

Tricel Site Recommendation Report

Tricel Novo Package Plant and Gravity Soil Polishing Filter (Percolation Area)



Date 16/05/2016
Report No: SA2_D_855
Customer Name Alan & Annette Richie
Site Location & Townland McDonaghs Lane, Glenaraneen, Brittas, Dublin
Tel: 0000

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 6 and a P/T value of between 3-20. Please see outlined below the accompanying documents:

Section 1: Information on the Tricel Novo Package Plant

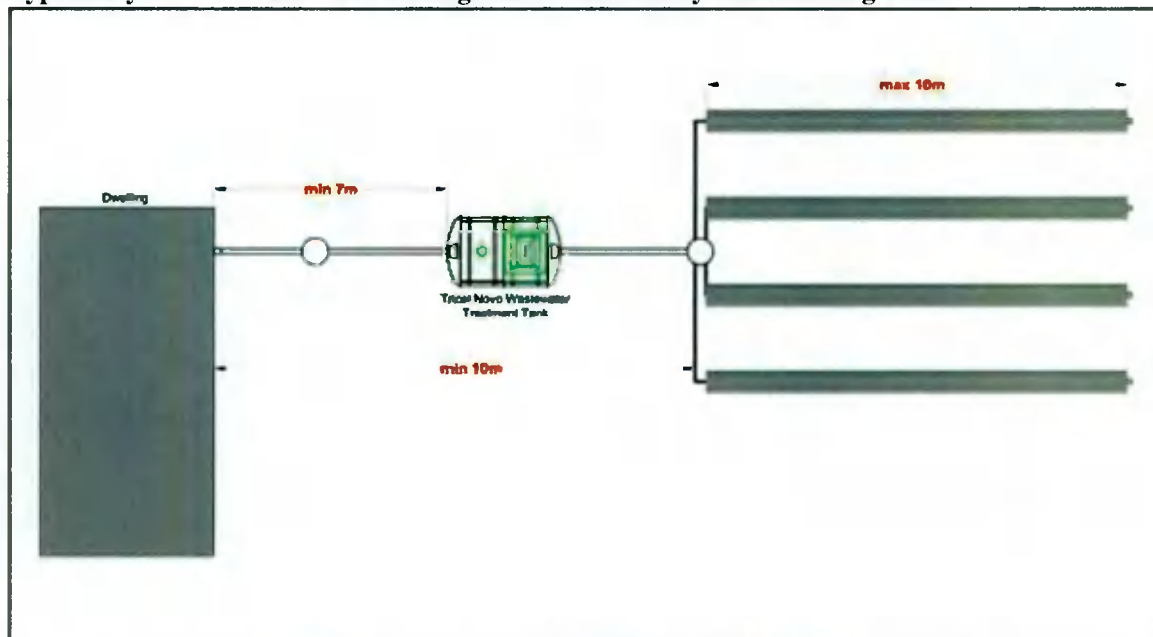
- Manufacturers report and sizing of the Tricel Novo Package Plant
- Drawing of the Tricel Novo Package Plant
- Certification of the selected Tricel Novo Package Plant
- Technical information on the Tricel Novo Package Plant
- Optional maintenance agreement for Tricel Novo Package Plant

Section 2: Information on the percolation area

- Percolation area sizing and outline construction separation distances

Based on the information provided to us and using 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 wastewater treatment plant followed by a gravity fed soil polishing filter, also called a percolation area. The Tricel Novo provides secondary treatment using submerged aeration filter technology. The gravity fed soil polishing filter consists of a series of pipe work which distribute the effluent for treatment using the in situ subsoil.

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



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For your site we recommend a Tricel Novo IRL6+ wastewater treatment plant which is designed to treat a maximum of 900 litres of wastewater per day. This recommendation is based on the EPA Code of Practice which states the plant selection should be based on a hydraulic loading rate of 150l/per person/per day. The Novo IRL6+ has a capacity of 4000 litres, of which 2400 are in the primary chamber, this ensures a long desludging interval. The Tricel Novo range of wastewater treatment plants is fully in conformance with EN12566-3 and complies with the Irish Annex.

