



# Oil Water Separator Operating Manual

Rev 2 18/09/2018



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## 1 INTRODUCTION

Thank you for purchasing your Enviroconcepts, OWS. This manual has been prepared to help you to understand, setup, operate and troubleshoot your system. This package has been designed so that minimal maintenance will be needed to keep it operating efficiently.

Before operating the user should be thoroughly familiar with equipment operation, limitations and hazards. Thoroughly read, understand and observe all safety and operating instructions. Please note – System components may vary with your system please disregard / ignore system component instructions that are not relevant to your system. If you are unsure, please contact Enviroconcepts.

### 1.1 Initial Handling and Inspection

By following the instructions, you will have opened the equipment and found it to be in good condition or damaged.

If the equipment was delivered to you by a common carrier and damage is found, even hidden damage, IMMEDIATELY file a claim with your carrier. Their representatives must inspect and verify the damage. It is your responsibility, not Enviroconcepts, or your distributors to file the freight damage claim.

Check the enclosed packing list to verify that all items have been received. Contact your distributor or Enviroconcepts if assistance is needed with common carriers, identification of parts or installation process.

### 1.2 Important Notice

The following information is necessary for installation, parts, service and warranty consideration.






Serial Number \_\_\_\_\_ Model Number: \_\_\_\_\_

### 1.3 Your legislative requirements.

Customers purchasing these products will be subject to trade waste charges. These charges may vary between different water or sewer service providers in each circumstance.

You will need to ensure you have trade waste approval prior to installation.

**Contact your local sewerage network provider for proper instruction and advice.**

-  **IMPORTANT:** Any electrical work must be undertaken by a qualified electrician.
-  **IMPORTANT:** Always follow the MSDS, SWMS and any JSAs specific to your site prior to undertaking any system changes that cause any harmful effects.
-  **WARNING:** Observe and do not remove any warning and safety labels on the system.
-  **WARNING:** All guards, shields and covers must be in place to prevent accidental contact with hazardous parts.
-  **WARNING:** Never stand in water when cleaning, contacting or working with electrically powered equipment.

## 2 Transportation & Storage

### 2.1 Receiving and Inspection of the Equipment

Depending on the product, the equipment may be delivered fully assembled or in flat-pack form for local assembly. Upon delivery, immediately inspect the goods and report any visible damage. Notify Enviroconcepts of any defect or damage and include photographic evidence.

### 2.2 Typical Loading/Unloading of the equipment

Before doing any work, an appropriate lift study needs to be undertaken by a qualified person before commencing the lift. The lifting procedures specified in this manual are only generic guidelines and should be reviewed for suitability depending on actual site conditions.

Planning, selection and operation of crane must be done in accordance with AS/NZS 2550.1-2011. Check the empty equipment weight and select appropriate rated and sized lifting equipment.

### 3 Operator Safety

When in doubt, contact Enviroconcepts on 1300 661 130.

Remember that the equipment may operate automatically and can start at any time. Isolate any equipment before working on it or asking others to work on it.

#### 3.1 Make it safe first.

Always make the unit safe by flushing out any chemical residues from the pumps and pipelines and isolating the equipment.

Always electrically isolate the equipment and switch off the local isolator **before** you dismantle any electrical equipment. Remember that equipment can be turned on by accident.

Do not undertake any works unless the consequences are carefully thought through. Many pipelines contain chemicals or effluent under pressure even when the equipment has been shut down for some time.

All warranties and guarantees with respect to the function and durability of the system shall be void should the operator fail to adhere to these safety instructions or any other instructions within this Guide.

The associated risks due to failure to adhere to these safety instructions include but are not limited to:

1. Endangering people due to electrical, mechanical, and/or chemical/biochemical hazards.
2. Endangering the environment due to leakage of hazardous material (where chemicals are involved).
3. Failure of important equipment and process functions leading to inferior performance.

