# ONSITE STORMWATER DETENTION SYSTEM

LANDSCAPE TANKS™

# INDEX

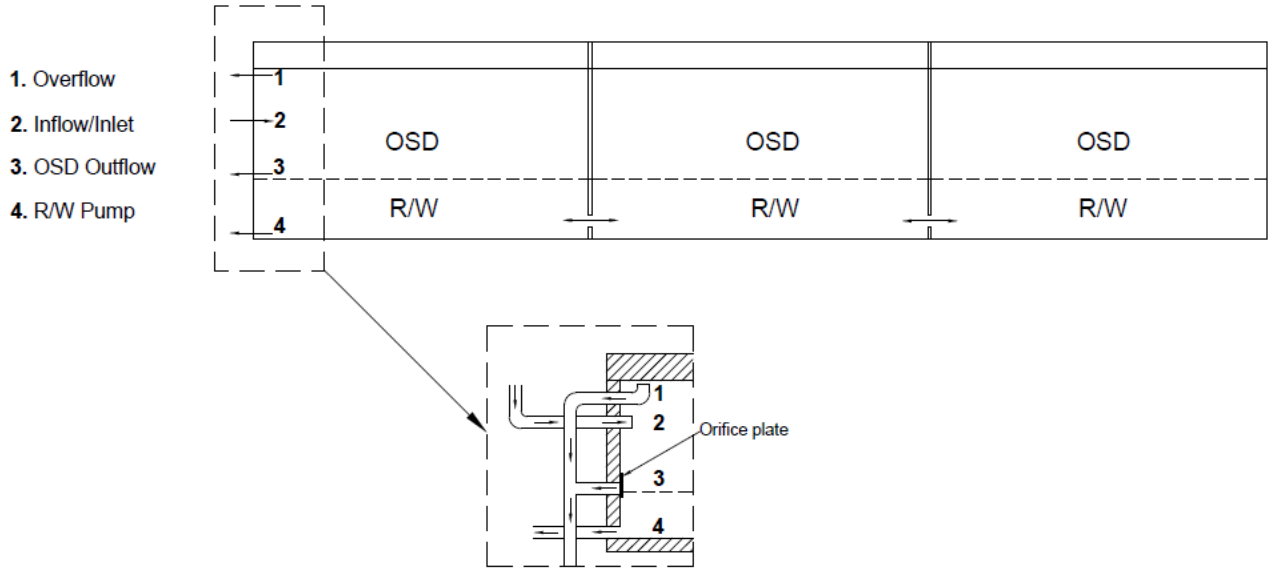
*Always check that your proposed tank "OSD" system meets local council ordinances / regulations before submitting a development application "DA".*

*We provide complimentary 'OSD' drawing (CAD, dwg files) services to hydraulic engineers / relevant building professionals.*

# 1. DUAL OSD (DETENTION) AND RAIN WATER, HORIZONTAL / VERTICAL SYSTEMS

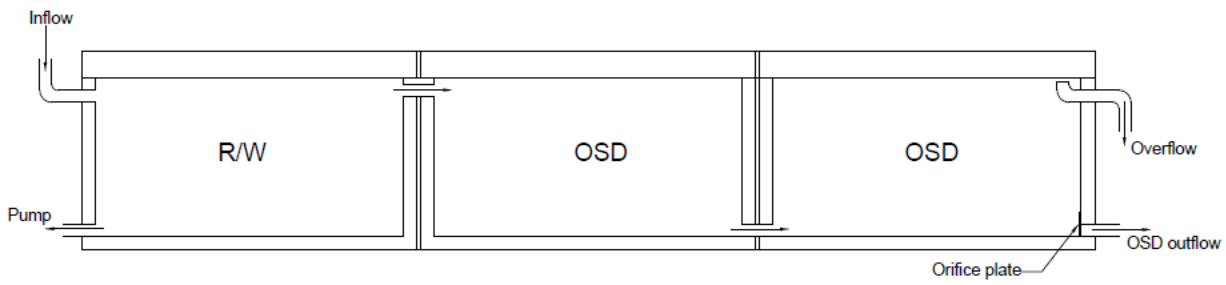
## a. Dual 'OSD' and Rainwater "Horizontal" / "Vertical" Systems

### "Horizontal" System




Click <here> for a copy of the drawing provided above.

### "Vertical" System




Click <here> for a copy of the drawing provided above.

*Landscape Tanks™ Dual 'OSD' and Rainwater "Horizontal" or "Vertical" Systems allow for one water retention structure with one inflow, overflow, pump and 'OSD' plumbing works to perform two functions, ('OSD' detention and rainwater storage), simultaneously.*

*Dual systems are far more water efficient than separate singular systems. They automatically allocate 100% of inflows to rainwater storage and then when the rain water reservoir is full, allocate 100% of inflows to 'OSD'.*

*With a "horizontal" system you have the added advantage of being able to allocate 'OSD' and rainwater, detention or storage, respectively, in any desired proportions.*

# 2. Tanks & Tops

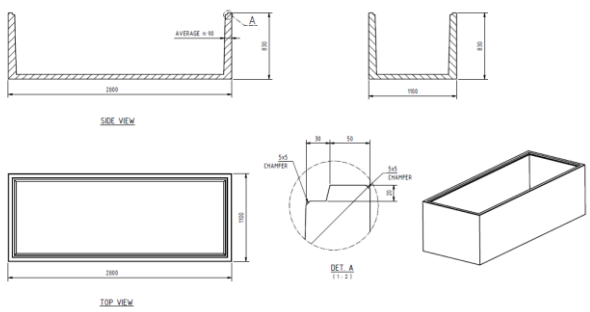
*For dimensions, capacities (litres), weights, standard tank formats and example arrangement configurations click <here>*

## a. Tanks

### i. General Tank Information

1. *All tanks can be placed above or below ground, above ground and as a retaining wall or directly under driveways. For our engineering schedules visit our website or e-mail operations@landscapetanks.com.au.*
2. *Adherence to the tolerances provided in our standard engineering, will provide installation confidence without necessitating the commissioning of further engineering.*
3. *The tanks can be arranged in pretty much any format and connected, provided the top of the tanks are on one plane. The same applies to the use of different size tanks.*
4. *Stepping down a gradient is also possible.*
5. *Engineering services for specialised settings or uses are at the customer's cost. For further specialised engineer we recommend "Partnear". To go to their website www.partnear.com.au.*

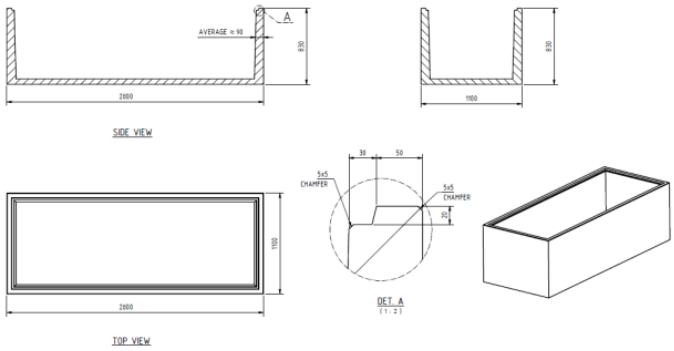
### ii. Small Tank




*Click <here> for a copy of the drawing provided above.*

| | |
|---|---|
| *Weight:* | *1,750 kgs.* |
| *Dimensions:* | *2800L x 1100W x 830H.* |
| *Water storage capacity:* | *1,750 ltrs.* |
| *Wall / base thickness:* | *(Proprietary information) approx. ave 85mm (walls) & 90mm (base)* |
| *Concrete mPa:* | *(Proprietary information) heavy duty and significantly greater than 32 mPa required by water plants.* |
| *Standard Seal Positions:* | *See "Seals" section below.* |
| *Finish:* | *Guaranteed "Class 2 AS3610 finish or better".* |
| *Reinforcing:* | *(Proprietary information) mesh and bar.* |
| *Casting method:* | *(Proprietary information) mild steel multipiece mould, dual commercial wackers and extraction by swing.* |
| *Lifting:* | *Four diagonally positioned 1.3t pin head lifts* |

