

# Tradewaste Drainage

## Concept Design Report

### Volkswagon Australia Development

### Muir Road, Chullora

**Client:**

Volkswagon Group Australia

**Building Contractor:**

Commercial & Industrial Property Pty Ltd  
Level 32, 60 Margaret Street  
SYDNEY NSW 2000  
(T) 02 8298 3333  
(F) 02 8298 3399

**Hydraulic & Wet Fire Services Consultant:**

SPP Group Pty Ltd  
Level 3, 432 Kent Street  
SYDNEY NSW 2000  
(T) 9261 1300  
(F) 9261 1600

9 June 2010

File: SY100027 Hydraulic Services Return Brief



FS 521024

**Review and Approval Record:**

Rev	Date	Description Release	of	Prepared By	Reviewed By	Approved By
A	09/06/10	Draft Issue		BL	BL	BL

This document is and shall remain the property of SPP Group Pty Ltd. The document may only be used for the purpose for which it was commissioned and in accordance with the Terms of Engagement for the commission. Unauthorised use of this document in any form whatsoever is prohibited.

# **CONTENTS**

<b>1</b>	<b>INTRODUCTION</b>	<b>4</b>
1.1	Executive Summary	4
1.2	Scope Of Services	4
1.3	Authorities	4
1.4	Briefing Documents	4
<b>2</b>	<b>TRADEWASTE DRAINAGE</b>	<b>5</b>
2.1	Codes	5
2.2	System Description	5
2.3	Fuel Bay	5
2.4	Detailing Area	5
2.5	Wash Area	6
2.6	Materials	6
2.7	Performance	6
<b>3</b>	<b>APPENDIX A</b>	<b>8</b>
<b>4</b>	<b>APPENDIX B</b>	<b>9</b>
<b>5</b>	<b>APPENDIX C</b>	<b>10</b>

# **1 INTRODUCTION**

## **1.1 Executive Summary**

This concept design report provides a brief description of the scope of works, design criteria, materials to be utilised and codes and regulations to which the services shall be designed and constructed for the proposed Volkswagon Group Australia facility at Muir Road, Chullora.

## **1.2 Scope Of Services**

The scope of services addressed in the report, include the following:

- Tradewaste Drainage

## **1.3 Authorities**

The following Governing Authorities shall have jurisdiction over the design, documentation and installation of the hydraulic services for this development;

- Sydney Water Corporation
- Workcover NSW
- Bankstown City Council
- NSW Metropolitan Fire Brigades

## **1.4 Briefing Documents**

The engineering elements considered in this report have based or taken into consideration the following documents:

- Design Brief prepared by Commercial & Industrial Property Pty Ltd dated 16<sup>th</sup> April 2010
- Architectural drawing 2-14-004-MR-DA Plans-101 prepared by Commercial & Industrial Property Pty Ltd dated 16<sup>th</sup> April 2010

## **2 TRADEWASTE DRAINAGE**

### **2.1 Codes**

Tradewaste drainage services within the development shall conform to the following design codes;

- Building Code Of Australia
- Australian Standard 3500.2 – Sanitary Drainage
- NSW Code Of Practice – Plumbing & Drainage

### **2.2 System Description**

A tradewaste drainage service shall be provided to all tradewaste fixtures within the development. The system shall be capable of collecting discharge from all fixtures and transferring it via an appropriate pre-treatment device, to a point of connection with the buildings sanitary drainage or stormwater drainage system as appropriate.

Sydney Water Corporation does not permit chemicals or oily waste to be discharged to the sewer. Any such waste generated within the proposed development will need to be removed by an appropriate pre-treatment device, prior to discharge into the sewer drainage system.

The facility owner will be required to provide details of all chemicals and processes to be used on site to determine pre-treatment requirements of liquid trade waste generated on site prior to discharge to Sydney Water Corporation sewer. Subject to Sydney Water approval, the facility owner will then be required to enter into a trade waste agreement with Sydney Water Corporation.

### **2.3 Fuel Bay**

#### **DESCRIPTION**

A fuel bay will be provided within the proposed development to facilitate re-fuelling of vehicles. The fuel bay will be provided with the following equipment;

- Provide 2 no. off 10,000ltr Transtank or similar self-bunded above ground fuel tanks as detailed in the design documentation
- Provide 1 no. off cantilever canopy approximately 13m x 18m and min 5.5m clearance, 3 phase power, data conduits, tanker standing bund, safety shower and eye wash and armco barrier
- Provide adequate 3 phase weather proof power outlet adjacent the bunded area.
- Provide a 50mm data conduit to a point adjacent the electrical outlet.
- Fuelling area to be bunded and drained to the pollution control equipment as required by the local authority and Australian Standards.

