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TRI-CEL® Wastewater Treatment System for Single Dwellings.

tri-cel bio systems

It is important, that the installer of the system and the end user (builder or homeowner) receives this handbook.

- Delivery of the Tri-Cel to site.
- Inspection for any damage.
- Installation of the system (by others) as per manufacturers instructions.
- Fill the tri-cel with water, to ballast it, and inspect for leaks.
- Plumbing of the Tri-Cel to the house (Pipework and Electrical).
- Back filling around the Tri-Cel & drainage of the internal water from the system.
- Electrical connection and System Start Up.
- Contact the DISTRUBUTOR that supplied the system to you for the “Final Commissioning” of the Tri-Cel system
- or
- Contact Killarney Plastics Ltd. at (064) 32421 - extension 110
- Final commissioning should take place, within one month of system start up for standard units and within 2 days for all pumped system.



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**Tri-Cel<sup>®</sup> Bio Systems.**

Tri-Cel, Standard P6 Gravity system with an alarm.

**Optional extras:**

- Site assessment.
- Servicing agreement.
- Pumped system
- Manhole Riser (Deep invert).
  - 250mm
  - 500mm
  - 750mm
- Distribution boxes.

**The system must never be installed below the “MAX GROUND LEVEL” indicated on the unit.**

This handbook pertains to tri-cel bio systems (Tri-Cel<sup>®</sup> Wastewater treatment systems). Further information is available through IAB certificate number 06/0208. Where there is a reference to the EPA, this is referring the EPA WASTEWATER TREATMENT MANUALS, TREATMENT SYSTEMS FOR SINGLE HOUSES © Environmental Protection Agency 2000.

**Quality control.**

KMG Ltd is totally committed to the pursuit of excellence in quality. We have in place measurable programmes of continuous improvement in quality and productivity and currently are accredited to the Quality Standard ISO 9001:2000

**GENERAL INFORMATION**

**Wastewater Treatment Systems.** EPA WASTEWATER TREATMENT MANUALS, TREATMENT SYSTEMS FOR SINGLE HOUSES © Environmental Protection Agency 2000

**Mechanical Aeration Systems.**

In recent years many mechanical aeration systems offer a solution in some cases where a site may be unsuitable for a septic tank. These systems may be biofilm-aerated systems, rotating biological contactor systems or sequencing batch reactor systems. A biofilm system, consists of a primary settlement chamber, a secondary chamber containing aerated filter media and a final settlement chamber

**Polishing Filters.**

Polishing filters should be used to treat wastewater from intermittent filters, constructed wetlands and mechanical aeration systems. These filters consist of either soil or sand and are employed to reduce micro organisms, phosphorus and nitrate nitrogen. Soil polishing filters may comprise in-situ, improved soil or imported soil, whereas sand-polishing filters comprise stratified layers of sand. This is simply passing the discharged water through a specially designed sand filter. A discharge pump will be required for this application. The guidelines set out by the EPA in EPA WASTEWATER TREATMENT MANUALS, TREATMENT SYSTEMS FOR SINGLE HOUSES © Environmental Protection Agency 2000 or the manufacturer should be consulted.

