Case Study

A69 Bridge End, Hexham

SDS's largest Vortex Separator addresses road runoff pollution on busy main junction

Image kindly supplied by National Highways.

SDS Systems
SDS Aqua-Swirl® AS-10 Hydrodynamic Vortex Separator.

SDS Customer
Seymour Civil Engineering.

Client
National Highways (formerly The Highways Agency and later Highways England).

Purpose
To relieve congestion on the main A69 arterial route.

Brief to SDS
To prevent runoff from polluting the local environment.

Timing
Spring 2022 completion.

Project Background Information
The A69 is an important trans-Pennine arterial route, connecting the north-east and north-west of England, that is heavily used by both hauliers and commuters and is regularly subject to delays at peak travel times.

A newly designed intersection of the A69 and A6079 at Bridge End, at which the existing traditional roundabout is turned into a grade-separated junction, will help to create 18 miles of free-flowing dual carriageway between Newcastle and Hexham and improve access from the A69 and into Hexham. Congestion will be significantly reduced, resulting in shorter, and more reliable, travel times and safer journeys.

Project Objectives
To minimise the impact of a busy new road junction on the environment.

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Part of SDS Water Group

Company Registered in England & Wales. Registered Number: 04433740

Project Requirements

To minimise the pollution impact of surface water runoff from a new road junction on the local watercourses, groundwater and ultimately the River Tyne.

Surface Water System Requirements

To provide a pollutant removal facility for water running off a busy new intersection.

The primary driver for this water quality scheme has been the mitigation of outfalls and associated discharges that fail National Highways' prescribed performance standards for 'LA113 Road Drainage and the Water Environment' as specified in the Design Manual for Roads and Bridges (DMRB). The method of pollutant removal should meet the requirements of the DMRB "CG 501: Design of highway drainage systems."

Since a high proportion of highway pollutants are found to be adhered to the suspended solids, by collecting, filtering and treating the fine sediment, which is subsequently removed, the system should have the capability to deal with a significant part of the runoff pollution.

DMRB "CD 528: Vortex Separators For Use With Road Drainage Systems"* provides the requirements and advice for including vortex separators within road drainage systems. It states that: "Oil separators are excluded from use as they are designed to mitigate oils and cannot be relied upon to treat suspended solids or dissolved metals" whilst they also "require regular maintenance to function effectively".

SDS Product Features

SDS AS-10 Aqua-Swirl® hydrodynamic vortex separator, which is manufactured from Weholite HDPE material, was specified for this project by engineering consultancy Pell Frischmann and installed in coordination with groundworkers Seymour Civil Engineers, working on behalf of lead construction contractor, Carnell Group.

Issues Overcome

SDS Aqua-Swirl® was identified by the design team as an appropriate solution that demonstrated the necessary performance required to restore road runoff water quality to acceptable standards and deliver value for moneywhilst also satisfying National Highways' internalgovernance processes.

In order to establish whether the improvement scheme would have any impact on the local environment, National Highways carried out ecological surveys on protected species and important habitats for plants and wildlife. In addition to the habitat research these included surveys for multiple animal species including badgers, otters, water voles, white-clawed crayfish, bats, reptiles, great crested newts and breeding birds.

As a result, amongst many initiatives to protect nature affected by the scheme, badger and otter passes have been constructed underneath the road at carefully selected locations to allow the animals to cross safely, whilst great crested newts have been relocated to ensure they are not harmed during construction. A new pond has been constructed to provide an alternative habitat, trees planted and nest boxes installed, to provide replacement nest sites for birds and foraging areas for bats in the longer term. The scheme has been completed using National Highways' Construction Works Framework, which involves a number of approved contractors and whose collaboration has been deemed essential in delivering an outstanding infrastructure project.

Award Winning Scheme

At the 2022 Constructing Excellence North EastAwards the project achieved industry recognitionby winning two Highly Commended awardsincluding "Civils Project of the Year".

Image kindly supplied by Pell Frischmann.

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* Replaces HD 220/18 in order to comply with the new Highways England drafting rules; for implementation on all schemes involving the use of vortex separators on Highways England's motorway and all-purpose trunk roads.

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