#### **PRE-TREATMENT REQUIREMENTS**

The fuel bay will be provided with a drainage outlet located within the bunded area. Catchment for this drainage outlet shall be limited to any minor fuel spillage and washdown water from within the bunded area. An overhead roof structure will exclude the majority of rainwater run-off. Wastewater from the drainage outlet within the bunded area shall be piped to a SEPL Puraceptor P006 Class 1 pre-treatment device, having a treatable flow rate of 6L/s. Discharge from the pre-treatment device shall be connected via gravity into the site stormwater drainage system.

### **2.4 Detailing Area**

#### **DESCRIPTION**

A detailing area will be provided within the proposed development to facilitate detailing of vehicles. The detailing area will be provided with the following equipment;

- Electrical, lights and mechanical services as required
- 80m<sup>2</sup>, 4m high Colorbond Carwash shelter to suite the proposed equipment
- No. off 3m high x 3.6 m wide Roller Shutter Doors
- Statutory Signage as required.
- Detailing area to be bunded and drained to the pollution control equipment as required by the local authority and Australian Standards.

## **PRE-TREATMENT REQUIREMENTS**

The detailing area will be provided with a drainage outlet located within the bunded area. Catchment for this drainage outlet shall be limited to washdown water from within the bunded area. An overhead roof structure will exclude the majority of rainwater run-off. Wastewater from the drainage outlet within the bunded area shall be piped via gravity to a collection pit located within the nearby wash area. Pre-treatment of discharge from the detailing area shall be combined with discharge from the wash area.

## **2.5 Wash Area**

### **DESCRIPTION**

A wash area will be provided within the proposed development to facilitate washing of vehicles. The wash area will be provided with the following equipment;

- Provide 1 no. Laserwash 360 or similar automated car wash system capable of washing 10 cars per hour as detailed in the design documentation
- Recycle and entry systems
- Electrical, water, waste and separators as required
- Mechanical ventilation as required by the BCA
- 80m<sup>2</sup>, 4m high Colorbond Carwash shelter to suite the proposed equipment
- No. off 3m high x 3.6m wide Roller Shutter Doors
- Statutory Signage as required
- Wash area to be bunded and drained to the pollution control equipment as required by the local authority and Australian Standards

## **PRE-TREATMENT REQUIREMENTS**

The wash area will be provided with a drainage outlet located within the bunded area. Catchment for this drainage outlet shall be limited to washdown water from within the bunded area. An overhead roof structure will exclude the majority of rainwater run-off. Wastewater from the drainage outlet within the bunded area shall be piped to a Kwikflow Oil-Water Separator pre-treatment device, having a treatable flow rate of 3000L/h. Discharge from the pre-treatment device shall be connected via gravity into the site sewer drainage system.

## **2.6 Materials**

Tradewaste drainage services within the development shall be constructed from the following materials;

- Inground pipework will be constructed from High Density Polyethylene (HDPE) pipework and fittings.
- Suspended pipework will be constructed from High Density Polyethylene (HDPE) pipework and fittings, including acoustic insulation where required.

The above-nominated materials have been selected for the durability, cost effectiveness and intended purpose and are in line with current trade practice. Acoustic wrapping in sensitive areas will be as detailed by the project's acoustic engineer.

