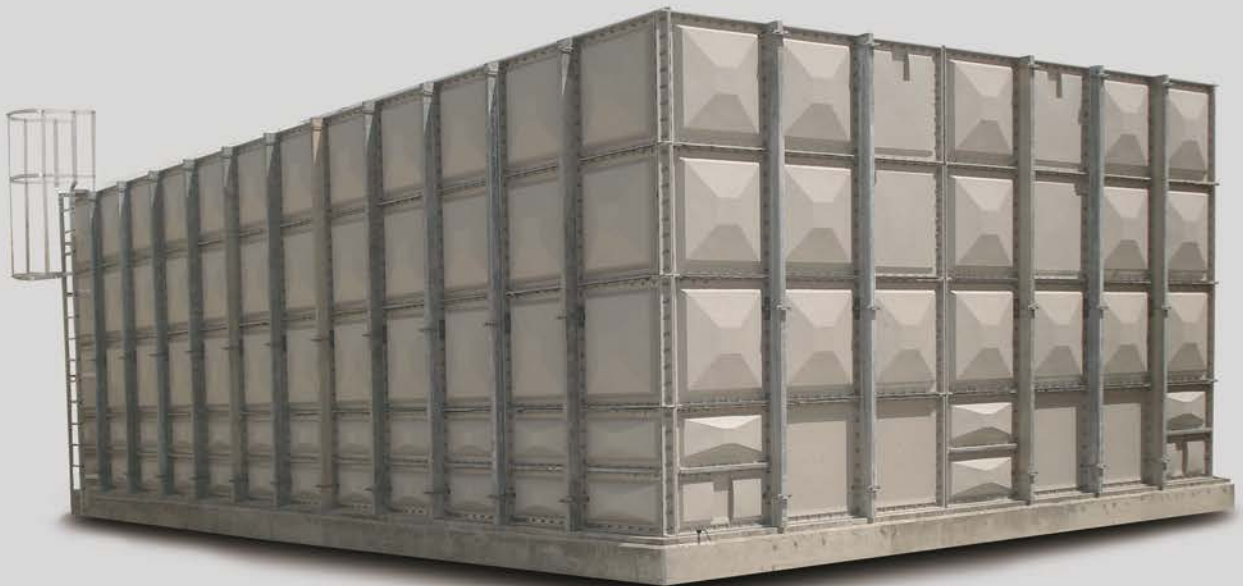




**TRICEL**  
WATER STORAGE

# GRP Sectional cold water storage tank

*Quality tanks since 1973*





## Index

	Page
1. Introduction	2
2. Guide lines on locating tanks	3
3. Guide lines on sizing tanks	4
4. Guide Lines for different models of tanks	5
Modular Building Systems.	6
5. Data Sheets	
i Insulated tanks	7
ii Ball Valve housings	8
iii Drip trays	8
iv Divisions	9
v Connections	10
6. Base details	
Metric	12
Imperial *	13
7. Capacity tables	
Metric	14
Imperial *	15
8. Maintenance procedures	16
9. Sample tender specifications	17
10. One piece water tanks	
i. Specifications	18
ii. Maintenance	19
11. Glossary of terms	20

\* All information in relation to imperial tanks is printed in blue

### Note :

- Tanks must be installed and maintained strictly in accordance with our installation and maintenance Instructions.

**Head Office :** Ballyspillane Industrial Estate, Killarney, Co. Kerry, Ireland  
Tel.: +353 64 - 6632421 Fax: +353 64 - 66 32777  
Email: [sales@ie.tricel.eu](mailto:sales@ie.tricel.eu)  
Web: [www.ie.tricel.eu](http://www.ie.tricel.eu)

In accordance with Tricel (Killarney) normal policy of product development this specification is subject to change without notice.

# Introduction

Tricel (Killarney) is one of the foremost companies in the business of producing Glass Fibre Reinforced Plastic (G.R.P.) sectional water tanks.

Tricel (Killarney) is a group of companies headquartered in Ireland and is a global supplier of composite products and technology. Tricel (Killarney) has four core product groups: Building and Automotive Products, Sewage & Effluent Treatment Systems, Reinforced Compounds and Safety Products.

We are one of the few companies who possess the technical expertise and the advanced manufacturing facilities - not only to produce our tanks by hot compression moulding but also to produce in-house, the most important single element without which the term hot press moulding means nothing.

This element, an advanced composite known as Sheet Moulding Compound (S.M.C.) is manufactured in our Killarney Plant with all the necessary characteristics incorporated into the design and tested in advance.

Tricel (Killarney) has achieved a pre-eminent position in this field. Our experience in composite materials extends over 30 years, during which period we have grown to become a market leader - being in sole control of the key elements in the excellence of our product.

All our products are manufactured to ISO9001:2000

## Range of Panels

Tank panels are available in both metric (1 x 1meter, 1 x 0.5 meter & 0.5 x 0.5meter) and imperial configurations (1.22 x 1.22 meter, 1.22 x 0.61meter & 0.61m x 0.61meter)



## Guidelines for Locating Water Tanks

### General

The following recommendations are generally for elevated tanks, as tanks at elevated positions can cause serious damage to the surrounding area in the event of wall, pipe or structural support failure resulting in water spilling out at a fast rate. Consideration must be given to minimise the effects of such an occurrence, in terms of the positioning of the tank and regular inspection for defects.

- Water tanks should be located so as to prevent water damage or consequential loss in the event of leakage howsoever occurring.
- All tanks which are located above water sensitive areas should have a bund wall around them with adequate evacuation ducts.
- All other tanks should have Condensation or Drip trays to prevent nuisance damage and to keep floors dry.

Over the years we have seen tanks fail due to age, lack of maintenance, failure of the structural supports underneath the tanks, contaminated water attacking the internal fittings, ball valve failure where overflows were not fitted, vandalism etc.

### Water tanks on top of buildings

Water tanks located on top of any building should be sited at least 1.2 meters away from the edge of the building.

It would be preferable if the water tank was sited 1.5 times the height of the tank away from the edge of the building. In the event of failure, this would allow the water to spread itself over a much wider area before spilling over the edge of the building and possibly taking personnel or debris with it.

### Handrails on tank roofs - Health & safety requirements

Handrails may be necessary to satisfy Health & Safety Regulations. The type of railing required is dependant on the tank height, distance from ground level, access etc. Please confirm which handrail arrangement is required so that we can make the necessary inclusion. We can supply and install ladders and railings, but we must be informed of the exact details prior to quoting the project. We assume that the end user is making his own arrangements unless we are informed otherwise.

### Water tanks on elevated structures

For water tanks located on top of elevated structures, a walkway of at least 1 meter should be provided all round the water tank to allow for maintenance and inspection. This walkway should comply with health and safety regulations.

### Potable water tanks

To comply with the Health & Safety Executive regulations on the Control of Legionellosis 1998, Cold Water Storage Tanks must be located in areas that are "*readily accessible for cleaning*".

Regular Maintenance and Inspections as required by Health & Safety Legislation.

## Guidelines for sizing water tanks

Hotels	1045 Litres (actual capacity) per bedroom per day
Offices	45 Litres (actual capacity) per person per day
Schools	36 Litres (actual capacity) per person per day
House with 2 bathrooms	682 Litres (actual capacity) per day

The mains pressure must be sufficient to re-fill the tank while the premises are closed. In areas of low water pressure, the above figures would need to be increased. In our experience, the water pressure has been reducing gradually for the past number of years, particularly in the cities and in areas where there have been large developments.

