TREATMENT PLANT APPROVAL 18/2023
Plumbing and Drainage Regulation 2019, part 4.

Queensland Government

Approval

1. **Ecosafe EP10** ("the System") described in the Specifications and Drawings in the attached Schedule and manufactured by **Ecosafe Wastewater** (ABN 70 276 315 218) ("the manufacturer") has been assessed in accordance with the Queensland Plumbing and Wastewater Code (QPW Code).

2. Approval is granted for the system as an **advanced secondary** quality wastewater treatment system with **nutrient reduction**, subject to compliance by the manufacturer with the requirements of the *Plumbing and Drainage Regulation 2019*, part 4 and the conditions of approval detailed below.

3. This approval, the conditions of approval and the Schedule comprise the entire Chief Executive Approval document.

4. Any modification by the manufacturer to the design, drawings or specifications scheduled to this approval must be approved by the Chief Executive.

Conditions of approval

5. The manufacture, installation, operation, service, and maintenance of the systems must be in conformity with the conditions of this Treatment Plant Approval.

6. The system when tested by a certification accreditation body in accordance with AS1546.3:2017 was found to comply with the **advanced secondary** 10 EP/1500L level criteria and must continue to meet the following requirements:

    (a) Advanced secondary treatment

Table 2.1 (Abrev) AS1546.3:2017 Advanced secondary effluent compliance criteria for an STS

Parameter	Advanced secondary effluent	
	90% of Samples	Maximum
BOD^5	≤ 10 mg/L	20 mg/L
TSS	≤ 10 mg/L	20 mg/L
*E. coli**	≤ 10 cfu/100 mL	30 cfu/100 mL
FAC[Þ]	Minimum 0.5 mg/L[†]	N/A
Turbidity [§]	N/A	10 NTU

* Where disinfection is required
Þ Where chlorine disinfection is required
† Minimum level, not 90% of samples
§ Where UV light is used for disinfection

Treatment Plant Approval
Approved by: Lindsay Walker
Delegated Authority
Department of Energy & Public Works

(b) Nutrient reduction

During the testing of the System, the treated effluent was tested for total Nitrogen (TN) and total Phosphorus (TP) concentrations. The treatment process has the capacity to reduce the TN and TP concentrations as follows:

- Total N an average of 65 mg/L to 52 mg/L which represents a **reduction of 19.2%.**
- Total P an average of 10 mg/L to 6.7 mg/L which represents a **reduction of 36.7%.**

7. Each system must be serviced in accordance with the accreditation certificate issued by SIA Global Pty Ltd (certificate number SMK41256) on 25 November 2023, and details supplied in the owner's operation and maintenance manual.

8. Each system must be supplied with —

   a. a copy of this Treatment Plant Approval document.
   b. details of the system.
   c. instructions for authorised persons for its installation.
   d. a copy of the owner's manual to be given to the owner at the time of installation.
   e. detailed instructions for authorised service personal for its operation and maintenance.

9. At each anniversary of the Treatment Plant Approval date, the supplier must submit to the Chief Executive a list of all systems installed in Queensland during the previous 12 months. Where the Chief Executive is notified of any system failures the Chief Executive may randomly select several installed systems for audit. The Chief Executive will notify the supplier's nominated NATA accredited laboratory which systems are to be audited for BOD^5 and TSS. The sampling and testing of the selected systems, if required, is to be done at the supplier's expense. The following results must be reported to the Chief Executive;

   a. Address of premises.
   b. Date inspected and sampled.
   c. Sample identification number.
   d. BOD^5 for influent and effluent.
   e. TSS for influent and effluent.

10. The Chief Executive may, by written notice, cancel this approval if the manufacturer/supplier fails —

    a. to comply with one or more of the conditions of approval, or
    b. within 30 days, to remedy a breach, for which a written notice been given by the Chief Executive.

11. This approval may only be assigned with the prior written consent of the Chief Executive.

12. This approval expires on 05 December 2028 unless cancelled earlier in accordance with paragraph 10 above.

Lindsay Walker

Treatment Plant Approval
Approved by: Lindsay Walker
Delegated Authority
Department of Energy & Public Works

Level 15,
53 Albert Street Brisbane
GPO Box 2457, Brisbane Qld 4001
Telephone +61 7 3008 2557
Website www.hpw.qld.gov.au
ABN 61 331 950 314

Director
Plumbing, Drainage and Special Projects
Date approved: 05 December 2023

Treatment Plant Approval
Approved by: Lindsay Walker
Delegated Authority
Department of Energy & Public Works

TREATMENT PLANT APPROVAL 18/2023
Plumbing and Drainage Regulation 2019, part 4.

SCHEDULE

Ecosafe EP10

Attachment 1 – Ecosafe EP10 - CAB Certificate number SMK41256
Attachment 2 – Ecosafe EP10 – Operator's and Installation Manual
Attachment 3 – Ecosafe EP10 - Schematic diagrams

Attachment 1 – Ecosafe EP10 - CAB Certificate number SMK41256

STANDARDSMARK LICENCE

SAI Global hereby grants

The Hawthorne Family Trust

ABN 70 276 315 218

6 Brook Crescent, Burpengary East, QLD 4505, Australia

StandardsMark Licence

Manufactured to:
AS 1546.3:2017 - On-site domestic wastewater treatment units - Secondary treatment systems

"the StandardsMark Licensee" the right to use the STANDARDSMARK as shown below only in respect of the goods described and detailed in the Schedule which are produced by the Licensee or on behalf of the Licensee* and which comply with the appropriate Standard referred to above as from time to time amended. The Licence is granted subject to the rules governing the use of the STANDARDSMARK and the Terms and Conditions for certification and licence. The Licensee covenants to comply with all the Rules and Terms and Conditions.

Certificate No:SMK41256

Issued: 25 November 2023 **Originally Certified: 6 November 2023**
Expires: 5 November 2028 **Current Certification: 24 November 2023**

Calin Moldovean
President, Business Assurance
SAI Global Assurance

Certified Product Australian Standard

JAS-ANZ

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or details of manufacture, refer to the licensee
STANDARDSMARK is a registered certification trademark of SAI Global Pty Limited (A.C.N. 050 644 642)
is issued under licence by SAI Global Certification Services Pty Limited (ACN 108 716 669) ("SAI bal") Level 7 Suite 7.01, 45 Clarence Street, Sydney NSW 2000 Australia. This certificate remains the perty of SAI Global and must be returned to SAI Global upon its request. Refer to www.saiglobal.com, the list of product models.