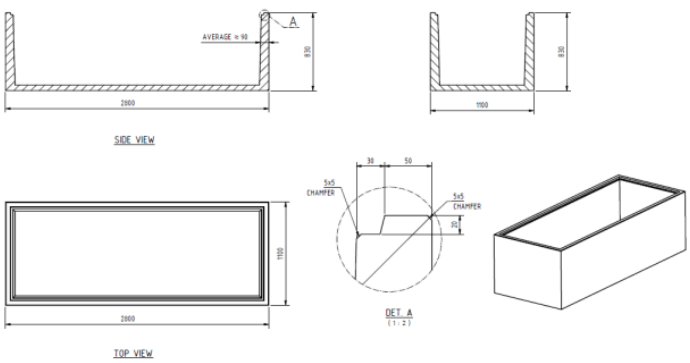
### iii. Medium Tank



*Click <here> for a copy of the drawing provided above.*

| | |
|---|---|
| *Weight:* | *2,500 kgs.* |
| *Dimensions:* | *2800L x 1100W x 1100H.* |
| *Water storage capacity:* | *2,250 ltrs.* |
| *Wall / base thickness:* | *(Proprietary information) approx. ave 85mm (walls) & 115mm (base)* |
| *Concrete mPa:* | *(Proprietary information) heavy duty and significantly greater than 32 mPa required by water plants.* |
| *Standard Seal Positions:* | *See "Seals" section below.* |
| *Finish:* | *Guaranteed "Class 2 AS3610 finish or better".* |
| *Reinforcing:* | *(Proprietary information) mesh and bar.* |
| *Casting method:* | *(Proprietary information) mild steel multipiece mould, dual commercial wackers and extraction by swing.* |
| *Lifting:* | *Four diagonally positioned 1.3t pin head lifts* |

### *iv. Large Tank*

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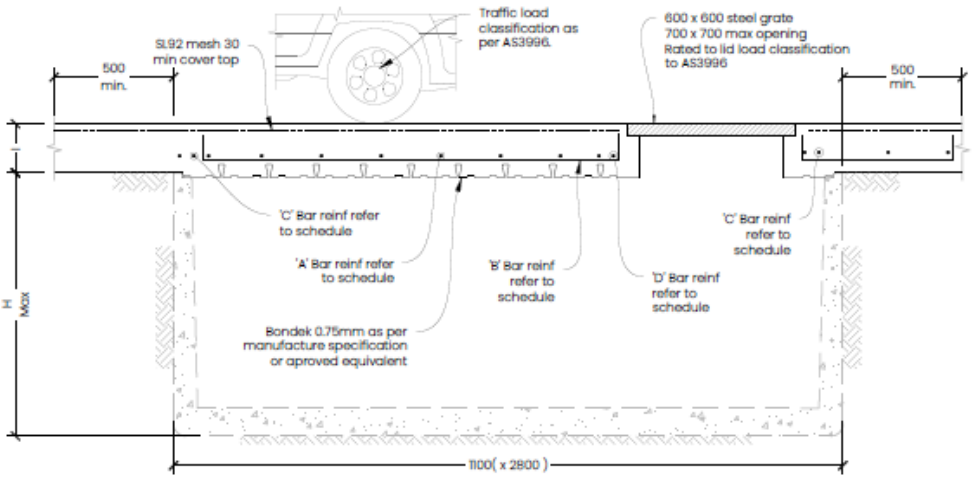
| | |
|---|---|
| *Weight:* | *3,200 kgs.* |
| *Dimensions:* | *2800L x 1100W x 1430H.* |
| *Water storage capacity:* | *3,150 ltrs.* |
| *Wall / base thickness:* | *(Proprietary information) approx. ave 90mm (walls) & 120mm (base)* |
| *Concrete mPa:* | *(Proprietary information) heavy duty and significantly greater than 32 mPa required by water plants.* |
| *Standard Seal Positions:* | *See "Seals" section below.* |
| *Finish:* | *Guaranteed "Class 2 AS3610 finish or better".* |
| *Reinforcing:* | *(Proprietary information) mesh and bar.* |
| *Casting method:* | *(Proprietary information) mild steel multipiece mould, dual commercial wackers and extraction by swing.* |
| *Lifting:* | *Four diagonally positioned 2.5t pin head lifts* |

### v. Under Driveway




Cast Insitu Lid Detail - no Soil Cover

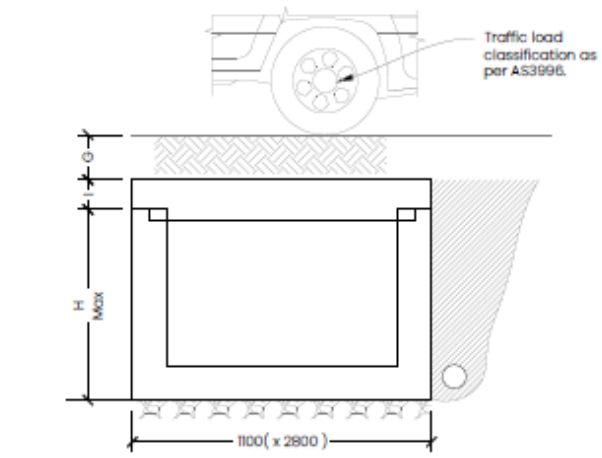
Scale 1:20

Click <here> for a copy of the drawing provided above.

*There are many sites where placement of the tanks beneath driveways is either a development application ('DA') requirement or preferable. Our under-driveway solution comprises an under-driveway tank base and requires onsite casting of its top. The tank cast top becomes both the tank top and also your driveway.*

*We sell "under driveway" top casting packs and tanks. The top casting pack has cut to size Bondek® 0.75mm (or equivalent), steel bar, mesh and Class B or C grate, as specified. The top (driveway) needs to be cast onto our class B or C tank, as specified.*

### vi. Buried Tanks




Water Storage Tank - Buried Tank Detail - with Soil Cover

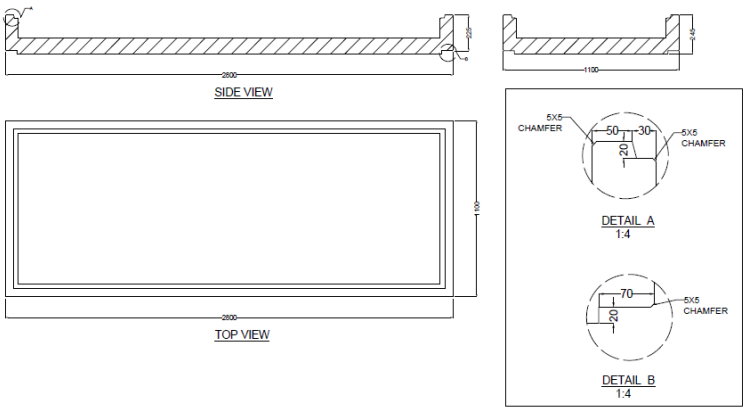
Not to scale

Click <here> for a copy of the drawing provided above.