**Note : The above figures are based on Dublin Corporation Guide Lines. The minimum Requirements do not include for fire-fighting.**

### Nominal Versus Actual Capacity

Metric

Imperial

Tank Height	% Loss in capacity for 51mm (2") Overflow	% Loss in capacity for 89mm (3 ½")
500	42	51
1000	21	26
1500	14	17
2000	11	13
2500	8	10
3000	7	9
3500	6	7
4000	6	7

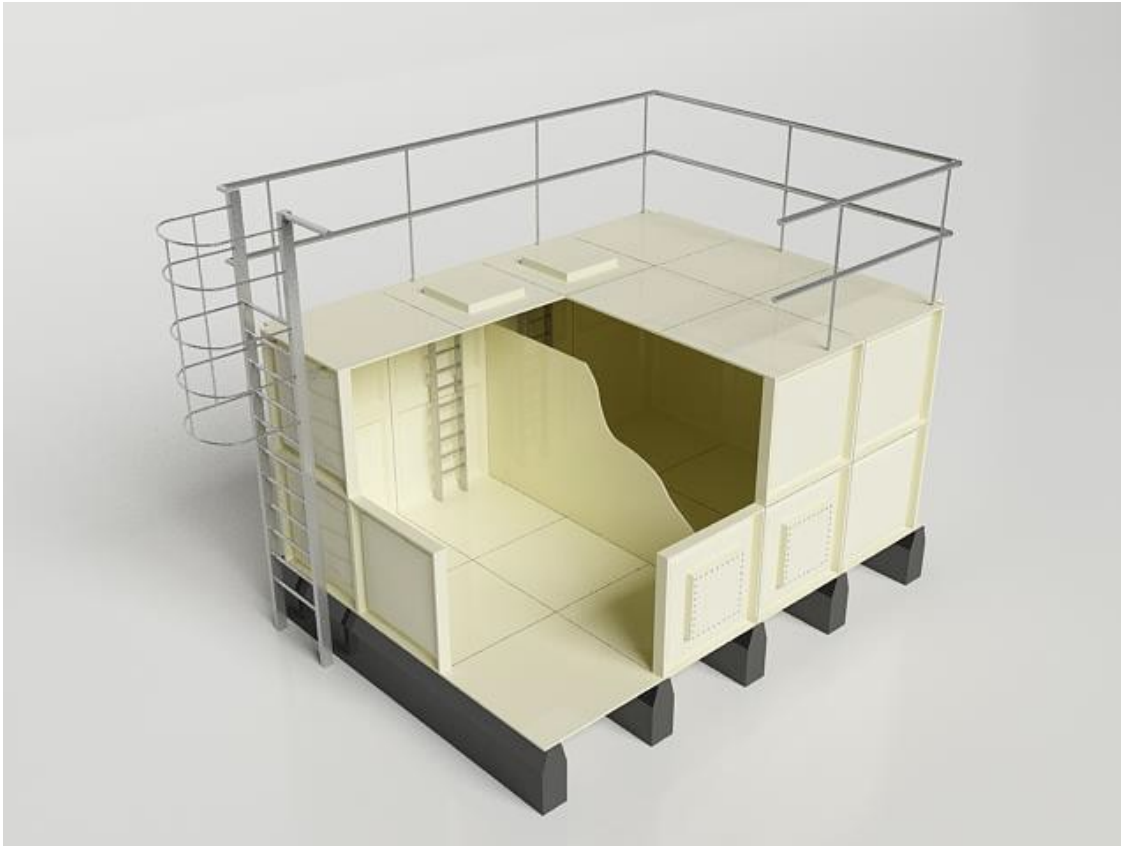
Tank Height mm	% Loss in capacity for 51mm (2") Overflow	% Loss in capacity for 89mm (3 ½")
610 (2')	35	42
1220 (4')	17	20
1830 (6')	12	14
2440 (8')	9	10

The above figures are approximate and are based on a 51mm (2") and 89 mm (3 ½ ") overflows. If a larger overflow is used, the percentage loss will be greater.



15150 x 4140 x 2000 mm 120,000 litre (26,000 Gallons) Tank Insulated to Format 30. Installed 1998.

## Guidelines for different models of tanks



**Standard tank :** This tank is complete with internally flanged base, externally flanged side walls. All under water stays are Stainless Steel and all bolts are Galvanised to BS 729.

**Light duty cover :** Only suitable for indoor use, and for the storage of foul water. They are not designed to take Man weight.

**Heavy duty cover :** Suitable for Indoor and Outdoor Use, and for the storage of foul water. These tanks have internally flanged lid panels, similar to those used in the base.

**Heavy duty cover and finished to Format 30 :** Suitable for Indoor, Outdoor use and for the storage of Drinking Water, as defined in our specification, Tricel (Killarney) Format 30 on page 6.

**Note :**

- To comply with current legislation all tanks that store water that may be used for drinking must be protected, they must meet the requirements set out in the water byelaws
- BS 6700 states that because any cold water tap is likely to be used to drink from, all such taps not directly connected to the mains shall be supplied only from tanks that are protected.
- Where drinking water has been stored in an inadequately protected tank, a water analysis should be considered and adequate protection installed.
- Tanks of over 1000 litres (220 gallons) shall be divided or have standby tanks to facilitate repairs and maintenance. It should also have a wash out pipe or drain out taps, these to terminate above an outside gully to prevent wastage.



- Tank insulation materials should not suffer permanent structural damage from contact with water generally Phenolic and Polyurethane closed cell foams comply. Where pipe cut outs go through insulation panels, bezels should be fitted to protect the exposed insulation from the ingress of moisture, insects and vermin and preserve the integrity of the insulation with a protective finish.

**Types of bolts:** Standard Tanks come complete with Bolts galvanised to BS 729, we recommend that Consultants specify Stainless Steel grade 316 S16 bolts under water.

**Dividers :** In any situation where there is only one water storage tank in a building and the capacity is greater than 1000 litres (220 gallons), BS 6700 states *"To avoid interruption of the water supply when carrying out repairs or maintenance, the cistern shall be provided with compartments or standby cistern"*. Where drinking water is being stored, two separate tanks are recommended as it is difficult to detect cross contamination from one side of a division wall to another.

**Condensation trays:** They should be used in any instance where condensation, drips from pipe work, or from the tank could cause nuisance damage or render floors wet and slippery.

**Ball valve housing:** Enclosed chamber containing an access hatch above the level of the cover, permitting the level control mechanism to be mounted at a higher level than would otherwise be possible. The overflow(s) must be placed on the tank side wall and not on the Ball Valve Housing. Water must be kept below tank roof level. This is only necessary where very large ball valves are used.

**Ladders:** Where tank depth is 1.5 m or greater, internal and external ladders should be specified. If the tank is on a raised platform then ladders may be required on tanks lower than this height. Where the tank is 2m or more from the top of the tank to the finished floor level external ladders should be fitted with safety cages and comply to BS4211 1994.

**Handrail:** A handrail should be fitted enclosing all access points to the tank roof, where a tank is 2m or more from the top of the tank to the finished ground level.

**Reverse base tanks:** (Externally flanged base) These types of tanks allow the tank to be totally drained down, as the base is flat, they also allow access to all the bolts from outside the tank. 450 mm clearance is required underneath the tank for access to the base bolts.

***The client shall ensure that potable water is not stored in tank compartments that are adjacent to compartments storing foul water due to risk of contamination.***

## Side access hatch



The Side Access Hatch has an opening of 600mm x 600mm. It is available as a 1000mm x 1000mm metric panel or as a 1220mm x 1220mm imperial module panel. The side access hatch is a useful choice when there are height restrictions on site. It also provides easier access to the inside of a tank, particularly when there is restricted space above the tank.