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Treatment Plant Approval
Approved by: Lindsay Walker
Delegated Authority
Department of Energy & Public Works

Queensland Government

SCHEDULE TO

STANDARDSMARK LICENCE

SAI Global hereby grants

The Hawthorne Family Trust

6 Brook Crescent, Burpengary East, QLD 4505, Australia

StandardsMark Licence

Manufactured to:

AS 1546.3:2017 - On-site domestic wastewater treatment units - Secondary treatment systems

Model identification of the goods on which the STANDARDSMARK may be used:

Brand Name & Model ID	Treatment Capacity (Litre / Day)	Treatment Type	Compliance Type	Disinfection Method	Tank Types and Capacities	Service Interval	Date Endorsed
Ecosafe EP10	1500	Septic tank with pressure dosed Sand Filter final treatment. BOD5 <10mg/L Ave Total Nitrogen 52 mg/L = 19.2% reduction Ave Total Phosphorus 6.7 mg/L = 36.7% reduction	Advanced Secondary	Chlorine Tablets	Primary treatment tank (baffled) of 4200L capacity; Lined sand filter bed (7.0 x 2.5m = 17.5m2) x containing 700-1000mm depth of specified washed filter sand	Annual	24 Nov 2023

End of Record

Certificate No: SMK41256

Issued Date: 25 November 2023

This schedule supersedes all previously issued schedules

* For details of manufacture, refer to the licensee

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Attachment 2 – Ecosafe EP10 - Operators Manual

ECOSAFE WASTEWATER TREATMENT

The Hawthorne Family Trust

6 Brook Crescent

BURPENGARY EAST QLD 4505

AUSTRALIA

Trading as ECOSAFE WASTEWATER TREATMENT

ABN: 70 276 315 218

This document contains:

- ✓ PRODUCT SPECIFICATIONS
- ✓ OWNER'S OPERATION & MAINTENANCE MANUAL
- ✓ INSTALLATION & SERVICING – for:

ECOSAFE 10EP
(1500 L/ day)

ECOSAFE

ADVANCED SECONDARY with NUTRIENT REDUCTION
19.2% for Nitrogen; &
36.7% for Phosphorous

Ecosafe 10EP (1500 L / day) ADVANCED SECONDARY with NUTRIENT REDUCTION
19.2% Total Nitrogen & 36.7% Total Phosphorous

ECOSAFE WASTEWATER TREATMENT

Table of Contents

ECOSAFE WASTEWATER TREATMENT

1. PRODUCT SPECIFICATIONS & DESIGN FEATURES

1.1. Introduction

The new Ecosafe Advanced Secondary EP10 Treatment Plant, is a domestic sized treatment system which produces effluent of 'Advanced Secondary' quality, with nutrient reduction, with certification of approval in accordance with AS 1546.3:2007.

With its unique and patented system of aerobic sand filtration, the new Ecosafe performs at an even higher level, using international best practice for the future of our planet, aerobic sand filtration. It has achieved this, while still maintaining the key features of being a passive and robust design, no noise, no odour and only one service per year – not four.

All treatment plants have a 'design life' of 15 years and they all require regular servicing by a qualified service technician who must document and report the health of the system. They require a high degree of user dedication to day-to-day operation and maintenance to ensure the high performance is maintained for that period.

The history of installations in Queensland over the past 30 years demonstrates that high performance of the Ecosafe may be maintained for a much longer period with a diligent approach to on-going operation and maintenance.

1.2. Specifications

This system's capacity is 1500 litres of normal household wastewater – both black (sewage) and grey (laundry, bathroom) – each day. With average influent of 150L / person / day, this will comfortably service a 10-person household.

It produces effluent of "Advanced Secondary quality" which means < 10mg/L of BOD51, < 10mg/L of TSS2 and < 10mcfu / 100ml of E.coli[3].

Although not targeted, this system achieved nutrient reduction of 19.2% of total nitrogen and 36.7% of total phosphorus.

Average daily electricity consumption for this system has been measured at 0.9kWh / 1000L.

It has emergency storage capacity of a minimum of 1,000L.

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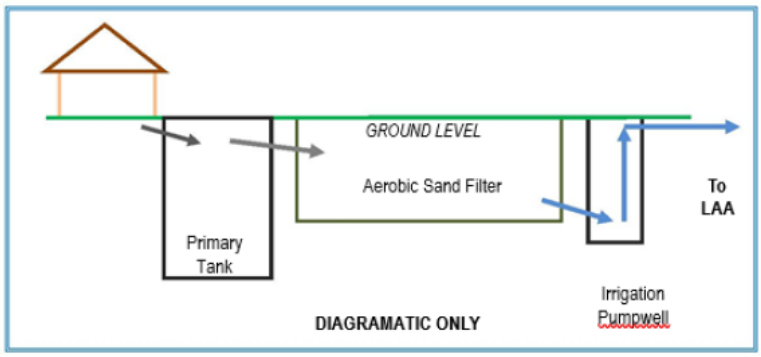
[1] *5-day biochemical oxygen demand*
[2] *Total suspended solids*
[3] *Escherichia coli*

2. OVERVIEW OF THE ECOSAFE TREATMENT PROCESS

Physical components of the system include the Primary Tank, Sand Filter and the Pumpwell, as indicated below:



Although the Diagram above shows components in a straight line, the configuration of the components on site may differ to suit site conditions.

Sanitary drainage from the dwelling to the Primary Tank inlet must be attended to, and certified, by your residential Plumber.

2.1. The Land Application Area

The Land Application Area design is site-specific and is the subject of a separate design based on factors including site specific soil test results, number of bedrooms in the dwelling, your use of the property.

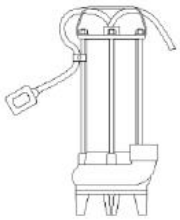
In the Land Application Area, the treated effluent is 'applied' to the land by one of a number of means which may include heavy droplet sprinklers, or pressure-compensating drippers and shallow subsurface irrigation systems.

Following installation, Ecosafe will provide you with specific information concerning your Land Application Area including suitable species of plants to ensure maximum nutrient uptake and absorption.

More information is provided in the Operation and Maintenance Manual below.