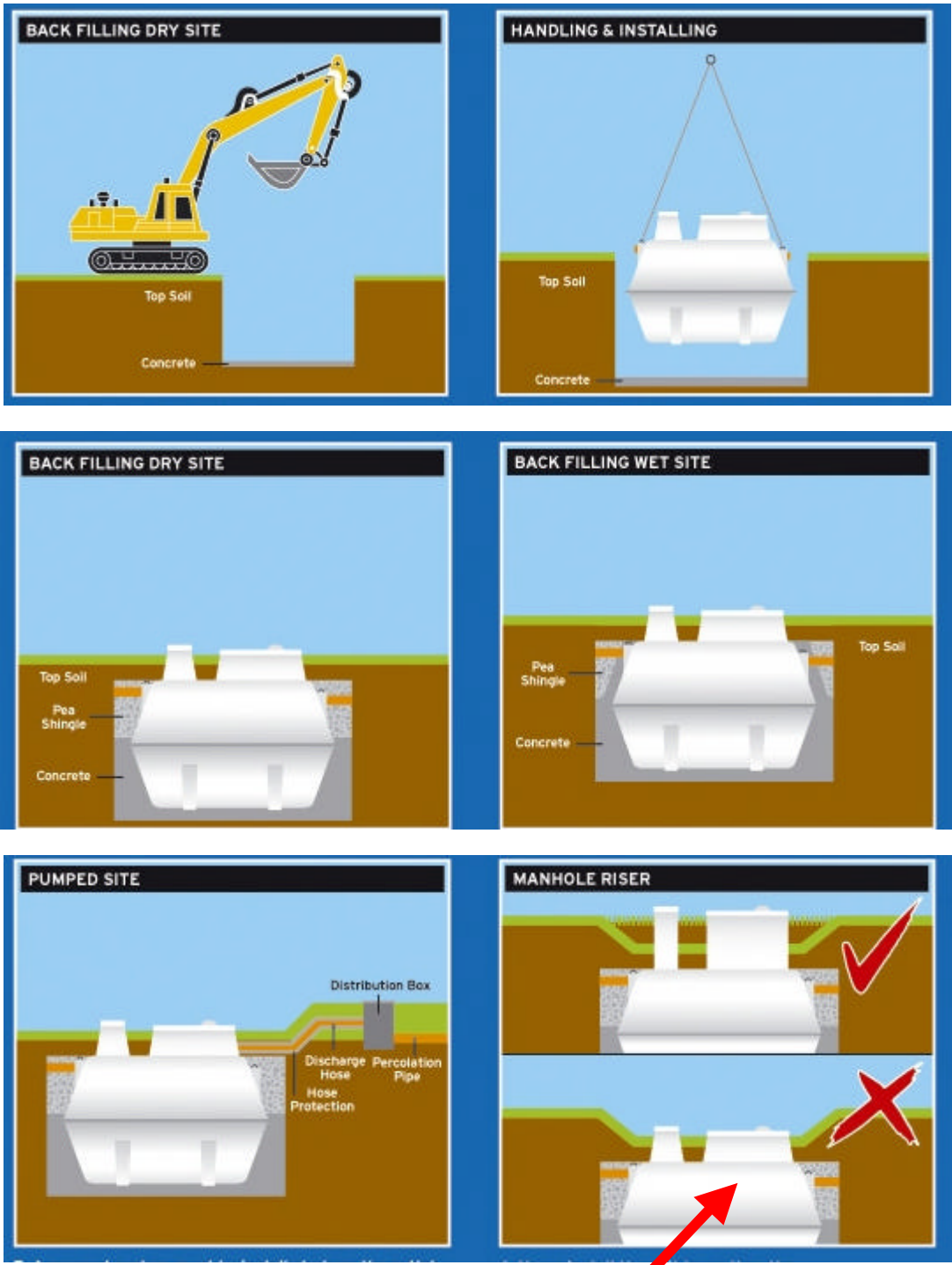
**Site Development.**

Where a site is initially unsuitable for a septic tank system site development works may improve the site and make it suitable for the development of an on-site system.

**Installation of the Tri-Cel wastewater treatment system.**

**Note:** We recommend that when the system arrives on site that it is inspected for damage, from miss-handling etc. If any damage is seen or suspected, please notify the manufacturer immediately. It is then the responsibility of the client to undertake the installing of the unit, as per manufacturers instructions. A suitably sized digger will be required to excavate the hole and lower the TRI-CEL system. Once a suitable site has been chosen and excavated the following steps must be followed: When installation is completed and the system filled with water and is plumbed to the relevant sewers etc, the electrical installation must be completed. Only then, can KMG Ltd call back to commission the system.

# Installation Diagrams



**Never place the cover of the system below ground level**

**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 Tri-Cel<sup>®</sup> Bio System are responsible for the operation and maintenance of the system
- Operated 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 manufacturers 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 section “Homeowners maintenance” of 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 contract. They are inexpensive and will help the life of the system
- Ensure that if you did not receive the handbook that came with the system, that you get it from KMG Ltd. Its easy
  1. Phone us: Tel: + 44 1453 791616
  2. Email us: [info@kmggroup.eu](mailto:info@kmggroup.eu)
  3. Get it off the web: [www.kmggroup.eu](http://www.kmggroup.eu)

**Don'ts.**

- Alter in any way, any part of the system or internal parts supplied with the system.
- Open the Tri-Cel 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 chemicals to enter the system including:
  - Water softener regenerate.
  - Disinfectants.
  - Strong Acids and Alkalis.
  - Oil or Grease.
  - Pesticides.
  - Photographic Chemicals.
  - Milk
  - Any product that may adversely effect the smooth running of the system

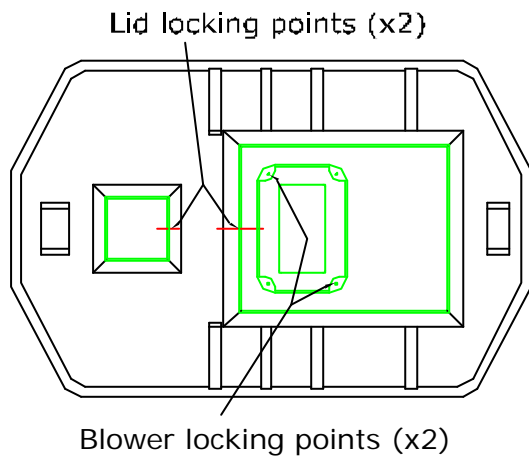
### Safety Precautions.

- There is potential danger when de-sludging and therefore this should never be done alone.
- Never enter a tank unless qualified to do so.
- Naked flames should not be used in the vicinity of the tank due to the danger of combustion.
- The manhole covers should never be left off an unattended tank.
- Disused or abandoned tanks should be removed or demolished in accordance with current regulations.

As safety and security are of vital importance in small-scale sewage treatment systems, the following aspects are critical,

- Protective clothing / gloves should be worn at all times. Always remove contaminated clothing and protective equipment after working with sewage treatment systems.
- Wash hands and face prior to eating, drinking or smoking.
- When working with machinery / electrical equipment, proximity of water should be noted.
- Equipment should not be wet when working with it.
- A second person should be present when carrying out maintenance.
- The distribution box should be constructed to facilitate sampling and inspection without placing personnel at risk.
- Only a qualified person should carry out electrical repairs.
- Great care should be taken when handling sludge.
- Always lock the cover of the system when maintenance is completed.
- **KMG 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.**

### Lid locking points.



**Note:** Tri-cel wastewater system is supplied with 4 optional locking points, as seen above. It is strongly recommended that all these points be locked with a suitable locking device to prevent unauthorised access.