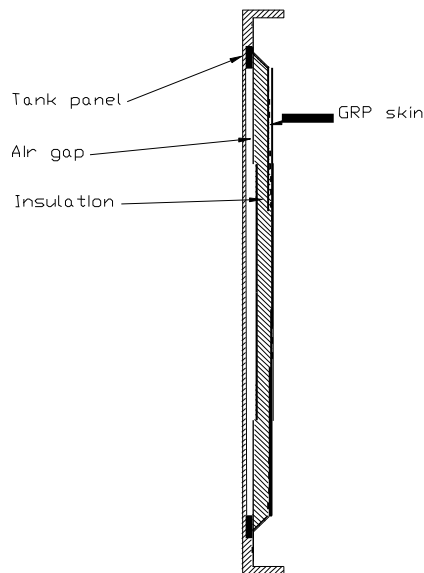
The Side Access Hatch comprises of three main components: panel, flange and flat hatch sheet. To open the hatch, the flat hatch sheet is simply unbolted from the flange. It can only be opened when the water level inside the tank is lower than the access hatch.

This Access Hatch was designed so that both the head of the bolt and the nut are accessible. This allows a wrench to be placed on the bolt head as well as the nut and prevents a scenario of the bolt simply spinning without opening.

***Please note that the 'tank sealant' between the flat access sheet and the will need to be in good condition or replaced, prior to the reattachment of the flat access hatch.***



## Tanks insulated and finished to Format 30



**Note :** This is only an example of one type of insulation skin, there are different arrangements for different types of tanks.

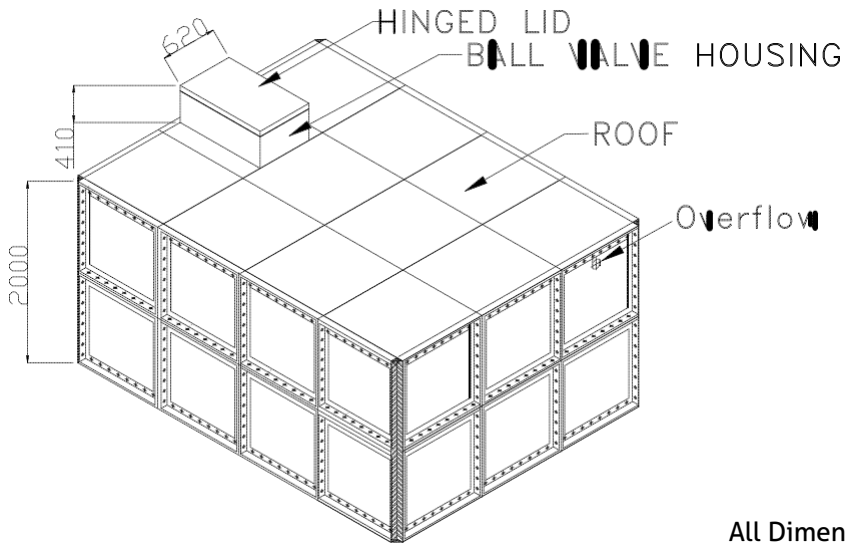
- Current legislation states that water hot or cold, in any premises that might be used for human consumption must be of potable quality.
- In addition to tank material specifications, there are now further requirements for lid design, the screening of vents, breathers, overflows, warning tell tale pipes and the provision of insulation which will help prevent freezing and also help keep water as cool as practicable, ideally less than 20°C.
- Format 30 is our description of tanks with Heavy Duty panel covers, complete with screened vents, overflows, warning pipes etc and having side wall and roof panels with a (u) value of 2.5 w/m<sup>2</sup>K, (tanks under 1m high have a slightly higher value). This value meets the requirements of section 30 of the water bye laws in the majority of situations. Tanks in boiler rooms etc may also need base insulation. The purchaser can specify extra requirements or thermal transmittance after considering the period of protection necessary, the tank location and the surrounding conditions.

**Please Note :** Insulation slows down but does not prevent heat loss or gain over protracted periods. Additional information is available in BS 7491 & BS 6700.



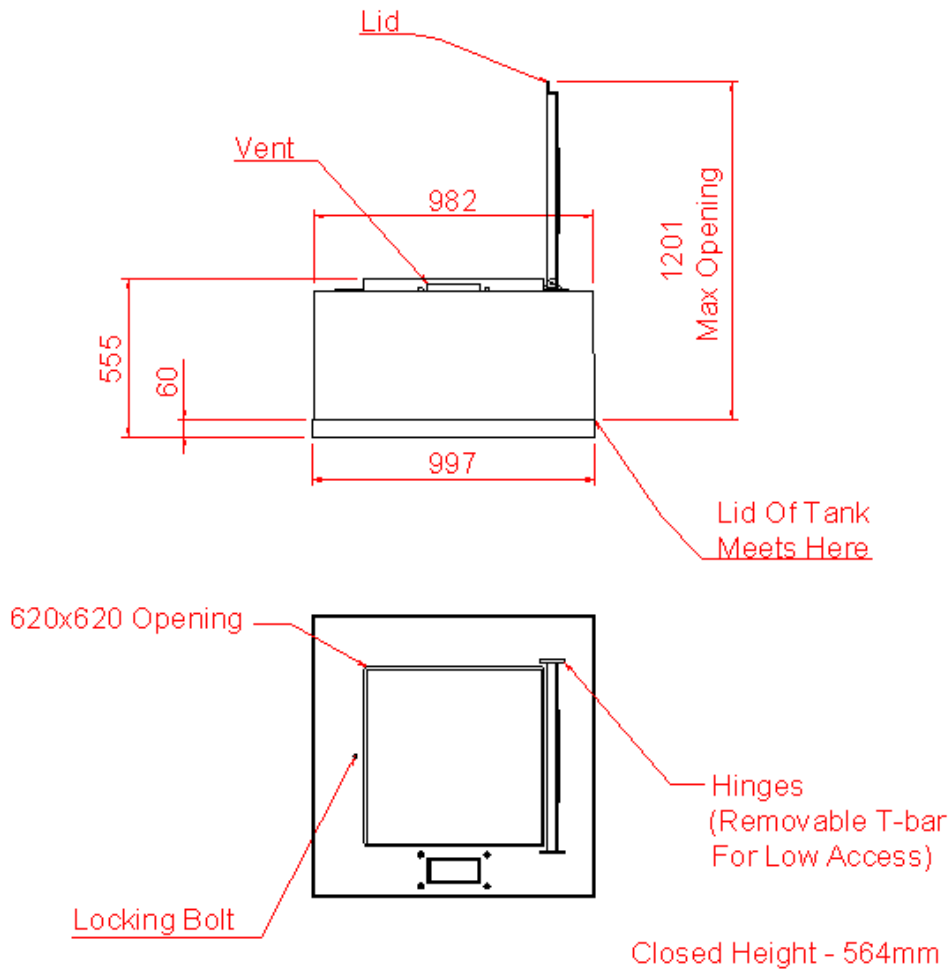
5150 x 4150 x 2000 mm 40,000 Litre (8,800 Gallons) Water Tank, Insulated to Format 30

# Ball valve housing



All Dimensions are in mm

## Ball Valve Housing Specification



Isometric view of a Ball Valve Housing on a 4000 x 3000 x 2000 mm Sectional cold water storage tank. A Ball Valve Housing is an enclosed chamber containing an access hatch above the level of the cover, which leaves space for larger ball floats to raise up and shut off the water supply.

#### Specification

External Dimensions : 1000 x 1000 x 560 mm high

Space required : 1201 mm clearance space is required above the roof of the tank, i.e.

For a 2m high tank the room needs to be 3201 mm high.

**Note : The overflow(s) must be placed on the tank side wall and not on the Ball Valve Housing. Water must be kept below tank roof level.**

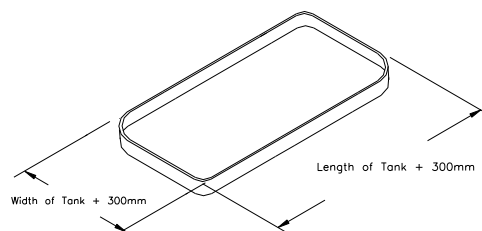
## Condensation trays

We manufacture condensation trays to suit all sizes of Water Storage Tanks.

