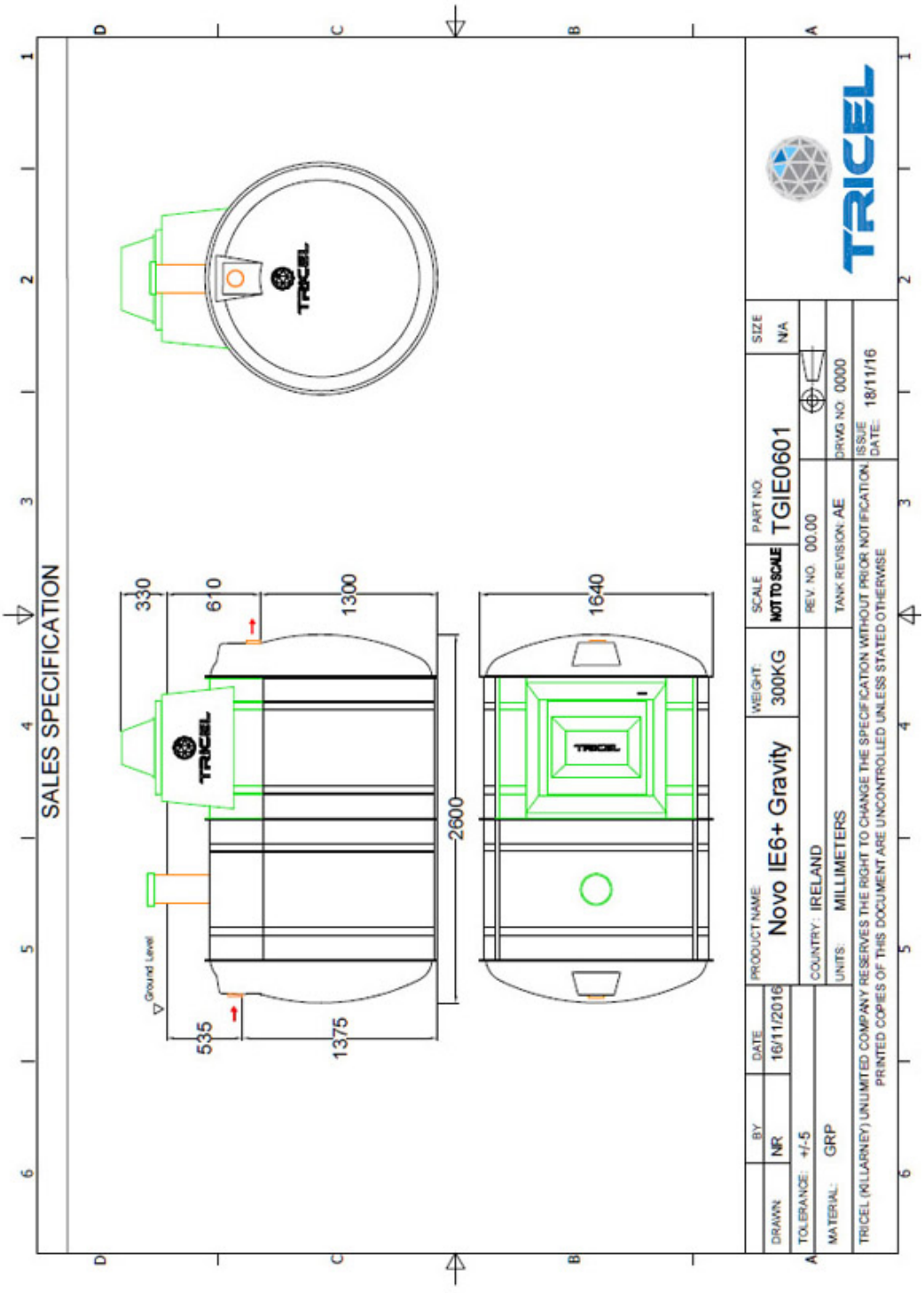
- Manufacturers report and sizing of the Tricel Novo Package Plant.
- Drawings of the Novo Package Plant.
- Pump selection and technical data
- Certification of the selected Novo Package Plant.
- Brochure on the Novo Package Plant.
- Optional Novo maintenance agreement.

For your site, we recommend a Novo IRL6+ wastewater treatment plant which is designed to treat a maximum of 900 litres of wastewater per day. The Tricel Novo range of wastewater treatment plants is fully in conformance with EN12566-3 and complies with SR66.

The Novo IRL6+ has a capacity of 4000 litres, of which 2400 are in the primary chamber, this ensures a long desludging interval.

This solution contains a DOMO 15 pump based on an the Length of Rising Main 45 metres and Difference in Height of Rising Main 2.5 metres. A 38mm compression is supplied for connection to a rising main of 38mm internal bore pipework. Details and pump specifications are contained in Section 1.

Section 1


SALES SPECIFICATION
330
610
1300
1640
2600
535
1375
Ground Level
PRODUCT NAME: Novo IE6+ Gravity
WEIGHT: 300KG
SCALE: NOT TO SCALE
PART NO: TGIE0601
SIZE: N/A
REV. NO: 00.00
TANK REVISION: AE
DRWG NO: 0000
ISSUE DATE: 18/11/16
COUNTRY: IRELAND
UNITS: MILLIMETERS
DRAWN: NR
DATE: 16/11/2016
TOLERANCE: +/-5
MATERIAL: GRP
TRICEL (KILLARNEY) UNLIMITED COMPANY RESERVES THE RIGHT TO CHANGE THE SPECIFICATION WITHOUT PRIOR NOTIFICATION.
PRINTED COPIES OF THIS DOCUMENT ARE UNCONTROLLED UNLESS STATED OTHERWISE

LOWARA
a xylem brand

Submersible Electric Pumps for drainage of dirty water

The DOMO series electric pumps are available with **twin-channel** or **vortex** impeller (DOMO VX).
Designed to handle liquids with suspended solids up to 50 mm in diameter (35 mm for DOMO 7 and DOMO 7VX).
Four basic models with 0,55 to 1,5 kW.
DRIVELUB SEAL SYSTEM.

DOMO Series

APPLICATIONS

- Pumping of effluent (VX model handles also suspended filaments).
- Emptying of septic tanks and residential sumps.
- Draining of flooded basements and garages.