2.2. Overview of The Ecosafe Components

Primary Tank	The "Primary Tank" is a 4200L baffled modified septic tank with an outlet filter provided by Ecosafe. The purpose of the Primary Tank is to separate the solids from the liquids and for anaerobic digestion of the solids. Wastewater flows from the domestic sanitary drain into the First Chamber of the Primary tank. Here, fats, oils and greases form a "scum" on the surface and solids form a "sludge" on the bottom of the tank. In the middle a "clear water zone" forms in which the anaerobic process of primary treatment takes place. Following Primary treatment, the clear effluent flows into the Second Chamber. From there, it passes through an outlet filter and flows to the in-ground Aerobic Sand Filter. Your Primary tank is manufactured and installed with certification of compliance with AS/NZS:1546. It carries a manufacturer's warranty of 15 years. Important information about operation and maintenance follows.
Aerobic Sand Filter	The "Aerobic Sand Filter" is an in-ground bed containing grades of sand and aggregate. It is lined with an impervious geo-membrane and is **7m long x 2.5m wide**. It contains 700 – 1000mm depth of specified washed filter sand overlaying 200mm of coarse aggregate material. Primary treated water from the septic tank is pumped (via a dosing pump) to the sand filter bed and distributed along the length of the bed via a series of 3 pressure-dosed distribution manifolds comprising 25mm PVC pipe with apertures at specified distances as per the system design. During dosing intervals, primary treated wastewater is distributed across the sand filter bed before filtering downward through the treatment system and collected by the plastic liner.
Irrigation Pumpwell	The treated effluent then flows into the Irrigation Pumpwell awaiting disposal. The Pumpwell contains a dual tablet contact chlorinator and the effluent pump sump with automatic float switch. When the effluent level reaches a determined level, the pump will automatically pump the effluent to the disposal area. Your Pumpwell also complies with AS/NZS 1546 and comes with a manufacturer's warranty of 15 years. From the Irrigation Pumpwell, the effluent is disposed (via a sump pump) of in the Land Application Area. The effluent pump-out chamber also has a high-water level switch which turns on an audio-visual alarm, in the event of pump failure. See fellow with Electrical Parts. Important information about operation and maintenance follows.
Contact Chlorinator in Pumpwell	A dual contact chlorinator (dual trichloroisacyanuric acid tablet applicators) are installed in the Pumpwell. Important information is provided in the Operation and Maintenance Manual.

Submersible Pumps	Two submersible pumps are used in the system. The Irrigation Pump is installed by Ecosafe in the Pumpwell.  Nominally the Irrigation pump is 250W with head less than 5 metres – but the size will vary depending on site requirements. The smaller Dosing pump is installed at the Sand Filter.
Pumpwell High-water Pumpwell alert system	The Audio-visual alarm which is activated by the switch in the pumpwell, is provided by Ecosafe and installed in the home by your Electrician. See below:  In addition, Ecosafe provides an Electrical Pack for your electrician with instructions as to wiring of the submersible pumps.

3. OPERATION AND MAINTENANCE

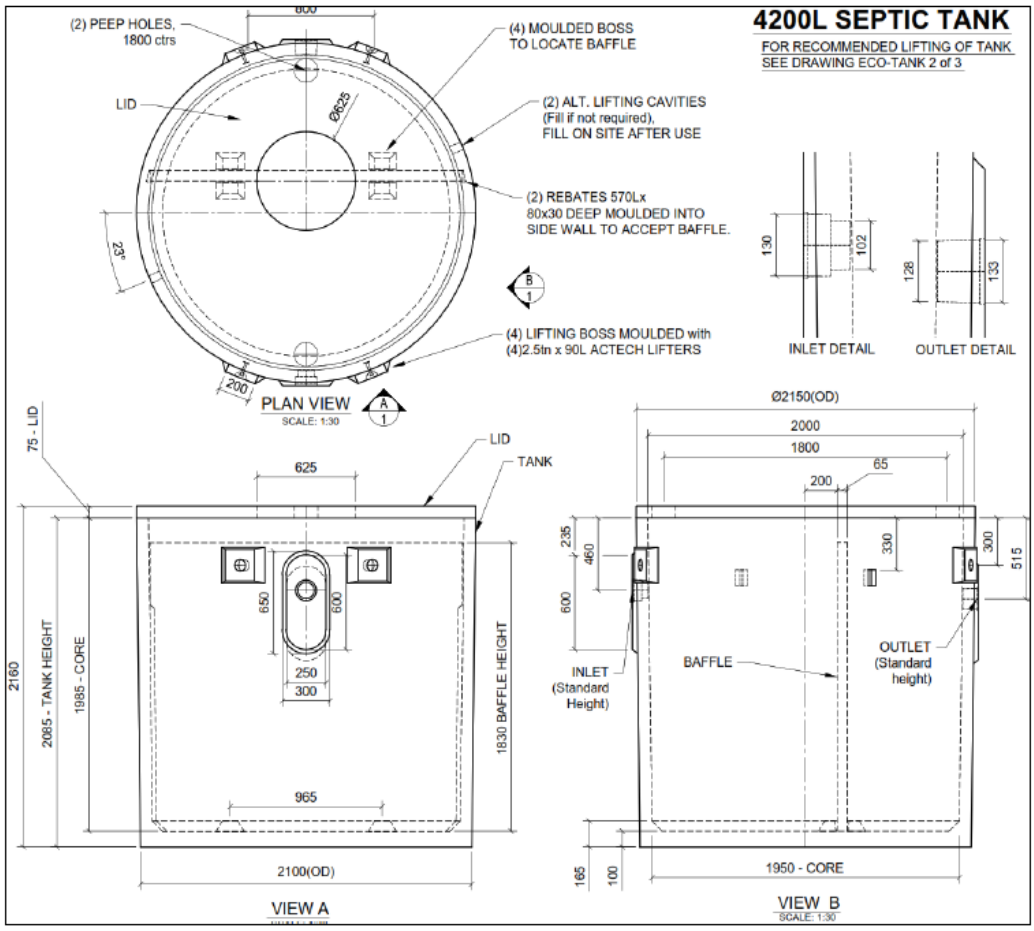
3.1. Primary Tank

3.1.1. Operation

The Primary Tank performs primary treatment of the wastewater in the following way:

- solids settle to the bottom of the tank and form a layer of sludge;
- lighter wastes such as fat and grease float to the surface and form a scum layer; and
- bacteria, which live in the septic tank, help break down the solid wastes and reduce the volume of sludge collecting in the bottom of the tank.

1. Drawing of the Ecosafe Primary Tank:



3.1.2. Maintenance – Desludging

The local regulatory authority requires that when the Ecosafe is serviced annually, it is checked for sludge depth. When the sludge reaches a depth of one metre the primary tank will need desludging by a properly licensed and approved Contractor.

When your system is serviced annually the sludge depth will be noted in the report forwarded to Council.

The primary tank may need desludging after 3 years depending on the extent of usage and the level of care taken with household products used.

To assist with reducing sludge build-up in the Primary Tank, Australian Standard AS/NZS 1547:2000 "*On-site Domestic Wastewater Management*" provides the following useful advice:

a) scrape all dishes to remove fats, grease, etc before washing;

b) keep all possible solids out of the system;

c) don't use a garbage grinder unless the system has been specifically designed to carry the extra load;

d) don't put sanitary napkins and other hygiene products into the system.

