

# CASE STUDY



## Background

The **Montgomery Canal** is partly navigable and is located in Shropshire and Powys, passing through the towns of Welshpool and Newtown. The canal is 35 miles long, with 7 miles connected to the canal network via the Llangollen Canal. A further 13 miles is navigable, centred on Welshpool. The canal is very important for its assemblage of aquatic plants, including the European protected floating water plantain.

## Challenge

In 2008 a decision was taken by the then British Waterways, now **The Canal & River Trust**, to restore the 430m length of canal near Knockin.

British Waterways Site Engineer, Mike Friend contacted H&R ChemPharm to enquire about using **Sahara® Terraseal** as a viable alternative to the existing Geosynthetic Clay Liner (GCL).

The following extract taken is from the **Shropshire Union Canal Society** website

<http://www.shropshireunion.org.uk/montgomery-canal-restoration/redwith>

and highlights when the group first became aware of **Sahara®** and the challenges that 2012, in particular the weather, posed;

‘Before the 2012 season there was a major development. A new canal lining system called **Sahara®** had been developed that reacts and expands on contact with water to create a geomembrane. The manufacturer treated a geo-textile with **Sahara®** to create a material that would be waterproof and self healing. Not only would this be much lighter and easier to handle than the clay lining, but it did not require the pressure that the clay needed, reducing the number of blocks we would have to lay to less than half. Initially our hopes were high and so were the clouds of dust being kicked up by the dumpers. But in April the weather turned and 2012 turned out to be the wettest year on record. We lined 144 m, well below expectations, bringing the total to 174 m.’



## Montgomery Canal

## Project Overview

The workforce on the Montgomery Canal project was primarily a volunteer force and not always the same persons. Therefore, the required lining product needed to be one that was relatively easy to install with health and safety in mind, requiring minimal training or specialist tools and an expected life of at least 20 years. A Sahara® impregnated substrate, Terraseal, has a number benefits, which are highlighted below and met this criteria providing beneficial to achieving a highly effective liner for the Montgomery Canal...



### Terraseal Features

**Delivery to Site:** Due to its low weight, approximately 600g/m<sup>2</sup>, Sahara® Terraseal proved lower cost for deliveries and was easily hand carried to the installation site and manoeuvred into position using only 2 persons minimum

**Ease of Installation:** Sahara® Terraseal is easily cut to size and simple to install, only requiring an overlapping of the impregnated liner to achieve the required seal

**Strength and Durability:** The Terraseal substrate is of high tensile and shear strength which made it durable enough to withstand foot and light vehicular traffic without damage. Sahara® has been proven effective for 20+ years which met the criteria of specification.

**Self-healing Capability:** The profile of the canal was surface lined with concrete blocks to avoid spalling from propeller thrust. Due to its ability to self-heal, there was a lesser degree of concern over damage due to sharp aggregates or other hazardous materials that could potentially damage alternative liner products.

### The Client Said

Les Clarke, Principle Engineer, Technical Solutions from The Canal and River Trust and who had overseen the regeneration project said of the material;

"The Sahara® lining product made a significant difference to the scheme to re-line the Montgomery Canal in the length between Pryces Bridge and Redwith Bridge in Shropshire. The weight of the treated geotextile was much less than the previous liner that was being used and this sped up the laying process by a factor of around 3 times. There were a few issues with details concerning connections to the existing banks but these were resolved relatively easily.

The geotextile does not require a weight of material to be placed on top of it other than to protect it from mechanical damage that might arise from boat use on the finished canal. The self-healing properties of the liner when punctured are a big advantage over other lining membranes that would require patching if punctured.

The material can become quite slippery to walk on if it starts to gel before covering over but this can be accommodated by suitable temporary scaffold boards placed on it.

Overall the Sahara® system is an impressive product and one that will be used much more often on the canal and river network in the future."

As a result the Montgomery Canal was officially opened in July 2014 and now links to the to the national canal network. Work has now started on the next section beyond Bridge 84 towards Crickheath that will eventually link with the Welsh canal system beyond Welshpool.

The information contained within this case study gives an overview of a particular application and of the advice given in relation to it. It is the users obligation to determine the suitability of the product for the users application, to evaluate and use the product safely and within the scope advised by H&R ChemPharm (UK) Limited, complying with all relevant laws and regulations.

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