### Capacity:

**Tank capacity nominal 4100 litres - Tank capacity actual 3,540 litres**

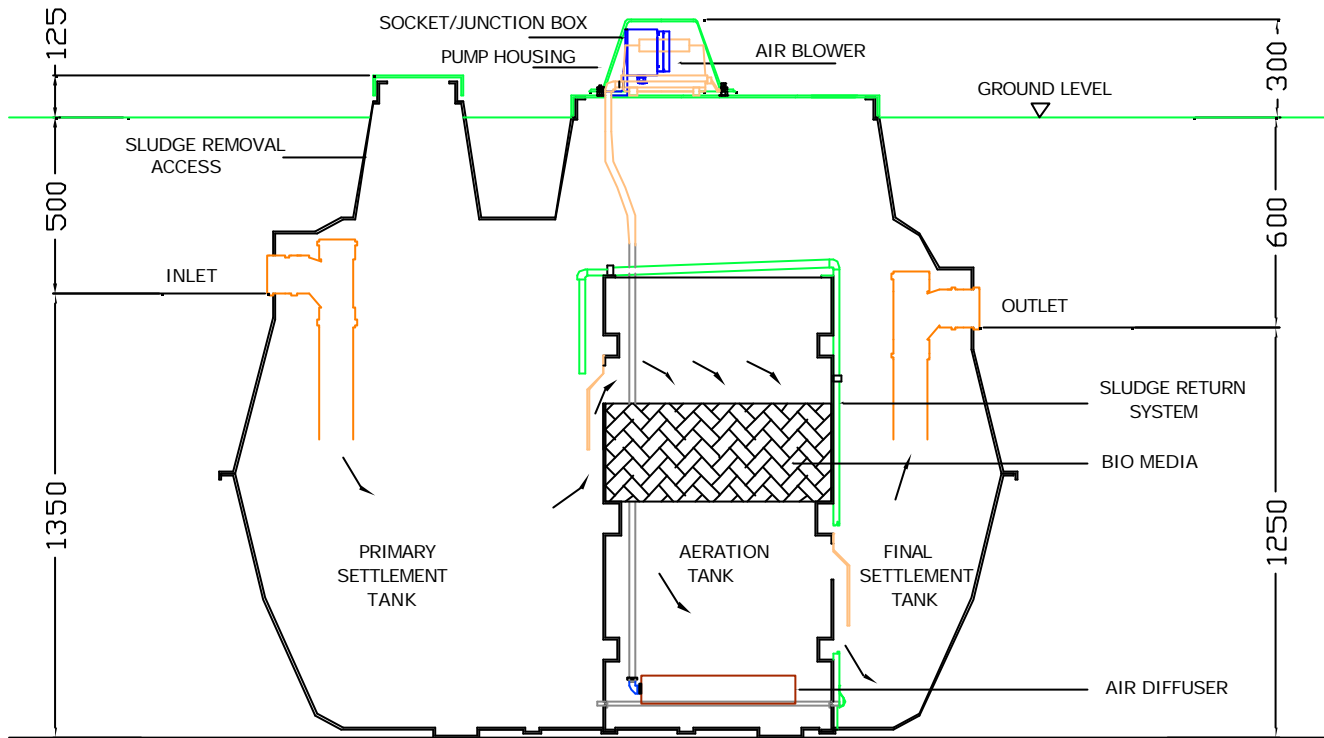
**Primary Chamber 1: 1,690 litres**

**Treatment Chamber 2: 1,200 litres**

**Final Settlement Chamber 3: 650 litres**

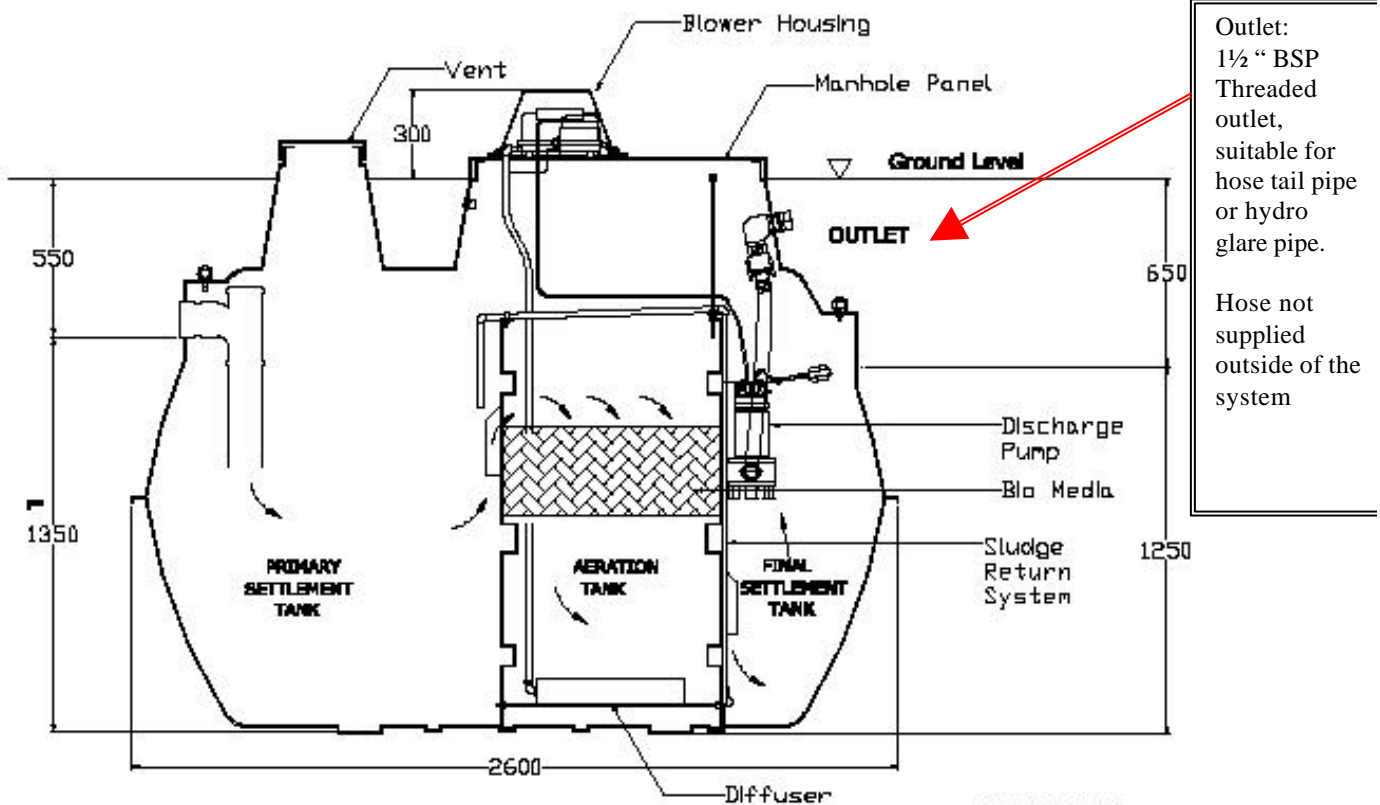
### Tri-Cel P6 Gravity System: Length: 2.7m.