For Sectional cold water storage tanks, the tray extends round the tank by 150 mm. i.e. a sectional tank with external dimensions 4150 x 3150 mm will have a tray approximately 4300 x 3300 mm.

Trays for large sectional tanks are joined on site.

Condensation trays should be water tested at time of testing tank.



Condensation Trays should be used in any instance where condensation, drips from pipe work or from the tank could cause nuisance damage or render floors wet and slippery.

**A condensation tray is not a substitute for a bund wall or for tanking out a room.**

**APPROPRIATE OVERFLOWS MUST BE FITTED AS CLOSE AS POSSIBLE TO THE BASE OF THE DRIP TRAY. THESE MUST BE FITTED BEFORE THE TANK IS FILLED. TRAYS ARE DESIGNED TO HOLD A MAXIMUM OF 25MM OF WATER**

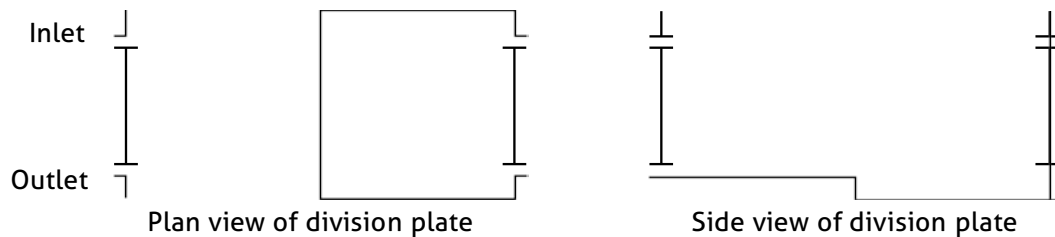
## Tank divisions

In any situation where there is only one water storage tank in a building and the capacity is greater than 1000 litres (220 gallons), BS 6700 states "To avoid interruption of the water supply when carrying out repairs or maintenance, the cistern shall be provided with compartments or standby cistern". Where drinking water is being stored, two separate tanks are recommended as it is difficult to detect cross contamination from one side of a division wall to another.

### Division Types

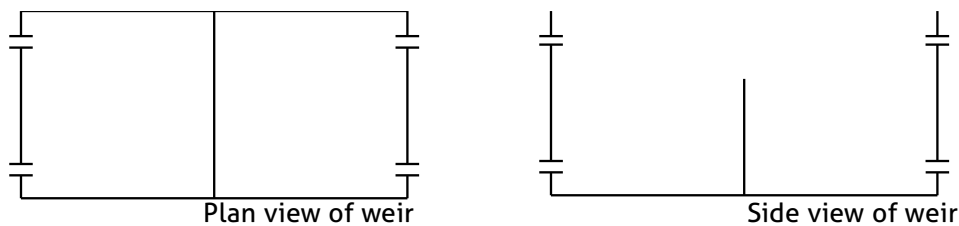
#### Division Plate

Construction of one or more panels within a tank which divides the tank into two separate compartments.



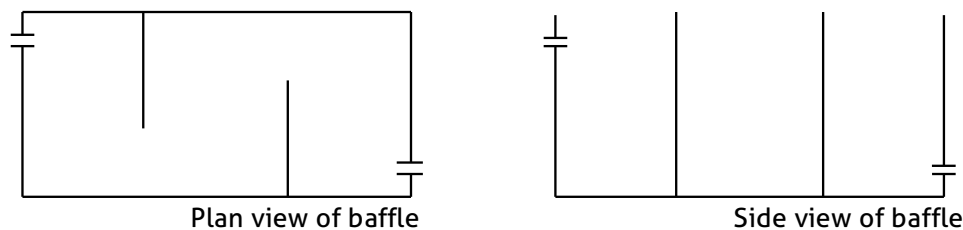
#### Weir

Construction of one or more panels within a tank, which divides the tank but to less than its full depth such that the contents can spill over from one side of the weir to the other.



#### Baffle

Construction of one or more panes within a tank, which partially subdivides the tank in order to increase the length of the flowpath between the inlet and the outlet from the tank.



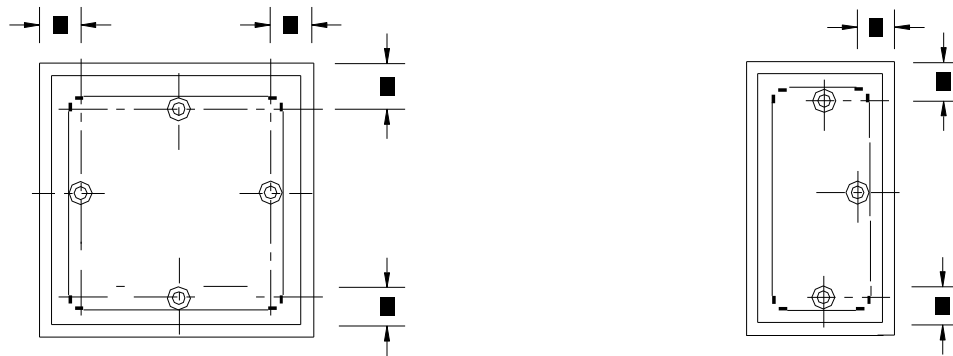
## Maintenance on tanks with dividers

- Extra care should be taken during the maintenance of tanks with divisions, as maintenance staff will be working in an enclosed space, adjacent to a large volume of water in relation to the size of the space. (See Health & Safety Act)

## Pipe connections for cold water storage tanks

- If the tank is to be drained down at a fast rate or by pumps etc, we should be contacted so that adequate vents can be placed on the tank. The standard vent is 2".
- Connections of 100mm (4") nominal bore or over require studed flange pads to suit BS1962, table D&E flanges for pipework connections.
- Connections below 100mm (4") nominal bore may be made by cutting holes in situ. First determine whether single or double sided connections are required and cut hole in panel to suit external pipe diameter.
- For connections over 50 mm (2") nominal bore use two flanges screwed BS21 taper thread, drilled to BS 10. Offer one flange to panel concentric with hole and transfer drill bolt holes into panel. Set one flange to external pipe and using appropriate gaskets, assemble external flanged pipe using other flange as an internal backing plate. Finally bolt up.
- For double sided connections proceed as above, replacing internal flange with the required fitting, e.g. ball valve, strainer basket etc.
- For connections of 50 mm (2") nominal bore or less proceed as above or alternatively use threaded flanges or backnuts (with rubber gaskets) on standard longscrow to BS 1387.

The figures below show hole diameter for in situ pipe fittings and minimum dimensions for the location of connections from panel edges.



Nominal bore diameter (mm/inch)	Nominal hole Size (mm/inch)	Dimension A (mm/inch)
12.7 (½)	22	158 (6 ¼)
19	28 (1 <sup>3</sup> /32)	161 (6 <sup>3</sup> /8)
25.4 (1)	35 (1 <sup>3</sup> /8)	167 (6 <sup>5</sup> /8)
31.7 (1 <sup>1</sup> /4)	44 (1 <sup>31</sup> /32)	170 (6 <sup>3</sup> /4)
38.1 (1 <sup>1</sup> /2)	50 (1 <sup>31</sup> /32)	177 (7)
50.8 (2)	61 (2 <sup>15</sup> /32)	186 (7 <sup>3</sup> /8)
63.5 (2 <sup>1</sup> /2)	78 (3 <sup>1</sup> /16)	193 (7 <sup>5</sup> /8)
76.2 (3)	90 (3 <sup>9</sup> /16)	202 (8)
89	105 (4 <sup>1</sup> /8)	212 (8 <sup>3</sup> /8)

**General notes**

All pipe work must be self supporting. If welded or brazed-on flanges are used, all heat must be dissipated before connections are made to the tank. Holes may be cut with normal metal working tools.