*Landscape Tanks™ are able to be buried up to two (2) meters underground (2 meters net burial depth from ground level to the top of the tank). The minimum soil coverage is 600mm. To load classifications B or C AS3996. The tank and top need to be our class B or C tank and top (as applicable).*

## b. Tops (Lids)

### i. Standard Planter

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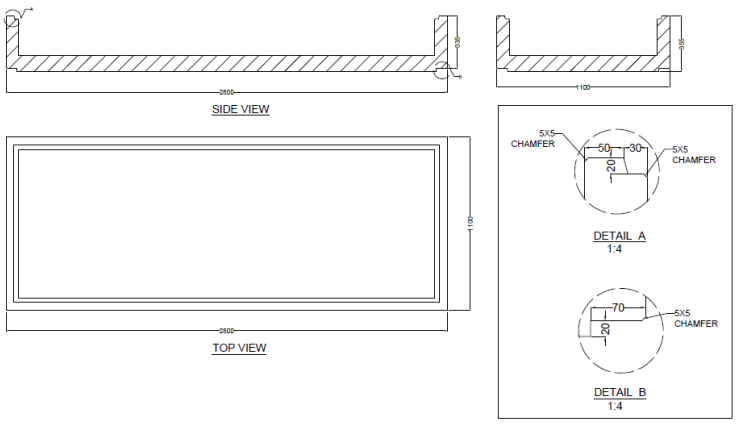
| | |
|---|---|
| *Weight:* | *850 kgs.* |
| *Dimensions:* | *2800L x 1100W x 245H (installed net height 225)* |
| *Sump and drain:* | *Recessed sump leading to drain centred on one long side. Drain suits 25mm PVC pipe.* |
| *Wall / base thickness:* | *(Proprietary information) approx. ave 80mm (walls) & 80mm (base)* |
| *Concrete mPa:* | *(Proprietary information) heavy duty and waterproof.* |
| *Inlet access:* | *Two 90mm diameter knockouts to allow inletting through planter, situated in the two corners on one long side, are available on request (no charge).* |
| *Finish:* | *Guaranteed "Class 2 AS3610 finish or better".* |
| *Reinforcing:* | *(Proprietary information) mesh and bar.* |
| *Casting method:* | *(Proprietary information) mild steel multipiece mould, dual commercial wackers and extraction by swing.* |
| *Lifting:* | *Four diagonally positioned 1.3t pin head lifts* |

### ii. Deep Planter

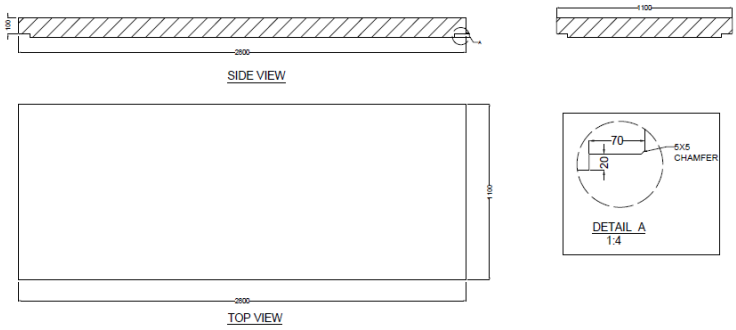



Click <here> for a copy of the drawing provided above.

| | |
|---|---|
| *Weight:* | *1,100 kgs.* |
| *Dimensions:* | *2800L x 1100W x 355H (installed net height 335)* |
| *Sump and drain:* | *Recessed sump leading to drain centred on one long side. Drain suits 25mm PVC pipe.* |
| *Wall / base thickness:* | *(Proprietary information) approx. ave 80mm (walls) & 95mm (base)* |
| *Concrete mPa:* | *(Proprietary information) heavy duty and waterproof.* |

| | |
|---|---|
| *Inlet access:* | *Two 90mm diameter knockouts to allow inletting through planter, situated in the two corners on one long side, are available on request (no charge).* |
| *Finish:* | *Guaranteed "Class 2 AS3610 finish or better".* |
| *Reinforcing:* | *(Proprietary information) mesh and bar.* |
| *Casting method:* | *(Proprietary information) mild steel multipiece mould, dual commercial wackers and extraction by swing.* |
| *Lifting:* | *Four diagonally positioned 1.3t pin head lifts* |

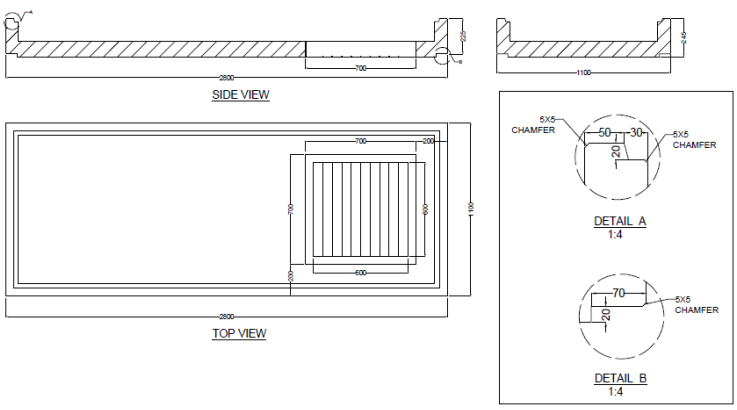
### *iii.* ***Flat Lid***




*Click <here> for a copy of the drawing provided above.*

| | |
|---|---|
| *Weight:* | *920 kgs.* |
| *Dimensions:* | *2800L x 1100W x 120H.* |
| *Sump and drain:* | *None.* |
| *Base thickness:* | *(Proprietary information) approx. 120mm.* |
| *Concrete mPa:* | *(Proprietary information) heavy duty and waterproof.* |
| *Inlet access:* | *None.* |
| *Finish:* | *Guaranteed "Class 2 AS3610, finish".* |
| *Reinforcing:* | *(Proprietary information) mesh and bar.* |
| *Casting method:* | *(Proprietary information) mild steel single piece mould, manual wacker and extraction by swing.* |
| *Lifting:* | *Four diagonally positioned 1.3t pin head lifts* |

### *iv.* ***Standard Planter with Grate***

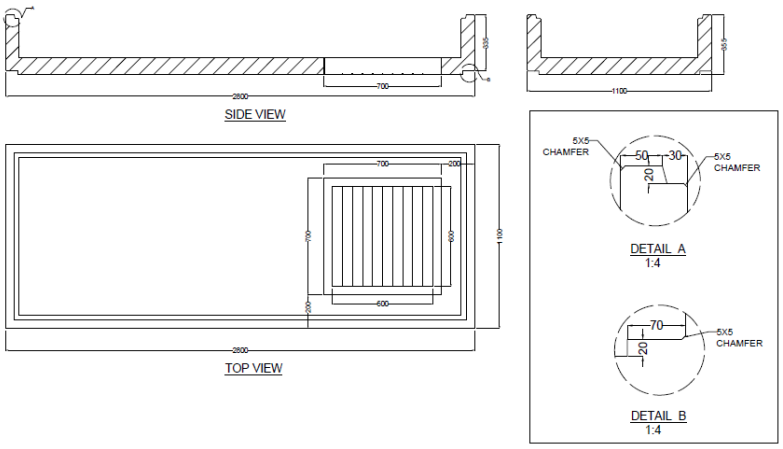



*Click <here> for a copy of the drawing provided above*

| | |
|---|---|
| *Weight:* | *820 kgs.* |
| *Dimensions:* | *2800L x 1100W x 245H (installed net height 225)* |
| *Grate:* | *600x600 grate, 700x700 frame, mild steel, hot dipped galvanised (HDG), hinged and lockable, class B or C, gross weight approx. 32kgs.* |
| *Riser:* | *Optional.* |
| *Baffle:* | *Optional. Concrete or plastic.* |

| | |
|---|---|
| *Sump and drain:* | *Recessed sump leading to drain centred on one long side. Drain suits 25mm PVC pipe.* |
| *Wall / base thickness:* | *(Proprietary information) approx. ave 80mm (walls) & 80mm (base)* |
| *Concrete mPa:* | *(Proprietary information) heavy duty and waterproof.* |
| *Inlet access:* | *One 90mm diameter knockout to allow inletting through planter, situated in one corner on one long side, is available on request (no charge).* |
| *Finish:* | *Guaranteed "Class 2 AS3610 finish or better".* |
| *Reinforcing:* | *(Proprietary information) mesh and bar.* |
| *Casting method:* | *(Proprietary information) mild steel multipiece mould, dual commercial wackers and extraction by swing.* |
| *Lifting:* | *Four diagonally positioned 1.3t pin head lifts* |