## **2.7 Performance**

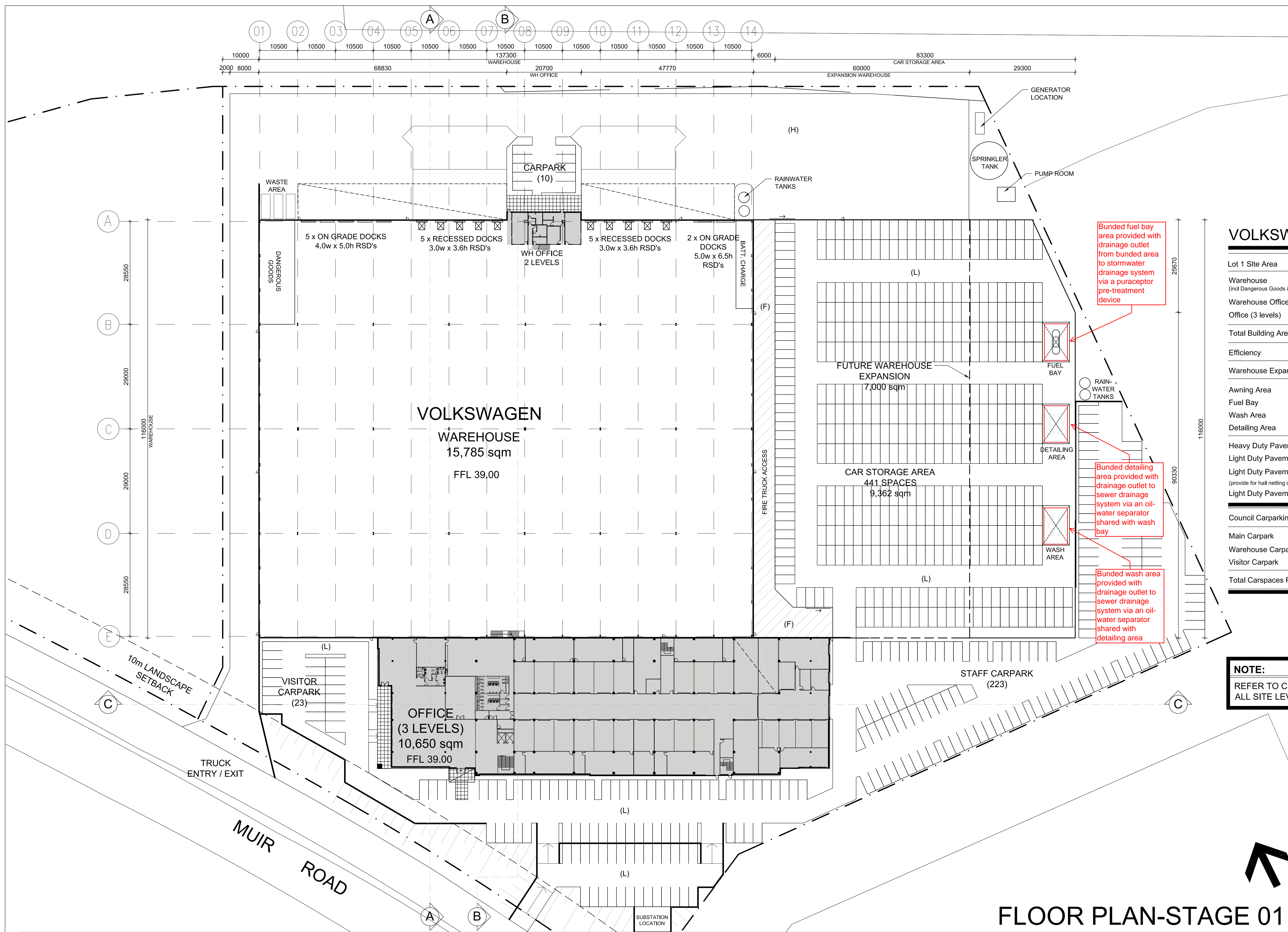
Tradewaste drainage services within the development shall be designed to meet the following performance criteria;

- Gravity services sized to Australian Standards using the fixture unit rating system based upon a minimum grade of 1.65%.

### **3 APPENDIX A**

Tradewaste Drainage Concept Site Plan





© CIP  
These drawings are subject to copyright and may not be copied, used or reproduced in any way without the express permission of Commercial & Industrial Property Pty Ltd. All Areas written on drawings are approximate only and are subject to confirmation.

REVISIONS		
A	DEVELOPMENT APPLICATION	20.04.10

VOLKSWAGEN GROUP	
Lot 1 Site Area	50,721 sqm
Warehouse (incl Dangerous Goods & Battery Charge)	15,785 sqm
Warehouse Office (2 levels)	375 sqm
Office (3 levels)	10,650 sqm
Total Building Area	26,815 sqm
Efficiency	52.9 %
Warehouse Expansion	7,000 sqm
Awning Area	1,004 sqm
Fuel Bay	80 sqm
Wash Area	80 sqm
Detailing Area	80 sqm
Heavy Duty Pavement (H)	8,228 sqm
Light Duty Pavement - Main Carpark (L)	7,270 sqm
Light Duty Pavement - Car Storage Area (L) (provide for hail netting over)	9,362 sqm
Light Duty Pavement - Fire Truck Access (F)	842 sqm
Council Carparking Requirement (1/300 sqm)	113 spaces
Main Carpark	223 spaces
Warehouse Carpark	10 spaces
Visitor Carpark	23 spaces
Total Carspaces Provided	256 spaces