**Note:** These figures only apply to Un-Insulated tanks

**Pipe connections for insulated cold water storage tanks.**

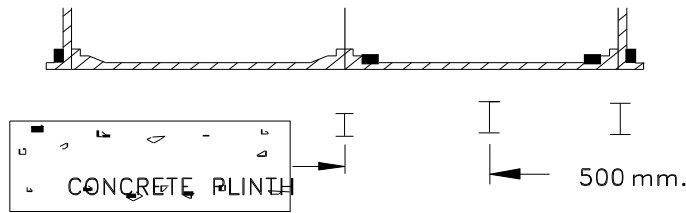
The areas where pipe connections can be made on insulated tanks are more restricted than in standard tanks, the picture below shows a recess in the insulation panel to allow for the pipe connection. Standard insulated tanks come with three insulation panels with recesses. More can be supplied if required. These are generally 190mm diameter





## Base details /design considerations (METRIC)

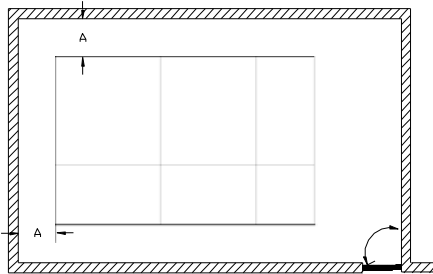
### Tanks based on 1x1 & 1x.5 m panels



Standard base tanks (internally flanged base panels) may be laid directly on a concrete plinth having a trowelled finish, brushed clean and free from any local protuberances. It should be flat, level and not vary more than 6 mm in any 6 m, measured laterally or diagonally with a maximum variance of 2 mm per metre. The plinth must exceed the nominal tank dimensions by a minimum of 200 mm.

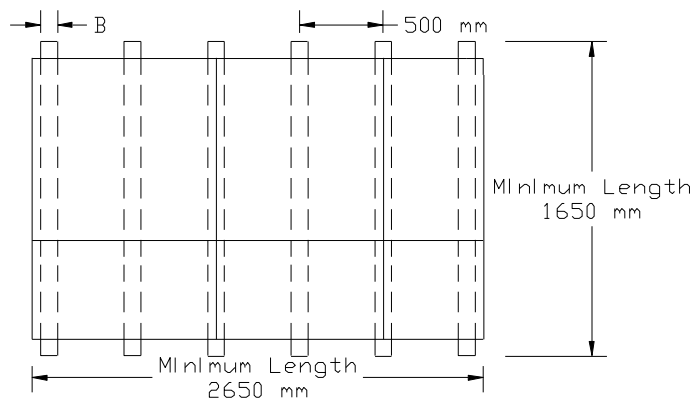
Tanks erected on elevated structures (RSJ beams or brick courses in one direction only). Bearers must be at 500 mm centres. Bearer length must exceed nominal tank dimensions by a minimum of 150 mm plus any extra for fixings. All bearer walls to be flat and level. For bearer width see chart below.

### Typical Tank Room (Plan)



For dimension 'A' see chart below. This clearance should be on all sides of the tank, also a top clearance of 650 mm is required for standard access hatch to open. (This can be reduced to 450 mm provided that we are notified prior to dispatch). If the tank has to be pushed closer to any wall after assembly or if the working space is reduced (dimension 'A') at a later stage, by the building of walls etc, responsibility will rest with others.

### Example : Tank where base is 2650 x 1650 mm



### General Notes:

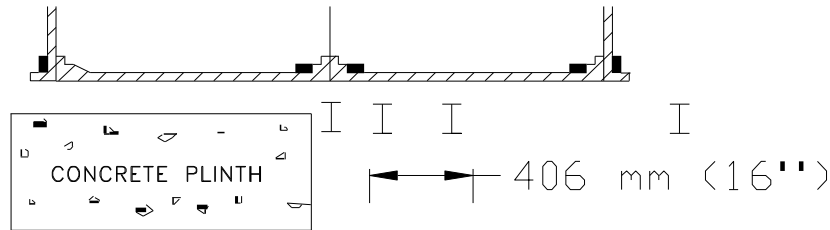
1. Tanks should not be placed above / beside water sensitive areas, unless there is adequate bunding.
2. Client to design suitable bearers to suit load conditions. Water load =  $1000 \text{ kg/M}^2 + 20\%$  for tank.
3. Bearers can run in either direction.
4. It is necessary that the top of each bearer be flat, level and level with its neighbouring bearers.
5. Deflection must not exceed  $1/500^{\text{th}}$  of the unsupported span of the bearers. The unsupported span can only be in one direction.
6. Adequate overflows should be fitted to prevent the tank from being pressurised.
7. Tanks in exposed places may be susceptible to movement in high winds, especially when empty. These may need to be anchored to the base, this work is to be carried out by others.

### Working space and bearer width

Tank Height	Dimension 'A'	Bearer Width 'B'
Mm	Mm	mm
500	450	75
1000	450	100
1500	500	100
2000	600	150
2500	650	150
3000	700	150

## Base details /design considerations (IMPERIAL)

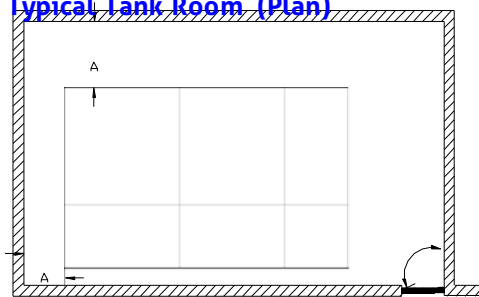
Tanks based on 1.22m x 1.22m & 1.22m x.61m panels



Standard base tanks (internally flanged base panels) may be laid directly on a concrete plinth having a trowelled finish, brushed clean and free from any local protuberances. It should be flat, level and not vary more than 6 mm in any 6 m, measured laterally or diagonally with a maximum variance of 2 mm per metre. The plinth must exceed the nominal tank dimensions by a minimum of 200 mm.

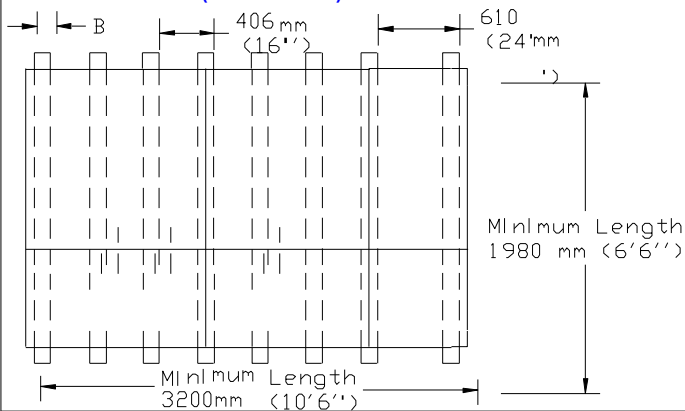
Tanks erected on elevated structures (RSJ beams or brick courses in one direction only). Bearers must be at 406 mm (16") centres. Where a half panel is used one bearer at 610 mm (24") centres is required. Bearer length must exceed nominal tank dimensions by a minimum of 150 mm plus any extra for fixings. All bearer walls to be flat and level. For bearer width see chart below.

### Typical Tank Room (Plan)



For dimension 'A' see chart below. This clearance should be on all sides of the tank, also a top clearance of 650 mm is required for standard access hatch to open. (This can be reduced to 450 mm provided that we are notified prior to dispatch). If the tank has to be pushed closer to any wall after assembly or if the working space is reduced (dimension 'A') at a later stage, by the building of walls etc, responsibility will rest with others.