For the soil polishing filter, a minimum of 36m of percolation pipe will be required. The EPA Code of Practice outlines a loading rate on the trench of 50 l/m²/d based on a P/T value of 3-20. It recommends that each percolation trench should be equal in length and no longer than 10m. The percolation pipe is laid in trenches 500mm wide. A Tricel distribution box will be required to split the flow evenly into each trench to ensure even dispersal.

Note:

In the above named site, a substitute wastewater treatment system may not be put in place of the Tricel wastewater treatment system.

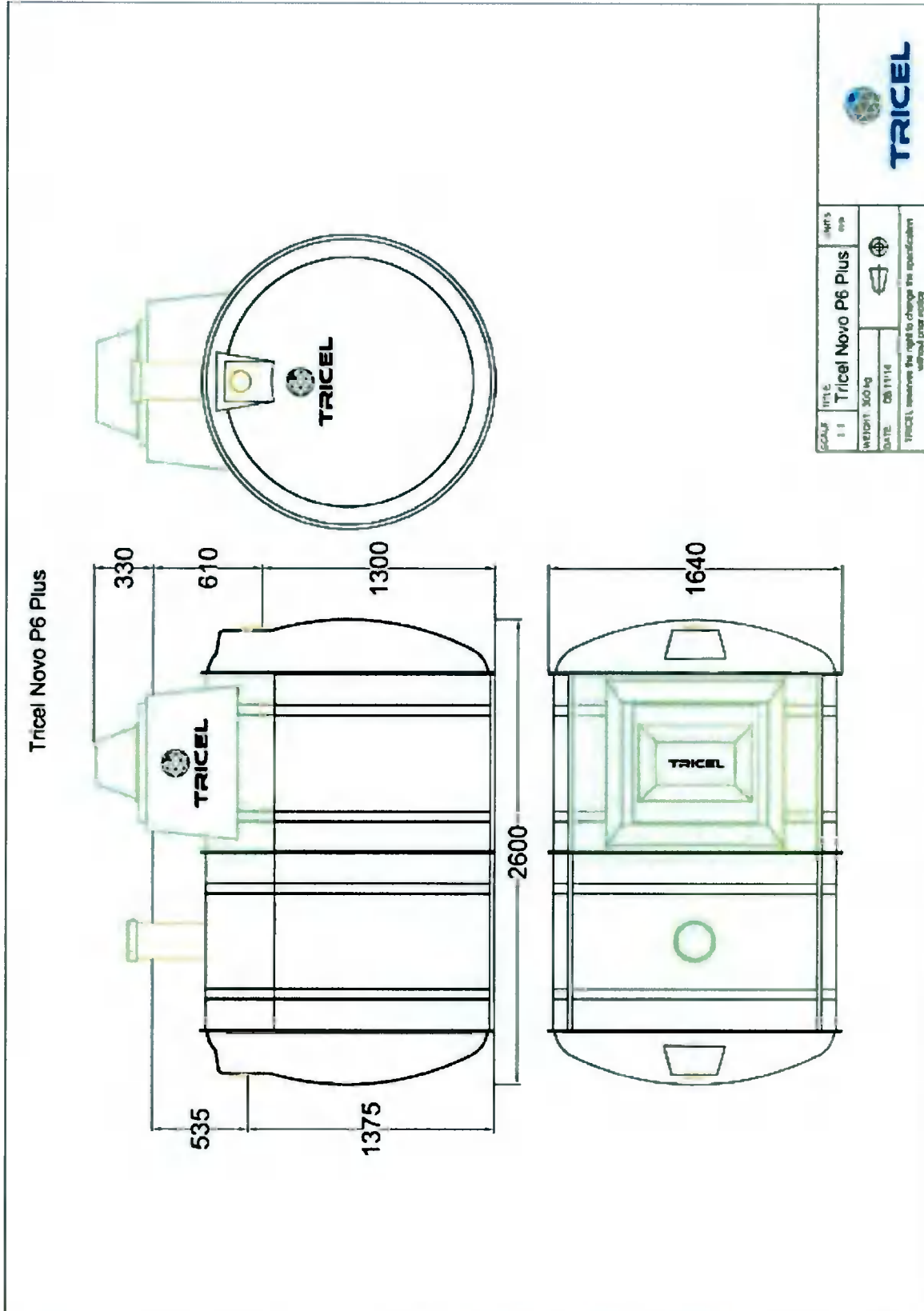
This recommendation only applies to the above named site based on the information supplied to Tricel (Killarney). A Site Characterisation Form should accompany this report. Tricel (Killarney) cannot be responsible for misinformation due to misleading information being received by us from clients.

