

## Downstream Defender® delivers stormwater treatment for highway improvement project

### Project profile

#### Objective

As part of a major overhaul to junction 16 of the M4 motorway, Swindon Borough Council needed to ensure that development work incorporated effective stormwater treatment to ensure adequate environmental protection.

#### Solution

The Downstream Defender® stormwater treatment system captures sediment, oils and floatables, preventing pollution from being carried by surface water from the road and into the drainage network.

### Situation

As part of a plan to improve the local road network in order to stimulate economic growth in Wiltshire, UK, Swindon Borough Council needed to undertake major works to overhaul and improve Junction 16 of the M4 motorway.

An £11.5M (\$15.1M) project was initiated, with the objective of improving access to growth areas in Swindon and North Wiltshire, cutting traffic congestion and reducing delays at the junction.

Around 5,500 vehicles per hour use Junction 16 during morning and evening peak times, and this has been forecast to increase by more than 50 per cent in the future.

Key aspects of the project included widening the motorway off-slips in both directions, widening the Great Western Way circulation carriageway and modifying surface water drainage systems.

### Problem

UK construction regulations require infrastructure development projects, such as roadbuilding, to conform with water quality legislation derived from the EU Water Framework Directive.

### Product profile

#### Downstream Defender® 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, the junction overhaul project needed to incorporate stormwater treatment measures in order to capture pollutants that might be washed from the road surface and prevent them from passing into the environment.

### Solution

The [Downstream Defender® stormwater separator](#) was specified to protect the drainage network from waterborne pollution conveyed from the new road surfaces, using drawings supplied by Hydro International to expedite the design and specification process.

Hydro International's Mark Goodger and Steve Waters, both qualified engineers, then worked with contractors [MJ Church Civil Engineering](#) to confirm construction details and ensure that installation went smoothly.

While the system is available in both plastic and concrete chambers, the design called for concrete, and the site required an unusually deep chamber in order to match to site levels. Mark and Steve helped MJ Church to accommodate this requirement by modifying the standard unit with additional manhole rings.

The design drawings also called for smaller pipes that could have compromised the pollution capture performance of the system, so Mark and Steve worked with MJ Church to adjust the construction details in order to ensure that treatment performance was optimised.

This constituted a variation to the contract, so MJ Church needed to seek client approval; Mark and Steve helped MJ Church to develop and submit a compelling case to the client, and worked with the site manager to manage delivery timelines to mitigate installation and schedule risks to the project.

## Outcome

The project was completed in spring 2018, and the new junction has improved both road safety and traffic flow.

In terms of the stormwater treatment elements the support from the Hydro International team in amending the construction details enabled MJ Church to deliver a stormwater treatment system that maintained the designed standard of environmental protection, without adversely affecting costs or schedules.

Technology assessors WRc visited the site during the construction phase in order to conduct an independent audit of the ease of installation of the Downstream Defender®. As a result of this assessment, [WRc Approved status](#) has been granted for the product.



*The project required dedicated stormwater treatment systems  
(Image © MJ Church)*

## Supporting highway developments

To date more than 70 Hydro International stormwater treatment systems have been installed on the UK Strategic Road Network, delivering reliable pollution protection as part of new roadbuilding and smart motorway upgrade projects.

The Downstream Defender® is recognised within the UK Design Manual for Roads and Bridges, with a specific “Vortex Grit Separator” standard (HA220/18) that was developed following a trial installation and a period of monitoring on the M25 during 2007-08.

“ The pre-installation checks on construction details were vital to ensure that this project ran smoothly when products arrived on site. We understand the pressures that contractors are under, which is why we always offer support before and during the construction and installation phase. ”

- Mark Goodger  
Business Development 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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