**Example: Tank 3200 x 1980 mm**  
( 10'6" x 6'6")



### General Notes:

1. Tanks should not be placed above / beside water sensitive areas, unless there is adequate bunding.
2. Client to design suitable bearers to suit load conditions. Water load =  $1000 \text{ kg/M}^3 + 20\%$  for tank.
3. Bearers can run in either direction.
4. It is necessary that the top of each bearer be flat, level and level with its neighbouring bearers.
5. Deflection must not exceed  $1/500^{\text{th}}$  of the unsupported span of the bearers. The unsupported span can only be in one direction.
6. Adequate overflows should be fitted to prevent the tank from being pressurised.
7. Tanks in exposed places may be susceptible to movement in high winds, especially when empty. These may need to be anchored to the base, this work is to be carried out by others.

### Working Space and Bearer Width

Tank Height mm	Dimension 'A' mm	Bearer Width 'B' mm
610	450	75
1220	450	75
1830	500	75

## Capacity tables - metric panels

**Panel sizes available : 1m x 1m, 1m x .5m, .5m x .5m**

Tank sizes given in this table are based on their external dimensions which are 150 mm greater than the internal dimensions.

Nominal capacities are calculated based on internal dimensions as follows INTERNAL  
LENGTH X WIDTH X HEIGHT IN M = M<sup>3</sup> x 1000 = Litres ÷4.546 = Gallons.

External Length m	External Width m	1m high litre	gallons	1.5 m litres	gallons	2m high litres	gallons	2.5 m Litres	gallons
1.15	1.15	100	220	1500	330	2000	440	2500	550
1.65	1.15	150	330	2250	495	3000	661	3750	826
2.15	1.65	300	660	4500	991	6000	1322	7500	1651
2.65	1.15	250	550	3750	825	5000	1101	6250	1377
2.65	1.65	375	825	5625	1278	7500	1652	9375	2065
2.15	1.15	200	440	3000	660	4000	880	5000	1,100
2.15	2.15	400	880	6000	1,320	8000	1,760	10000	2,200
3.15	1.15	300	660	4500	990	6000	1,320	7500	1,650
3.15	2.15	600	1,320	9000	1,980	12000	2,640	15000	3,300
3.15	3.15	900	1,980	13500	2,970	18000	3,960	22500	4,949
4.15	1.15	400	880	6000	1,320	8000	1,760	10000	2,200
4.15	2.15	800	1,760	12000	2,640	16000	3,520	20000	4,399
4.15	3.15	1200	2,640	18000	3,960	24000	5,279	30000	6,599
4.15	4.15	1600	3,520	24000	5,279	32000	7,039	40000	8,799
5.15	1.15	500	1,100	7500	1,650	10000	2,200	12500	2,750
5.15	2.15	1000	2,200	15000	3,300	20000	4,399	25000	5,499
5.15	3.15	1500	3,300	22500	4,949	30000	6,599	37500	8,249
5.15	4.15	2000	4,399	30000	6,599	40000	8,799	50000	10,999
6.15	1.15	600	1,320	9000	1,980	12000	2,640	15000	3,300
6.15	2.15	1200	2,640	18000	3,960	24000	5,279	30000	6,599
6.15	4.15	2400	5,279	36000	7,919	48000	10,559	60000	13,198
6.15	5.15	3000	6,599	45000	9,899	60000	13,198	75000	16,498
6.15	6.15	3600	7,919	54000	11,879	72000	15,838	90000	19,798
7.15	1.15	700	1,540	10500	2,310	14000	3,080	17500	3,850
7.15	2.15	1400	3,080	21000	4,619	28000	6,159	35000	7,699
7.15	3.15	2100	4,619	31500	6,929	42000	9,239	52500	11,549
7.15	6.15	4200	9,239	63000	13,858	84000	18,478	105000	23,097
7.15	7.15	4900	10,779	73500	16,168	98000	21,557	122500	26,947
8.15	1.15	800	1,760	12000	2,640	16000	3,520	20000	4,399
8.15	2.15	1600	3,520	24000	5,279	32000	7,039	40000	8,799
8.15	3.15	2400	5,279	36000	7,919	48000	10,559	60000	13,198
9.15	1.15	900	1,979	13500	2,969	18000	3,960	22500	4,949
9.15	2.15	1800	3,960	27000	5,939	36000	7,919	45000	9,899
9.15	3.15	2700	5,939	40500	8,908	54000	11,878	67500	14,848
9.15	4.15	3600	7,919	54000	11,878	72000	15,838	90000	19,797
10.15	5.15	5000	11,013	75000	16,520	100000	22,026	125000	27,533

16.15	6.15	9600	21,145	14400	31,718	19200	42,290	24000	52,863
48.15	24.15	1.15	25,330	1.73 m	381,05	2.31 m	508,81	2.88 m	634,361
<b>External Length</b>	<b>External</b>	<b>3m high</b>			<b>3.5 m</b>		<b>4m high</b>		
<b>m</b>	<b>m</b>	<b>Litres</b>	<b>gallons</b>		<b>litres</b>	<b>Gallons</b>	<b>litres</b>	<b>gallons</b>	
1.15	1.15	3000	660		3500	770	4000	880	
1.65	1.15	4500	991		5250	1,155	6000	1,320	
2.15	1.65	9000	1982		10500	2,310	12000	2,640	
2.65	1.15	7500	1652		8750	1,925	10000	2,200	
2.65	1.65	11250	2478		13125	2,887	15000	3,300	
2.15	1.15	6000	1,320		7000	1,539	8000	1,760	
2.15	2.15	12000	2,640		14000	3,079	16000	3,520	
3.15	1.15	9000	1,980		10500	2,310	12000	2,640	
3.15	2.15	18000	3,960		21000	4,619	24000	5,279	
3.15	3.15	27000	5,939		31500	6,929	36000	7,919	
4.15	1.15	12000	2,640		14000	3,080	16000	3,520	
4.15	2.15	24000	5,279		28000	6,159	32000	7,039	
4.15	3.15	36000	7,919		42000	9,239	48000	10,559	
4.15	4.15	48000	10,559		56000	12,319	64000	14,078	
5.15	1.15	15000	3,300		17500	3,850	20000	4,399	
5.15	2.15	30000	6,599		35000	7,699	40000	8,799	
5.15	3.15	45000	9,899		52500	11,549	60000	13,198	
5.15	4.15	60000	13,198		70000	15,398	80000	17,598	
6.15	1.15	18000	3,960		21000	4,619	24000	5,279	
6.15	2.15	36000	7,919		42000	9,239	48000	10,559	
6.15	4.15	72000	15,838		84000	18,478	96000	21,117	
6.15	5.15	90000	19,798		10500	23,097	12000	26,397	
6.15	6.15	10800	23,757		12600	27,717	14400	31,676	
7.15	1.15	21000	4,619		24500	5,389	28000	6,159	
7.15	2.15	42000	9,239		49000	10,779	56000	12,319	
7.15	3.15	63000	13,858		73500	16,168	84000	18,478	
7.15	6.15	12600	27,717		14700	32,336	16800	36,956	
7.15	7.15	14700	32,336		17150	37,725	19600	43,115	
8.15	1.15	24000	5279		28000	6,159	32000	7,039	
8.15	2.15	48000	10559		56000	12,319	64000	14,078	
8.15	3.15	72000	15838		84000	18,478	96000	21,117	
9.15	1.15	36000	7,919		31500	6,929	36000	7,919	
9.15	2.15	54000	11,878		63000	13,858	72000	15,838	
9.15	3.15	81000	17,817		94500	20,788	10800	23,757	
9.15	4.15	10800	23,571		12600	27,717	14400	31,676	
10.15	5.15	15000	33,039		17500	38,495	20000	43,995	
16.15	6.15	28800	63,436		33600	73,911	38400	84,470	
48.15	24.15	3.45 m	759,91		4.03m	886,93	4.6m	1.1m	

**ACCESS FOR ERECTION:**

Adequate space must be available for erection purposes and across the cover for access to the inside of the Tank. See assembly space requirements.