Width: 1.7m. Height: 1.98m



### Tri-Cel P6 Pumped System: Length: 2.7m. Width: 1.7m. Height: 1.985m

**Note:** The Sewage pump will pump to a maximum distance of 25 meters at a “Head” of 4 meters above the ground level. Please consult KMG Ltd if unsure.



## Installation of the unit.

**The green covers of the system must never be placed below the ground level.**

- A partial concrete installation is required for a dry site. A dry site is one where the water table never rises higher than the base of the unit
- A complete concrete backfill may be required for wet sites. A Wet Site is one where the water table may rise higher than the base of the TRI-CEL unit.
- A complete concrete backfill may also be required where the TRI-CEL system may be prone to some superimposed load.

Manhole risers may be required for deep installations. (See page 14)

## Installation procedure guidelines.

1. It is the responsibility of the client to ensure that a correct installation procedure is followed.
2. Dig a hole circa 3.0m x 2.0m in plan. The unit shall be installed at the required depth to accommodate incoming drainage pipes. Remove any soft spots or boulders or sharp objects of any significant size from the base and sides of the excavation. A level graded base is then formed using sand binding.
3. A foundation of semi dry concrete is laid and levelled. The concrete shall be of sufficient grade and thickness (minimum 150mm and grade 25 N) to ensure that the unit is fully supported with due regard to subsoil conditions and loads imposed by the unit. Care shall be taken to eliminate voids.
4. Lift the system into position carefully using certified lifting equipment. Eyebolts are provided with the Tri-Cel system. Care should be taken to prevent damage to external flanges or pipe work and to ensure the unit is ORIENTATED CORRECTLY. The inlet and outlet are clearly marked on the system.
5. Level the unit. The recommend max ground level is marked on the unit. Line up the inlet and outlet pipes with the house pipes and percolation pipes respectively.
6. The concrete is filled around the base of the system. Ensure that the “feet” are embedded. Ensure that the top of the tank is “dead” level and that all of the connections are lined up correctly.
7. The excavation is then backfilled to above the joint (flange) with a minimum of 200mm surround (Grade 25 N concrete). As backfilling progresses, the system is progressively filled with water, to prevent uplifting (stop the system popping out of the ground).
8. Compact the concrete around the system, to ensure transfer of ground loads and to prevent concentrations. Vibrating poker must not be used, as these may damage the GRP system.
9. The remainder of the excavation is then backfilled, with suitable selected self-compacting Pea Gravel or suitable granular material (compaction factor of 0.2 or less), to the underside of the pipe work connections. Ensure that the connections remain exposed.
10. Connect up the pipe work. The TRI-CEL system is plumbed for 110mm uPVC pipe. A short length of pipe with flexible joints should be used immediately before and after the unit to allow for movement between the tank and the pipe work.
11. A suitably qualified person should then connect up the power according to best practise and the electrical installation instruction below.

**Additional requirements for wet sites.**

1. A wet site is a site where the local water table can rise above the base of the system. Installation in a wet site may be precluded by site considerations in relation to effluent disposal.
2. A 250mm hardcore sub-base is laid, compacted and levelled.
3. The excavation must be kept dry until the concrete has set.
4. The excavation is then lined with a continuous layer of 1200 gauge polyethylene sheet. The grade and thickness of the concrete base should be designed to suit the site conditions (minimum 250 mm thickness, grade 25N).
5. The system is to be installed and the excavation backfilled generally in accordance with the requirements for a dry site from this point on, however,
6. The excavation shall be backfilled with concrete to approx. 300mm below the ground level. Allowances must be made for flexible joints at pipe connections where necessary.

**Note: water logged sites.**

The Tri-Cel<sup>®</sup> Wastewater treatment System may not be suitable to be used in a water logged site. Please contact the supplier of the system if there are difficulties on site due to adverse water logging. Adequate drainage is important to improve wet sites, or sites with a high water table level. It is critical that water is removed from the area surrounding the system to prevent flotation, or ingress of water that could cause electrical failure within the system. Excessive loading caused by site water can harm the system, please consult with the manufacturer or a qualified engineer if in doubt.