**NOTE:**  
REFER TO CIVIL ENGINEER'S DRAWINGS FOR ALL SITE LEVELS

# FLOOR PLAN-STAGE 01

**VOLKSWAGEN GROUP AUST.**  
Muir Road, Chullora, NSW



MELBOURNE OFFICE  
SUITE 4, L8  
644 CHAPEL STREET  
SOUTH YARRA, VIC 3143  
TEL: 03 9829 0200  
FAX: 03 9829 0299

SYDNEY OFFICE  
LEVEL 32  
60 MARGARET STREET  
SYDNEY NSW 2000  
TEL: 02 8298 3333  
FAX: 02 8298 3399

File location :  
Y:\ARCH\NSW\2-14-004-Volkswagen  
2-14-004-MR-DA Plans

Scale :	1 : 500	A1
2-14-004-MR-DA Plans - 101		
16.04.2010	A	

## **4 APPENDIX B**

### Puraceptor Pre-Treatment Device Information





**SPEL**  
PURACEPTOR

Petrol Stations  
Fuel Depots  
Transformer Bunds  
Switchyards  
Power Stations  
Wash Bays  
Airports



**SPEL** STORMWATER  
PURACEPTOR™ TREATMENT

STORMWATER QUALITY IMPROVEMENT DEVICES





## STORMWATER TREATMENT

**SPEL PURACEPTOR** Class 1 stormwater treatment separators cater for potential hazards to the environment including sites where there is a risk of oil and fuel spills.

Oils and all petroleum hydrocarbons are treated to the highest discharge quality exceeding EPA standards ensuring it safe for stormwater discharge.

Major Oil spills from a petrol tanker or a transformer rupture are captured and contained preventing any stormwater discharge.

- Independently tested (laboratory) and certified to discharge < 1.86PPM or less petroleum hydrocarbons (TPH), from 5,000PPM ingress
- Independently field tested to discharge 'no detection' from >33,000.0PPM



The results obtained at HR Wallingford, U.K. are certified to European Standard EN BS858.1 (2006) and are in line with the designed performance criteria for high performance and long service life between maintenance periods, achieving results averaging between **0.1 - 1.86mg/**

### SERVICE STATION NATA TEST

Service station forecourt after 3 months operation.  
Includes capture and treatment of unleaded fuel, diesel and engine oil.

Total Petroleum Hydrocarbons				
Results expressed in mg/l				
	EQL*	Test 1		Reduction
		Inflow	Outflow	
C6-C9	0.05	2.4	<0.05	No Detection
C10-C14	0.05	302	<0.05	
C15-C28	0.4	1820	<0.4	
C29-C36	0.1	8.3	<0.1	
*Sensitivity: Estimated Quantitation Limit				



## MAINTENANCE

- Designed for high performance and low maintenance over a long life span
- Visible oils (TPH) are skimmed from the surface of the water level
- Easy and safe to access and clean, with access shafts positioned on all chambers.
- No entering of the unit is required
- Not mandatory for the unit to be cleaned every 3 months.
- Only oils, sediment and gross pollutants need to be removed. All stormwater does not require removal.
- The cylindrical design ensures sediment collects easily on the floor of the chambers effecting easy, quick removal. There are no square corners or unreachable cavities and recesses.
- Waste is removed by a vacuum loading truck. (Suction truck)



Stormwater discharge quality is  $< 1.86 \text{ mg/l}$  hydrocarbon content exceeding the Environmental Protection Agency (E.P.A.) requirements of  $10 \text{ mg/l}$  hydrocarbon content.

Test sampling access: Field test discharged samples are taken from sampling point and analysed by NATA accredited laboratories.