### *v. Deep Planter with Grate*

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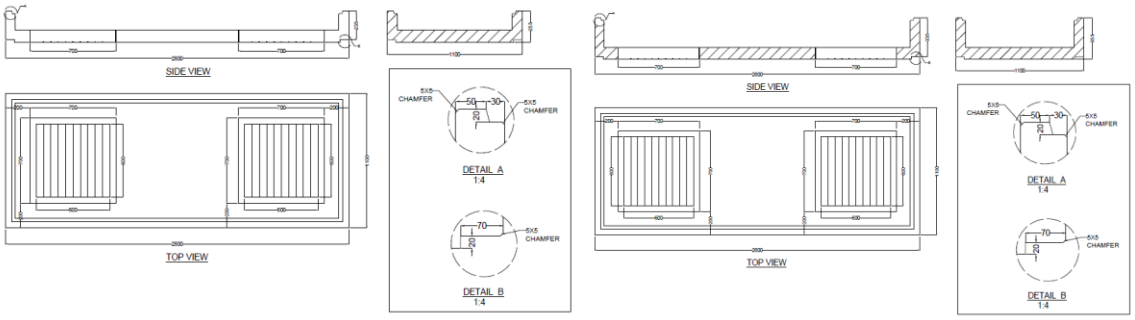
| | |
|---|---|
| *Weight:* | *1,070 kgs.* |
| *Dimensions:* | *2800L x 1100W x 355H (installed net height 335)* |
| *Grate:* | *600x600 grate, 700x700 frame, mild steel, hot dipped galvanised (HDG), hinged and lockable, class B or C, gross weight approx. 32kgs.* |
| *Riser:* | *Optional.* |
| *Baffle:* | *Optional. Concrete or plastic.* |
| *Sump and drain:* | *Recessed sump leading to drain centred on one long side. Drain suits 25mm PVC pipe.* |
| *Wall / base thickness:* | *(Proprietary information) approx. ave 80mm (walls) & 95mm (base)* |
| *Concrete mPa:* | *(Proprietary information) heavy duty and waterproof.* |
| *Inlet access:* | *One 90mm diameter knockout to allow inletting through planter, situated in one corner on one long side, is available on request (no charge).* |
| *Finish:* | *Guaranteed "Class 2 AS3610 finish or better".* |
| *Reinforcing:* | *(Proprietary information) mesh and bar.* |
| *Casting method:* | *(Proprietary information) mild steel multipiece mould, dual commercial wackers and extraction by swing.* |
| *Lifting:* | *Four diagonally positioned 1.3t pin head lifts* |

### *vi. Standard / Deep Planter with Dual Grates*

***Standard Planter with Dual Grates*** ***Deep Planter with Dual Grates***

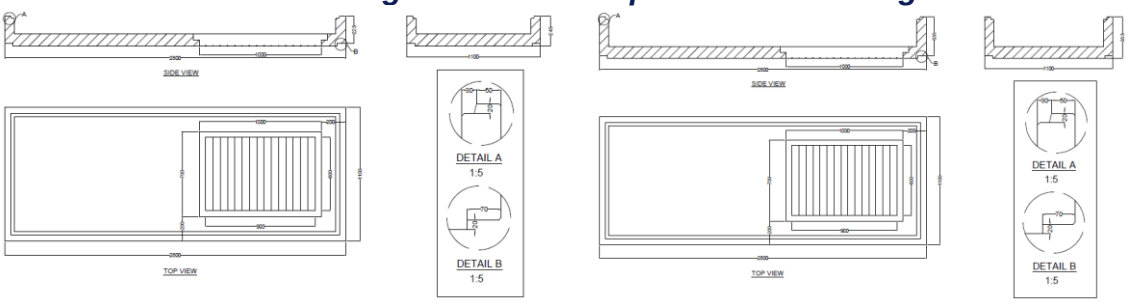



*Click <here> for a copy of the drawing provided above – STANDARD PLANTER.*
*Click <here> for a copy of the deep planter drawing provided above – DEEP PLANTER.*

| | |
|---|---|
| *Weight:* | *790 and 1040 kgs, approximately, respectively.* |
| *Dimensions:* | *2800L x 1100W x 245/355H, respectively, (installed net additional height 225 or 335).* |
| *Grate:* | *600x600 grates, 700x700 frames, mild steel, hot dipped galvanised (HDG), hinged and lockable, class B or C, gross weight approx. 32kgs each.* |
| *Riser(s):* | *Optional.* |
| *Baffle:* | *Optional. Concrete or plastic.* |
| *Sump and drain:* | *Recessed sump leading to drain centred on one long side. Drain suits 25mm PVC pipe.* |
| *Wall / base thickness:* | *(Proprietary information) approx. ave 80mm (walls) & 80/95mm (base).* |
| *Concrete mPa:* | *(Proprietary information) heavy duty and waterproof.* |
| *Inlet access:* | *Not available.* |
| *Finish:* | *Guaranteed "Class 2 AS 3610 finish or better".* |
| *Reinforcing:* | *(Proprietary information) mesh and bar.* |
| *Casting method:* | *(Proprietary information) mild steel multipiece mould, dual commercial wackers and extraction by swing.* |
| *Lifting:* | *Four diagonally positioned 1.3t pin head lifts* |

### *vii. Standard / Deep Planter with Large Grate (900x600)*

***Standard Planter with Large Grate*** ***Deep Planter with Large Grate***



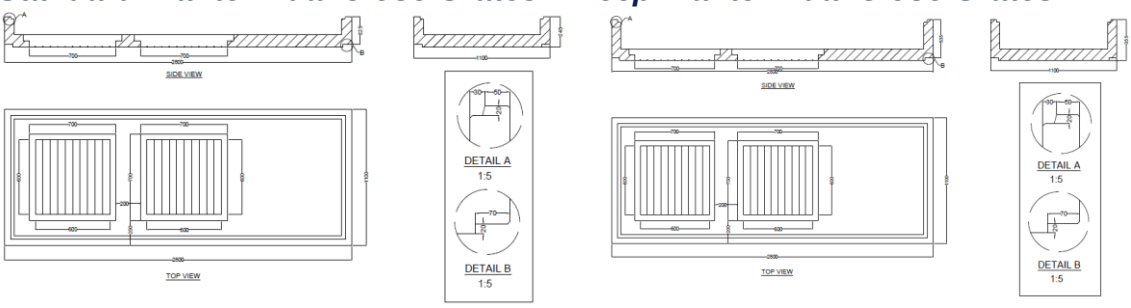

*Click <here> for a copy of the drawing provided above – STANDARD PLANTER.*
*Click <here> for a copy of the drawing provided above – DEEP PLANTER.*

| | |
|---|---|
| *Weight:* | *805 / 1055 kgs.* |
| *Dimensions:* | *2800L x 1100W x 245/355H, respectively, (installed net additional height 225 or 335).* |
| *Grate:* | *600x900 grate, 700x1000 frame, mild steel, hot dipped galvanised (HDG), hinged and lockable, class B or C, gross weight approx. 45kgs.* |

| | |
|---|---|
| *Riser:* | *Optional.* |
| *Baffle:* | *Optional. Concrete or plastic.* |
| *Sump and drain:* | *Recessed sump leading to drain centred on one long side. Drain suits 25mm PVC pipe.* |
| *Wall / base thickness:* | *(Proprietary information) approx. ave 80mm (walls) & 80/95mm (base).* |
| *Concrete mPa:* | *(Proprietary information) heavy duty and waterproof.* |
| *Inlet access:* | *Available on request, in one corner only, (no charge).* |
| *Finish:* | *Guaranteed "Class 2 AS3610 finish or better".* |
| *Reinforcing:* | *(Proprietary information) mesh and bar.* |
| *Casting method:* | *(Proprietary information) mild steel multipiece mould, dual commercial wackers and extraction by swing.* |
| *Lifting:* | *Four diagonally positioned 1.3t pin head lifts* |