#### 3.2 Before operating.

The user should be thoroughly familiar with equipment operation, limitations, and hazards. Thoroughly read, understand, and observe all safety and operating instructions. Please note – System components may vary with your system please disregard/ignore system component instructions that are not relevant to your system. If you are unsure, please contact Enviroconcepts on 1300 661 130.

### 4 APPLICATION DESCRIPTION

Wastewater will enter the above-ground ECOWS where free oils will coalesce and float to the surface and overflow the oil outlet pipes to a waste oil drum. Heavy suspended solids will settle and sink into the base hopper where they can be evacuated manually by ball valve, generally back to the pit the wastewater originated from. The pre-treated effluent will continue through to the outlet funnel where it will evacuate by gravity for discharge or further processing.

### 5 DESIGN CONDITIONS

ECOWS-030 - Maximum Inlet Flow Rate	1,800 L/hr
ECOWS-050 - Maximum Inlet Flow Rate	3,000 L/hr
ECOWS-100 - Maximum Inlet Flow Rate	6,000 L/hr

This range of units have the following design parameters:

Oil Types	Engine Oil, Gasoline, Diesel, Lubricant, etc.	
Typical Oil SG	0.85 @ 25 °C	(note: will vary depending on oil type and temperature)
Operating Temperature	25 °C	(note: temperature affects OWS performance)

See below typical performance,

Inlet Oil Concentration	100 ppm	
Outlet Oil Concentration	< 5 ppm(Inlet by Gravity Flow)	
	< 10 ppm	(Inlet Diaphragm Pump, less than 60 strokes per minute)
	< 15 ppm	(Inlet Progressive Cavity Pump, > 1,000 revs per minute)
	< 30 ppm	(Inlet by Centrifugal Pump, less than 1,800 revs per minute)

Inlet Oil Concentration	750 ppm	
Outlet Oil Concentration	< 25 ppm	(Inlet by Gravity Flow)
	< 50 ppm	(Inlet Diaphragm Pump, less than 60 strokes per minute)
	< 75 ppm	(Inlet Progressive Cavity Pump, > 1,000 revs per minute)
	< 150 ppm	(Inlet by Centrifugal Pump, less than 1,800 revs per minute)

Typical wash bay effluent will be in the 50-200 ppm range. Some industrial trade wastewater may be higher.

No chemical emulsions, surfactants, detergents or water-soluble degreasers should be present.

If required, only Quick Break and Biodegradable Detergents and Degreasers may be used and only in minimal quantities.

The application and type of wastewater, including chemicals added in the process, will vary the expected output.

## 6 PRINCIPLES OF OPERATION

Like all gravity separators, the ECOWS range depends on Stokes' Law for its performance prediction. Stokes' Law is the physical law governing the settling or rise rate of a particle or oil droplet in a fluid stream and along with various design parameters, determines the size and type of OWS unit.

Contaminated water is introduced into the first section of the OWS via gravity flow. Heavy solids settle out immediately and fall into the hopper, whilst large oil particles rise to the surface.

The remaining oily water mixture flows through the closely spaced proprietary oleophilic coalescing plates with the smaller oil droplets and fine suspended solids being progressively separated. An oil dam prevents the collected (floating) oil from escaping into the outlet pipe. Adjustable Oil skimmers are provided for the removal of the accumulated oil.

Pre-Treated Effluent water passes underneath the base of the oil dam, over the outlet weir (funnel) and gravitates to the point of discharge

## 7 INSTALLATION INSTRUCTIONS

PLEASE REFER TO THE INSTALLATION GUIDELINES IN DIAGRAM ON PAGE 12.