SPECIFICATIONS

- **Maximum liquid temperature**: **35°C** with fully submerged pump.
- **Dry motor**.
- **Power cord**: **H07RN-F**
  - single-phase: with plug.
  - three-phase: without plug.
- **Insulation class 155°C (F)**.
- **IPX8 protection**.
- **Maximum immersion depth**: **5 m**.
- **Versions**:
  - Single-phase: 220-240V, 50Hz 2 poles.
  - Three-phase: 220-240V, 50Hz 2 poles. 380-415V, 50Hz 2 poles.
- **Motor power**:
  - single-phase: **0,55 to 1,1 kW**.
  - three-phase: **0,55 to 1,5 kW**.

- **The single-phase versions** feature:
  - **pre-assembled float switch** for automatic pump operation.
  - **built-in capacitor**.
  - **thermal overload protection** to stop pump supply in case of overheating.
- The **DOMO 7** and **DOMO 7VX** models feature:
  - **Rp 1"1/2 threaded delivery port** (female gas).
  - handling of liquids with suspended **solids up to 35 mm** in diameter.
  - **fiberglass-reinforced technopolymer impeller** (DOMO S7 and DOMO S7VX models with stainless steel impeller are also available).
- The **DOMO 10-15-20** and **DOMO 10-15-20 VX** models feature:
  - **Rp 2" threaded delivery port** female gas (can be turned into a flanged version if an optional accessory is installed).
  - handling of liquids with suspended **solids up to 50 mm** in diameter.
  - **stainless steel twin-channel or vortex impeller**.

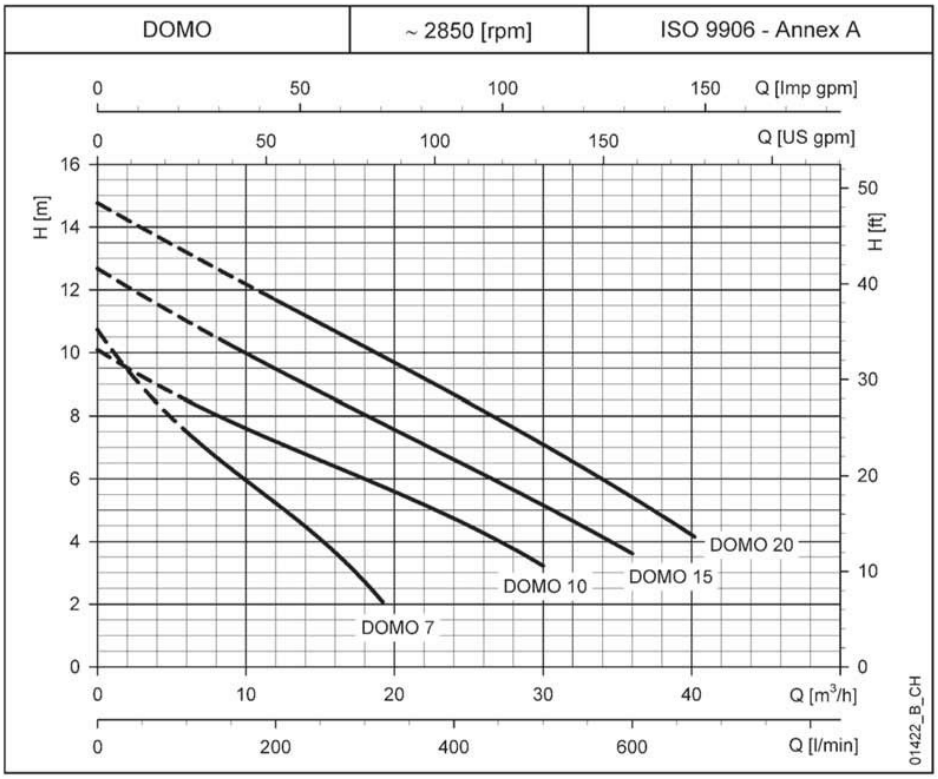
DRIVELUB SEAL SYSTEM

- Watertight electric motor protected by multiple seal system with **oil chamber**.
  A **V-ring** and **silicon carbide mechanical seal** (extremely resistant to wear and abrasion), as well as a **lip seal** which is continuosly lubricated by the **DRIVELUB system**, provide an extreme barrier against infiltration.

19

LOWARA
a xylem brand

DOMO SERIES
OPERATING CHARACTERISTICS AT 50 Hz



HYDRAULIC PERFORMANCE TABLE

PUMP TYPE	RATED POWER		Q = DELIVERY										
			l/min	0	100	150	200	250	300	320	400	500	600	670
			m³/h	0	6	9	12	15	18	19,2	24	30	36	40,2
	kW	HP	H = TOTAL HEAD METRES COLUMN OF WATER											
DOMO 7(T) - S7(T)	0,55	0,75		10,7	7,5	6,3	5,2	4,1	2,7	2,1				
DOMO 10(T)	0,75	1		10,1	8,5	7,8	7,2	6,6	6,0	5,8	4,7	3,2		
DOMO 15(T)	1,1	1,5		12,7	11,0	10,2	9,5	8,8	8,0	7,8	6,6	5,2	3,6	
DOMO 20T	1,5	2		14,8	13,2	12,4	11,7	10,9	10,2	9,9	8,7	7,1	5,4	4,2

These performances are valid for liquids with density ρ = 1,0 kg/dm³ and kinematic viscosity ν = 1 mm²/s.

domo-2p50-en_b_th

ELECTRICAL DATA TABLE

PUMP TYPE SINGLE-PHASE	ABSORBED POWER* kW	ABSORBED CURRENT* 220-240 V A	CAPACITOR µF / 450 V
DOMO 7 - (S7)	0,8 (0,76)	3,94 (3,83)	16
DOMO 10	1,14	5,84	22
DOMO 15	1,58	7,02	30
-	-	-	-