As a quick guide to space required :

Add 0.9 m to length and width of 0.5m & 1m high tanks.

Add 1m to length and width of 1.5m high tanks. Add

1.2 m to length and width of 2m high tanks.

Add 1.3 m to length and width of 2.5m high tanks. Add 1.4 m to length and width of 3, 3.5 & 4m high tanks.

## Capacity tables - imperial panels

**Panel sizes available :** 1.22m x 1.22m, 1.22m x .61, .61m x .61m

Tank sizes given in this table are based on their external dimensions which are 150 mm greater than the internal dimensions.

Capacities are calculated based on internal dimensions as follows

INTERNAL LENGTH X WIDTH X HEIGHT IN M = M<sup>3</sup> x 1000 = Litres ÷ 4.546 = Gallons.

External Length	External Width	.61m high		1.22 m		1.83m high		2.44m high	
m	M	litres	gallons	Litres	gallons	litres	gallons	Litres	gallons
1.37	1.37	90	20	181	40	272	60	363	800
1.98	1.37	136	30	272	60	409	90	545	1200
1.98	1.98	204	45	409	90	613	135	818	1800
2.59	1.37	181	40	363	80	545	120	727	1600
2.59	1.98	272	60	545	120	818	180	1091	2400
2.59	2.59	363	80	727	160	1091	240	1454	3200
3.2	1.37	227	50	454	100	681	150	909	2000
3.2	1.98	341	75	681	150	1022	225	1363	3000
3.2	2.59	454	100	909	200	1363	300	1818	4000
3.2	3.2	568	125	1136	250	1704	375	2273	5000
3.81	1.37	272	60	545	120	818	180	1091	2400
3.81	1.98	409	90	818	180	1227	270	1636	3600
3.81	2.59	545	120	1091	240	1636	360	2182	4800
3.81	3.2	681	150	1363	300	2045	450	2727	6000
3.81	3.81	818	180	1636	360	2454	540	3273	7200
4.42	1.37	318	70	636	140	954	210	1272	2800
4.42	1.98	477	105	954	210	1432	315	1909	4200
4.42	2.59	636	140	1272	280	1909	420	2545	5600
4.42	3.2	795	175	1591	350	2386	525	3182	7000
4.42	3.81	954	210	1909	420	2864	630	3818	8400
4.42	4.42	1113	245	2227	490	3341	735	4455	9800
5.03	1.37	363	80	727	160	1091	240	1454	3200
5.03	1.98	545	120	1091	240	1636	360	2182	4800
5.03	2.59	727	160	1454	320	2182	480	2909	6400
5.03	3.2	909	200	1818	400	2727	600	3636	8000
5.03	3.81	1091	240	2182	480	3273	720	4364	9600
5.03	4.42	1272	280	2545	560	3818	840	5091	11200
5.03	5.03	1454	320	2909	640	4364	960	5818	12800
5.64	1.37	409	90	818	180	1227	270	1636	3600
5.64	1.98	613	135	1227	270	1841	405	2454	5400
5.64	2.59	818	180	1636	360	2454	540	3273	7200
5.64	3.2	1022	225	2045	450	3068	675	4091	9000
5.64	3.81	1227	270	2454	540	3682	810	4909	10800
5.64	4.42	1432	315	2864	630	4296	945	5728	12600
5.64	5.03	1636	360	3273	720	4909	1080	6546	14400
5.64	5.64	1841	405	3682	810	5523	1215	7365	16200

### ACCESS FOR ERECTION:

Adequate space must be available for erection purposes and across the cover for access to the inside of the Tank. See assembly space requirements.

As a quick guide to space required :

Add 0.9 m to length and width of 0.61m & 1.22m high tanks. Add 1m to length and width of 1.83m & 2.44m high tanks.

# Maintenance recommendations for sectional water storage tanks

**Maintenance interval :** Annually

## **Check list**

1. All internal supports should be checked for corrosion, if corrosion is found it should be rectified immediately.
2. Check generally for leaks or drips.
3. Check that all pipe work connected to the tank is suitably braced.
4. Check that the structural supports under the tank are in good condition.
5. Check that overflows are fitted.
6. When cleaning the inside of the tank, do not interfere with the joint seals.
7. If overflow and/or air inlet screens are fitted, check that they have not become blocked.
8. If insulated check that insulation and the manhole is securely fixed and not damaged, if they are damaged then the tank is not in compliance with Byelaw 30.
9. If not insulated in accordance with Byelaw 30, ensure that people cannot consume water from the tank. We can advise on upgrading the tank to Byelaw 30 standard.
10. If there is a Condensation Tray with the tank, ensure that it has an overflow fitted and that it has not been damaged.
11. If there are ladders fitted to the tank, ensure that they have not been damaged and are securely fastened to the tank.
12. If the tank has a light duty cover and sited out of doors, check that the cover has not suffered structural damage. (This type of cover is not suitable for potable water or outdoor use).
13. If the area underneath / adjacent to the tank has become water sensitive check that the tank room is banded with adequate escape ducts.
14. If the tank room is banded, check that it is in good condition.
15. After maintenance of the tank is complete, ensure that the manhole seal is intact and the manhole is securely closed.

## **Maintenance on tanks with dividers**

Extra care should be taken during the maintenance of tanks with divisions, as maintenance staff will be working in an enclosed space, adjacent to a large volume of water in relation to the size of the space. (See Health & Safety Act)

**Note :** Further information on the Health & Safety aspect, reference water quality is available in BS 6700.

**Do not stand on internal stays while maintenance is being carried out.**



## Guidelines for tender specification

1. The cold water tank shall be sectional, constructed from panels which are either 1.22m (4 ft.) square or 1m (3.28 ft.) square using half and quarter panels where necessary.
2. Panels shall be hot pressed from specially formulated potable water grade of Glass reinforced plastic (G.R.P.)
3. All corner angles, gussets, divider carriers and roof supports shall be from the same material.
4. All underwater bolts, tie bars, joiners etc., shall be stainless steel grade 316 S16, external bolts shall be mild steel to BS 3692 and Galvanised to BS 729.
5. The lid shall be heavy duty, formed from panels as per base design, have vertical supports at each panel intersection.
6. All vents, warning pipes, overflows, shall have mesh screens of maximum 0.65mm x 0.65mm holes to protect contents.
7. The tank shall be insulated on the sides and lid. The insulation material shall be of rigid closed cell polyurethane foam, have a protective GRP skin securely fixed and sealed to the tank panel surface using a gasket type seal. All pipe cut outs shall have bessels of the same material securely fitted and sealed to both the outer skin and panel face. All insulation to be to Tricel (Killarney) Format 30 finish or approved equal.
8. Where the tank depth is greater than 1.5m (or the top of the tank is more than 1.5 m from the ground) Internal and External ladders shall be fitted in each compartment. Where the tank is 2m or more from the top of the tank to the finished floor level external ladders should be fitted with safety cages and comply to BS4211 1994. Internal ladders may be constructed from GRP or stainless steel. External ladders may be constructed from Aluminium.
9. A handrail should be fitted enclosing all access points to the tank roof, where a tank is 2m or more from the top of the tank to the finished ground level.
10. A divider shall be fitted to facilitate maintenance and repairs.
11. A side access hatch in each compartment situated on the lowest 1m x 1m or 1220mm x 1220mm panel.
12. The client shall ensure that potable water is not stored in tank compartments that are adjacent to compartments storing foul water due to risk of contamination.
13. The contractor shall ensure that the base supports conform to the tank manufacturer's recommendations.
14. Tanks to be commissioned and maintained in accordance with BS 6700.
15. The plumber should not leave the tank unattended during commissioning (first filling with water).
16. The Tank shall be manufactured to Format 30 specification by Tricel (Killarney) Ph. 00353 64-6632421) or approved equal.