The basic steps for installation of the OWS are as follows:

1. Select a sound, level foundation for locating the OWS.
2. Secure to the foundation with 10-12mm diameter corrosion resistant fasteners.
3. Connect the clean water outlet pipe to the outlet connection of the OWS.
4. Connect the oil outlets from the oil skimmers to the oil collection drum or tank. A normally open valve may be installed in the oil outlet line, if required for isolation purposes.
5. Install a ¼ turn valve on the solids outlet at the base of the hopper. If required install piping back to the dirty water collection tank or a sludge drying pit if available.
6. All pipe work is to be independently supported, not supported by the separator connection nozzles.
7. When installing a bund, its minimum capacity should be equal to the volume of your unit. (ECOWS-030 = 185 Litres, ECOWS-050 = 200 Litres, ECOWS-100 = 441 Litres) and drain back into the dirty water collection tank.

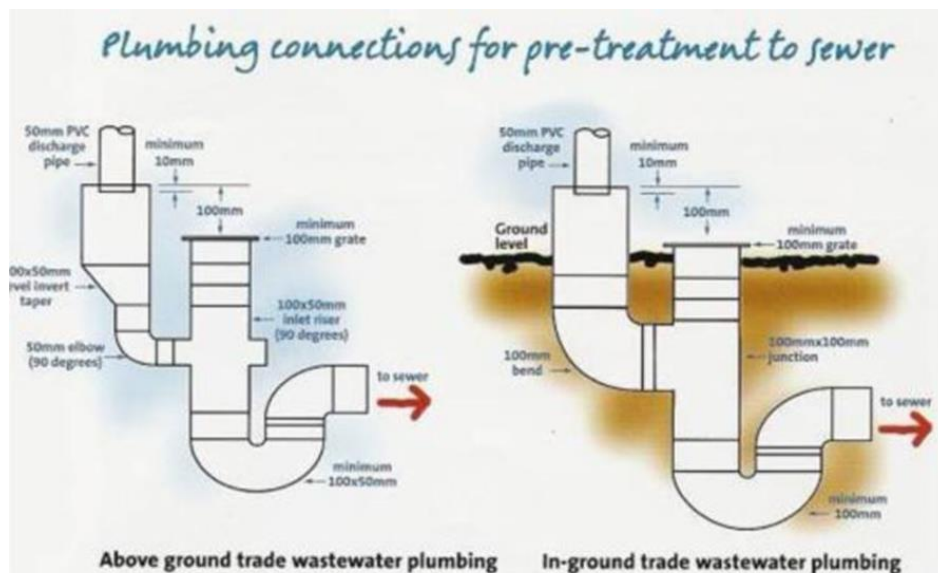
### Fitting Sizes

#### ECOWS-030 and ECOWS-050

- The dirty water inlet and clean water outlet are in 40mm BSP threaded female connections.
- The solids outlet is 50mm BSP threaded female connections.
- The two oil skimmer outlets are 25mm BSP threaded male connections.

#### ECOWS-100

- The dirty water inlet and clean water outlet are in 50mm BSP threaded female connections.
- The solids outlet is 50mm BSP threaded female connections.
- The two oil skimmer outlets are 40mm BSP threaded male connections.





## 8 OPERATING INSTRUCTIONS

### Initial Startup

This procedure is to be followed after installation or after the unit has been drained, cleaned and is ready to be brought back into operation.

1. Ensure that the waste water inlet is not allowed to flow by isolating the feed pump or gravity feed.
2. Set the oil skimmers high, approx. 35mm above the threaded oil skimmer pipe. Ensure that there are no obstructions in the oil or water outlet piping and remove any foreign matter if necessary.
3. Ensure Oil Waste drums are empty and in place
4. Ensure all fittings are tight and secure.
5. Fill the OWS with clean water until water starts to flow over the outlet weir (funnel).
6. Check for leaks or blockages at the outlet.
7. Now allow the inlet water to enter under typical conditions. If you typically use a pump, make sure you use the pump. This way you can set the oil outlet skimmers at the correct height under normal operating conditions.
8. Note there are two oil skimming outlets. One at the entry end, one at the outlet end. They will be set at different levels. After the pump has primed & then operated for several minutes, set the top of the inlet oil skimmer socket approximately 5mm above the high water level and the discharge end approximately 3mm above the maximum operating water level by screwing the sockets up or down. Secure the lock nuts on each skimmer socket to ensure no movement.
9. Skimmers can be adjusted if necessary but remember that it is always acceptable for an oil layer of approximately 5-10mm to be maintained on the surface.
10. Always adjust oil skimmers relating to the MAXIMUM water level (i.e. at full flow conditions). Note that diaphragm pumps pulse the water level. It is important you set the skimmers based on the highest water level.