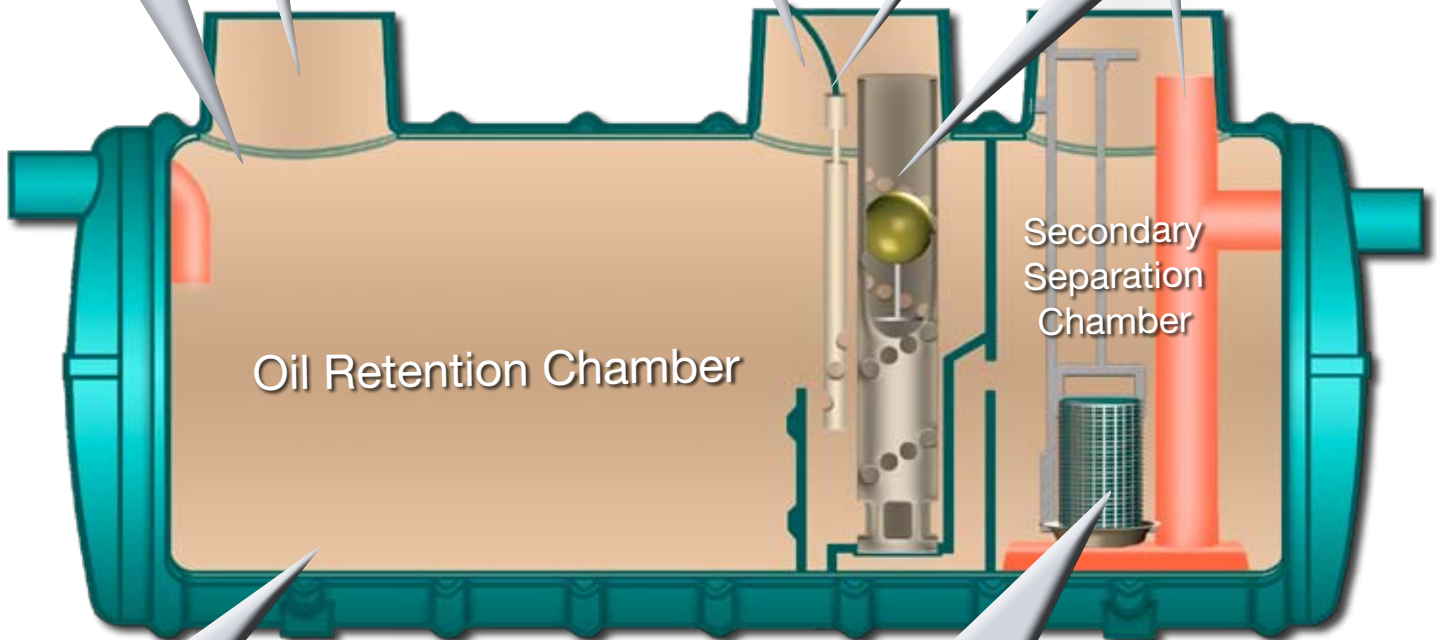
The probe is freely suspended in the probe protection tube in the separator at the correct level. When the oil-layer or depth of hydrocarbons reaches the predetermined level, the top of the probe will be immersed in the oil, breaking the circuit and activating the alarm. It is intrinsically 'fail-safe' system providing complete assurance that is operative. If a fault occurs it will be signaled immediately.



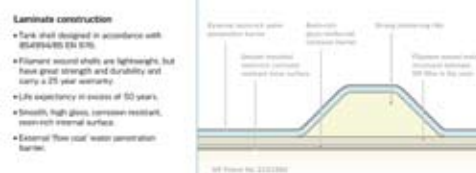
SPEL® PURACEPTOR tanks contain an immersed inlet dip pipe to extinguish flames and prevent inflammable vapours from passing through to the drainage system. Complies with Section 6.3.4 of BS EN 858.1.2006. SPEL PURACEPTOR can withstand temperatures of up to  $140^\circ\text{C}$ .



The AUTOMATIC CLOSURE DEVICE (A.C.D.) is a precisely engineered device comprising a water-buoyant ball that is sensitive to any change in the water density as a consequence of light liquids build up, thereby automatically activating a process of depressing the A.C.D. to SHUT OFF the separator, preventing pollutants from discharging to drains and waterways.



SPEL® PURACEPTOR units are glass reinforced plastic vessels made by the technical advanced chop hoop filament winding process (patented) producing circumferential and longitudinal strength complying with AS 2634-1983 for tank design.



SPEL PURACEPTOR Class 1 separators incorporate coalescer units. They consist of a quality stainless steel mesh container with an adjustable handle and high volume reticulated foam insert.

The coalescer unit is mounted in the second chamber, providing a coalescence process for the separation of smaller globules of light liquid pollutants before final discharge to stormwater.