### *viii. Standard / Deep Planter, Dual Close Proximity Grates*

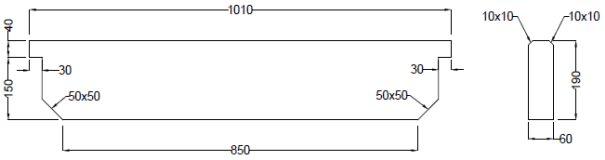
***Standard Planter Dual Close Grates*** ***Deep Planter Dual Close Grates***



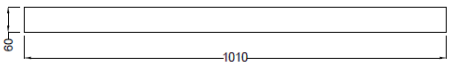

*Click <here> for a copy of the drawing provided above – STANDARD PLANTER.*
*Click <here> for a copy of the drawing provided above – DEEP PLANTER.*

| | |
|---|---|
| *Weight:* | *790 and 1040 kgs, approximately, respectively.* |
| *Dimensions:* | *2800L x 1100W x 245/355H, respectively, (installed net additional height 225 or 335).* |
| *Grates:* | *600x600 grates, 700x700 frame, mild steel, hot dipped galvanised (HDG), hinged and lockable, class B or C, gross weight approx. 32kgs each.* |
| *Riser:* | *Optional.* |
| *Baffle:* | *Optional. Concrete or plastic.* |
| *Sump and drain:* | *Recessed sump not present, drain on one long side middle of wall.* |
| *Wall / base thickness:* | *(Proprietary information) approx. ave 80mm (walls) & 80/95mm (base).* |
| *Concrete mPa:* | *(Proprietary information) heavy duty and waterproof.* |
| *Inlet access:* | *Available on request, in one corner only, (no charge).* |
| *Finish:* | *Guaranteed "Class 2 AS 3610 finish or better".* |
| *Reinforcing:* | *(Proprietary information) mesh and bar.* |
| *Casting method:* | *(Proprietary information) mild steel multipiece mould, dual commercial wackers and extraction by swing.* |
| *Lifting:* | *Four diagonally positioned 1.3t pin head lifts* |

### *ix. Planter Baffle*




SIDE VIEW




TOP VIEW

*Click <here> for a copy of the drawing provided above.*

| | |
|---|---|
| *Weight:* | *26 kgs.* |
| *Dimensions:* | *1010L x 60W x 190H* |
| *Concrete mPa:* | *(Proprietary information) heavy duty and waterproof.* |
| *Finish:* | *Guaranteed "Class 2 AS3610 finish".* |
| *Casting method:* | *(Proprietary information) mild steel multipiece mould.* |

# *3. Seals*

***(Patent Granted # 2010286347)***

*The tanks come with sixteen (16) standard seal placement positions. There are three seal sizes 50mm, 100mm and 150mm diameter to suit readily available standard class 12 (50mm) or DWV PVC pipe (100mm and 150mm). This allows you to arrange your tanks in pretty much any arrangement you desire, along with determining your flow rate.*

*Each seal is fabricated into the tank wall with its centre positioned approximately 25mm from the inner tank skin. This positioning provides the seal with ultra violet ray and physical protection and as a consequence, extends seal operational life.*

*The seals will adjust to moderate tank (soil) movements and sites with reactive soils. We guarantee flexion of up to five (5) degrees which will easily cover most tank movements. Tank movements for instance as a result of reactive soils and or mispositioning. While this flexion may appear small, over pipe length of 200mm, the flexion quickly adds up. While not advisable or guaranteed, there are instances where the seals have accommodated flexion of up to ten (10) degrees.*

*To allow for pipe movement the void in the seal cavity is approx. 20mm's wider than the seal and has a flange that opens up at approx. 15 degrees from the inner to the outer tank skin.*

*The seals are made specifically for water storage and PVC or metal pipe connections. Using the tanks for storage of other liquids is possible provided the liquid is compatible with concrete shells and synthetic rubbers e.g. not acidic, is stable and does not need to be stored at temperatures above 80 degrees or below -5 degrees.*

*The connection between the pipe and seal is tight. Sliding PVC pipe into the seals makes a quick waterproof connection. To connect pipes to tanks no special tooling is needed other than some arm strength and potentially some lubricant (we recommend, silicone spray or water and a little detergent).*

*To connect the tanks:*

a) *Check and clear the seal of foreign materials. Use your hand or soft brush and or water.*
b) *Check your PVC connecting pipe (provided) by running your hand over its surface. Sharp edges or shards of PVC may damage the seal and void your warrantee, PVC faults (divots, pitting, deviations) could affect seal contact. Only use pipe which has a clean, smooth, consistent contact surface.*
c) *Ensure your tanks are in place and aligned per your tank schedule.*
d) *Push the pipe into the seal(s). Once the connection is made wriggle the pipe so that the seal(s) are neither convex nor concave. Depending on your strength you may need to lubricate the pipe with silicone spray or water with a touch of detergent (same as what you would use to do the dishes).*
e) *Ensure all external pipe works are supported, aren't pulling or pushing or applying pressure and stopping seals adjusting to tank movements. Support charged pipe as you would normally, add flanges or brackets as necessary, ensure that soil or other matter cannot fall and collect on pipe and apply more than normal pressure on the seal(s).*

***Important.*** *For the seals to work well and to maximise their longevity ensure connecting pipe is:*

*1. Static, i.e. no inwards or outwards motion.*
*2. Weight neutral, i.e. the weight on the seal is that of the pipe and the water it contains. And*
*3. Pipe is entering the seal at or near 90 degrees to the outer tank surface.*

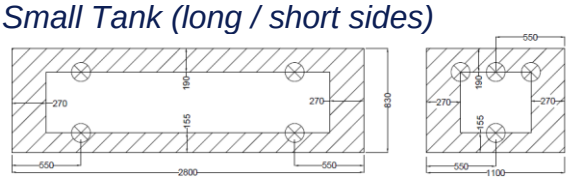
***Undue movement or pressure or excessive angle will destroy the seals over time and void your warranty. The seals are robust and will take some poor treatment but that said, they are "super seals" not "superman seals".***

*We can, (within our manufacturing limitations), locate seals in the tank walls or tank base, at places other than our standard positionings. We are happy to advise on non-standard seal location for customised plans but provide no guarantees where requests near edges and junctions are involved. Special seal placement comes with some additional costs and is not as accurate as placing seals in the standard positions. Seal placement is something you can leave to us. Sketch your desired configuration / arrangement and forward it to us for our advice.*

*Seal positioning*

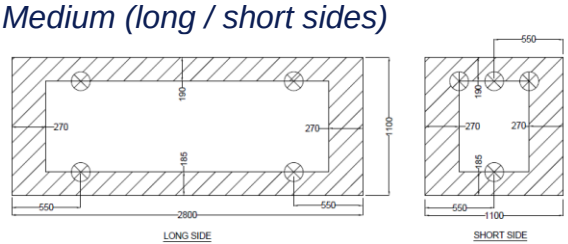
a) *Standard seal position*
b) *Unavailable for seal placement*
c) *Available for customised seal placement*