## 9 MAINTENANCE

The solids should be drained fortnightly by opening the valve on the solids hopper until solid free water is flowing (i.e. all the accumulated solids have been removed, usually a few seconds when fully open). Note: Any waste to be disposed of should be collected by a suitable contractor.

It is recommended that the unit be serviced regularly, the frequency being determined by the amount of solids built up in the plates at the time of the first inspection, which should take place approximately 3 months after installation.

A thin oil film present on the plates is normal. Cleaning need only be carried out if the plates are blocked by an oily sludge.

### 9.1 Inspecting & Servicing

1. The flow to the separator must be isolated before any servicing.
2. The oil skimmers can be lowered to remove accumulated oil from the surface of the OWS. The skimmers must be raised back up to the operating position.
3. Remove the plates by lifting slowly, allowing the water to drain back into the OWS.

Visual inspection will determine the amount of solids built up in the plates. If any of the plates appear to be silted up or partially blocked, they can be cleaned in one of the two following methods:

#### Method 1 – Cleaning In Situ

1. Makes sure the inlet flow is isolated during servicing.
2. Lower the plates back into the OWS and drain the water through the solids valve on the bottom of the hopper back into the collection tank or other suitable storage tank.
3. Hose down the plates with a hose or pressure washer until all sludge and oil has been removed. Remove any built up solids by hosing underneath the packs, ensuring no sludge remains in the OWS.
4. Follow Initial Start-up instructions above to return to operation.

#### **DO NOT USE ANY DETERGENTS**

#### Method 2 – Cleaning in a Bunded Area

1. Makes sure the inlet flow is isolated during servicing.
2. Drain the OWS through the solids valve on the bottom of the hopper back to the collection tank or gutter.
3. Remove the plate packs from the OWS and place into Bund or on the washbay.
4. Hose the plates thoroughly (in a bunded area draining back into the collection tank), ensuring any built up sludge is removed.
5. Hose the inside of the OWS, ensuring all collected sludge and oil is removed.
6. Replace cleaned plate packs back into the OWS and fill with clean water until water starts to flow over the outlet weir.
7. Follow Initial Start-up instructions above to return to operation.

## DO NOT USE ANY DETERGENTS

### **9.2 When to Service your OWS?**

Often, the service timeline requirements are dictated by your local governing authority. However, if there is no preset rules or guidelines, the quantity of sludge found in the hopper and in the plates can be used as a basis for determining the interval between subsequent cleaning operations.

A thin film of oil on the surface of each plate is normal. As is a 5-10mm crust of oil scum on the surface of the separator. The only main maintenance function is to ensure the plates cells are kept free of blockage to ensure the coalescing continues without obstruction.

If you carried out your first service at 3 months, and the plates were relatively clear and free of obstruction, you can consider making the next service date 4 months. Then you may push the next date out 5 months depending on what you find on the next service.

#### **Collection Tank Cleaning:**

At frequencies, depending upon the build-up of sludge and oil, the collection tank should be emptied (sucked out by a suitable contractor) and cleaned so that all sludge and oil has been removed. Scrape the walls of the collection tank to clean if necessary.

