

## Unconventional Downstream Defender<sup>®</sup> system helps protect Gulf waters in Qatar

### Project profile

#### Objective

Following the completion of a major drainage project, Qatar's Public Works Authority, Ashghal, needed to ensure that pollution was removed from stormwater before it reached the new discharge network in order to protect delicate marine ecosystems.

#### Solution

An unusual above-ground system of ten Downstream Defender<sup>®</sup> stormwater treatment units capture sediment, oils and floatables, allowing stormwater discharge into the waters of the Gulf.

### Situation

Situated just outside Doha, Qatar, Abu Hamour is a settlement that is undergoing development.

As part of this development a 3.7 m (12 ft) diameter, 9.5 km (5.9 mile) long surface and ground water drainage tunnel was constructed in the area to carry stormwater out to discharge into the Arabian Gulf.

Completed in 2016, the tunnel follows the route of the F Ring road to Doha's Hamad International Airport, where it discharges up to 16.5 m<sup>3</sup> (582 cu ft) of water per second into the waters of the Gulf.

### Problem

Due to the region's geography and level of infrastructure development, stormwater in much of the Middle East is distinctive for its high levels of dust, grit and hydrocarbons.

These pollutants can be highly damaging to marine life in sensitive ecosystems such as those found in the Gulf, as well as degrading the public amenity of beaches, so Qatar's Public Works Authority, Ashghal, has developed regulations that stipulate that stormwater must be treated for pollutants before it is discharged into the sea.

### Product profile

#### Downstream Defender<sup>®</sup> stormwater separator

Impressive and reliable removal of sediments, oil and floatables from stormwater runoff.

- Fine particles
- Floatable debris
- Liquid- and sediment-bound hydrocarbons
- Sediment-bound heavy metals
- Sediment-bound nutrients

As such, stormwater flows entering the Abu Hamour tunnel from a large catchment area around F Ring road, G Ring road and the tunnel itself needed to be treated for pollution before discharge.



*The treatment facility pumps stormwater for treatment before discharge into the Arabian Gulf*

## Solution

Ashghal engaged a consulting engineer to design and install a treatment system to manage stormwater pollution in Abu Hamour.

The engineer approached Hydro International to develop an unconventional solution to meet the specific needs of the project.

Facilitated by Ezzat Natsheh, the Hydro International technical team worked to support the design of a system of [Downstream Defender® hydrodynamic vortex separators](#) to capture sediment, oils and floatables from the stormwater.

Two distribution inlet channels each carry stormwater to a series of five Downstream Defender® units in concrete chambers.

A hydrodynamic vortex within each unit separates out sediment from the stormwater, while oils and floatables are captured at the surface.

Following treatment, the effluent from the ten units is discharged into the drainage tunnel.

Captured hydrocarbons and floatables may be removed from the traps at the top of the units, while captured sediment is extracted from a drainage pipe in the sediment sump at the bottom of the chamber—a modified design to meet client requirements.

Unusually, the system was designed as an above-ground installation, and pumps are used to feed stormwater through the treatment process.

## Outcome

The project was completed in December 2017, and the ten Downstream Defender® units are successfully able to remove pollutants from total flows of stormwater of over 4,000 l/s (64,193 gpm).



*The project incorporated an unconventional above-ground installation*

“Typically our stormwater treatment products are installed below ground, so this was an interesting challenge for us, and our technical team definitely delivered for Metito and for Ashghal. Normally these critical treatment processes take place out of sight, so most people are probably unaware that they are even happening—it’s great that this project brings them up above ground and gives them the prominence that they deserve. ”

- Ezzat Natsheh

MENA Regional Business Manager, Hydro International

## Learn more

To learn more about how the Downstream Defender® stormwater separator can help you to capture more surface water pollution visit [hydro-int.com](https://hydro-int.com), search **Downstream Defender** online or contact us:

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