*Small Tank (long / short sides)*



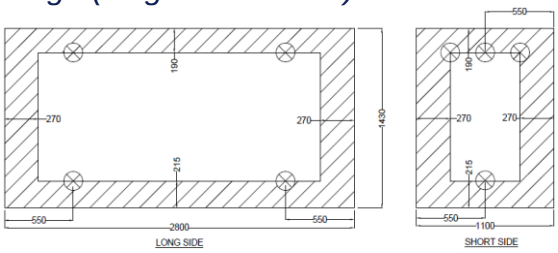

*Click <here> for a copy of the drawing provided above.*

*Medium (long / short sides)*




*Click <here> for a copy of the drawing provided above.*

*Large (long / short sides)*




*Click <here> for a copy of the drawing provided above.*

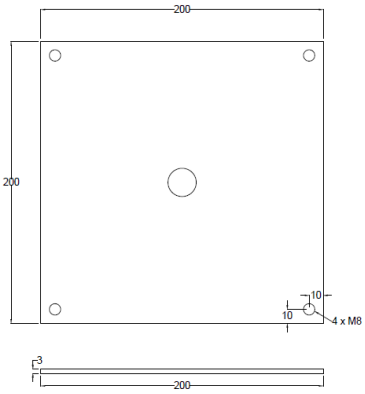
***Seal Specifications***

- *CAD drawing, not provided (under Patent # 2010286347).*
- *Material, (Proprietary information) a type of "synthetic rubber".*
- *Hardness, (Proprietary information) hardness varies depending on sizing.*
- *Dimensions, fits*
  - *50mm PVC pipe (class 12 high pressure)*
  - *100mm PVC pipe (standard DWV)*
  - *150mm PVC pipe (standard DWV)*
- *Seal positioning*
  - *Standard positioning, see drawings above.*
  - *Customised seal placement set-backs from nearest wall or edge (+/- 5mm):*
    - *Long wall*
      - *Top, 190mm centre.*
      - *Bottom, 155, 185 and 215mm centres for small, medium and large, respectively.*
      - *Side walls 270mm centres.*
    - *Short wall*
      - *Top, 190mm centre.*
      - *Bottom, 155, 185 and 215mm centres for small, medium and large, respectively.*
      - *Side walls 270mm centres.*
    - *Tank base, 270mm from sides.*
  - *Tank seal cavity dimensions*
    - *15 degree expansion of the opening from the seal to the outer tank skin.*
    - *Approx. 20mm all-round clearance from the seal to the inner tank skin.*
- *Durability,*
  - *Resistant to tearing and abrasion.*
  - *Typical heat tolerance without losing shape, melting or catching fire, is up to 150 degrees Celsius.*
  - *Tolerates steam.*
  - *Tolerates short term compression.*
  - *Ultra-violet resistant.*

*Image of a seal, (in black), on a piece of PVC pipe.*

# 4. OSD Accessories

## a. Orifice Plate



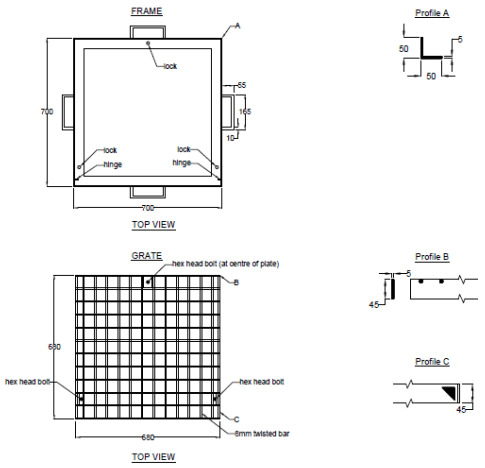

*Click <here> for a copy of the drawing provided above.*

### *Specifications*

- *Material, 304 stainless steel, equivalent or better.*
- *Plate dimensions, 200x200x3mm (other plate sizes available on request).*
- *Bore*
  - *Plus or minus 0.5mm diameter accuracy.*
  - *Sharp edge.*
  - *Any position and any size as long as there is a 5mm offset from the corner holes and all plate edges.*
  - *Computer laser machine cut.*
- *Suitable outlets behind plate 100mm or 150mm diameter.*
- *Affixings, (supplied for free), typically M6, 40mm long concrete anchors (or equivalent to dynabolt® or trubolt® or ankascrew®), with hex head and in 304 or 316 stainless steel.*
- *Engraved (dependent on space), whatever you desire, typical detail includes;*
  - *OSD Orifice Plate.*
  - *Do not tamper with or remove plate.*
  - *Customer name.*
  - *Site address.*
  - *Certified: "x"mm (orifice bore diameter) +/- 0.5mm diameter.*
  - *Certifying engineer name and or web address.*
  - *Manufacturer name or website address, www.landscapetanks.com.au.*
  - *Council designated signage detail.*
  - *Other.*

*Image of typical orifice plate.*

### b. Access Grates

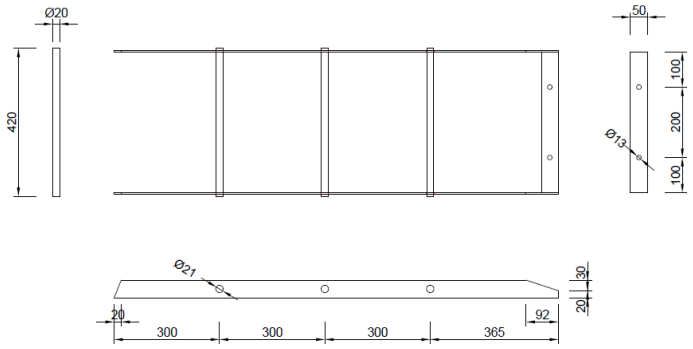



*Click <here> for a copy of the drawing provided above.*

### *Specifications*

- *Material, mild steel grade G250.*
- *Plating, hot dipped galvanised (HDG).*
- *Lockable, hex head bolt and nut, J mechanism or equivalent.*
- *Hinged, pin and hole hinge or equivalent.*
- *Affixing, cast into concrete in tank lid.*
- *Australian Standard AS3996 compliant, class A, B or C, respectively.*
- *Available grates*
    - *600x600mm Class A Pedestrian*
        - *Dimensions (see CAD drawing)*
        - *Gross weight 41kgs approx.*
        - *Grate net weight 32kgs approx.*
        - *Loading*
            - *Pedestrian and bycycles*
            - *Point pressure up to 330kgs / kN 6.7*
    - *600x600mm Class B Car*
        - *Dimensions (see CAD drawing)*
        - *Gross weight 41kgs approx.*
        - *Grate net weight 32kgs approx.*
        - *Loading*
            - *Vehicles excluding commercial vehicles*
            - *Point pressure up to 2,670kgs / kN 53*
    - *600x600mm Class C General Vehicles*
        - *Dimensions (see CAD drawing)*
        - *Gross weight 47kgs approx.*
        - *Grate net weight 38kgs approx.*
        - *Loading*
            - *Slow moving commercial vehicles*
            - *Point pressure up to 5,000kgs / kN 100*
    - *600x900mm Class B Car*
        - *Dimensions, frame 1,000 x 700, grate 600 x 900*
        - *Gross weight 56kgs approx.*
        - *Grate net weight 48kgs approx.*
        - *Loading*
            - *Vehicles excluding commercial vehicles*
            - *Point pressure up to 2,670kgs / kN 53*

### c. Ladder




Click <here> for a copy of the drawing provided above.