# SPEL PURACEPTOR™

## OIL CAPTURE & CONTAINMENT



# Oil Capture and Containment

## High Risk

### Ararat Wind Farm



SITE  
APPLICATION  
RISK  
POLLUTANTS  
DISCHARGE  
UNIT SUPPLIED  
T.F.R.  
OPERATION

#### Ararat Wind Farm, VIC.

Transformers  
High  
Transformer oil  
Stormwater  
**P006 - Puraceptor™ Class 1 with 20,000 litre retention tank**  
6 LPS  
Due to the remote position of this transformer and the impact on the environment in the event of a failure, it was essential to the power provider to have a proven and reliable system. SPEL PURACEPTOR™ was selected due to its proven "track record" in supplying the power industry, overall reliability and the necessity to have optimum quality discharge. Whilst the design of 6 LPS from the bund area caters for the nominal flow, a 20,000L spill retention was built into the system to hold the capacity of a transformer rupture.

### Cranbourne Switchyard



SITE  
APPLICATION  
RISK  
POLLUTANTS  
DISCHARGE  
UNIT SUPPLIED  
T.F.R.  
OPERATION

#### Cranbourne Switchyard, VIC.

Transformer Switchyard  
High  
Transformer oil (70,000 litres)  
Stormwater to river  
**P040 - Puraceptor™ Class 1 - oil capacity 70,000 litre**  
40 LPS  
This unit was installed to treat stormwater and firewater from the deluge system simultaneously. The unit caters for a 40 LPS flow rate, and has the capacity to capture a 70,000L transformer spillage and remain operational. SPEL units are designed and built to BS EN 858.1. 2006 it was able to be used as a designated flame trap, further enhancing its selection for this site.

### Fuel Station



SITE  
APPLICATION  
RISK  
POLLUTANTS  
DISCHARGE  
UNIT SUPPLIED  
T.F.R.  
OPERATION

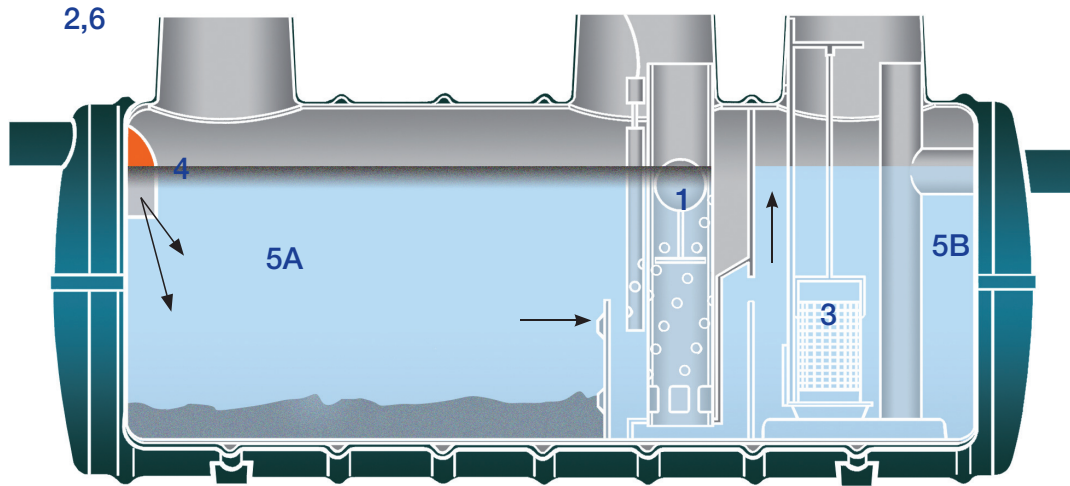
#### Fuel Service Station, NSW.

Stormwater runoff from forecourt and immediate adjacent surfaces.  
High  
Petrol, diesel, oils, suspended solids  
Stormwater drain to Georges River.  
**P006 Puraceptor™ Class 1**  
6 LPS  
Functions by gravity, will continue to be treated in the event of a power failure. Equipped with an oil/fuel alert probe for maintenance monitoring and to alert in the event of an emergency spill.

# SPEL PURACEPTOR™ CLASS 1

**Oil containment**

## “How it works”



**SPEL PURACEPTOR™** is a **FULL RETENTION** separator that treats all flows and is sized to contain more than the anticipated maximum oil spillage enabling it to be fully operational at all times.

It has two chambers, a coalescer and is fitted with an automatic closure device specifically designed to treat and contain major oil spills thereby making it suitable for high risk applications.