## **10 SPARE PARTS**

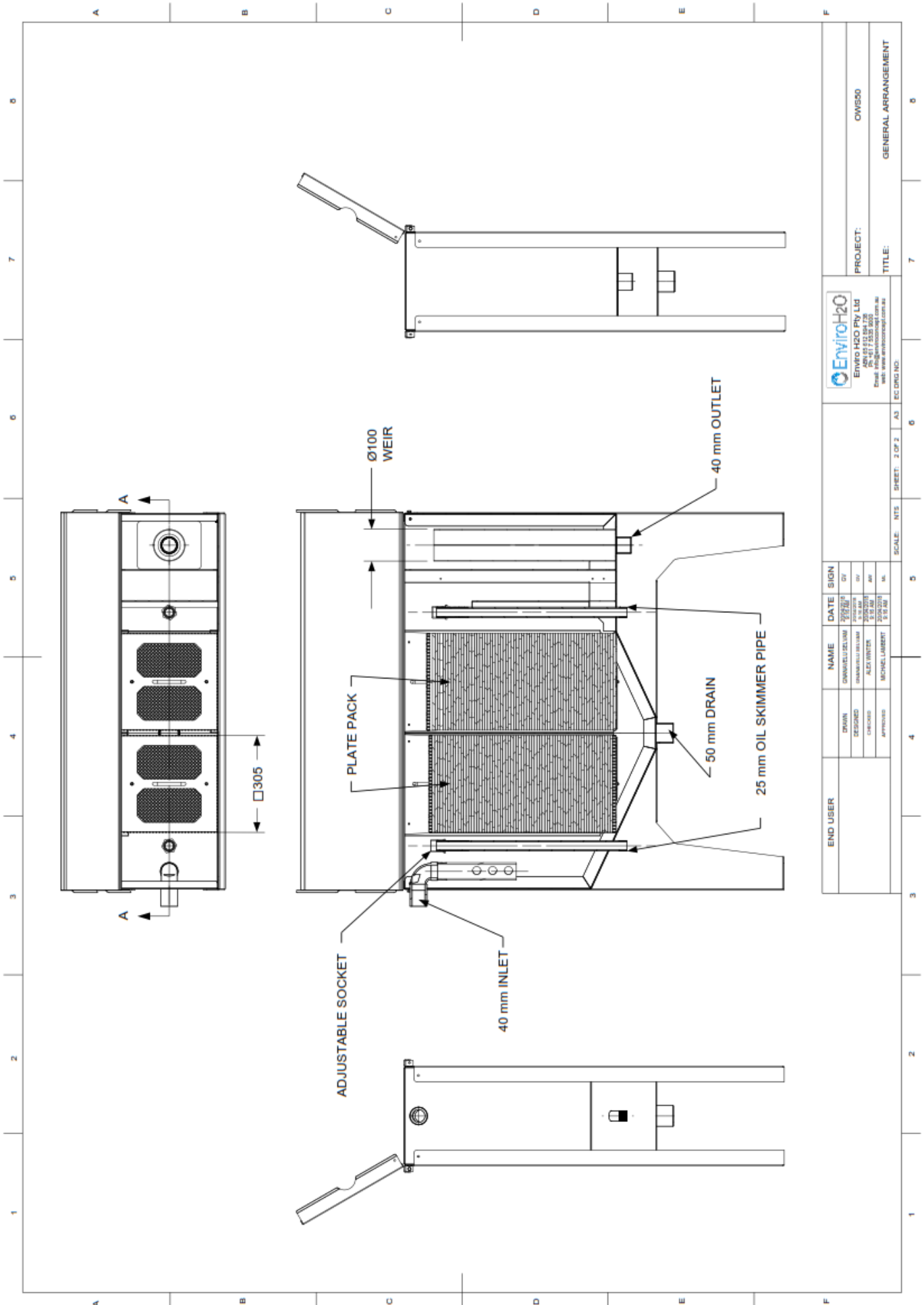
No spare parts are required for this unit. Should any plates or oil skimmer parts become damaged they can be repaired or replaced by contacting your supplier.