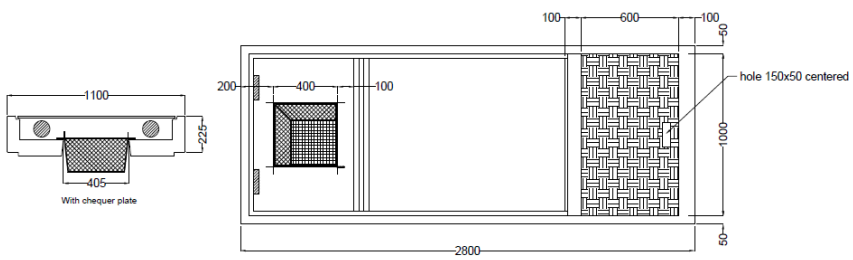
*Ladders are generally required under Workplace Health and Safety ('WHS') regulations where the height, (distance from the grate to the bottom of the tank), is greater than one or in some jurisdictions 0.9 meters or in our case for access into our medium and large tanks. Please note, 'WHS' regulations differ between jurisdictions.*

#### Specifications

- *Material, mild steel.*
- *Plating, hot dipped galvanised (HDG).*
- *Affixings, (supplied for free), typically M6, 40mm long concrete anchors (or equivalent to dynabolt® or trubolt® or ankascrew®), with hex head and in 304 or 316 stainless steel.*
- *Dimensions, 1265H x 420W.*
- *Steps, three (3), 300mm apart, each step is made from 10mm mild steel bar.*

*Image of typical ladder.*

### d. Out of Tank (in Planter) Filter



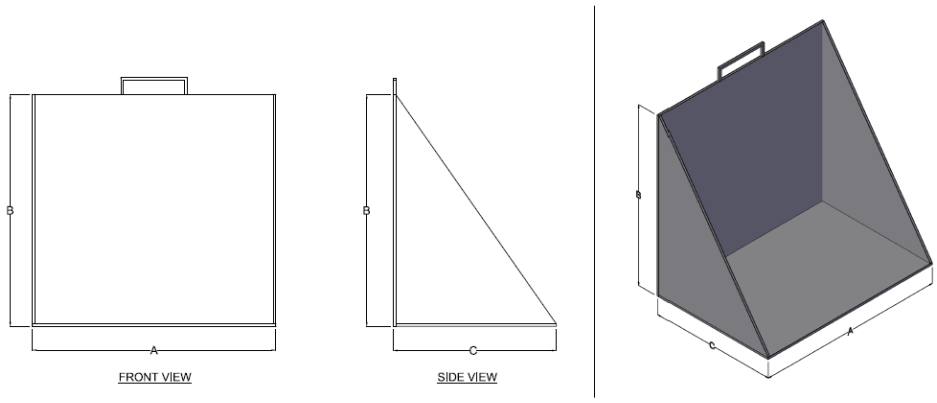

Click <here> for a copy of the drawing provided above.

#### Specifications

- *Material, stainless steel 304.*

- *Filter basket;*
  - *Frame, 5mm diameter wire.*
  - *Mesh,*
    - *Aperture, 8mm.*
    - *Wire, 1mm diameter.*
    - *Weave, plain weave square mesh (also known as "twill").*
- *Handles,*
  - *Number, two.*
  - *Material, stainless steel 304.*
  - *Dimensions 100L x 40H, approximately.*
- *Affixing, by gravity into cavity in the planter.*
- *Weight (clean), approx 3.2kgs.*
- *Dimensions,*
  - *Top, 400x400mm.*
  - *Depth, 250mm.*
  - *Base, 390x390mm.*
- *Maximum water filtering capacity, greater than 10 times the flow of 100mm pipe with 2 mtrs fall and ten to twenty (10-20) mtrs travel.*
- *Chequer Plate (optional);*
  - *Material, aluminium.*
  - *Finish, chequer plate (also known as checker or treadplate).*
  - *Thickness, 2mm.*
  - *Dimensions, 1000mm x 720mm.*
  - *Handle, 100mm x 40mm cut out.*
  - *Weight, 4.3kgs approx.*

### *e. In Tank Filter (Maximesh® RH3030)*




*Click <here> for a copy of the drawing provided above.*

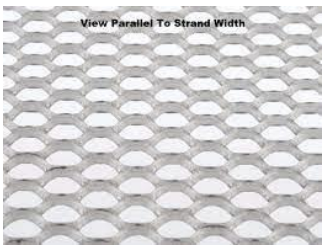
### *Specifications*

- *Maximesh® RH3030 refers to plated steel mesh developed by and registered to Truss Forte Pty Ltd.*
- *Materials, coatings, patterns, follow this link https://www.trussforte.com.au/collections/maximesh.*
- *Material, mild steel.*
- *Plating, hot dipped galvanised (HDG).*
- *Handle, mild steel HDG approx. dimensions 100L x 40H.*
- *Loxins, two or one of, affixed to the tank wall, with brackets to allow the filter to be lifted off for cleaning.*
- *Affixings, (supplied for free), typically M6, 40mm long concrete anchors (or equivalent to dynabolt® or trubolt® or ankascrew®), with hex head and in 304 or 316 stainless steel.*

- *Available filter sizes*
  - *300W "A" x 280H "B" x 200mmD "C"*
  - *400W "A" x 350H "B" x 250mmD "C"*
  - *500W "A" x 600H "B" x 250mmD "C"*
- *Mesh design, Maximesh® RH3030, of 3mm material thickness and pattern SWM (short pitch) 11mm, LWM (long pitch) 18.75mm.*

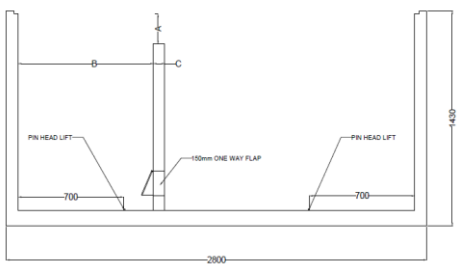
*Typical filter image*

*Typical mesh image.*

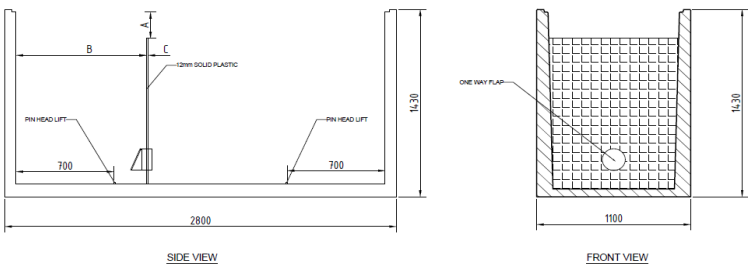



### *f. High Early Discharge (HED) Baffle*

***Concrete HED Baffle***




***Plastic HED Baffle***




*Click <here> for a copy of the drawing provided above - CONCRETE.*
*Click <here> for a copy of the drawing provided above - PLASTIC.*

***Specifications - Concrete HED Baffle***

- *Material, > 32 mPa concrete.*
- *Position and dimensions are to consulting engineers' specifications, typically, 900mm in from orifice, 75mm thickness and 200mm clearance to the top of the tank.*
- *With 150mm PVC one way flap cast into baffle and kissing or near kissing tank base.*
- *Construction, cast into the tank by hand using formwork, light mesh and bar and fastened to the wall using 10mm bar recessed into the tank wall.*
- *Manufactured in-situ and requiring spreader bar to avoid damage to the baffle during offload.*