Please see attached the accompanying documents in Section 1 for the Tricel Novo Package Plant and Section 2 for the percolation area.

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Section 1



**Tricel Site Recommendation Report
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Certificate in accordance with National Annex for EN12566-Part 3



Institute for
Wastewater
Technology

PERFORMANCE RESULTS

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


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


**Small wastewater treatment system Tricel Novo
fluidised bed reactor in a GRP tank**


Nominal organic daily load	0.28	kg/d	
Nominal hydraulic daily load	0.90	m ³ /d	
Material	glass reinforced plastic (GRP)		
Watertightness	pass		
Crushing resistance	pass		
Treatment efficiency (nominal sequences)		Efficiency	Effluent
	COD	91.8 %	52 mg/l
	BOD ₅	95.8 %	11 mg/l
	NH ₄ -N*	79.8 %	8 mg/l
	SS	95.3 %	18 mg/l
Electrical consumption	1.1	kWh/d	

* determined for temperatures ≥ 17°C in the bioreactor.

Performance tested by
PIA - Prüfinstitut für Abwassertechnik GmbH
(PIA GmbH)
Hergenthaler Weg 30
D-52074 Aachen

Certified according to
ISO 9001 2000 

Notified Body number 1739 



Elmar Lance March 2014

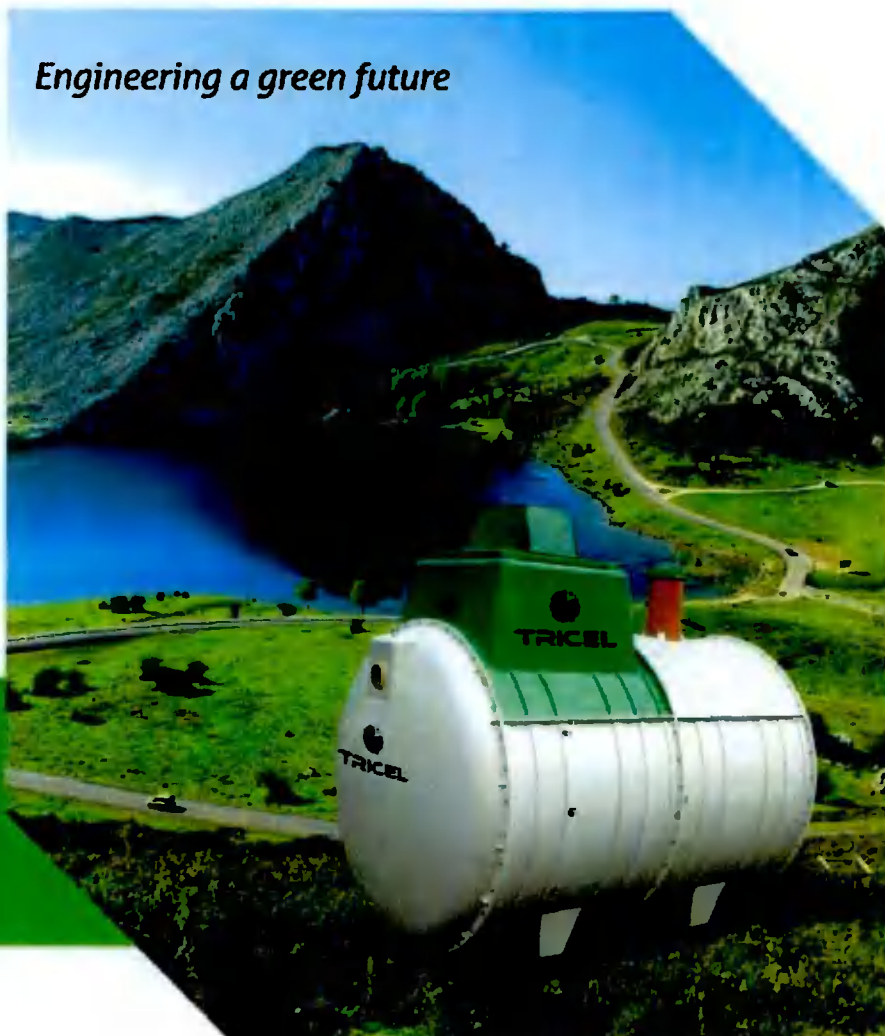
This document replaces neither the declaration
of conformity nor the CE marking



Tricel® Novo

Wastewater treatment plants for Ireland

Engineering a green future



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How a Tricel Novo works

Wastewater enters the primary settlement chamber where heavy sludge and solids separate from the liquid and settle at the bottom of the tank. A scum is formed at the surface of this liquid which keeps smells and odours from escaping.