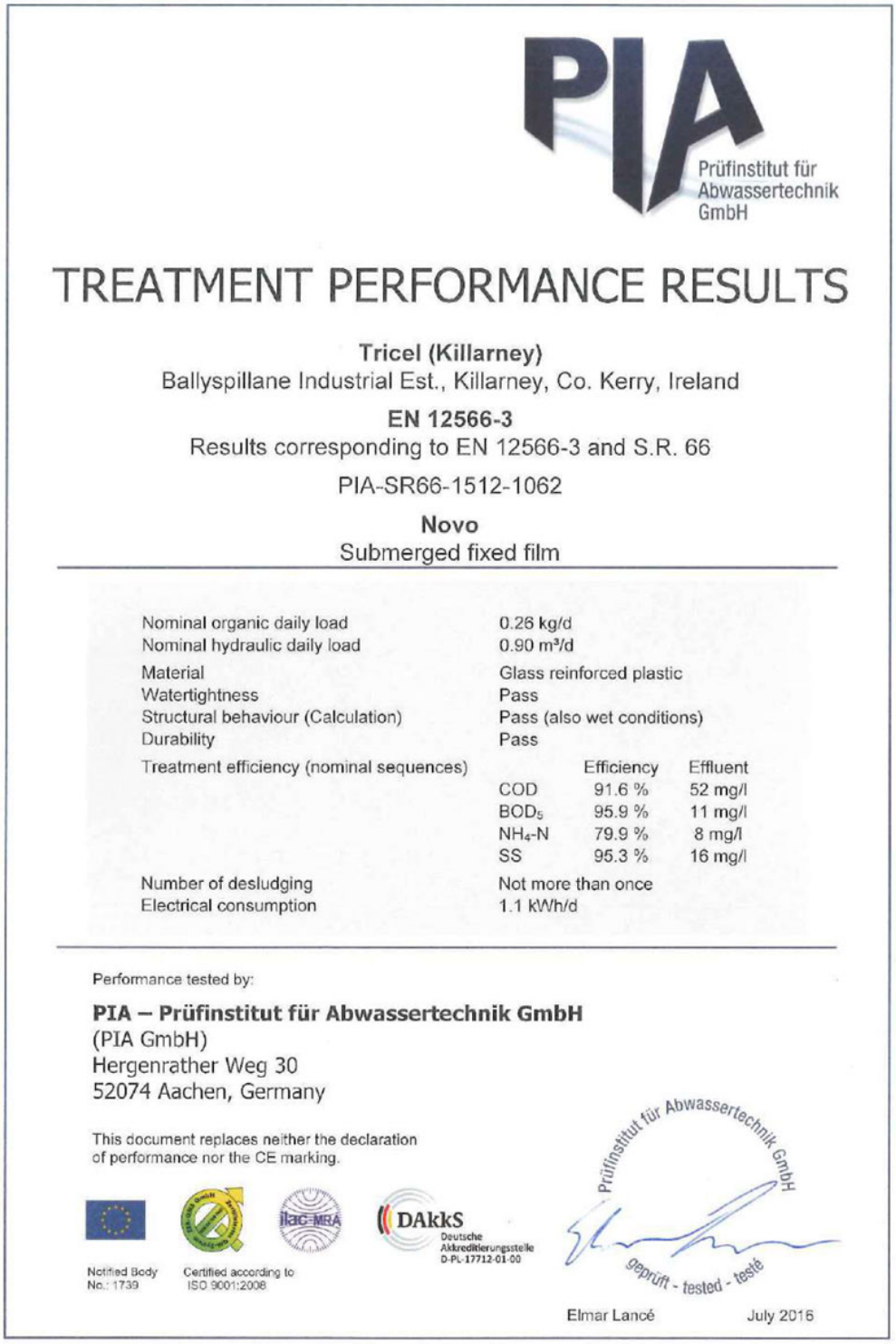
PUMP TYPE THREE-PHASE	ABSORBED POWER* kW	ABSORBED CURRENT* 220-240 V A	ABSORBED CURRENT* 380-415 V A
DOMO 7T - (S7T)	0,73 (0,68)	2,58	1,49
DOMO 10T	1,09	4,09	2,36
DOMO 15T	1,49	4,73	2,73
DOMO 20T	1,96	6,6	3,81

*Maximum values within operating range

domo-2p50-en_b_te

25

Certificate in accordance with SR66 for EN12566-Part 3



PIA Prüfinstitut für Abwassertechnik GmbH

TREATMENT PERFORMANCE RESULTS

Tricel (Killarney)
Ballyspillane Industrial Est., Killarney, Co. Kerry, Ireland

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

PIA-SR66-1512-1062

Novo
Submerged fixed film

Nominal organic daily load	0.26 kg/d		
Nominal hydraulic daily load	0.90 m³/d		
Material	Glass reinforced plastic		
Watertightness	Pass		
Structural behaviour (Calculation)	Pass (also wet conditions)		
Durability	Pass		
Treatment efficiency (nominal sequences)		Efficiency	Effluent
	COD	91.6 %	52 mg/l
	BOD_5	95.9 %	11 mg/l
	NH_4-N	79.9 %	8 mg/l
	SS	95.3 %	16 mg/l
Number of desludging	Not more than once		
Electrical consumption	1.1 kWh/d		

Performance tested by:

PIA – Prüfinstitut für Abwassertechnik GmbH
(PIA GmbH)
Hergenrather Weg 30
52074 Aachen, Germany

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

Notified Body No.: 1739

Certified according to ISO 9001:2008

DAkkS Deutsche Akkreditierungsstelle D-PL-17712-01-00

Prüfinstitut für Abwassertechnik GmbH
geprüft - tested - testé

Elmar Lancé July 2016

NOVO BROCHURE

Homeowners: Individual domestic installation

► The lightweight nature of the system makes for easy on-site delivery.

► No need for big excavators and large holes that disrupt and disturb your garden.

► Very low visual impact from fully installed units.

Larger projects: Commercial installations up to 50PE

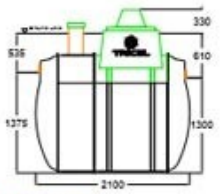
► These units are suitable for installation at housing estates, camping sites, hotels etc., and have low maintenance and running costs.

► Each WWTP unit is constructed of lightweight SMC and is easy to maneuver which simplifies the installation process.

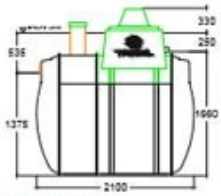
► Example of a fully installed 50PE Novo wastewater treatment unit in a 5-star hotel.