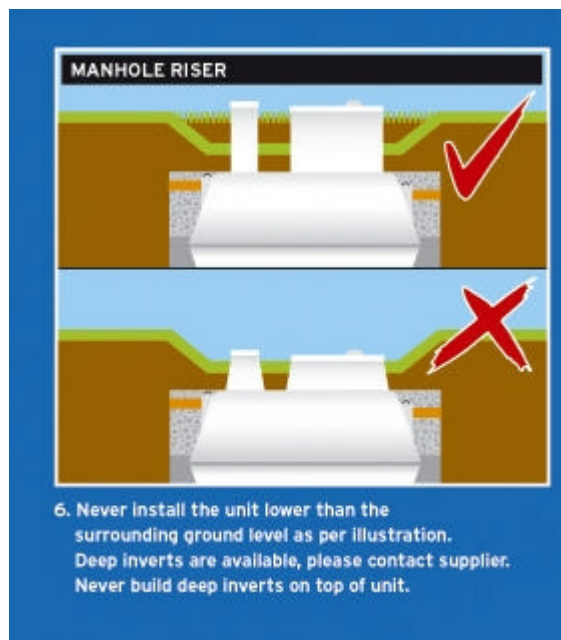
**Plumbing the system.**

**Do not:** Plumb storm-water (water) from roofs, drains, footpaths etc, into the Tri-Cel Wastewater treatment system. A competent person in accordance with this manual should connect the plumbing from the dwelling to the wastewater treatment system.

**Manhole Risers – (Deep inverts).**

We are pleased to be able to offer Manhole Risers to our customers for deeper installation requirements

- **250mm** and **500mm** manhole risers require a standard installation.
- **750mm** manhole risers require a **complete concrete** backfill is required as per wet sites.
- Never install the cover of the system under ground level.



**Distribution Box – Inlet and 6 number outlet holes with snap in seals.**



**Distribution Box with Snap In Seals.**

**150mm (6”) Riser extensions**

**Electrical Installation of the unit.**

**Standard gravity system with alarm and a Pumped systems with alarm.**

**Note:** All electrical work to be carried out by competent person using suitable materials for the application. Electrical work must be carried out strictly to the manufacturer’s instructions and to ‘The National Rules For Electrical Installations’ (ETCI) published by the ‘Electro-Technical Council Of Ireland’

- A 230V, 13Amp, splash proof (IP66) 3-pin square socket connector will be supplied with this unit.
- This will conform to IEC 60309, 1&2 and also to ISEE 60309, 1&2.
- The steel wired armoured cable is to be routed through the M25 gland in the unit and then up through the assigned hole in the lid panel to be terminated to the junction box.

**Alarm options. Why install an alarm?**

The alarm will warn you of failures in the system – giving you peace of mind.

We are pleased to be able to offer our customers, the protection and peace of mind of an alarm in the tri-cel Bio system. Other alarm systems are also available. Please consult with KMG Ltd, in order to get an alarm system that will suit your requirements. The alarm option chosen, may require a variation in the electrical connections used.

**What protection does it offer?**

**Standard alarm:**

Battery operated alarm to warn of Air Pressure failure to the compressor. No wiring is required for this standard option.

**Full alarm unit:**

Air pressure failure. Air blower failure. High water level detection. Float switch failure. Pump failure. Overload protection.

**How am I warned?**

Standard unit:

- Audio sounder attached to the junction box {in Tri-cel unit} with a mute facility.
- The sounder can be muted, once you realise that there is a problem with the system.

House alarm unit:

- Audio sounder attached to the RCD {fuse board in your home} with a mute facility.
- The sounder can be muted, once you realise that there is a problem with the system.
- Visual light attached to the RCD.

**How does the reset facility work?**

- If no failure is detected, the system automatically resets.
- It will also reset automatically once a fault has been rectified.



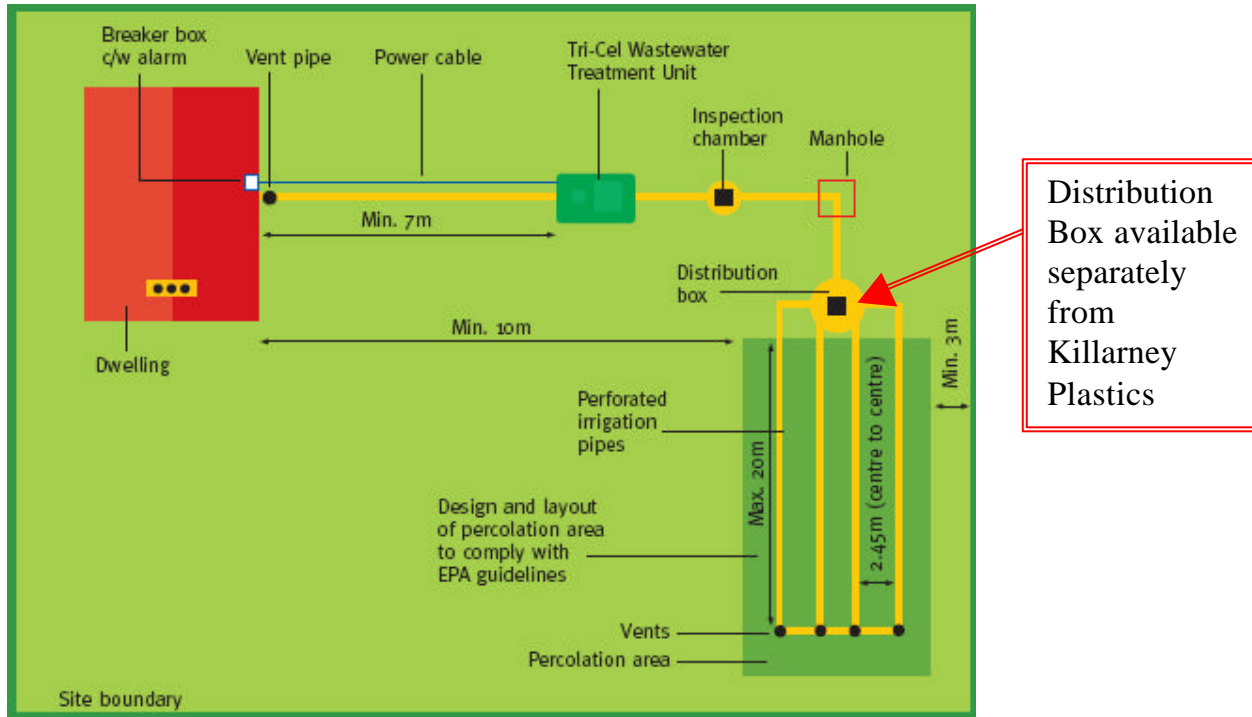


**System Start Up:**

Once installation, plumbing and the electrical installation are all completed, the tri-cel is now operational. If the system is running correctly, a slight “hum” will be heard from the air blower and there will be air bubbles coming up from the bottom of the middle chamber, rising to the surface. The customer must phone the system supplier for a Final Commissioning of the Tri-Cel wastewater treatment system, which should be done within two weeks of system start up for gravity system and within two days for pumped systems.