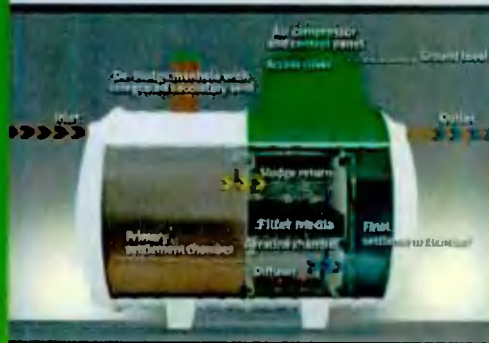
The effluent then passes into the aeration chamber where masses of naturally forming bacteria consume the impurities of the effluent. These bacteria are kept alive with air which is fed from a quiet, energy efficient air compressor. These bacteria attach and multiply on a specially designed filter media which has a lifetime guarantee.

This treated liquid then passes into the final settlement chamber where any residual sludge which may have passed through is returned via the sludge return system. The remaining treated liquid now meets the required standard and can be safely passed out of the Novo plant.

European certification requirements:

Wastewater treatment plants installed in Ireland must attain the European certification EN12566-3. Plants are tested for structural strength, water tightness, durability and treatment efficiency. These test results must be further verified and approved to the Irish Annex.

Tricel Novo wastewater treatment plants comply with national requirements offering customers peace of mind that they are installing a fully approved plant.



Why buy a Tricel Novo?

<p>Locally manufactured</p> <p>Local advice and back up service ensuring a swift response to after sales service calls.</p>	<p>Reliability</p> <p>40 years in business, currently treating over 18 million litres of wastewater per day.</p>	<p>Easily installed</p> <p>Lightweight for ease of installation. Most tanks depending on site conditions installed without concrete!</p> <p><small>*Refer to Installation Manual</small></p>
<p>Durable</p> <p>Manufactured from SMC (Sheet Moulding Compound) which is a type of fibre glass moulded under heat and compression ensuring an extremely strong and durable product.</p>	<p>Value for money</p> <p>The Tricel Novo wastewater treatment plant is a durable long lasting product, expertly designed for effective and efficient treatment of wastewater.</p>	<p>Fast delivery</p> <p>Large network of distributors serving all of Ireland.</p>
<p>Certified</p> <p>CE tested, certified to EN12566-3 and approved to the Irish Annex.</p>	<p>Long life components</p> <p>The Tricel Novo wastewater treatment plant is the only plant in the Irish market using a ceramic quartz diffuser which does not get clogged or wear.</p>	<p>Easily maintained</p> <p>Minimal maintenance needed as the system will run efficiently and effectively when properly operated and installed.</p>
<p>Full traceability</p> <p>Every plant is inspected and water tested prior to leaving the factory with all components and production records logged for full traceability.</p>	<p>Clever design</p> <p>Plants are designed with few electro-mechanical components and no electronic components which ensures little or no breakdown risk.</p>	<p>Pumped discharge</p> <p>A pumped discharge option is available if required, avoiding the need for an additional pump chamber.</p>