Technical characteristics/ Plant dimensions

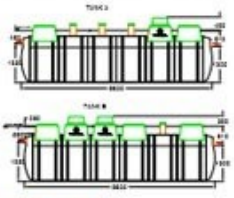
Novo Design Population		No. of people	Length	Width	Height	Nominal Inlet/ outlet diameter	Weight empty	Inlet invert to base	Outlet invert to base	Inlet invert to ground level	Air blower rating
			m			mm	kg	m			watts
IE6		1-6	2.1	1.64	2.24	110	270	1.375	1.3	0.535	60
IE6+		2-6	2.6	1.64	2.24	110	300	1.375	1.3	0.535	60
IE8		2-8	2.6	1.64	2.24	110	300	1.375	1.3	0.535	80
IE10		3-10	3.1	1.64	2.24	110	370	1.375	1.3	0.535	80
IE12		4-12	3.6	1.64	2.27	110	400	1.375	1.3	0.535	100
IE18		6-18	4.6	1.64	2.27	110	500	1.375	1.3	0.535	200
IE24		8-24	6.6	1.64	2.27	150	700	1.35	1.3	0.56	200
IE30	Tank A	10-30	2.6	1.64	1.99	150	300	1.35	1.3	0.46	
	Tank B		5.6	1.64	2.27	150	600	1.35	1.3	0.56	200 + 80
IE36	Tank A	12-36	3.6	1.64	1.99	150	400	1.35	1.3	0.46	
	Tank B		6.6	1.64	2.27	150	700	1.35	1.3	0.56	200 + 80
IE42	Tank A	14-42	5.6	1.64	2.27	150	600	1.35	1.3	0.46	
	Tank B		5.6	1.64	2.27	150	600	1.35	1.3	0.56	200 x 2
IE50	Tank A	16-50	6.6	1.64	2.27	150	700	1.35	1.3	0.46	
	Tank B		6.6	1.64	2.27	150	700	1.35	1.3	0.56	200 + 120 + 80



► **IE6 gravity outlet**
Up to 6PE domestic gravity flow outlet.



► **IE6 pumped outlet**
1-6 domestic pumped unit. Suitable for pumping to a raised discharge area (over).



► **Gravity IE50 outlet**
Suitable for commercial installation, caters for up to 50 people.

Tricel Novo riser options for deep installation

Tricel offer 3 different manhole riser heights to suit different invert/inlet levels. Manhole risers allow for the positioning of the treatment plants at the depth which is optimum to each individual installation.Wastewater is gravity fed from the home to your treatment plant. The inlet pipe's position from the premises determines the excavation depth for the WWT plant. Tricel offer a choice of manhole risers 250mm/500mm/750mm to help with installation where site conditions require a flexible solution.

Tricel Novo: Wastewater Treatment System

Service Agreement

Establishing a regime of yearly inspections and maintenance is advised to ensure that your Tricel Novo continues to perform to the same high standards throughout its lifetime. The service agreement covers travel, the service and the labour cost of servicing only. Other labour costs are excluded, as are all replacement parts.

Tricel (Killarney) Unlimited Company, Ballyspillane Industrial Estate, Killarney, Co. Kerry, V93 X253, Ireland ("the Company") enter this Tricel Novo service agreement with the Customer named below:

Customer Details:			
Name:			
Address:		Address of Site: (If other)	
Telephone No.:			
Date of Tricel Novo Order:			
Work Order No.:			
Date of Delivery of Tricel Novo:			
Date of System Commissioning:			
Service Agreement Fee Paid:			
Date of Service Agreement Commencement:			
Unit Serial No.:			

During routine servicing, the service technician will perform a series of checks and procedures:

Checks:

- The air-diffuser is monitored to check for sufficient dispersion of air.
- The sludge return system is functioning correctly.
- The covers and locks are in place and in good condition.
- General appearance and condition of the treatment system is good.

Procedures:

- The blower is tested.
- The blower filter is replaced.
- The system alarm is tested.
- The pump and float-switch are tested (If applicable).
- The vents are cleared of any blockages.
- The sludge level in the primary chamber is measured.

Notes:

- Full inspection labour is covered (including any immediate minor system adjustment required). This service agreement does not cover the cost of any labour or materials that may arise as a result of this inspection.
- Components that require replacing will incur additional charges.
- All service agreements exclude de-sludging.

Tricel (Killarney) Unlimited Company trading as Tricel.

March 2017

Section 2: Information on Tertiary Treatment and Disposal route

The proposed solution to use on site is a Sandcel.

This system will provide tertiary treatment a total of 15m². This is designed to treat the hydraulic load of 900 litres from a packaged secondary treatment plant.

The tertiary treated liquids is disposed into the ground through a gravel distribution layer required underneath the Sandcel. The gravel distribution layer must be 300mm thick and should be 37.5m² based on a population of 5 and a Subsurface/surface Value of 21-40.

The location and construction of the Tertiary infiltration area is the responsibility of the site engineer. A full site layout drawing should accompany this report.
The EPA CoP 2021 outlines the design, siting and construction requirements for tertiary polishing filters. The tables below outline some of the key factors to take into consideration when designing and locating a tertiary polishing filter.

Table 6.2: Minimum separation distances from the entire DWWTS

Features			DWWTS – periphery of tank/plant and infiltration/ treatment area (m)
Public/group water supply abstraction points/wells			60
Down-gradient domestic well	3 ≤ PV ≤ 10 (usually SAND- or GRAVEL-dominated material)	Depth of soil/subsoil > 2.0 m between invert level and bedrock, and water table 1.2–2.0 m	60
		Depth of soil/subsoil 2.0–8.0 m between invert level and bedrock, and water table > 2.0 m	40
		Depth of soil/subsoil > 8.0 m between invert level and bedrock, and water table > 2.0 m	30
	10 < PV ≤ 30 (usually SILT- or SAND- or silty GRAVEL-dominated material)	Depth of soil/subsoil 1.2–8.0 m between invert level and bedrock	45
		Depth of soil/subsoil > 8.0 m between invert level and bedrock	30
	30 < PV ≤ 120 (usually SILT/ CLAY- or CLAY-dominated material)	Depth of soil/subsoil 1.2–3.0 m between invert level and bedrock	40
		Depth of soil/subsoil ≥ 3.0 m between invert level and bedrock	30
Alongside domestic well			25
Up-gradient domestic well			15
Karst feature			15
Lake or foreshore			50
Watercourse/stream			10
Open drain or drainage ditch			10
Adjacent tank/plant and percolation area, polishing filter or infiltration area			10
On-site dwelling house			7 (tank/plant)
			10 (free water surface constructed wetland)
			10 (infiltration/ treatment area)
Neighbouring dwelling house			7 (tank/plant)
			25 (free water surface constructed wetland)
			10 (infiltration/ treatment area)
Surface water soakaway[a]			5
Road			4
Slope break/cuts			4
Trees[b]			3
Site boundary			3
Heritage features, NHA/SAC/SPA[c]			See note

PV, percolation value.