**Percolation Area.**

A typical layout of the house, pipe work, Tri-Cel Bio System and the polishing filter (percolation area).



**Sub-surface irrigation:**

One of the principle factors for sub-surface irrigation is the ‘T’ value as obtained for the percolation test. This will determine the length of pipe needed in the percolation area based on 450mm-meter wide trenches.

1. ‘T’ values <1 may indicate a percolation rate that is too fast. Consult the manufacturer for percolation area sizing.
2. ‘T’ values >50 may indicate a percolation rate that is slow. Consult the manufacturer for percolation area sizing.

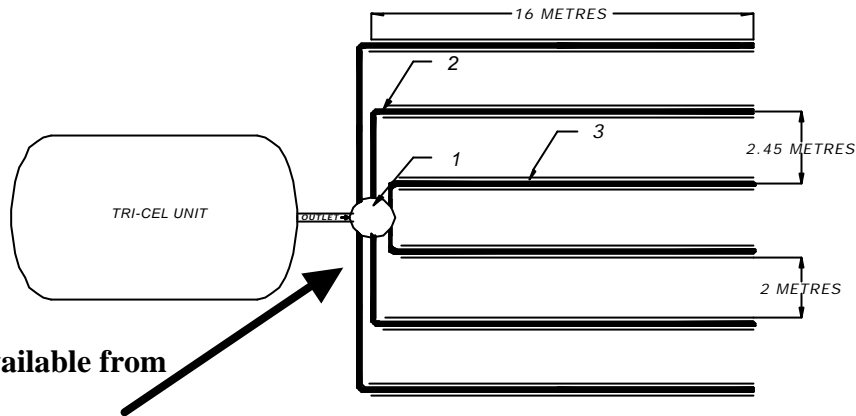
Estimated number of people in the house based on number of bedrooms.	Required length of trench (m) for T/P values 21-50 (loading at 25 l/m <sup>2</sup> .d)	Required length of trench (m) for T/P values 1-20 (loading at 50 l/m <sup>2</sup> .d)
6	96	48

The treated water is discharged by gravity. A network of 100mm perforated pipes is laid in the percolation. The percolation area spreads the treated water evenly over a large area thus minimising the risk of the ground getting over saturated.

The length of percolation pipe recommended should be sub-divided into a number of equal lengths. No trench should be longer than 20 meters. There should be a minimum distance of 2 meters between any two trenches.

The trenches should be 450mm wide and 800 mm deep. The pipe should be laid on 250mm of clean 20mm stone. The pipe should be covered by another 150mm of stone. A layer of geo-textile soil barrier should be placed on top of the stone and the remaining 300mm should be back filled with topsoil. The pipes should be laid with a fall of not more than 1 in 200. There should be at least 600 - 1200mm of unsaturated soil from under the bottom of the trench to the bedrock / water table, depending on site conditions.

**Typical arrangement of percolation trenches.**

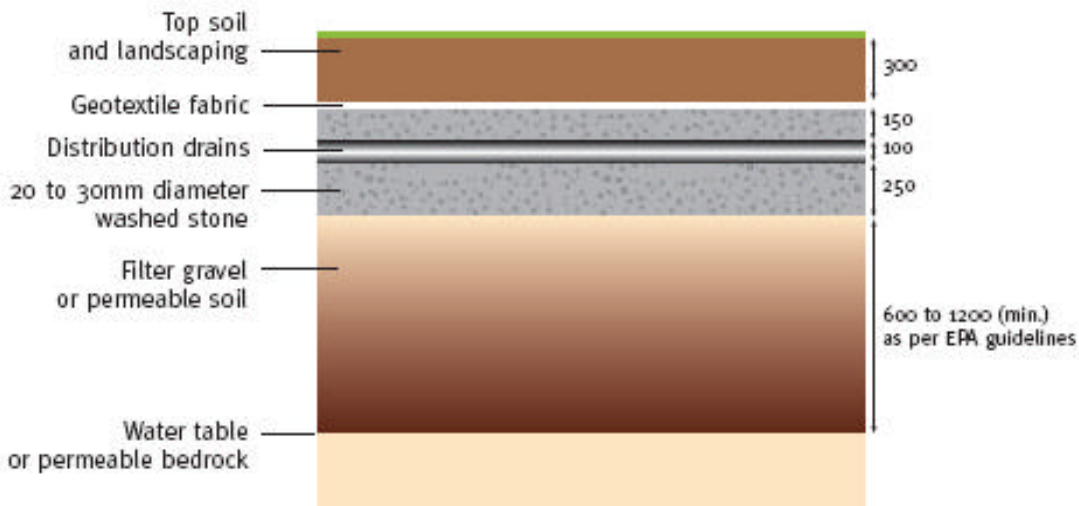


**Percolation Trench Characteristics.**

**Note:** Always connect from the Tri-Cel System, to a correct Distribution Box .

- Length of distribution pipe, 20 meters maximum.
- Minimum separation distance between percolation trenches 2 meters (2.45 centre to centre).
- Diameter of pipe from system, 100mm.
- 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.
- Distribution (percolation) pipes. 100mm bore, perforated (**typically at 4, 6 and 8 o clock – i.e. facing down**) smooth wall PVC drainage pipes with perforations of 8mm diameter at about 75mm centres along the pipe or pipes with similar hydraulic properties.
- Width of percolation trench, 450mm.
- Depth of percolation trench is about 800 mm below ground surface depending on the site.