## **11 Drawings**

- a) ECOWS-030
- b) ECOWS-050
- c) ECOWS-100
- d) INSTALL GUIDELINES



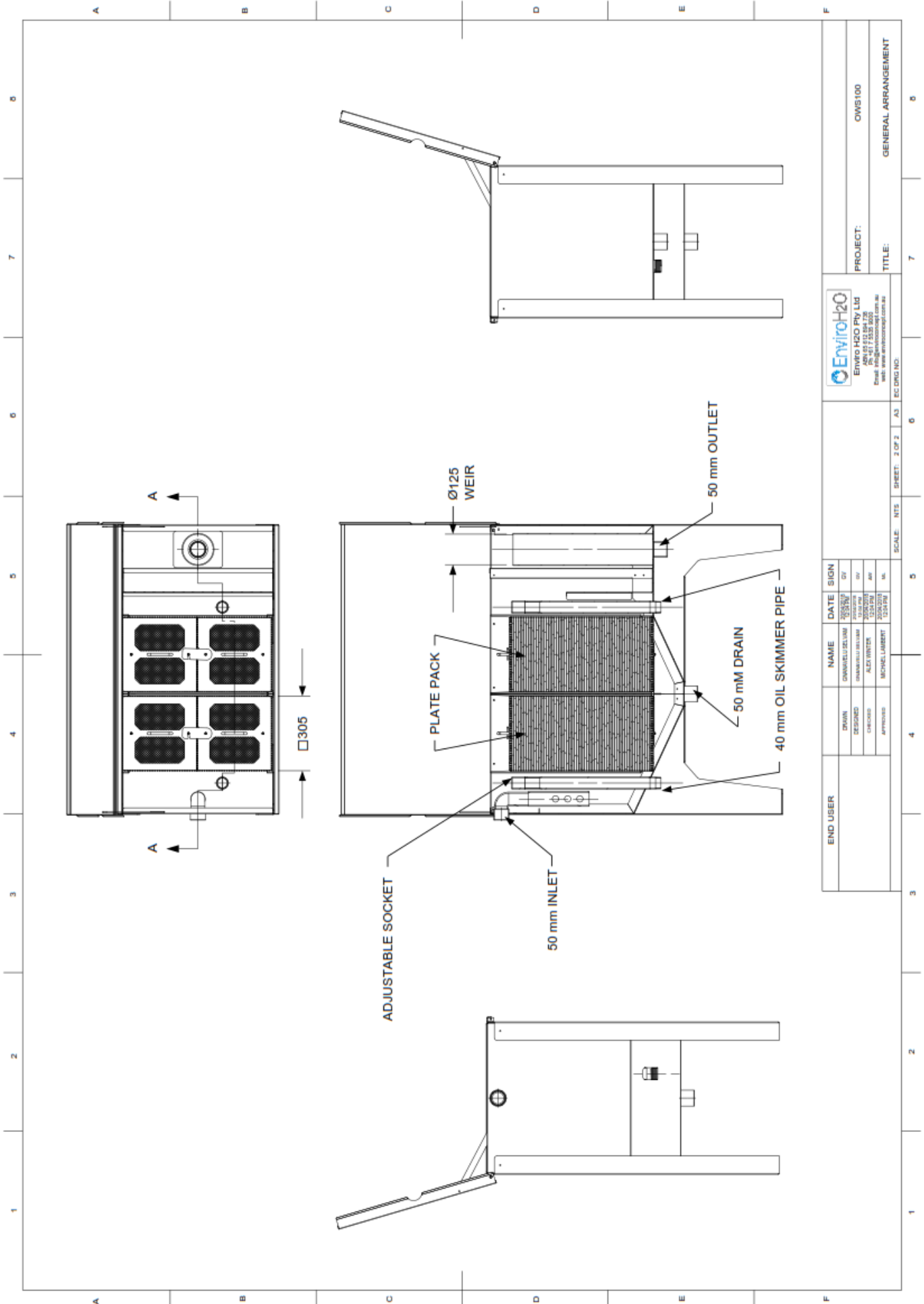




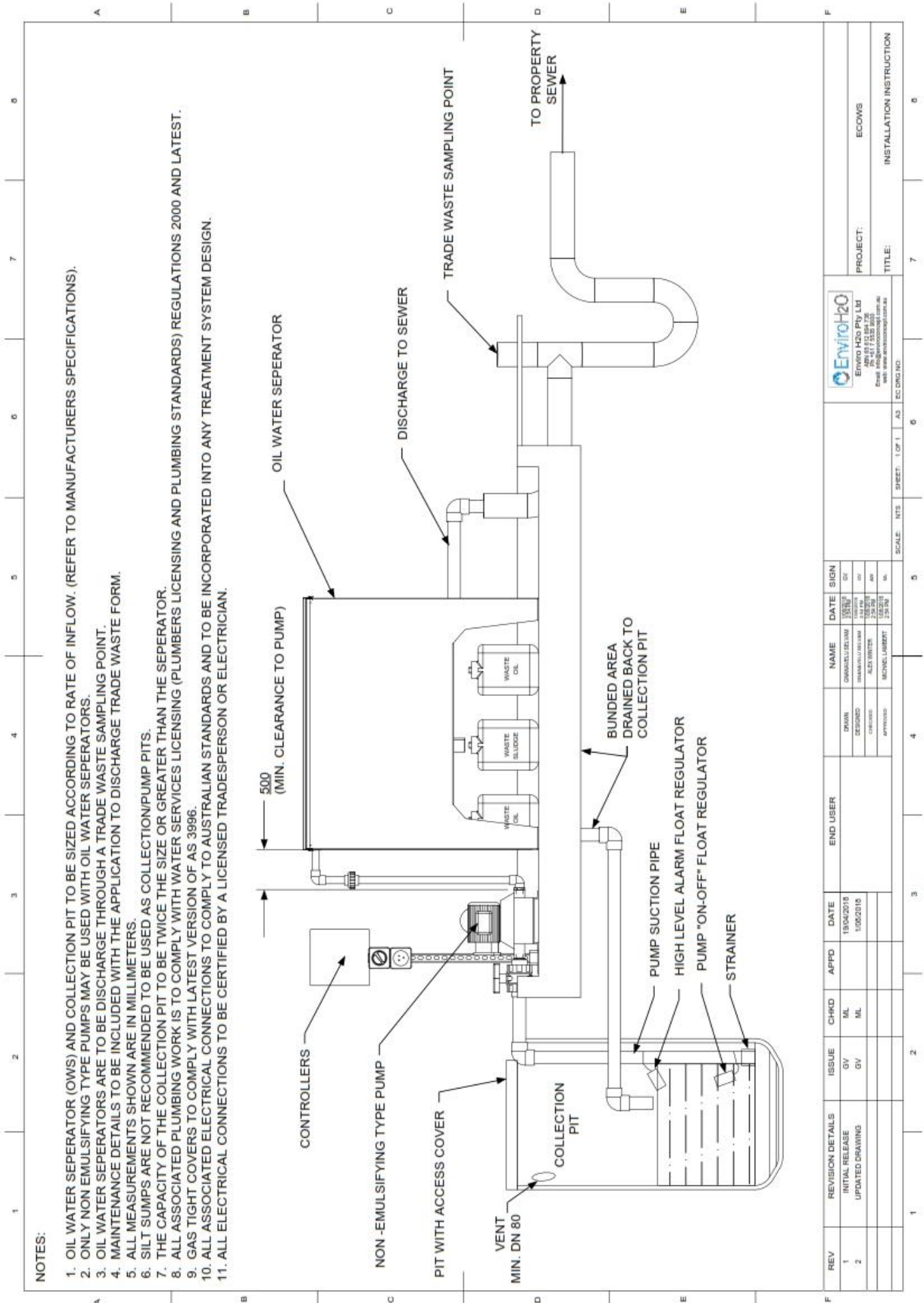
END USER		NAME	DATE	SIGN
DRAWN	DIMANVELLI SELAM	20/02/20	DT	
DESIGNED	DIMANVELLI SELAM	20/02/20	DT	
CHECKED	ALEX WINTERS	20/02/20	AW	
APPROVED	MICHAEL LAMBERT	19/03/20	ML	