The natural biological principles used in the Ecosafe system require that only bio-degradable material is acceptable for treatment. The Ecosafe system has sufficient capacity and robustness to accept the usual household products such as soaps and detergents provided they are used in moderate quantities.

However, the primary treatment of waste in the primary tank is dependent on the presence of bacteria. Any household products of disinfectants which reduce bacteria will, of course, reduce the effectiveness of your primary tank.

To assist with maintaining the anaerobic bacteria in the Primary Tank, AS/NZS 1547:2000 advises as follows:

e) use biodegradable soaps;

f) use a low-sodium detergent in dispersive soil areas;

g) don't use powerful bleaches, whiteners, nappy soakers, spot removers and disinfectants;

h) don't put chemicals or paint down the drain".

We recommend you do not dispose of chemicals arising from a hobby or home industry into the system, without first seeking the advice of the Environmental Officer of your local authority.

Also, do not use acid cleaners, chlorinated products, sterilization agents and, of course, disposal of unused antibiotics are not recommended. Ecosafe's Product Advice is updated regularly and is attached.

3.1.3. Maintenance - General

- The Primary Tank will need to be protected from vehicles;
- Trees should not be planted near the Primary Tank or any other component of the system because of possible ingress of root systems.
- Keep the vent and/or access cover of the septic tank exposed.

Owners are also advised that the tank/s should not be emptied and following de-sludging, they should be refilled with water without delay.

3.2. Aerobic Sand Filter

3.2.1. Operation

The "Aerobic Sand Filter" is an in-ground bed containing various grades of sand and aggregate. It is lined with an impervious geo-membrane and is usually 7m long x 2.5m wide. It contains 700 – 1000mm depth of specified washed filter sand overlaying 200mm of coarse aggregate material. Here, the biological process of aerobic sand filtration occurs.

Primary treated water from the septic tank is pumped via a dosing pump, to the sand filter bed and distributed along the length of the bed via a series of 3 pressure-dosed distribution manifolds comprising 25mm PVC pipe with apertures at specified distances as per the system design. During dosing intervals, primary treated wastewater is distributed across the sand filter bed before filtering downward through the treatment system and collected by the plastic liner.

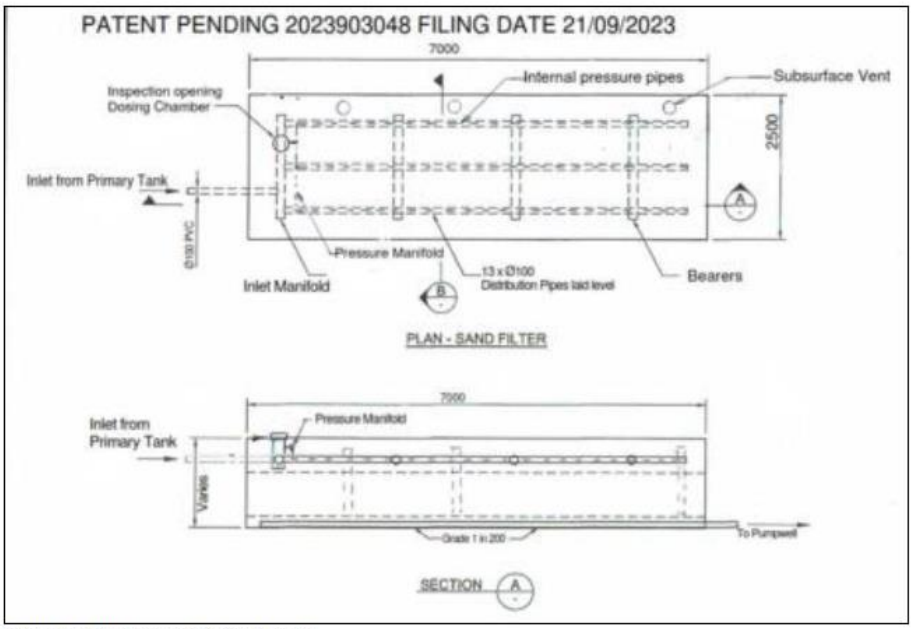
It is important that owners understand that the 'filter' is not a physical filter, but a biological process of aerobic sand filter. The principal by-products of the process are clear water, methane, hydrogen sulphide and carbon dioxide (these gases escape undetected to the atmosphere through the surface of the buried filter).

3.2.2. Maintenance

Provided the system is not grossly misused or neglected, the process is bio-sustainable and "clogging" should never occur.

The size and location of the sand filter should be noted, and the following advice followed:

- Motor vehicles should not be driven on the sand filter, as this may damage the distribution pipes, which are close to the surface.
- Trees or plants should not be grown on top of or near the sand filter.
- The area containing the Treatment Plant (as well as the Land Application Area) must be kept free of livestock – if necessary by stock-proof fencing.



- *Drawing of the Ecosafe Sand Filter:*

3.3. Irrigation Pumpwell

3.3.1. Operation

The treated effluent then flows into the Irrigation Pumpwell awaiting disposal. The Pumpwell contains an irrigation pump which has an automatic float switch so that when the effluent level reaches a determined level, the pump will automatically pump the effluent to the disposal area.

Your Primary tank is also manufactured by our local supplier, CivilMart, who also holds approval under Australian Standards and provides a warranty of 15 years.

3.3.2. Maintenance

The Irrigation Pumpwell contains an automatic submersible pump which has an automatic float switch so that when the treated effluent reaches a determined level the pump will automatically pump the effluent to the disposal area.

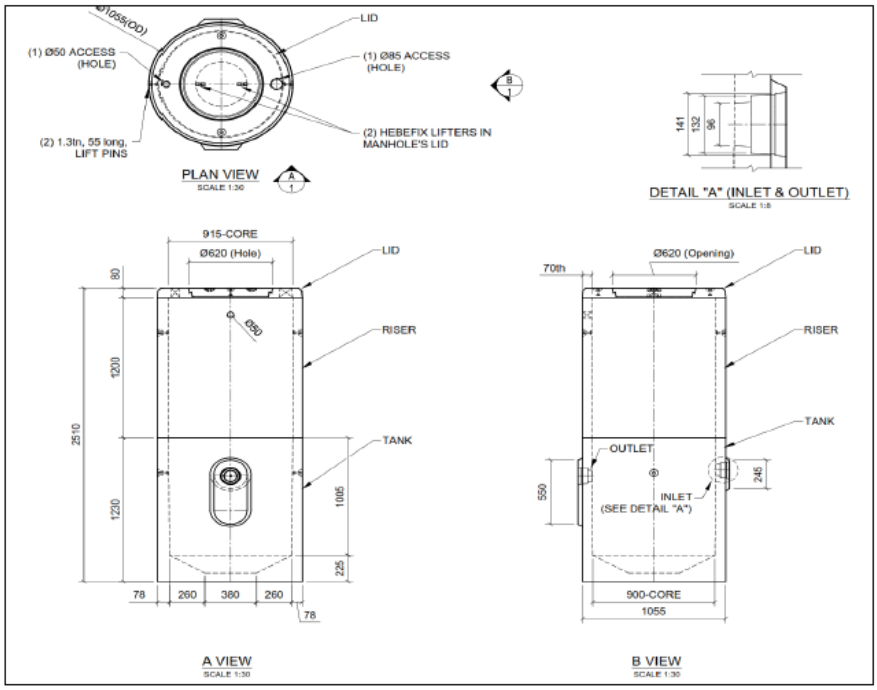
There is also a switch at a higher level in this Pumpwell which activates the (connected to a neon light in the laundry) which will turn ON in the event of pump failure.