## One piece tanks

Tricel ( Killarney) manufactures a variety of One Piece cold water storage tanks. These durable one piece constructions are easy to install and represent excellent value for money. They come in sizes from 45 to 4546 Litres.

One piece tanks can also be supplied insulated to Format 30, thus meeting Dublin Corporation requirements for break tanks.

### The following sizes are EX stock

Model	Length	Width	Height	Height if Insulated	Litres nominal	Gallons nominal
KP10	495	370	345	420	45	10
KP20 sq	610	485	445	520	91	20
KP25	1200	530	340	420	114	25
KP40 L	1041	546	457	457	182	40
KP40 sq	670	530	565	640	182	40
KP50	1216	545	457	545	227	50
KP70	1230	575	584	650	318	70
KP100	1448	740	610	685	454	100
KP150	1645	1075	545	610	682	150
KP200	1660	1055	690	765	909	200
KP250	1660	1055	845	920	1136	250
KP300	1660	1245	845	1015	1363	300
KP400	2545	1330	615	775	1818	400
KP500	1880	1375	1140	1300	2275	500
KP600	Dia 1830	Dia 1830	1240	1340	2730	600
KP800	2690	1830	1040	1040	3637	800
KP1000	2690	1830	1290	1290	4546	1000

-  All the above capacities are nominal.
-  Insulated One piece tanks come complete with insulated covers.
-  GRP covers and condensation trays are available for all sizes.
-  When the tanks are installed space is required above the tanks for access.

### Underground tanks insulated to Format 30.

KPU x 200	1645	1035	1285	1285	909	200
KPU x 500	2030	1500	1585	1585	2273	500
KPU x 800	2690	1830	1525	1525	3637	800
KPU x 1000	2690	1830	1775	1775	4546	1000
KPU x 1200	3169	1824	1775	1775	5455	1200
KPU x 2000	2125	1824	1775	1775	9092	2000

**Underground tanks are suitable of 300mm of soil. All tanks have a ball valve box 500mm**

### **Installation notes**

- a. Ensure that the base of the cistern is adequately and uniformly supported over its whole area.
- b. Support and align the pipes so as not to distort the cistern, and do not over tighten the back nuts.
- c. Ensure that circular holes for fixing pipes have a clean edge, free from notches, and cut them with a hole saw or drill them with a sharp cutter.
- d. Position the cistern so that it is not in close proximity to any source of heat
- e. The tank should not be left unattended during commissioning.

## **Maintenance recommendations for one piece water storage tanks**

**Maintenance interval : Minimum of once yearly.**

### **Check List**

1. All internal supports should be checked for corrosion, if corrosion is found it should be rectified immediately.
2. Check generally for leaks or drips.
3. Check that all pipe work connected to the tank is suitably braced.
4. Check that the structural supports under the tank are in good condition.
5. If overflow and/or air inlet screens are fitted, check that they have not become blocked.
6. If insulated check that insulation and the manhole is securely fixed and not damaged, if they are damaged then the tank is not in compliance with Byelaw 30.
7. If not insulated in accordance with Byelaw 30, ensure that people can not consume water from the tank. We can advise on upgrading the tank to Byelaw 30 standard.
8. If there is a Condensation tray with the tank, ensure that it has an overflow fitted and that it has not been damaged.
9. If the tank has a light duty cover and sited out of doors, check that the cover has not suffered structural damage. (This type of cover is not suitable for potable water or outdoor use).
10. If the area underneath / adjacent to the tank has become water sensitive check that the tank room is bunded with adequate escape ducts.
11. If the tank room is bunded, check that it is in good condition.
12. After maintenance of the tank is complete, ensure that the manhole seal is in tact and the manhole is securely closed.

**Note :** Further information on the health & safety aspect, reference water quality is available in BS 6700.

## Modular building systems – Tank & equipment enclosures

The modular building system is constructed of GRP (fibreglass) modules to various sizes and colours to meet customers specifications.

### Architecture.

Modular building systems can help you meet strict planning regulations, by hiding unsightly booster-sets, pumps, air-conditioning systems & water tanks. These modular systems from Tricel (Killarney) can help blend roof-tops into a more natural surroundings.



### External Finish.

The external finish is a light, easy to clean, horizontal ribbing. All Gelcoats are UV stabilised and may be chosen from most colours in the BS5252 or Ral ranges. Our systems are available in a range of 1000mm and 1200mm modules, with special modules to suit our customers requirements.



### Fire Resistance.

Fire resistance materials to Class 0, Class 1 or Class 2 can be offered as an option.

## Glossary of terms

**Sectional tank:** Rectangular fixed container assembled from panels for the storage of water at atmospheric pressure and at a maximum temperature of 30 °C.

**Note:** This temperature is higher than is acceptable for drinking water, which should not normally exceed 20 °C.

**Nominal Capacity :** Volume contained in a tank, measured up to the top edge of the side walls.

**Actual capacity:** Volume contained in the tank up to the maximum working level, this can be between 10 and 50% less than the Nominal Capacity.

**Bund Wall:** Structure situated underneath water tanks. It's purpose is to protect the building from water damage. All water tanks located above areas that are water sensitive should be banded.

**Ball valve housing:** Enclosed chamber containing an access hatch above the level of the cover, permitting the level control mechanism to be mounted at a higher level than would otherwise be possible.

**Vent:** Opening to the atmosphere to allow for the movement of air resulting from changes in the water level so that the water always remains at atmospheric pressure.

**Warning pipe:** Pipe so fixed that it's outlet, whether inside or outside a building, is in a conspicuous position where the discharge of water can be readily seen.

**Overflow pipe:** Pipe connected to the tank to discharge any overflow therefrom.

**Division plate:** Construction of one or more panels within a tank which divides the tank into two separate compartments.

**Note:** In any situation where there is only one water storage tank in a building, it is to be recommend that a weir or a division plate be used. This will facilitate maintenance of the tank without effecting the water supply to the building.

**Weir:** Construction of one or more panels within a tank, which divides the tank but to less than its full depth such that the contents can spill over from one side of the weir to the other. **Baffle:** Construction of one or more panels within a tank, which partially subdivides the tank in order to increase the length of the flowpath between the inlet and the outlet from the tank. **Leakage test:** The duration of the test should be a minimum of 24 hours, commencing at least 2 hours after the tank has been filled. The test shall be carried out within 10 days of erection unless

the manufacturer agrees to a longer period after assembly. The tank should be inspected at regular intervals and not deserted during commissioning (first filling with water). The leakage test is not carried out by Tricel (Killarney)

**BS 7491 : Part 3 : 1994 :** Glass fibre reinforced plastics cisterns for cold water storage. Part 3 Specification for sectional tanks.

**BS 6700 : 1997 :** Specification for design, installation, testing and maintenance of services supplying water for domestic use within building and their curtilages.

In accordance with Tricel (Killarney) normal policy of product development, this specification is subject to change without notice.

**Note:**

Tricel (Killarney) believe that the information contained in this brochure is accurate, and is printed for information only. No warrants, express or implied, are contained therein, nor does any legal liability attach to Tricel (Killarney) for any reason whatsoever. Property rights of the subject belong to Tricel (Killarney), and transfer of these rights is not granted by possession of this document.

Mar 14

