

Ammanford (Llandibye)

In Channel Asset Protection

Salix were commissioned on a Design and Build Contract for our client, Wales & West Utilities (WWU), who are responsible for 2.4 Million Gas Consumers in Wales & South West England to undertake Pipe protection works in the river channel at their Site in Ammanford.



The site was subject to significant erosion from natural processes, which, in turn, presented a risk to our client's live apparatus. The channel (Afon Gwyddfan) displayed a mixture of pool and riffle features along its length both upstream and downstream of the pipeline crossing. The channel was also displaying a history of bed incision, some of which may have been as a result of human intervention (e.g. dredging), developing a channel which is now disconnected from the surrounding floodplain. There were existing Gabion Baskets which were failing to contain the eroded embankments & protect the client's assets.

Our remit on the design front was to ensure that asset protection was at the forefront of the design, whilst ensuring soft engineering principles in keeping with the surrounding area. Our design partner, cbec engineering, for whom we commissioned under the design and build contract were tasked with producing a design with these parameters in mind. Their team of Geomorphologists and design engineers, combined with our delivery team feeding into the ECI and buildability challenges, produced an excellent design which not only delivered the clients remit, but also looked visually stunning on completion.

Following initial review of the site data and the scope of works, a simple solution for this site was devised, to transform the short section of channel from a riffle-pool-riffle sequence, into one large, reinforced riffle bedform. Resulting in a short section of channel which is more resemblant of a plane-bed channel, a naturally occurring channel type in steep settings, such as this.

Once design had gained approval, we assisted the client with the FRAP application process using our in-house specialist team and the Water Framework Directive (WFD) Assessment. Our Project Management team were also tasked with significant stakeholder liaison, to ensure all relevant permissions were in place and asset owners had provided their approval. These included private landowners, Carmarthenshire County Council and the asset owners of the gas main.

Construction work started in June 2024 and lasted for three weeks. The site compound was set up at the entrance to the field, ensuring there was enough area for the temporary storage of materials and welfare facilities, as well as turning areas for delivery wagons, while allowing normal farming activities to continue. As part of the site setup, our team installed goalposts in accordance with the GS6 guidance provided in the pre-construction information.

The scope of works included tree felling and fencing, in addition to the enabling works, compound construction, and in-channel construction activities. The channel works involved the removal of failed gabions, the use of locally felled trees to install wooden check weirs keyed into the channel bed, and the re-grading of banks to new profiles as we progressed along the section of the channel to ensure a consistent and functional finish.

The in-channel work was all conducted in line with GPP5 regulations for works in or near the water course, to ensure no adverse effects from pollution. To enable this, we installed Sedi-matt's downstream of the works to intercept large sediment particles. Following our safe systems of work and best practice, our project team were tasked with checking local flood warnings daily and monitoring existing water levels in the channel.

Existing gabion baskets were removed, with the stone and wire mesh separated to provide a value-engineered solution for our client and to reduce site waste and import costs. All recovered stone was re-used as part of the construction works. The site-won gabion stone was then redistributed within the channel to fill pool areas to level, achieving the design intent of a short section of plain-bed channel.



Post Completion pictures, showing the works blending seamlessly into the natural surroundings whilst also providing excellent, long-lasting protection to the asset owner's pipeline.

We then installed our Salix Rock Mattress products to fully cover the exposed pipeline. These were also used up the batter of the existing embankment, following remedial works to stabilise and reinstate the eroded faces. The Rock Mattresses selected for this project measured 1m x 2m x 250mm. Because we were able to pre-fill them off-site in our production yard, this approach saved programme time on site. Upon delivery, the units could be lifted directly into position in accordance with our lift plan, effectively providing a plug-and-play solution that minimised disturbance outside the working area.

Due to significant access constraints, including soft ground and the narrow channel width, we deployed our 9t wide-track long-reach excavator to complete the works.