[a] The soakaway for surface water drainage should be located down-gradient of the infiltration/treatment area; it should *also* be ensured that this distance is maintained from neighbouring storm water disposal areas or soakaways.

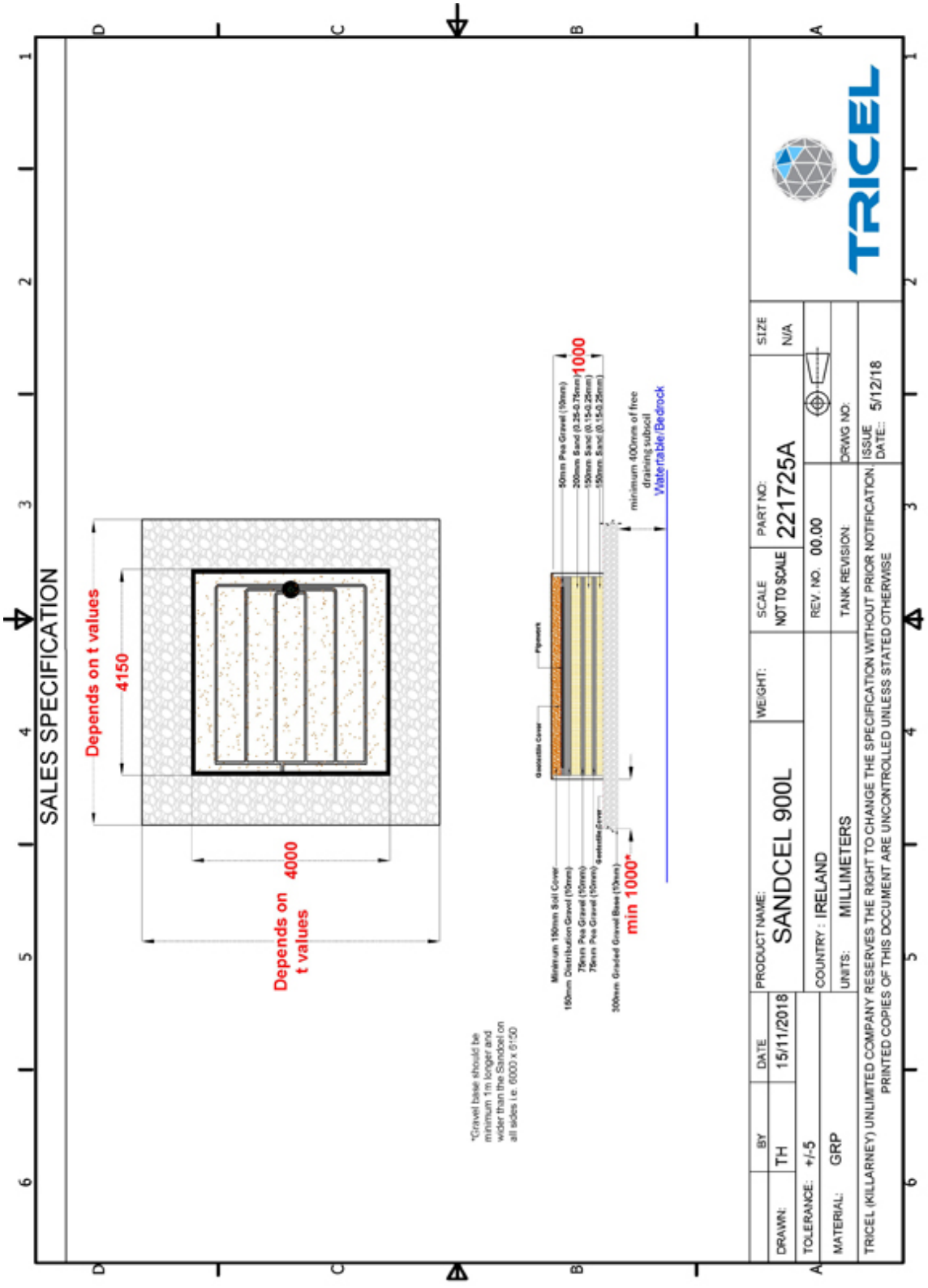
[b] Tree roots may lead to PFPs developing. The canopy spread indicates potential root coverage.

[c] The distances required depend on the importance of the feature. Therefore, advice should be sought from the local authority and/or from the the Department of Housing, Local Government and Heritage, specifically the National Monuments Service and the National Parks and Wildlife Service.

Table 6.1 EPA CoP 2021: Minimum separation distances

Please see attached the accompanying documents in Section 2 for the Tricel Sandcel Sand Polishing filter

- Separation Distances
- Sandcel Sand Polishing Filter Drawing
- Sandcel Technical Specification
- Optional Sandcel Maintenance Agreement
- Technical information on the Sandcel sand polishing filter


SALES SPECIFICATION
Depends on t values
4150
4000
Depends on t values
min 1000*
1000
minimum 400mm of free draining subsoil
Watertable/Bedrock
*Gravel base should be minimum 1m longer and wider than the Sandcel on all sides i.e. 6000 x 6150
PRODUCT NAME: SANDCEL 900L
WEIGHT:
SCALE NOT TO SCALE
PART NO: 221725A
SIZE N/A
REV. NO. 00.00
TANK REVISION:
DRWG NO:
ISSUE DATE: 5/12/18
DRAWN: TH
DATE 15/11/2018
TOLERANCE: +/-5
MATERIAL: GRP
COUNTRY : IRELAND
UNITS: MILLIMETERS
TRICEL (KILLARNEY) UNLIMITED COMPANY RESERVES THE RIGHT TO CHANGE THE SPECIFICATION WITHOUT PRIOR NOTIFICATION.
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TRICEL

The Sandcel sand polishing filter is a tertiary filter designed to the EPA CoP. It can be located above or below ground depending on the existing bedrock or subsoil. According to the EPA CoP the treated effluent which passes through a sand polishing filter is treated to a high enough standard to be allowed to discharge to groundwater through a distribution bed of gravel.

The Sandcel is a complete supply and fit product including a detailed report containing photographic evidence of works carried out, certification of sands used, testing of pipe network and sign off by a certified engineer.