The Pumpwell is 'automatic', that is, it must be switched 'on' at all times to allow the pump to intermittently operate in response to the risen water level. 'Manual' operation is not recommended because failure to switch the pump back 'on' could cause 'backing up' of water in the sand filter.

In addition, owners should ensure that:

- The Pumpwell must remain accessible and exposed.
- The Pumpwell must remain accessible and exposed.
- The electrical connection of the irrigation pump must always be switched "on" which permits automatic operation.
- The area containing the Treatment Plant must be kept free of livestock – if necessary, by stock-proof fencing.
- If the Pump fails, the audio-visual alarm installed will be ON.

The Pump in your Pumpwell is:_____



- *Drawing of Irrigation Pump Well*

3.3.3. Disinfection Requirements:

There is a chlorine tablet dispenser in the lid of your pumpwell. If you are surface spraying you should add a single chlorine tablet every month.

We recommend chlorine tablets containing Trichloroisocyanuric Acid, such as "Hy-Clor", which are available in most supermarkets

DISINFECTION OF PUMPWELL IN ECOSAFE SYSTEMS

Council requires disinfection of the final effluent in the pumpwell.

Ecosafe recommends:

1. **HY-CLOR Long Lasting Swimming Pool Tablets** – Active ingredient 850g/kg available Chlorine present as Trichloroisocyanuric acid (TICA) – preferrable as longer lasting but only available from Bunnings

2. **BARACUDA Weekly Chlorine Tablets** - Active ingredient 900g/kg available Chlorine present as Trichloroisocyanuric acid (TICA) – available from Mitre 10 or Supermarkets

3. Long Lasting Pool Chlorine tablets from a Pool shop with the Active ingredient Chlorine present as Trichloroisocyanuric acid (TICA)

Application Rate: As per the Recommendation on the Service Report.

Please note that Calcium Hypochlorite is NOT recommended

3.4. The Land Application Area (LAA)

3.4.1. Operation

Your Land Application Area (LAA) is the allocated area for disposal of the treated effluent after discharge from the Pumpwell, 'applying' it to the land. The Land Application Area has been designed by a Site and Soil Evaluator who conducted the appropriate soil tests and other investigations and submitted to the local Authority who issued approval.

You should retain a copy of the approved design and note that the installation must not be altered in any way from the original approved design except with the permission of the local authority. Any alteration is an offence under the relevant plumbing and draining laws and may attract a substantial fine.

3.4.2. Maintenance

Problems with your Land Application Area, such as a blocked discharge line, may cause damage to the Ecosafe.

It is very important to regularly check the discharge of treated effluent.

Problems may occur with systems which have not been maintained and where absorption areas have become blocked or clogged. The warning signs are obvious:

a) Absorption field is wet or soggy with wastewater ponding on the surface of the ground.

b) There is a smell of "sewage" near the absorption area.

c) Drains and toilets run slowly. This indicates a blockage in the drain between the house and the inlet of the Primary Tank – If this occurs, you should contact your local Plumber.

Your Land Application Area has been designed by a Site and Soil Evaluator and your local authority approval / permit is based on this. It must not be altered in any way from the original approved design except with the permission of the local Council. Any alteration is an offence under the State Government legislation and could attract a substantial fine.

For ease of owner maintenance, Ecosafe recommends, if possible, the use of "heavy droplet sprinklers" and not below-ground "pressure compensated drippers", for your Land Application Area.

If your LAA construction incorporates below-ground disposal, ensure that adequate end-of-line flushing valves are fitted.

The Discharge Line is a poly pipe line which runs from the Pumpwell to the Land Application Area. It should be a minimum size of 32mm.

We do not recommend the use of an in-line filter fitted in the discharge line. However, if one is fitted, regular cleaning is absolutely necessary to avoid the possibility of pipe or filter blockage and premature pump failure. Ecosafe recommends this in-line filter be cleaned once each month.

The Australian Standard AS/NZS 1547:2000 "On-site Domestic Wastewater Management" provides the following maintenance requirements for Land Application Areas:

a) Deter pedestrian access and restrict access by children, to the spray or irrigation areas;

b) No vehicles or livestock should be allowed on trenches or beds;

c) Deep rooting trees or shrubs should not be grown over or near absorption trenches, pipes or Sand Filter;

d) Evapo-transpiration and irrigation areas should have their grass mowed and plants maintained to ensure that these areas take up nutrients with maximum efficiency.

e) Warning signs for Spray Irrigation areas should be visible.

f) Surface water diversion drains (or levees) upslope of and around the Land Application Area should be kept clean to reduce absorption of rainwater into trenches or beds.

g) Check and follow manufacturer's instructions for on-going maintenance of disc filters or filter.

4. WARRANTY INFORMATION

4.1. Concrete Primary Tank and Pumpwell

The concrete Primary Tank and Pumpwell are both constructed of durable materials, structurally sound, corrosion resistant and fit for purpose to achieve the minimum service life of 15 years.

In order to preserve this 15-year Warranty on the Tanks, the owner must be complaint with the Operation and Maintenance requirements of the Ecosafe concerning the Tanks. For example, the Tanks must be protected from all vehicular traffic and stock; inlet and outlet baffles should not be interfered with.

4.2. Submersible Pumps

The submersible irrigation pumps are covered by the manufacturer's warranty. In the event of pump failure (including fair wear & tear), for a period of 2 years from installation date, Ecosafe will arrange pump replacement (including pump installation) at no cost to the owner.

In order to preserve this 2-year Warranty on the Pump, the Pump must have been operated in accordance with the manufacturer's requirements, operated at all times automatically and has been switched "on" at all times.

5. INSTALLATION INSTRUCTIONS

5.1. Site Requirements

The site for installation of the Ecosafe should have a stable earth base for the tanks, suitable access, space for possible future tanks and an area for maintenance purposes.

All exposed pipework, if any, must be UV light stabilised.

