



ESK Oil-Water Separator  
Operations & Maintenance Manual

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## Introduction

The primary purpose of stormwater treatment devices is to capture and prevent pollutants from entering waterways, maintenance is a critical component of ensuring the ongoing effectiveness of this process. The specific requirements and frequency for maintenance depends on the treatment device and pollutant load characteristics of each site. This manual has been designed to provide details on the cleaning and maintenance processes for the ESK Oil-Water Separator as recommended by the manufacturer.

The ESK is designed and sized to meet stringent hydrocarbon regulatory requirements. It captures free oil and hydrocarbons at both low concentrations and also at higher spill volumes as required under the EN 858 standard that most Australian Authorities require.

### Why do I need to perform maintenance?

Adhering to the inspection and maintenance schedule of each stormwater treatment device is essential to ensuring that it functions properly throughout its design life.

During each inspection and clean, details of the mass and volume that has been collected by the device should be recorded. This data will assist with the revision of future management plans and help determine maintenance interval frequency. It is also essential that qualified, trained and experienced personnel carry out all maintenance (including inspections, recording and reporting) in a systematic manner.

Maintenance of your stormwater management system is essential to ensuring ongoing at-source control of stormwater pollution and for your sites continued environmental compliance. Maintenance also helps prevent structural failures (e.g. prevents blocked outlets) and aesthetic failures (e.g. debris build up), but most of all ensures the long term effective operation of the ESK Oil-water separator.

## Health and Safety

Access to the ESK Oil-water separator requires removing heavy access covers, and it may be necessary to enter into a confined space in some incidents. Pollutants collected by the ESK Oil-water separator will vary depending on the nature of your site. There is potential for these materials to be harmful. For example, built up hydrocarbon vapours may result in a potential explosive/fire risk situation.

No naked flames within the designated exclusion zone as detailed in the site specific management plan.

Also sediments may contain heavy metals, carcinogenic substances or objects such as broken glass and syringes. For these reasons, all aspects of maintaining and cleaning your ESK Oil-water separator require careful adherence to Occupational Health and Safety (OH&S) guidelines.

It is important to note that the same level of care needs to be taken to ensure the safety of non-work personnel. As a result, it may be necessary to implement traffic/pedestrian control measures when the device is situated in, or near areas with high vehicular/pedestrian activity.

### Personnel health and safety

Whilst performing maintenance on the ESK Oil-water separator, precautions should be taken in order to minimise (or, if possible, prevent) contact with hydrocarbons and sediment and other captured pollutants by maintenance personnel. The following personal protective equipment (PPE) is subsequently recommended:

- Puncture resistant gloves
- Steel capped safety boots
- Long sleeve clothing, overalls or similar skin protection
- Eye protection
- High visibility clothing or vest

During maintenance activities, it may be necessary to implement traffic control measures. Ocean Protect recommend that a separate site-specific traffic control plan is implemented as required to meet the relevant governing authority guidelines.

Whilst it is desirable for all aspects of ESK Oil-water separator maintenance to be performed from the surface level, there may be rare occasions when there is a need to enter the ESK system (confined space). It is recommended that all maintenance personnel evaluate their own needs for confined space entry and compliance with relevant industry regulations and guidelines. Ocean Protect maintenance personnel are fully trained and carry certification for confined space entry applications – should this be required.

## How does it Work?

The ESK™ is a passive high efficiency coalescing separator that removes free oil from contaminated stormwater runoff and has a built-in shutoff valve to prevent any defined spill volumes from exiting the device and polluting the environment. The device is ideally suited for sites where specific effluent targets are specified, or for sites where removal of oil and grease is the greatest concern e.g. fuel stations, fuel distribution stations, car servicing workshops, etc. It is typically sized to remove oil droplets as small as 10 microns and achieve an effluent concentration of 5 mg/L or less.

## ESK Coalescence Separators

The Separator consists of a tank equipped with inlet and outlet pipes, chamber baffles, a basket with coalescence insert and a closing float valve.

The coalescence insert is made of polyurethane foam.

The separator is normally equipped with a safety device: a float valve which prevents oil from escaping the separator when the volume inside the tank reaches the designed maximum value.

The float is calibrated for density equal to 0.85 g/cm<sup>3</sup>.

The applied solution prevents leakage of oil into the stormwater system.

## Maintenance Procedures

To ensure optimal performance, it is advisable that regular inspection and maintenance is performed. Typically, the ESK™ requires an inspection every 6 months with a minor service at 12 months. Additionally, as the coalescing media foam ages it may eventually become occluded with fine sediments and loss of structure such that the foam will require replacement (expected Foam media life is 10 years).

### Primary Types of Maintenance

The table below outlines the primary types of maintenance activities that typically take place as part of an ongoing maintenance schedule for the ESK™.