The Sandcel comprises of three layers, an upper layer of coarse sand and two lower layers of fine sand separated from each other by a thin layer of gravel as per **Fig. 1.0.**

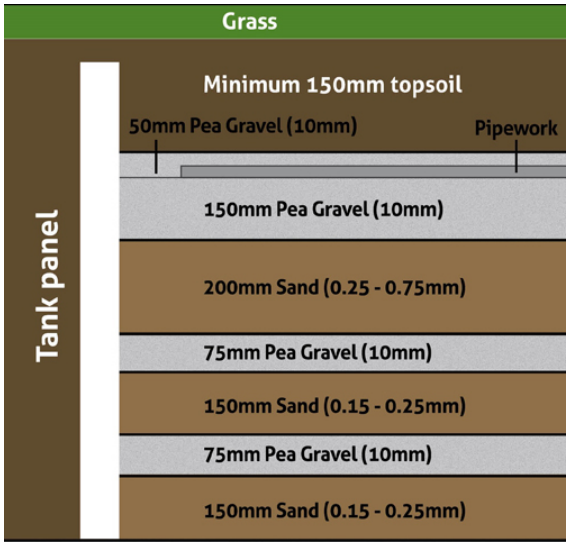


Fig. 1.0 Sandcel stratified layers

The sands used throughout are provided with certification to ensure compliance with the EPA Code of Practice. This washed and graded sands ensure little or no binding of sand particles during use. A sample copy of the certs are contained in **Fig 2.0**

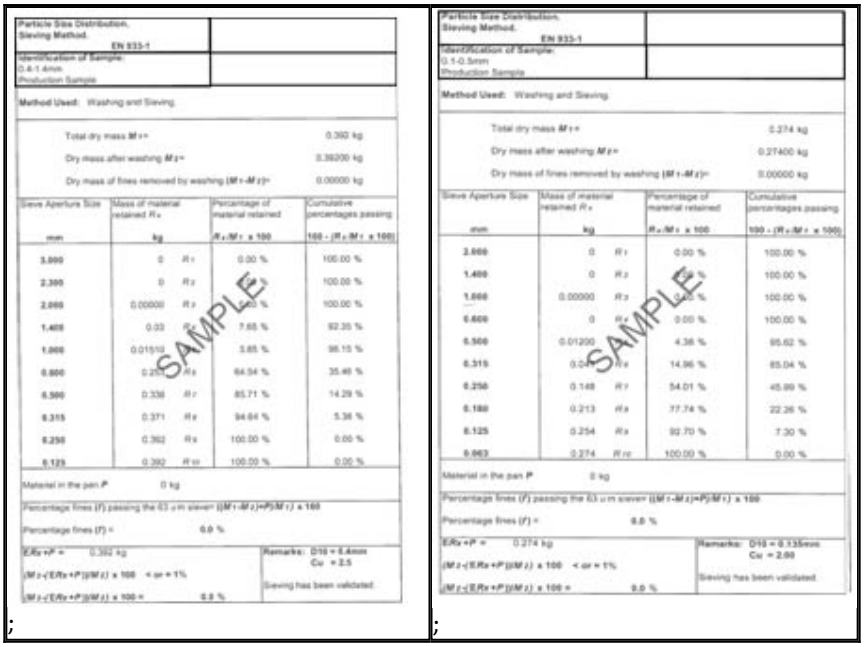


Fig 2.0 Examples of sand grading certificates supplied with Sandcel

The Sandcel must be placed on a gravel distribution bed to disperse the treated effluent. Its size is based on the EPA Code of practice which recommends a maximum hydraulic loading rate of 60l/m²/d.

The plan area of this distribution bed is dependent on the Subsurface/surface or percolation rate of the receiving subsoil. It is compulsory that the Subsurface/surface test is carried out at the infiltration level which is located at the base of the proposed Sandcel. This distribution bed should comprise of a 300mm layer of 10mm pea gravel as in Fig 3.0.

Fig 3.0 Cross section through Sand filter

For subsoil with a Subsurface/surface the distribution area is calculated using the below table from EPA Code of Practice 2021

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	–

The distribution gravel layer must be located on a 0.6-0.9 (min) layer of free draining subsoil as highlighted in Fig. 3.0

Critical to the life of the sand filter is the impermeable liner as dictated in the EPA CoP.

Tricel use a unique panel liner manufactured from a hybrid material known as Sheet Moulding Compound, SMC, which is a form of Glass Reinforced Plastic. These panels are used to form a durable, chemically and impact resistant, watertight, long-lasting structure.

The distribution pipework in each zone, which is designed as a low-pressure uPVC pipe network, is housed within the top pea-gravel layer. It comprises of 32mm dia. uPVC pipe, which disperses the effluent evenly of the entire surface area of the filter media. The pipework consists of a series of 3.4m laterals spaced at 0.6m centers. Each lateral contains 6 no orifices 4.8mm in diameter spaced at 0.6m along each length. The laterals are fed from a pump in the wastewater treatment unit through the main pipe manifold.

The network is designed with the following pipework dimensions:

Sandcel 900		
Description	**Unit**	**Qty**
No of Residents	Persons	6
Daily Flow rate	litres	900
Polishing filter Loading Rate	l/m²	60
Size of Polishing Filter	m²	15
Length of Polish Filter	m	4
Width of Polishing Filter	m	3.75
Orifice Diameter	mm	4.8
Orifice Spacing	m	0.6
Lateral Spacing	m	0.6
No. of laterals		6
Length of laterals	m	3.4
Lateral Diameter	mm	32
No of Orifices/lateral		6
Total No. of Orifices		36
Size of rising Main	mm	37.5
Min Dose Volume	litres	200
Discharge Rate	l/min	90
Total Head	m	0.750

A full set of Sandcel design calculations is available on request.

Sandcel: Sand Polishing Filter System

Service Agreement

Establishing a regime of yearly inspections and maintenance is advised to ensure that your Sandcel sand polishing filter continues to perform to the same high standards throughout its lifetime. This service agreement covers travel, the service and the labour cost of servicing only. Other labour costs are excluded, as are all replacement parts.