When installed in the ground, the top surface of the tank or tanks should be placed a minimum 100mm above finished ground surface, so that inspection and access covers are readily accessed, and ingress of surface water and stormwater is prevented.

When the tanks are installed below ground level, a watertight vertical extension should be installed. The vertical extension should support the access and inspection covers (lids) and should extend to at least 100mm above finished ground level.

The location of the Ecosafe on a site is subject to approval by the local regulatory authority. It should be installed clear of any buildings and allotment boundaries so as not to affect any structure. For installation requirements for a particular site, refer to local by-laws and regulations.

The Ecosafe should be sited so that easy access to all chambers can be gained for desludging purposes. Where a vertical extension is installed, it should provide access to all chambers for desludging.

The Ecosafe should be installed on a structurally solid earth foundation to prevent subsidence or differential movement of pipework.

Surface waters and stormwater should be diverted away from the Ecosafe installation, and the installation procedure must account for any potential high groundwater table or flooding.

The requirements for a sanitary drainage system and backflow protection requirements are set out in AS/NZS 3500.1 and AS/NZS 3500.2. All drainage levels should have appropriate gradients leading to the Ecosafe plant.

5.2. Installation on Site

All system components are to be installed in accordance with the approved design plans and minimum separation distances from nearby structures and buildings in accordance with the rules of the regulating authority.

All excavation work and installation activities are to be in accordance with safe work practice and procedure.

Tanks are delivered by truck equipped with a crane for unloading on site, as are the large quantities of washed sand and aggregate, and prefabricated pipe-work and fittings, for use in construction of the aerobic sand filter on site.

Access to the site and the method of construction applicable to each work site must be the subject of planning and site-specific risk assessments prior to the installation work commencing.

The Codes of Practice issued by each State Government provide practical guidance on how to achieve health and safety standards required under the relevant Work Health and Safety Act. They provide effective ways to identify and manage risks on work sites and include the following:

a) *Excavation work / Construction Work;*

b) *Hazardous manual tasks and Confined Spaces;*

c) *Working with underground electric lines – Electrical safety code of practice;*

d) *Managing risks of plant & the risk of falls in the workplace; and*

e) *Managing the work environment and facilities.*

During excavations, workers must ensure preparation of the bottom of the excavation (bedding etc) for tanks. The method of backfilling must prevent the Primary Tank from uplifting due to hydrostatic pressure.

Tanks must be installed so that they will not float out of the ground in areas where groundwater may be high. In this case, the water should be pumped away until the tank is stabilised and filled with water for ballast.

5.3 Electrical Connection

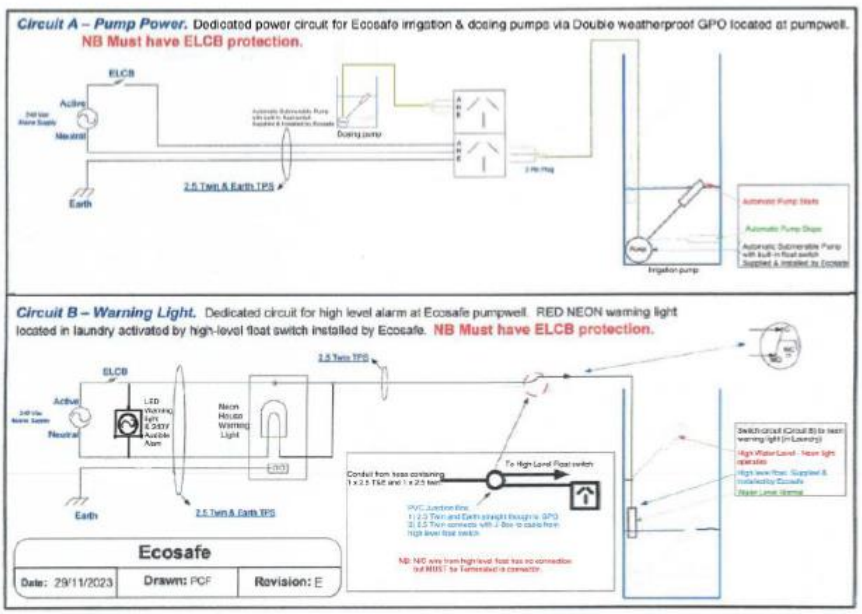
Electrical connection must be completed for both the Pumpwell (where there is an automatic submersible irrigation pump and a separate high water level float switch) and for the dosing pump in the Sand filter.

Two (2) electrical circuits are required to ensure proper function of the system.

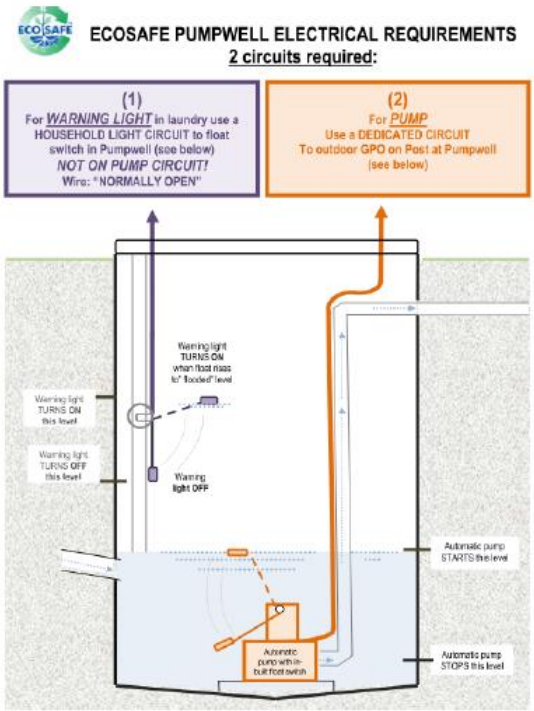
One circuit (Circuit A) is for power to both submersible pumps. There is an outdoor double GPO for both pumps; as the pumps are automatic the GPO must be switched "on" at all times.

The other circuit (Circuit B) is for the float switch in the Pumpwell and this MUST be a separate circuit.

Full instructions including a Wiring Diagram will have been provided for your Electrician, and copy of this is below.



To assist you to understand the operation of the Pumpwell, below is a diagram of the Pumpwell:



5.4 Installation Verification

Installation verification should be undertaken by the system designer and manufacturer, Ecosafe, and should verify that all the system components have been installed in accordance with the approved design plan.

The verification documents should be provided to the system owner and a copy provided to the regulatory authority. Where the designer and installer is the same person, this requirement should still apply and will not be diminished in any way.

Verification documentation should only be issued on completion of the installation and commissioning tests. The documentation should provide details of all components assessed during the commissioning testing.