	Description of Typical Activities	Frequency
<b>Inspection</b>	Visual Inspection of the primary and secondary chambers Dipping of the accumulated oil level and sediment level Perform minimal rectification works (if required)	Every 6 Months
<b>Minor Service</b>	Wash-down of coalescing foam, into primary chamber Removal of accumulated floating hydrocarbon (if required) Removal of accumulated sediment (if required) Check correct operation of sensor and alarm (if fitted)	Every 12 Months
<b>Major Service</b>	Replacement of coalescing foam	As required

Maintenance requirements and frequencies are dependent on the pollutant load characteristics of each site. The frequencies provided in this document represent what the manufacturer considers to be best practice to ensure the continuing operation of the device is in line with the original design specification.

## Inspection

The purpose of the inspecting the ESK system is to assess the condition of the Primary and Secondary chambers and the accumulation of hydrocarbons from minor spills. When inspecting the chambers, particular attention should be taken to ensure that the sensor (if fitted) is operational and the float valve is in the correct position. It is also an optimal opportunity to gauge the degree of accumulated hydrocarbon and sediment within the device – allowing for appropriate timing of minor servicing requirements.

## Minor Service

This service is designed to ensure the ongoing operational effectiveness of the ESK Oil-water separator system, whilst also assessing the condition of the coalescing foam and the float control valve.

1. Establish a safe working area around the access point(s)
2. Make contact with the site operations manager
3. Complete any site specific OH&S requirements prior to starting work on site
4. Remove access cover(s) and allow a few minutes for adequate air exchange
5. Measure and record the level of accumulated oils and sediment in the primary chamber
6. Measure and record the level of accumulated oils in the secondary chamber (if a 2 chamber system)
7. Undo the locking nut at the top of the ESK coalescing foam basket and carefully remove
8. Use vacuum unit to removed accumulated oils from the surface of the secondary chamber
9. Use low pressure water rinse any hydrocarbons and fine silts from the coalescing foam cage into the primary chamber or into an approved containment area for subsequent pollution clean-up.
10. Use vacuum unit to removed accumulated sediment and hydrocarbons from the primary chamber
11. Remove sensor and wipe down – refer to separate care and operation guide for the sensor type
12. Re-install the coalescing foam cage and secure in place with locking nut
13. If an excessive amount of water has been removed in the maintenance process (>25%), fill the ESK up to operational levels with clean water
14. Replace access cover(s) and complete client service activity report (if required)

## Major Service (replacement of coalescing foam or float valve)

For the ESK system a major service is reactionary process based on the outcomes from the minor service, specifically the evaluation of the condition of the coalescing foam and float valve.

Trigger Event	Maintenance Action
Coalescing foam has lost structure or has accumulated fine sediment build up within the pore structure that is not being removed in the rinse stage <sup>[1]</sup>	Replace Coalescing foam <sup>[2]</sup>
Float valve is shutting off prematurely or appears to be damaged	Replace Float valve <sup>[2]</sup>

[1] Multiple assessment methods are available, contact Ocean Protect for assistance

[2] Replacement coalescing foam and components are available for purchase from Ocean Protect.

This service is the same as a minor service with the addition of replacing the components above – if deemed necessary. The additional step would be performed just prior to Step 12

1. Remove the damaged coalescing foam or float valve and replace with newly purchased components – following installation guide supplied with components.

## Hazardous Material Spill

If there is a major spill event on site, the ESK Oil-water separator should be inspected and cleaned following the minor service steps but with some additional requirements. Specifically, all captured pollutants and liquids from within the unit should be removed and disposed in accordance with any additional requirements that may relate to the type of spill event. Additionally, it will be necessary to jet wash the empty tank surfaces and all components before inspection and subsequent refilling of the unit with clean water before returning the ESK into operational service.

## Blockages

In the unlikely event that surface flooding is observed the following steps should be undertaken to assist in diagnosing the issue and determining the appropriate response.

1. Inspect the upstream grated drains and pits ensuring that these are free of debris and pollutants
2. Inspect the ESK unit checking that the float valve is in the correct operational position.
3. Inspect the water level in both the primary and secondary chamber – these should be the same.

## Disposal of Waste Materials

The accumulated pollutants found in the ESK must be handled and disposed of in a manner that is in accordance with all applicable waste disposal regulations. When scheduling maintenance, consideration must be made for the disposal of solid and liquid wastes. If the system has been contaminated with any unusual substance, there may be additional special handling and disposal methods required to comply with relevant government/authority/industry regulations.

## Maintenance Services

With over a decade and a half of maintenance experience Ocean Protect has developed a systematic approach to inspecting, cleaning and maintaining a wide variety of stormwater treatment devices. Our fully trained and professional staff are familiar with the characteristics of each type of system, and the processes required to ensure its optimal performance.

Ocean Protect has several stormwater maintenance service options available to help ensure that your stormwater device functions properly throughout its design life. In the case of the ESK Oil-water separator system we offer long term pay-as-you-go contracts or pre-paid once off servicing.

For more information please visit [www.OceanProtect.com.au](http://www.OceanProtect.com.au)