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Novo IRL 6 being installed



Novo IRL 6 Wastewater treatment plant installed



Novo IRL 50 Wastewater treatment plant installed



Novo IRL 6 being installed

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	Max. Power Rating
			m	m	m	mm	kg	m	m	m	watts
IRL6		1-6	2.1	1.64	2.24	110	275	1.375	1.3	0.535	60
IRL6+		2-6	2.6	1.64	2.24	110	300	1.375	1.3	0.535	60
IRL8		2-8	2.6	1.64	2.24	110	300	1.375	1.3	0.535	100
IRL10		3-10	3.1	1.64	2.24	110	375	1.375	1.3	0.535	100
IRL12		4-12	3.6	1.64	2.27	110	400	1.375	1.3	0.535	100
IRL18		6-18	4.6	1.64	2.27	110	500	1.375	1.3	0.535	200
IRL24		8-24	5.6	1.64	2.27	150	600	1.35	1.3	0.56	200
IRL30		10-30	6.6	1.64	2.27	150	700	1.35	1.3	0.56	200
IRL36	Tank A	12-36	2.6	1.64	1.99	150	300	1.35	1.3	0.46	200 + 80
	Tank B										
IRL42	Tank A	14-42	3.6	1.64	1.99	150	400	1.35	1.3	0.46	200 + 2
	Tank B										
IRL50	Tank A	16-50	3.6	1.64	1.99	150	400	1.35	1.3	0.46	200 + 2
	Tank B										

*Increase the desludging interval by opting for an IRL6+ as the primary chamber capacity has an extra 1000 litres storage over an IRL6.

Tricel Novo optional extras

- Distribution box to evenly distribute the treated wastewater into the polishing filter. Extensions also available
- Manhole risers available for deeper installation requirements. 250mm, 500mm & 750mm
- Pumped discharge option for pumping up hill or into a raised polishing filter.
- Remote kiosk to house electronic components.
- Range of service contracts available carried out by our trained and experienced service crews.
- Emergency breakdown contracts.



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Tricel is a global provider of high performance solutions for the Water, Environmental, Construction and Materials Industries. Our company ethos "Generations of Innovation" is built around three interlinking themes: Innovation, Quality and Heritage, which have been developed over the last 40 years. We deliver innovative quality solutions that our customers can trust. With manufacturing locations in 5 countries we possess a broad and distinct range of capabilities enabling us to supply a comprehensive range of products to over 50 countries worldwide.

Tricel global presence



Environmental solutions



Novo Domestic wastewater treatment plants



Novo Septic tanks



Sand polishing filter



Purvo station



Repower harvesting systems

Image - March 2014



CE
Certified to EN12566-1



TRICEL
SPECIALISTS IN WASTEWATER

Tricel (Killarney), Ballyspillane Industrial Estate, Killarney, Co. Kerry, Ireland
Tel: +353 (0) 64 6632421 | Email: sales@ie.tricel.eu | www.ie.tricel.eu

In accordance with Tricel's normal policy of product development these specifications are subject to change without notice

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Servicing Agreement.

This servicing Agreement is between the customer named and Tricel (Killarney). A Servicing Agreement covers travel, the service and the labour cost of servicing only. Other labour costs are excluded, as are all replacement parts.

Date Tricel Novo ordered		
Tricel (Killarney) works order no:		
Tricel Novo delivered on (date)		
Date commissioned		
Servicing agreement fee paid		
Servicing agreement date		
Unit serial number		

Please tick the service that you require: ✓

Single service:

One standard schedules visit to service the system

Single service & one emergency breakdown service:

One standard schedules visit to service the system & one emergency breakdown visit if required

Three year service:

One scheduled visit to service the system per year, for 3 years.

Five year service:

One scheduled visit to service the system per year, for 5 years.

All servicing Agreements exclude de-sludging

I have read, understand and agree to the information in the Builders & Homeowners Handbook, this servicing agreement and also the terms and conditions. This agreement relates only to the Tricel® Novo Wastewater Treatment System, manufactured by Tricel (Killarney) or its subsidiaries and the associated components and is between the company or person named in this document & Tricel (Killarney). Only signed and paid servicing agreements are valid and any lapse in payments will negate any responsibility that Tricel (Killarney) will have over this site.

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* Unused emergency breakdown cover fees cannot be refunded, if a breakdown does not materialise.

Signed on behalf of customer:.....

Print name here:.....

Date:.....

Signed on behalf of Tricel (Killarney)

Print name here.....

Date

Servicing Agreement fee paid €.....