Tricel (Killarney) Unlimited Company, Ballyspillane Industrial Estate, Killarney, Co. Kerry, V93 X253, Ireland ("the Company") enter this Sandcel service agreement with the Customer named below:

Customer Details:			
Name:			
Address:		Address of Site: (If other)	
Telephone No.:			
Date of Sandcel Order:			
Work Order No.:			
Date of Delivery of Sandcel:			
Date of Sandcel Commissioning:			
Service Agreement Fee Paid:			
Date of Service Agreement Commencement:			
Unit Serial No.:			

During routine servicing, the service technician will perform a series of checks and procedures:

Checks:

- The should be no evidence of ponding.
- There must be no planting of vegetation in or around the Sandcel.
- The surface of the Sandcel is in good condition i.e. there is no damage from traffic/machinery passing over the surface area.
- The panels are aligned correctly (above-ground Sandcels only).
- The soil level is correct within the Sandcel.
- The access cover of the sampling chamber is in good condition.
- The pipework within the sampling chamber is secure and there are no signs of leakage.
- The connection at the outlet of wastewater treatment system/pump-chamber is secure.
- The pipework at the inlet is secure and no signs of leakage (above-ground Sandcels only).

Procedures:

- The vents in the sampling chamber are cleared.
- The vent from the gravel layer in service pod is cleared.
- The pipework within the Sandcel is rodded to ensure there are no blockages.
- The pipework is flushed, after rodding, to ensure there are no leakages in the sampling chamber and the pipework is secure.

Tricel (Killarney) Unlimited Company trading as Tricel.

March 2017

Service Agreement Options:

TICK THE SERVICE AGREEMENT OPTION YOU WISH TO AVAIL OF: (Please tick one option only)	
Annual Service Agreement 1 year: (covers system for 2 years overall): One standard scheduled service visit per year	☐
Annual Service Agreement 4 year: (covers system for 5 years overall): One standard scheduled service visit per year	☐

The first years' service is included in the original purchase of your Sandcel.

Note: In cases in which multiple service agreements have been purchased by a customer for individual components of a complete wastewater treatment plant, i.e. a Tricel Novo, Tricel Puraflo or Sandcel - a discount will apply.

This contract is subject to terms & conditions. For the terms & conditions, please contact Tricel:

Tricel (Killarney) Unlimited Company, Ballyspillane Industrial Estate, Killarney, Co. Kerry, V93 X253, Ireland.
Tel: +353 (0)64 6632421 Fax: +353 (0)64 6632777
Email: sales@tricel.ie | Web: www.tricel.ie

This service agreement relates only to the Sandcel sand polishing filter, manufactured by Tricel, its subsidiaries and associated companies, and is between the company, or person named in this document, & Tricel.

By signing the declaration below, I hereby acknowledge that I, the Customer, have read, understand and agree to the information in the Sandcel Technical Manual, this service agreement and also the relevant terms & conditions.

Tricel agrees to provide the services listed on this service agreement subject to the terms and conditions:	*Please supply the services listed on this service agreement subject to the terms and conditions:*
Signed on behalf of the Company:	*Signed by the Customer:*
Name (Block Capitals):	Name (Block Capitals):
Signature:	Signature:
Date:	Date:

Important: Original signed service agreements must be returned to Tricel with payment in full and in advance, in order for the service agreements to be initiated. You are reminded of your obligations to the relevant County Council.

Tricel (Killarney) Unlimited Company trading as Tricel.

March 2017

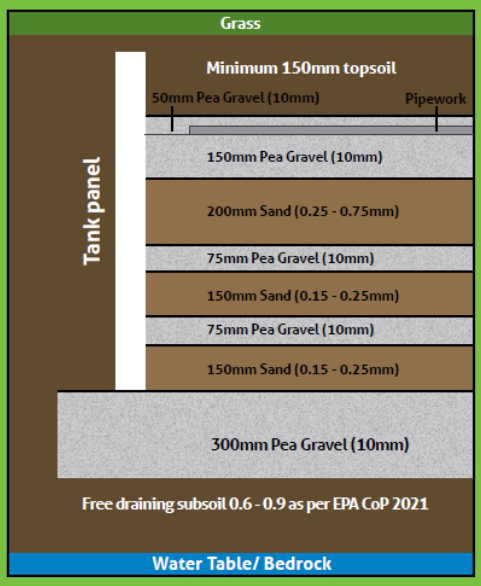
SANDCEL BROCHURE

How a Tricel Sandcel works

Sandcel sand polishing filters are designed to the EPA Code of Practice as tertiary treatment systems. These filters are the perfect solution for treatment and disposal of effluent from a secondary treatment unit. The filters comprise of stratified layers of certified sands according to the EPA Code of Practice.

They are enclosed in GRP impermeable panels which will not rot or decay, ensuring the structure of the filter will hold for many years. The filters can be installed above or below ground with all pipe work accessible from a service pod.

Treatment efficiency:
Sandcel filters provide excellent polishing of treated effluent. Sample testing of some sites where a Sandcel and Tricel Novo wastewater treatment plant were in operation have shown final effluent quality of <1 mg/ltr BOD_5.



Why buy a Tricel Sandcel?

Solid impermeable structure
Filter enclosure will not rot or decay like timber surrounds.

Small footprint
Only 16m2 area for a 6 person application eliminating the need of large percolation area.

Aesthetic finish
Filter can be covered with topsoil and planted with a lawn to blend into garden.

Long life components
Certified sands and gravel used as the filter bed which will not break down over time.

Flexible design
Under and overground applications possible.

Future
Pipework accessible from service pod to future proof your system.

Engineered design
Specifically designed pipework network to ensure equal distribution over the entire bed.

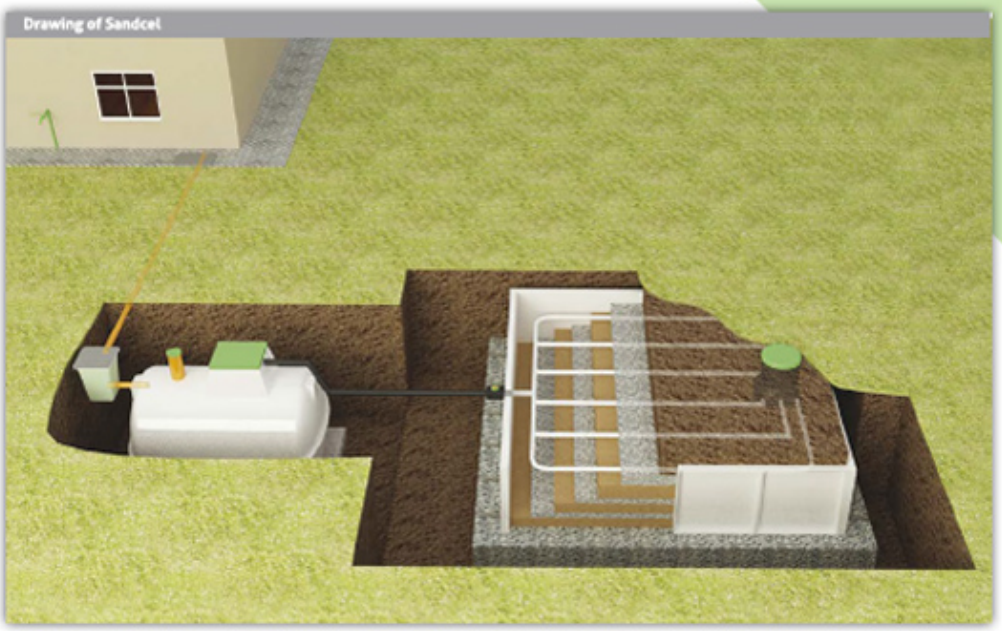
High performance
Excellent treatment of effluent.