 Enviro H2O Pty Ltd ABN 61 612 094 726 Email: info@enviroconcept.com.au web: www.enviroconcept.com.au		PROJECT: ECOWS50
SCALE: NTS SHEET: 2 OF 2		TITLE: GENERAL ARRANGEMENT



		<b>PROJECT:</b> ECOWS100	
Enviro H2O Pty Ltd ABN 61 112 094 128 Email: info@enviroconcept.com.au web: www.enviroconcept.com.au		<b>TITLE:</b> GENERAL ARRANGEMENT	
<b>END USER</b>		SCALE: NTS	SHEET: 2 OF 2
NAME: DIMANVELLO BELLIAM	DATE: 20/03/14	SIGN:	OF:
DRAWN: DIMANVELLO BELLIAM	DESIGNED: ALEX JANTZEN	CHECKED: MICHAEL LAMBERT	1/24/14


**NOTES:**

1. OIL WATER SEPARATOR (OWS) AND COLLECTION PIT TO BE SIZED ACCORDING TO RATE OF INFLOW. (REFER TO MANUFACTURERS SPECIFICATIONS).
2. ONLY NON EMULSIFYING TYPE PUMPS MAY BE USED WITH OIL WATER SEPARATORS.
3. OIL WATER SEPARATORS ARE TO BE DISCHARGE THROUGH A TRADE WASTE SAMPLING POINT.
4. MAINTENANCE DETAILS TO BE INCLUDED WITH THE APPLICATION TO DISCHARGE TRADE WASTE FORM.
5. ALL MEASUREMENTS SHOWN ARE IN MILLIMETERS.
6. SILT SUMPS ARE NOT RECOMMENDED TO BE USED AS COLLECTION/PUMP PITS.
7. THE CAPACITY OF THE COLLECTION PIT TO BE TWICE THE SIZE OR GREATER THAN THE SEPARATOR.
8. ALL ASSOCIATED PLUMBING WORK IS TO COMPLY WITH WATER SERVICES LICENSING (PLUMBERS LICENSING AND PLUMBING STANDARDS) REGULATIONS 2000 AND LATEST.
9. GAS TIGHT COVERS TO COMPLY WITH LATEST VERSION OF AS 3996.
10. ALL ASSOCIATED ELECTRICAL CONNECTIONS TO COMPLY TO AUSTRALIAN STANDARDS AND TO BE INCORPORATED INTO ANY TREATMENT SYSTEM DESIGN.
11. ALL ELECTRICAL CONNECTIONS TO BE CERTIFIED BY A LICENSED TRADESPERSON OR ELECTRICIAN.

REV	REVISION DETAILS	ISSUE	CHKD	APPD	DATE	END USER	NAME	DATE	SIGN
1	INITIAL RELEASE	GV	ML		19/02/2018		DANIEL BILHAM	19/02/2018	DB
2	UPDATED DRAWING	GV	ML		10/02/2018		DANIEL BILHAM	10/02/2018	DB
							ALAN BRITZ	23/08/2018	AB
							MONICA BRITZ	23/08/2018	MB

		PROJECT: ECOWS TITLE: INSTALLATION INSTRUCTION
Enviro H2O Pty Ltd ABN 65 615 841 726 PO Box 6664 GCMC QLD 9726 Email: info@enviroh2o.com.au web: www.enviroh2o.com.au		SCALE: NTS SHEET: 1 OF 1 A3 EC DRG/NO