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

During routine servicing Agreements the following items are checked:

- Sludge return
- Functionality of blower and / or pump
- Pump pressures
- Pump filters are replaced.
- Pump Diaphragm checked.
- Alarm checked
- Diffuser monitored to check for dispersion of air
- Ventilation checked
- Tri-cel Covers and locks inspected

Terms & Conditions:

- Subject to Tricel (Killarney) terms and conditions, available on request.
- The manufacturers instructions outlined in the builders & homeowners manuals must be followed at all times. A service Agreement does not remove this responsibility from the customer / homeowner.
- It is important that the unit is operated under the conditions for which it is designed. Any variation in these conditions could lead to the unit not performing to its full potential and the discharge may not meet the required standards.
- A certain amount of system maintenance is required, on an ongoing basis to ensure that the system is working correctly. This is the responsibility of the customer. Tricel (Killarney) or its Agreementors will endeavour to do this if

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Agreed to do so. In general, one or two visits per year are required (depending on the capacity of the system) by Tricel (Killarney) in order to carry out this maintenance on the system.

- The end user of the wastewater treatment system is entirely responsible for the operation of the unit and for ensuring that the quality of the effluent does not breach the required discharge standards.
- De-sludging is a critical part of the successful operation of the Tricel® Novo Wastewater Treatment Systems and is to be done by the customer. All servicing Agreements exclude de-sludging. Only competent approved personnel should carry out de-sludging. De-sludging must be carried out yearly, however the system should be inspected every two or three months to check the depth of sludge in the primary chamber. If desludging is required it should be done as soon as possible.
- If the electrical connection fails to the air blower in the system, the system will not function correctly. It is imperative that a continuous air supply, via the air blower, enters the system in order for the system to function correctly.
- The discharge to the ground is also a critical part of the operation of the system. Correctly constructed distribution chambers and distribution drains or polishing filters are necessary as part of the treatment process. Incorrectly constructed drains or polishing filters could result in poor treatment of effluent and Tricel (Killarney) holds no responsibility in this regard.
- If the system is not installed correctly, flooding, overloading, electrical shock or flotation may occur. Tricel (Killarney) is not responsible for incorrectly installed systems.
- Soak ways, drains and the emptying of primary tanks remain the responsibility of the client and damage to the installation due to the influx of surface water or the backing up of soak ways or drains is not covered by the manufacturer.
- Tricel (Killarney) shall not be liable for any damage or loss, including consequential loss, caused by the failure of any plumbing equipment or failure caused by the inclusion of gross solids, (e.g. – disposable diapers or sanitary towels etc) in the waste water treatment unit.
- To ensure the continuance of the systems performance, the user has to take certain precautions including the following:
 - The design loading of the plant should not be exceeded.
 - High volume discharges such, as those from swimming pools and Jacuzzi's must never enter the system.
 - Surface water must not enter the system.
 - Do not allow large quantities of chemicals to enter the system including:
 - Water softener regenerate.
 - Disinfectants.
 - Strong Acids and Alkalis.
 - Oil or Grease.
 - Pesticides.
 - Photographic Chemicals, etc.
- Service personnel must be accommodated with clear access to the system.
- A servicing agreement is an agreement to perform one routine service (unless extra are specified) on the Tricel® Novo Wastewater Treatment System. This service is usually performed within two months of date of payment for the agreement. A servicing agreement covers travel, the service and the labour cost of these only. Other labour costs are excluded, as are all replacement parts.
- Servicing and / or maintenance of the unit can only be carried out between 8.00am and 6.00pm, Monday to Friday. In special cases only, can maintenance and servicing be done on a weekend? There may be an additional charge to accommodate the customer in this instance. An inspection report will be issued to you after completion of each maintenance / service visit. If additional work is required, being not covered by the service agreement, you will be given an estimate and the work will only be carried out on your specific instructions. The homeowner would be

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advised if the general maintenance that they are doing does not meet the required standard and would be given advice where possible on what is necessary to help them maintain the system correctly.