At the conclusion of installation, a Certification / Marking Plate will be applied.

ECOSAFE
ADVANCED SECONDARY
MODEL EP10

Certified Product™

Australian Standard
Standard No.: AS1546.3:2017
Licence No.: SMK1256
SAI Global

Manufacturer: Ecosafe
Date of Manufacture: / /
Capacity: 1500 L / d

Contacts:
Ecosafe: 07 3368 9076
Servicing by Filtercare:
0422 025 099 or 0437 732 347

ECOSAFE WASTEWATER TREATMENT

6 ANNUAL SERVICING

The Ecosafe system has been certified as suitable for only one service per year – not four.

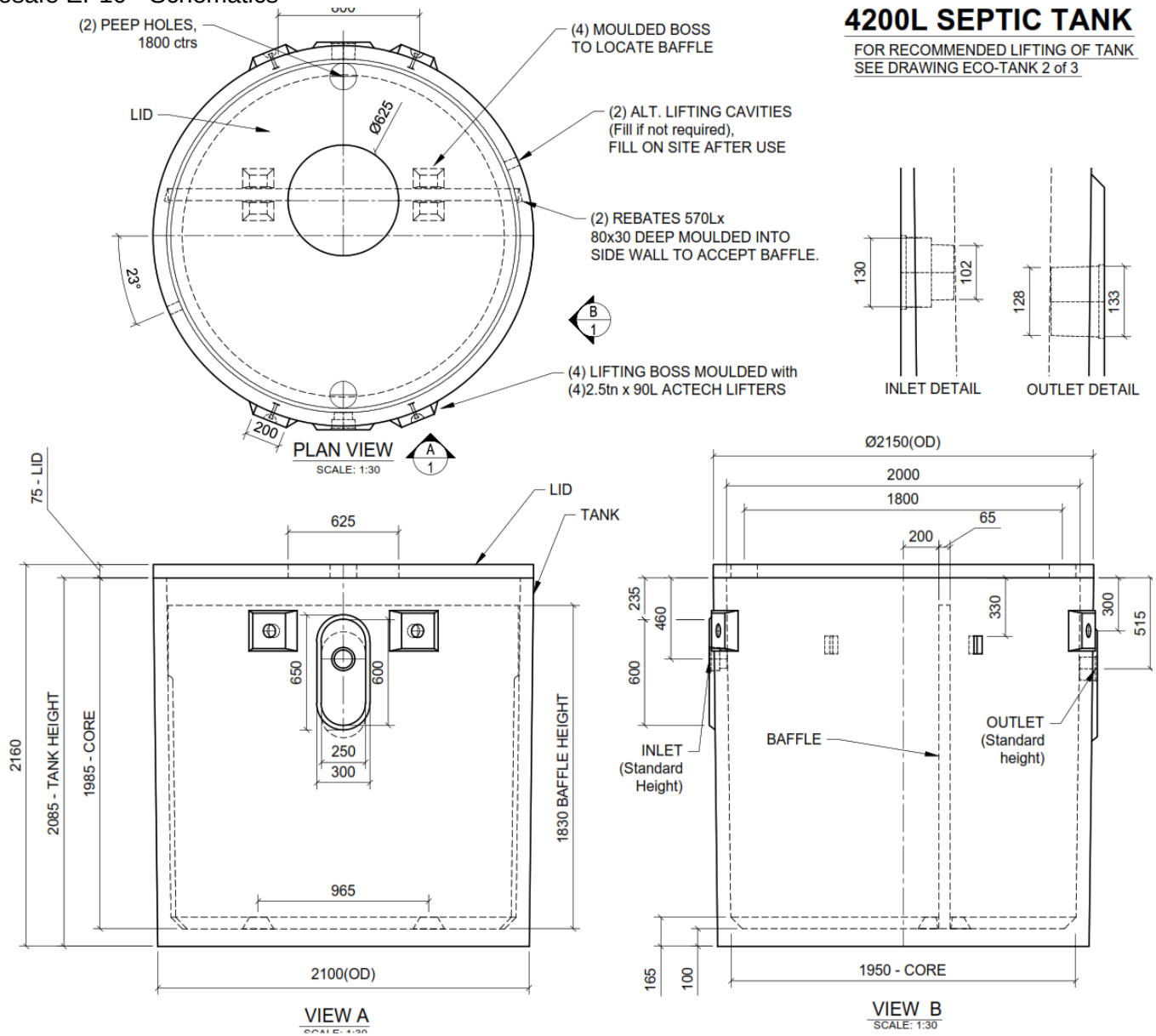
At each annual service, the following must be undertaken and reported on:

1. The condition of the irrigation area;
2. The condition of all pipes, hoses and effluent filter;
3. Efficiency of the irrigation spray / system;
4. The condition of the electrical systems including the high-water level audio visual alarm;
5. Measure the sludge level in the Primary Tank;
6. Ensure that both Pumps are functioning;
7. Check the chlorinator for the residual chlorine;
8. Check the effluent clarity;
9. Conduct onsite tests of water quality (clarity, pH and free residual chlorine, and forward the test results to the local authority and the owner; and
10. Report on all of the above to the local authority in the appropriate form.

The service cannot be undertaken by the homeowner, and to ensure longevity of the system and warranty provisions, must be undertaken by a qualified person who:

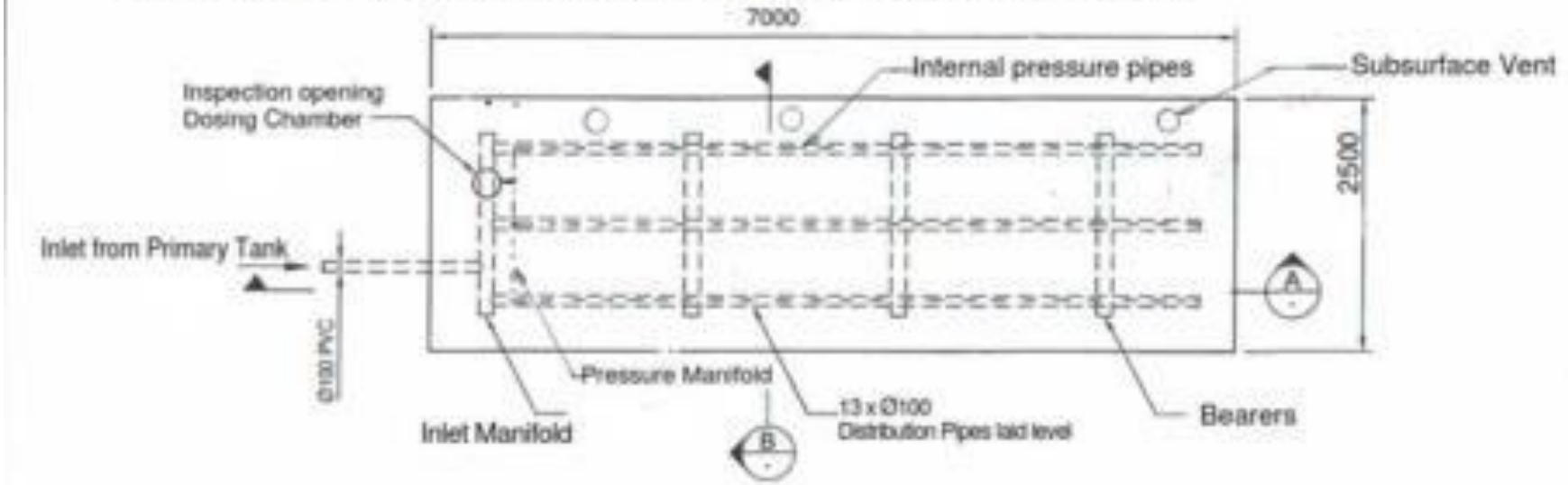
- Has satisfied the requirements of the local authority, as being properly licenced and competent to perform the service including conducting the tests required and provide a written report in the approved form; and
- Has completed the Ecosafe Servicing Course and is therefore familiar with the unique features of the system.