Legacy sites
Ideal compact solution designed to the EPA CoP fulfilling most Local Authority requirements.

Quick installation
Reduced on site labour costs.

Certification
Certified components used.

Peace of mind
Tricel have earned an unrivalled reputation in the environmental field in over 20 countries worldwide.




Sandcel during installation


Sandcel installed

Tricel Sandcel
-Up to 10 persons-

	Sandcel 900	Sandcel 1200	Sandcel 1500
Capacity	900 litres per day	1200 litres per day	1500 litres per day
Length	4000mm	4000mm	4000mm
With	3850mm	5000mm	6350mm
Depth	1000mm	1000mm	1000mm
Footprint	15.4m2 (165.77 sq/ft)	20.0m2 (215.28 sq/ft)	25.4m2 (269.10 sq/ft)

>10 persons available on request.

Fig 4.0 Completed pipe network on a Sandcel before placement of final gravel layer

All Sandcel filters have a service pod which is designed to provide access to the complete pipe network. All laterals terminate in the pod and are capped and sealed to maintain the pressure within the network. This ensures access to the pipe network for service and rodding if required.

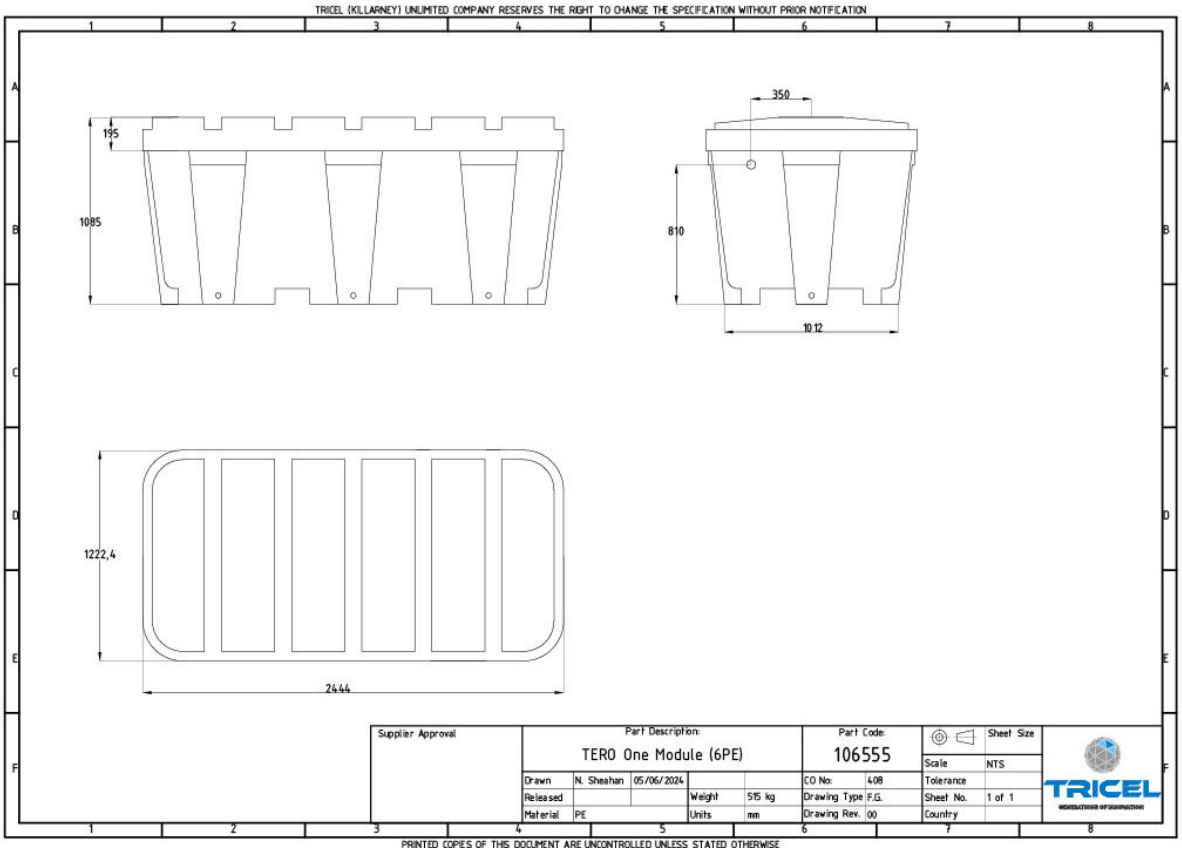
Fig. 5.0 Servicing pod

A layer of geotextile is placed on top of the final layer of gravel to protect the filter from silt being washed down. On this geotextile a layer of topsoil can be placed to blend the entire unit in with its surroundings.

Terms and conditions:

Tricel cannot accept responsibility for incorrect site details or calculations as these are based on user inputs which are outside of Tricel control.
Full terms of website use are available at www.tricelsiteassessor.ie./TermsOfWebsiteUse

*****Domestic WwTP catering for over 10 Population Equivalent that are discharging to TERO Tertiary Treatment modules may require a pump station*****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195
1085
350
810
1012
1222,4
2444
Supplier Approval
Part Description:
TERO One Module (6PE)
Part Code:
106555
Sheet Size
Scale NTS
Drawn N. Sheahan 05/06/2024
Released
Material PE
Weight 515 kg
Units mm
CO No: 408
Drawing Type F.G.
Drawing Rev. 00
Tolerance
Sheet No. 1 of 1
Country
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