- Tricel (Killarney) has the right to terminate a service agreement. Tricel (Killarney), are under no obligation to offer a further service agreement. The issuing of a servicing agreement is at the sole discretion of Tricel (Killarney)
- Emergency call outs to unit failures, shall be attended to as quickly as possible, but no guarantees are given, expressed or implied, with respect to the speed of response. These callouts are to be paid for in advance at the current daily rate plus VAT, such rate not including charges for possible mileage and / or spare parts that may be required.
- If the system has been sized by others, Tricel (Killarney) will supply a system to these specification and not its own specifications. In this case, the responsibility lies with others, in relation to the maximum flow / litres per day, the system capacity and retention times.
- If Tricel (Killarney) sizes the system, and a greater load is placed on the system, by the addition of extra houses, bedrooms in the houses, schools, crèche etc or by any other means, Tricel (Killarney) is not responsible for the system in terms of overloading or the quality of the effluent as the retention times may be compromised.
- Site assessments are completed in good faith in relation to the information given to Tricel (Killarney) and Tricel (Killarney) cannot be held responsible for completing inaccurate site assessments, due to miss-information being given to Tricel (Killarney).
- If the system has not been installed as per our recommendations, we may not be able to offer a customer a servicing agreement. Incorrectly installed systems may not function correctly, and Tricel (Killarney) cannot take responsibility for these systems and may not be able to service them. In this case, any servicing agreement fees paid in advance, will be refunded partially or in full, (deductions may be necessary to cover travel costs incurred, by Tricel (Killarney), or its Agreementors). In this instance Tricel (Killarney) retains the discretionary right to refuse to issue a service agreement.

Do's & Don'ts

Do's.

- Read the technical handbook.
- Make sure your system cannot flood from ground water. If the covers are below ground level, the system will not work.
- Ensure that all of the information contained in the technical handbook is adhered to at all times.
- Ensure that you the end user of the Tricel® Novo system are responsible for the operation and maintenance of the system
- Operate the unit under the conditions for which it is designed. Any variation in these conditions could lead to the unit not performing to its full potential
- Ensure that the unit has been installed correctly, in accordance with the manufacturer's specifications.
- Ensure that an electrician wires the unit.
- Phone for commissioning once the unit is plumbed to the house and electrical wiring completed.
- Maintain the system in accordance with the "Homeowners maintenance" in your book handbook.
- Take certain precautions, to ensure the continuance of the systems performance, including the following:
 - The design loading of the plant should not be exceeded.
 - High volume discharges such, as those from swimming pools and Jacuzzi's must never enter the system.
 - Surface water must not enter the system.
- Empty the system every year.
- Get a maintenance agreement. They are inexpensive and will help the life of the system

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- Ensure that if you did not receive the handbook that came with the system, that you get it from Tricel (Killarney). Its easy
 1. Phone us: Tel: 064 66 32421. Fax us: 064 66 32777
 2. Email us: sales@ie.tricel.eu
 3. Get it off the web: www.ie.tricel.eu
 4. Write to us: Tricel (Killarney), Ballyspillane Ind Est, Killarney, Co Kerry, Ireland

Don'ts.

- Alter in any way, any part of the system or internal parts supplied with the system.
- Open the Tricel Novo cover without firstly isolating the mains power.
- Disconnect the power to the unit once commissioned. It is imperative that it is running 24 hours a day.
- Do not allow large quantities of certain chemicals or products enter the system including:
 - Water softener regenerate.
 - Disinfectants.
 - Strong Acids and Alkalis, or Photographic Chemicals.
 - Oil or Grease.
 - Petrol or diesel
 - Pesticides.
 - Large quantities of milk
 - Large quantities of alcohol
 - Large quantities of bleaches or cleaners
 - Baby wipes
 - Sanitary towels
 - Kitchen paper
 - Nappies
 - Food etc

Tricel (Killarney), Ballyspillane Ind Est, Killarney, Co. Kerry, Ireland.
Tel: +353 (0)64 6632421 Fax: +353 (0)64 6632777 e-mail: sales@ie.tricel.eu
Web: www.tricel.eu

Note: In accordance with Tricel (Killarney) normal policy of product development, this specification is subject to change without notice. All sales are subject to standard agreement conditions, available on request.
May 2015

Section 2

The design and construction of the polishing filter is the responsibility of the site engineer. A full site layout drawing should accompany this report.

The EPA CoP 2009 outlines the design, siting and construction requirements for polishing filters.

The tables below outline some of the key factors to take into consideration when designing and locating a polishing filter.

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TABLE 6.1. MINIMUM SEPARATION DISTANCES IN METRES.