Attachment 3 – Ecosafe EP10 - Schematics

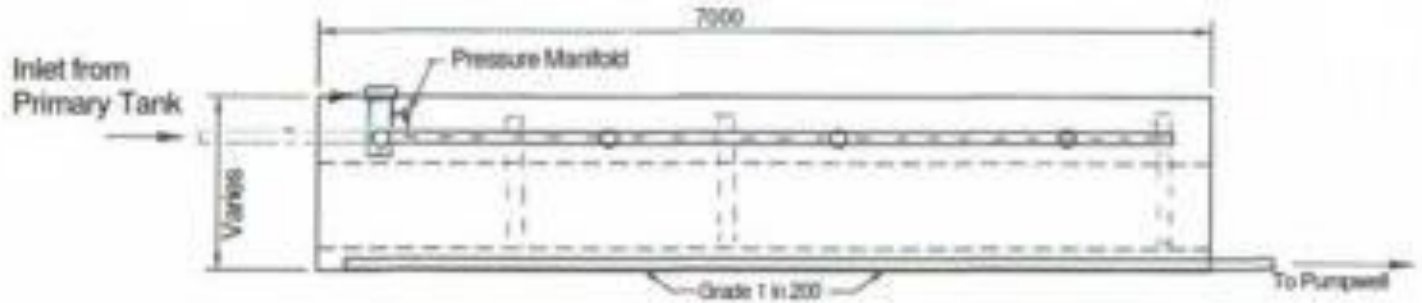


Treatment Plant Approval
Approved by: Lindsay Walker
Delegated Authority
Department of Energy & Public Works

PATENT PENDING 2023903048 FILING DATE 21/09/2023



PLAN - SAND FILTER



SECTION A

Treatment Plant Approval
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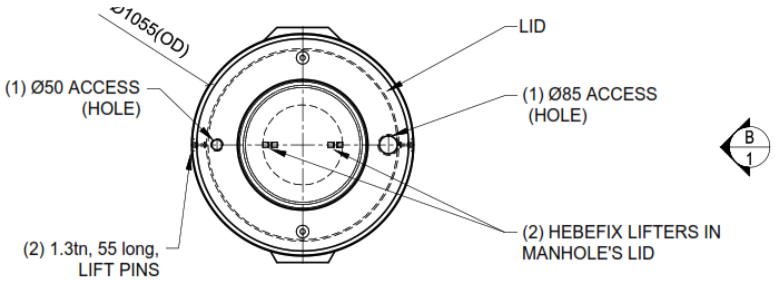
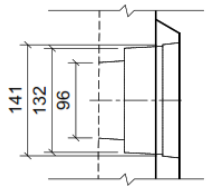
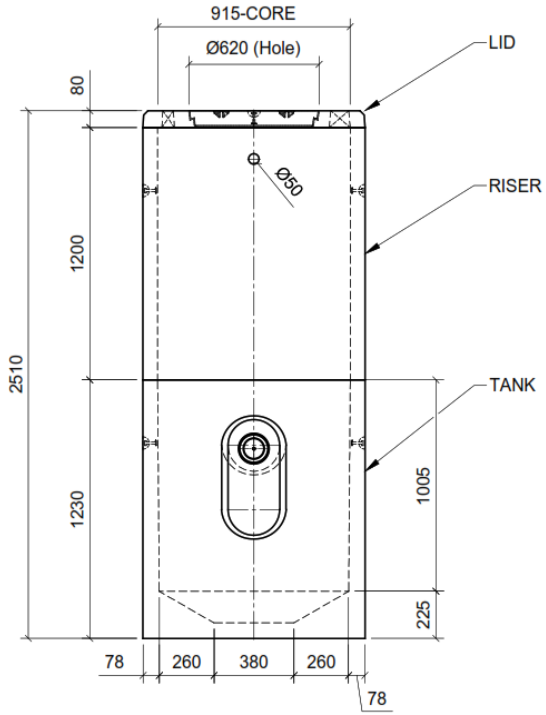


PLAN VIEW
SCALE 1:30

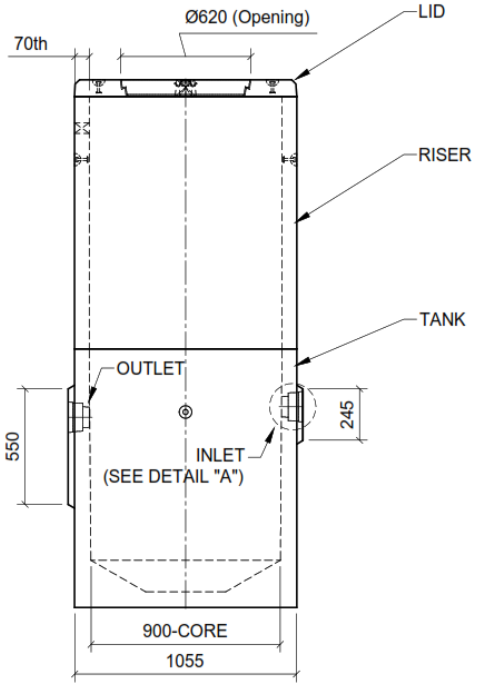
A 1



DETAIL "A" (INLET & OUTLET)
SCALE 1:8



A VIEW
SCALE 1:30



B VIEW
SCALE 1:30

Treatment Plant Approval
Approved by: Lindsay Walker
Delegated Authority
Department of Energy & Public Works

Queensland Government