Back-filling of percolation trench. 250 mm of 20 to 30 mm washed gravel or broken stone aggregate on invert; pipe laid at 1 in 200 slope surrounded by 20-30 mm clean washed gravel or broken stone aggregate and width 150 mm of similar aggregate over pipe: goetextile layer followed by topsoil to ground surface.



**Raised bed: if required.**

Where the existing pipes have to be above ground level or where there is a very thin layer of topsoil a raised bed percolation system is required. It is similar to the sub- surface percolation only it is man-made. In this case a discharge pump must be used to elevate the treated water into the percolation system. Full details available upon request from the manufacturer

**Locating the TRI-CEL<sup>®</sup> Wastewater Treatment System.**

EPA WASTEWATER TREATMENT MANUALS, TREATMENT SYSTEMS FOR SINGLE HOUSES © Environmental Protection Agency 2000. Minimum distances for locating the TRI-CEL unit are set out below. These are minimum distances only; the unit should in fact be located as far away as is practically possible. However, when locating the unit, consideration should be given to allow adequate access for the vacuum tanker. The unit should be located not nearer than 7 meters from any other dwelling as set out in EPA wastewater treatment manual. Guidelines of minimum distances for locating the TRI-CEL<sup>®</sup> system are:

	Any dwelling	Watercourse or stream	Spring or well	Lake	Site boundary	Road	Slope, break or cuts
Tri-Cel system	7m	10m	10m	50m	3m	4m	4m
Percolation area	10m	10m	30m	50m	3m	4m	4m

Minimum separation distances in meters.

This applies to wells down gradient or where flow direction is unknown. For information on wells alongside or up-gradient consult DELG/EPA/GSI ground water protection scheme.

Liquid is introduced and discharged from the TRI-CEL unit under gravity. This may have a bearing on the location of the unit. Where site conditions do not allow gravity discharge, a pumped discharge option is available. The TRI-CEL unit is designed for pedestrian traffic only. Adequate protection should be given to avoid super- imposed loads. Vehicles must be restricted from the region surrounding the TRI-CEL unit. Vehicles should maintain a distance of 4 meters of the system.

The manufacturer will advise on the suitable protection. Suitable fencing to restrict farm animals should be erected. Do not plant trees close to the system or any trees or plants over the percolation area.

**Maintenance.**

PLEASE REFER TO SAFETY SECTION OF THIS HANDBOOK.

**NOTE:** Always isolate the power to the system, before opening any covers, as the system contains a mains powered blower.

**NOTE:** The air blower must never be turned off. It is imperative that it is left running 24 hours a day, every day to ensure a constant supply of oxygen to the second chamber. If for any reason it ceases working, call your supplier.

**NOTE:** The continued performance of the TRI-CEL unit will depend on regular maintenance as outlined below.

### 3 monthly Maintenance (Homeowner)

There are two vents on the TRI-CEL unit. The inlet vent, under the blower housing, guarantees a fresh supply of air to the plant through the blower. The outlet vent under the de-sludging cover allows gas to escape and stops the tank from becoming pressurised. The vents should be checked to make sure they are

not blocked or over grown by surrounding plants. The inlet manhole should be inspected and any solid matter' which may clog the inlet tee-pipe. The matter should be removed and the cause of any blockage should be investigated. Only qualified person should carry out this. The inlet and outlet tee-pipes should be inspected and rodded that scum does not collect and that the vertical leg is not obstructed.

### Yearly Maintenance (Homeowner)

The TRI-CEL system will require a full service every year to guarantee the efficiency of the unit is maintained. A maintenance contract is available from the manufacturer

To maintain its efficiency, the TRI-CEL system will require yearly de-sludging and a maintenance check. The de-sludging of the TRI-CEL system is the responsibility of the homeowner. De-sludging should be carried out yearly (maximum time is every two years), however depending on usage and house population, more frequent de-sludging may be required. Your Tri-Cel Bio system has a separate desludging access cover, the smaller of the two covers. De-sludging is done with a vacuum tanker (we would recommend the use of a licensed company).

**NOTE:** Do not let this equipment drive over the system. Maintain a distance of at least 4 meters away from the covers on the Tri-Cel wastewater treatment system.

### De-Sludging

1. Remove the de-sludging access cover.
2. Empty the TRI-CEL system using the vacuum tanker. Care must be taken not to damage the TRI-CEL system with the hose of the vacuum tanker.
3. Replace the de-sludging access cover and re lock it in place with a pad lock, (lock not supplied).
4. Waste must be disposed of in accordance with Local Authorities requirements

#### Notes:

- The access cover should never be left off while the unit is unattended.
- De-sludging should never be carried out alone.

### Yearly Maintenance (Installer)

The blower will require a full inspection and filter change. The vents and inlet/outlet should be checked as described above. The sludge return must be inspected to ensure continued functionality. The media should be checked for any damage. The alarm function must be tested by disconnecting the air signal to the alarm.

### EPA Guidelines (selected) from Wastewater Treatment Manuals Treatment Systems for Single Houses © Environmental Protection Agency 2000.