It achieves a water discharge quality of 5mg light liquids per litre complying to European Standard BS EN 858.1. 2006. Treatable flow rates range from 2LPS to 200LPS. Pipe sizes range from 100mm to 450mm (larger sizes on request).

Careful and proper planning by corporate Australia and government bodies is essential when designing and implementing systems that are effective in protecting our environment. The proven and independently accredited SPEL PURACEPTOR™ (complies to European Standard BS EN 858.1 2006) is an Australian made stormwater treatment and oil containment device that can contain and prevent light liquid pollutants from discharging into our waterways.

### 1 AUTOMATIC CLOSURE DEVICE

The AUTOMATIC CLOSURE DEVICE (A.C.D.) is a precisely engineered device comprising a water-bouyant ball that is sensitive to any change in the water density as a consequence of light liquids build up, thereby automatically activating a process of depressing the A.C.D. to SHUT OFF the separator, preventing pollutants from discharging to drains and waterways.

### 2 FULL RETENTION

All liquid is treated. There is no by-pass operation.

### 3 COALESCER EQUIPPED

Provides a coalescing process for the separation of smaller globular of light liquid pollutants to reduce the light liquid content in the outlet to **5mg/litre or less.**

### 4 INLET DIP PIPE - FLAME TRAP

For minimum turbulence and to prevent fire and inflammable vapours passing through to the drainage system.

### 5 TWO CHAMBER

A non-turbulant flow through two horizontal treatment chambers, utilising the underflow principle to retain light liquids in all flow conditions.

**A. CONTAINMENT CHAMBER:** Where Total Suspended Solids (TSS) silt, sediments, sludge and gross pollutants are trapped and settle on the chamber floor and where light liquids are contained.

**B. COALESCER CHAMBER:** Where light liquids separation is enhanced reducing it to **5mg/litre** or less prior to discharge.

### 6 GRAVITY OPERATED

Will function in the event of power failure and fits into existing pipe drainage systems or new sites.

### 7 MAINTENANCE

Easy and safe with no entering of the tank required.

## **5 APPENDIX C**

Kwikflow Oil-Water Separator Pre-Treatment Device Information





[Home](#) | [Company Profile](#) | [Seals](#) | [Special Products](#) | [Contact Us](#)

## Kwikflo Oil Water Separators

YOU ARE HERE: [HOME](#) >> [WATER & WASTE WATER TREATMENT](#) >> [OIL WATER SEPARATORS](#)

[SITE MAP](#)

### Browse PRODUCTS

- [Industrial Pumps Range](#)
- [Water & Waste Water Treatment](#)
- [Stormwater Treatment](#)
- [Pump Service, Accessories & Spare Parts](#)
- [Packaged Pumping Station](#)
- [Packaged Pumping Systems](#)

### Products by INDUSTRY

- [PetroChemical](#)
- [Commercial](#)
- [Food & Beverage](#)
- [Mining](#)
- [Pharmaceutical](#)
- [Paint, Printing And Packaging](#)

### Other Misc. Products



[Peristaltic Hose Pumps](#)



[Centrifugal Pumps](#)



[Grease Arrestors](#)



Kwikflo Oil Water Separators

## Kwikflo Oil Plate Separators

The kwikflo oil water separator restricts the amount of oil and greasy waste going into stormwater and sewer.

The **Kwikflo Oil Water Separator** is an enhanced gravity separator capable of removing solids, oils or both, utilizing the difference in specific gravity between two or three immiscible components of a liquid stream for separation. Our package includes [pump](#) ([diaphragm](#), [helical rotor](#) or air operated), float switch and waste oil drum.

In the 1980's government bodies began to see that something was in place to restrict the amount of oil and greasy waste going into stormwater and sewer.

This meant that businesses that generated hydrocarbon-contaminated waste water like petrol stations, auto mechanic workshops, oil refineries and many industries, had to put in place some kind of treatment to render the waste fit to enter the sewer.

Regular cleaning of the plate packs with hot water is the only maintenance needed under normal operation conditions, making it fast and easy to look after.

### Sizes available:

- 1000 Litres Per Hour
- 1500 Litres Per Hour
- 2000-3000 Litres Per Hour

ALL PUMPS SUPPLIES 42 - 44 Dunorlan Road Edwardstown SA 5039 | Tel (+61 8) 8275 8000 | Fax (+61 8) 8275 8099

[Home](#) | [Company Profile](#) | [Seals](#) | [Special Products](#) | [Contact Us](#)