***Specifications - Plastic HED Baffle***
***"Quick Install, No Spreader"***

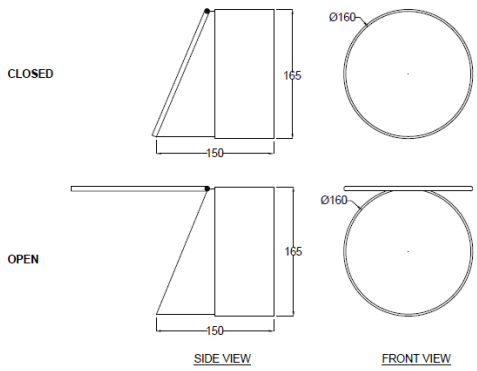
- *Material, PVC or ABS, depending on availability.*
- *Position to consulting engineers' specifications, typically, 900mm or other distance from short end encompassing the orifice plate.*
- *Baffle maximum pressure tolerance, 15 mPa.*
- *Acid and alkaline resistant.*
- *Baffle thickness, 12mm.*
- *Dimensions, varies, splayed from bottom of tank in line with camber of tank.*
- *With 150mm PVC one way flap cast into the baffle and not closer than 10mm to tank base.*
- *Affixed with HDG brackets and stainless steel anchors (supplied for free).*
- *Joins sealed with butyl (isobutylene) tape (supplied for free).*

***The Differences, Advantages and Disadvantages of each HED Solution***

*The concrete in comparison to the PVC / ABS baffle is:*

a) *Slightly more expensive to cast than the plastic to is to buy;*
b) *Requires a spreader bar at installation to lift the tank;*
c) *More susceptible to being damaged;*
d) *Heavier and takes up more space;*
e) *Not able to be temporarily removed to assist with access to the remainder of the tank; But*
f) *Comes installed in the tank leaving no further works necessary to be performed to make the HED functional.*

### *g. 150mm PVC One Way Flap*




*Click <here> for a copy of the drawing provided above.*

***Specifications***

- *Material, PVC.*
- *Sizing, to suit 150mm DWV PVC pipe.*
- *Dimensions, outer diameter 165mm, length 150mm maximum.*
- *Positioning in baffle, as per engineering specifications with minimum side clearances.*

*Image of 150mm One Way Flap*

# *5. Fall*

*Note, our tanks haven't traditionally experience mosquito, rodent, bacteria, fungal, algae or other hygiene issues requiring specific treatment. Some slurry / dust will collect in the base and shouldn't affect tank or orifice operation. In addition to their being only minimal dust, inside a tank there is:*

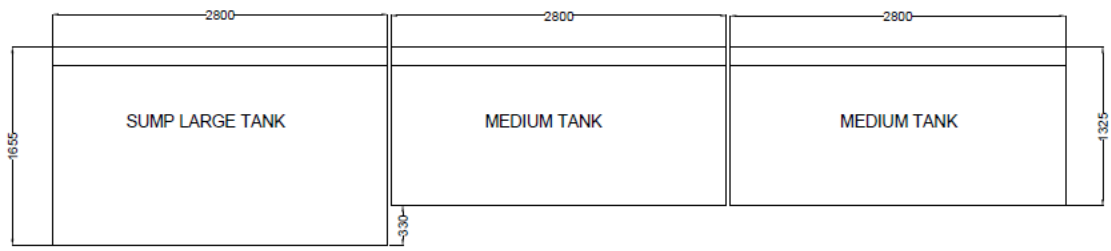
a) *No or little light;*
b) *Only small and intermittent air movement as water enters or exits the tank; and*
c) *Few nutrients.*

*Fall to allow the tank to completely and quickly drain dry after a rain event will further reduce or eliminate rodent, mosquito or odour risks.*

*Where fall is required, it can be achieved through, (in order of ease, practicality and from lowest to highest cost);*

a) *Placing the tanks on ground prepared with the desired fall, 1,2 degrees etc. Each degree of fall equates to approx.:*
    a. *30mm's accumulated height gain per length of tank. Tank 1 high end will be 30mm higher than the low end, tank 2 high end will be 60mm higher than tank 1 low end etc. And*
    b. *35 litres accumulating water storage capacity loss per tank. Tank #1 losses 35 litres capacity, tank #2 losses 70 litres capacity etc.*
b) *Placing the tanks on a platform with your desired fall and casting floor leveller into the tanks to create fall. 1 degree fall over the length of a tank equates to an additional 30mm height gain and approx. 35 litres of water storage accumulated loss. If you follow this method you will need to;*
    a. *Place polystyrene or other chocks over the pin head lifts to enable lifting of the tank after casting.*
    b. *Accumulate the floor leveller over your series of tanks e.g. 0 to 30mm's tank #1, 31mm's to 60mms tank #2, etc, including potentially some bar to reduce the chance of post casting cracking. And*
    c. *Customise your tanks with equaliser connective seal positionings to rise as they move away from the orifice plate. We can calculate and cast this for you.*

# 6. Sump




*Click <here> for a copy of the drawing provided above.*

*For the same reasons outlined under the "fall" heading above, there is some but not a huge amount of benefit in the additional cost of introducing a sump and sump drains into a Landscape Tanks™ 'OSD' tank.*

*It is possible to incorporate a sump into a tank series. You can do this by;*

a) *Cast a sump and also add drains to one or more of the tank bases, costs apply. Or*
b) *Cascading the tank sizes e.g. small to medium or large tank, medium tank to large. The last tank in the series being also the deepest would constitute a "sump". See the drawing above.*

# 7. Engineering Schedules

***a. Retaining Wall***
***b. Under Driveway Tanks***
***c. Buried Tanks***

*For copies of our engineering schedules, contact our office operations@landscapetanks.com.au*

# 8. Structural Engineering Services

*In the event that your design or site does not fit the standard engineering provided, we offer through our engineering partner, "Partnear", the ability to gain structural engineering advice (costs apply). Partnear have all the necessary calculations, know our plant and moulds and consequently are able to quickly and cost effectively find solutions to most individual requirements. To contact Partnear, email Jeremy Smith jeremy.smith@partnear.com.au or go to their website www.partnear.com.au*

***Purpose***
*This document and its contents are provided to assist consumers with their OSD enquiries and decision-making.*

*'OSD' obligations emanate from state planning legislation and are regulated locally by councils as part of the building development application process ('DA'). Each Council interprets the 'OSD' legislative provisions with reference to its locality, general conditions e.g. terrain, rainfall, catchments and environment. As a consequence, it's unusual to find two Councils with identical 'OSD' regulations. Interpretations and unique locality conditions mean each Council's 'OSD' requirements will differ to their neighbours and all other councils in one or many ways.*

*Our 'OSD' system operates across all Council's in all jurisdictions other than those Councils who specifically have "no concrete or no pre-fabricated concrete 'OSD' storage", regulations. Given the complexities and differences between the sixty odd 'OSD' applicable Council's in Australia and our inability to have a deep understanding of each Council's 'OSD' nuances, we suggest you seek professional assistance (builder, engineer, town planner or other suitable professional) in determining the best solution for your circumstances.*

***Patents***
*Patent Application #2018202547 & Patent Granted # 2010286347*

*Landscape Tanks™ has patents, granted and or pending. One patent specifically covers our 'OSD' modular concrete tank product range its components and parts, individually and or accumulatively. Another covers the fluid management system used in all tanks we produce.*

*The items shown in the formats specified on this website are proprietary and or covered by patents and cannot be manufactured without written licence from Landscape Tanks™. Open licence is provided by Landscape Tanks™ to all engineers, architects and draftsman to include the above drawings on plans, for and only for the expressed purpose of specifying our products on plans, where and provided they clearly and unambiguously acknowledge the ownership and authorship of the owner, namely Landscape Tanks™ patent pending 2018202547 and granted 201086347, in all and every instance.*

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**Manufacturing: 23 Hudson Cres, Albury NSW 2640**
**(Inform Construction)**

**Mob 0499 19 22 82**

**www.landscapetanks.com.au**

**Last Updated May 2023**