Regular maintenance of the unit and percolation area is very important for the satisfactory performance of the system. Units should be de-sludged a minimum of once per year,

The depth of sludge can be checked using the following technique,

- Use a 2-meter pole and wrap the bottom 1.2 meters with a white rag.
- Lower the pole to the bottom of the tank and hold for several minutes to allow the sludge layer to penetrate the rag.
- Remove the pole and note the sludge line, which will be darker than the coloration caused by the liquid waste.

The percolation area should be inspected regularly.

Note: Signs of ponding indicate blockage or insufficient permeability.

**NSAI, National Standards Authority of Ireland. Standard recommendation, 1991, ref: S.R.6: 1991 © Eolas 1991. 11.5.2.1 General.**

The inlet manhole should be inspected and any solid matter which may clog the inlet tee-pipe should be removed. The cause of any blockage should be investigated. Only qualified personnel should carry out this. The inlet and outlet tee-pipes should be inspected and rodded that scum does not collect and that the vertical leg is not obstructed.

#### **Maintenance of the system & percolation area.**

The system & percolation area should be inspected periodically and any signs of malfunctioning noted. This will show itself by obvious signs of blockage of the distribution box, or by ponding or smells or pollution in the surrounding area.

DO NOT plant trees or deep-rooted shrubs close to the system and especially not anywhere near the percolation area.

#### **Disposal of treated water.**

The TRI-CEL system discharges treated water to the required standards (BOD 20: SS 30) or better. This water is now suitable for disposal. Disposal can be by any of the following means:

- Sub-surface irrigation
- Raised bed

The best disposal method can depend on a variety of site factors including percolation results, soil type, water table level and topography of the site. Please refer to the manufacturer for further details.

#### **Recommended further reading**

- EPA WASTEWATER TREATMENT MANUALS, TREATMENT SYSTEMS FOR SINGLE HOUSES 2000.
- EPA CODE OF PRACTICE WASTEWATER TREATMENT SYSTEMS FOR SINGLE HOUSES (P.E. < 10) CONSULTATION DRAFT 2007.

#### **Warranty and Servicing Contract.**

KMG Ltd the manufacturer, is pleased to offers a 12-month warranty on the TRI-CEL<sup>®</sup> Wastewater Treatment System, provided that it is installed, commissioned & maintained in accordance with its technical instructions and also provided that the unit has not been subject to damage or abuse. This warranty covers all of the GRP components manufactured by KMG Ltd, and also all other additional installed components against malfunction. KMG Ltd can offer yearly Service Agreements.

KMG ltd offers servicing agreements to customers. For an annual fee, paid fully in advance, we will service and perform preventative maintenance of your Tri-Cel Wastewater treatment system. We can tailor servicing agreements to suit customer requirements, performing one visits per year.

It is advisable to have your system serviced a minimum of once per year. Servicing agreements do not include de-sludging the system (emptying chamber one). **See section on De-sludging.**

**Terms & Conditions:**

**Subject to Standard Contract Conditions, available on request.**

- The manufacturers instructions outlined in the builders & homeowners manuals must be followed at all times. A service contract 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. KMG Ltd or its contractors will endeavour to do this if contracted to do so. In general, one or two visits per year are required (depending on the capacity of the system) by KMG Ltd in order to carryout this maintenance on the system.
- The end user of the wastewater treatment system is 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 Tri-Cel® Wastewater Treatment Systems and is to be done by the customer. All servicing contracts exclude de-sludging. Only competent approved personnel should carry out de-sludging. De-sludging must be carried out a minimum of once 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. KMG Ltd will aid in the design of these, however the construction is the responsibility of others. Incorrectly constructed drains or polishing filters could result in poor treatment of effluent and KMG Ltd holds no responsibility in this regard.
- If the system is not installed correctly, flooding, overloading, electrical shock or flotation may occur. KMG Ltd 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.
- KMG 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 objects that can damage pumps or block pipework or quantities of chemicals that will alter the workings of the system, enter the system.**
    - **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**

- Service personnel must be accommodated with clear access to the system.
- A servicing contract is a contract to perform one routine service (unless extra are specified) on the Tri-Cel® Wastewater Treatment System. This service is usually performed within two months of date of payment for the contract. A Servicing Contract 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 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.
- Servicing is mechanical only, and does not include de-sludging (emptying of the system).
- KMG Ltd has the right to terminate a service contract. KMG Ltd, are under no obligation to offer a further service contract. The issuing of a Servicing contract is at the sole discretion of KMG Ltd.
- 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, KMG Ltd 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 KMG Ltd 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, KMG Ltd 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 KMG Ltd and KMG Ltd cannot be held responsible for completing inaccurate site assessments, due to miss-information being given to KMG Ltd.
- If the system has not been installed as per our recommendations, we may not be able to offer a customer a servicing contract. Incorrectly installed systems may not function correctly, and KMG Ltd cannot take responsibility for these systems and may not be able to service them. In this case, any servicing contract fees paid in advance will be refunded partially or in full, (deductions may be necessary to cover travel costs incurred, by KMG Ltd, or its contractors). In this instance KMG Ltd retains the discretionary right to refuse to issue a service contract.

In accordance with KMG Ltd normal policy of product development, this specification is subject to change without notice.

March 2009.

**Other products from KMG Ltd**

- Rainwater harvesting Systems
- Underground GRP tanks
- Sectional water tanks.
- One-piece water tanks, 45 litres to 9092 litres
- Tri-Cel P6 to P50 CE Certified systems to EN 12566-3
- Tri-Cel large multi house development Bio Systems
- Distribution boxes.
- Separators – Petrol / oil interceptors
- Kiosks
- ESB meter cabinets - Gas meter cabinets
- Agri Box - IP65 Metering cabinets
- Cable ETU Box
- Insulated housings.
- Chemical tanks
- Shower trays
- Safety products.

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