	Septic tank, intermittent filters, packaged systems, percolation area, polishing filters (m)
Wells ¹	-
Surface water soakaway ²	5
Watercourse/stream ³	10
Open drain	10
Heritage features, NHA/SAC ³	-
Lake or foreshore	50
Any dwelling house	7 septic tank 10 percolation area
Site boundary	3
Trees ⁴	3
Road	4
Slope breakouts	4

¹See Annex B: Groundwater Protection Response

²The soakaway for surface water drainage should be located down gradient of the percolation area or polishing filter and also ensure that this distance is maintained from neighbouring storm water disposal areas or soakaways

³The distances required are dependent on the importance of the feature. Therefore, advice should be sought from the local authority environment and planning sections (conservation officer and heritage officer) and/or from the Department of the Environment, Heritage and Local Government (DoEHLG), specifically the Archive Unit of the National Monuments Section and the National Parks and Wildlife Service. If considering discharging to a watercourse that drains to an NHA/SAC the relevant legislation is Article 63 of the Habitats Directive. (NHA, National Heritage Area; SAC, Special area of Conservation.)

⁴Tree roots may lead to the generation of preferential flow paths. The canopy spread indicates potential root coverage.

Table 6.1 EPA CoP 2009- Minimum separation distances

TABLE 10.1. MINIMUM SOIL POLISHING FILTER AREAS AND PERCOLATION TRENCH LENGTHS REQUIRED FOR A FIVE-PERSON HOUSE.

P/T-values ¹	Direct and pumped discharge (Options 1 and 2)		Percolation trench discharge (500 mm wide) (Option 3)	
	Loading rate on plan area (l/m ² /day)	Area required for five persons (m ²)	Loading rate on trench area (l/m ² /day)	Trench length required for five persons (m)
3-20	≤20	≥37.5	≤50	≥30
21-40	≤10	≥75	≤25	≥60
41-60	≤5	≥150	≤25	≥60
61-75	≤3	≥250	≤16	≥94

¹The loading rate is dependent on the percolation rate and in the case of an imported mound then the higher of the P-value of the *in-situ* subsoil and of the imported material should be used to size the polishing filter.

Table 10.1 from EPA CoP 2009 - Loading rates for gravity fed soil polishing filter

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TABLE 7.3. REQUIREMENTS OF A PERCOLATION TRENCH (GRAVITY FED).

Percolation trench characteristics	Requirements
Slope of pipe from tank to distribution box	1 in 40 for earthenware or concrete 1 in 60 for uPVC
Slope of percolation trench from distribution box	1 in 200
Length of percolation pipe in each trench	18 m maximum
Minimum separation distance between percolation trenches	2 m (2.5 m centre to centre)
Diameter of pipe from septic tank to distribution box	100–110 mm
Percolation pipes ¹	100 mm bore, perforated (typically at 4, 6 and 8 o'clock) smooth wall PVC drainage pipes with perforations of 8-mm diameter at about 75-mm centres along the pipe or Pipes with similar hydraulic properties
Width of percolation trench	500 mm
Depth of percolation trench	About 850-mm depth ² below ground surface depending on site (as per Fig. 7.3)
Backfilling of percolation trench (see Fig. 7.1)	300 mm of 8- to 32-mm washed gravel on invert; pipe laid at a 1 in 200 slope surrounded by 8- to 32-mm clean washed gravel and with 150 mm of similar gravel over pipe; geotextile layer followed by 300 mm topsoil to ground surface
Geotextile	Geotextile should be in accordance with EN ISO 10319
Access/inspection points and vents	These are recommended for the ends of the percolation pipes, the covers should be visible and installed to prevent entry of water. They may also be used for rodding/scouring purposes

¹Before installation the holes in the percolation pipe should be inspected to check that they are the correct size and free from debris.

²The percolation pipes may be located at a shallower depth, provided that a minimum of 450 mm of material is placed above the pipes to provide the required protection against damage from above (Fig. 7.4).

Table 7.3 EPA CoP 2009 - Construction of percolation trenches. For secondary treated waste water the maximum length of percolation pipe in each trench should be 10m as outlined in section 10.1.1 option 3

For further information in relation to percolation area design please refer to the EPA Code of Practice: Wastewater Treatment and Disposal Systems Serving Single Houses (p.e. ≤ 10)

Terms and conditions:

Tricel (Killarney) cannot accept responsibility for incorrect site details or calculations as these are based on user inputs which are outside of Tricel (Killarney) control.

Full terms and conditions are available at <http://tricelsiteassessor.ie/terms-conditions/>





