Queen Mary?s Walk, Llanelli

Location

Queen Mary?s Walk, Llanelli SA15 1PG (and Regalia Terrace, SA15 1LN)

Description

The Queen Mary?s Walk scheme is situated in a playing field in the Northumberland area of Llanelli, an d a few streets away in Regalia Terrace. Modelling was undertaken by D?r Cymru Welsh Water (DCWW) during the investigative stages of their wider surface water management scheme that is taking place across the Llanelli area. This scheme was highlighted as a priority for reducing Combined Sewer Overflow spills to the Loughor Estuary as the subcatchment generates large storm flows from a small area and is serviced by fully combined sewers. This modelling estimated that this area was contributing high flow rates to the nearby combined sewer at a rate of around 125l/s in a 1 in 5 year storm event.

By retrofitting solutions into this area, it is estimated that the peak flow rates will be reduced to around 29l/s ? a reduction of 77%. Main SuDS used The SuDS components below were chosen to reduce fl ows via evapotranspiration where possible and attenuate remaining flows during storm events. During low flows, treatment will also naturally occur through vegetation and the soil acts as an interceptor.

100m long planted swale with 150mm perforated pipe in the playing field adjacent to Queen Mary?s Wa lk; and

Planted basin on Regalia Terrace ? this forms part of the highways drainage.

How it works

The scheme uses site control in the form of the planted basin and conveyance and attenuation in the form of the swale, but both elements contribute to a wider regional approach, with a further 11 schemes due to be completed in the Llanelli and Gowerton areas by April 2015. The swale has been designed to a 1 in 30 return period, with an overflow back into the combined sewer. The flow controls being utilised in the swale are an orifice plate and the shallow gradient.

Due to the presence of old mine workings in the area, it was not possible to infiltrate flows into the playing field. The swale has been lined with a self- healing geotextile. Additional plants and trees have been planted in the area to encourage the evapotranspiration of flows where possible, these include shrubs within the lined area and trees above the lining. Work was done in the area to modify existing drainage to convey surface water flows from the nearby streets and lanes at the rear of the properties into the swale via traditional highways drainage pipes (see figures 1, 2and 3).

Figure 1: Outfall from highways network into the swale

Figure 2: Underdrained swale

Figure 3: Swale becoming full

The planter attenuates flows which run down Regalia Terrace, a fairly steep side street. This intervention is designed to a 1 in 30 return period. The planter includes two weirs which will

attenuate flows on the surface and has been planted to encourage evapotranspiration. The planter has been fully lined, but the soil in the planter will drain the unit over gradually to mitigate the area within the planter from becoming boggy. This planter was constructed as part of the highway drainage under agreement with the highways authority and now forms part of the highways drainage system for the area (see figure 4).

Figure 4: Kerb planter

Both parts of this scheme were designed in accordance with The CIRIA SuDS Manual (C697) and were constructed in summer 2013. The area of the playing field where the swale is located was fenced off until December 2013 to allow the new grass and plants to become established.

The purpose of the scheme is to manage runoff from the highway on Regalia Terrace and attenuate peak flows entering the combined sewer network via the highways drainage network. This was a key consideration and contributes to the wider objectives of reducing the instance of sewer flooding, and improving the water quality in the Loughor Estuary. Both of these objectives are being achieved by the use of surface water management solutions.

Specific details

A public consultation exercise was carried out with local residents to get their views on the scheme and also to raise awareness of the works in the local area.

Due to the great Welsh weather that was experienced in summer 2013, the work on the scheme was able to be completed sooner than expected.The total scheme cost was £800k, but is part of a £15m pr ogramme of work that will be delivered in Llanelli and Gowerton up to 2015.

The perforated pipe at the bottom of the swale now forms part of the public sewer network and was laid using DCWW?s statutory powers, but was made possible by working closely with Carmarthenshire Co

uncil. The planter was constructed on the existing highways drainage network under agreement with the highways authority.

Benefits or achievements

As a result of this scheme, the peak flow rate of surface water runoff entering the public sewer network has been drastically reduced. DCWW are collecting monitoring data to assess the effectiveness of the scheme. To date its performance has exceeded expectations.

Challenges or lessons learnt

Although the swale was constructed using statutory powers (the perforated pipe forms part of the public sewer network), it was a new way of working for DCWW and required consideration about how the ?green? elements of the swale will be maintained. Maintenance will be undertaken by agreement with the local authority and will require an appropriate maintenance agreement.

The works that were undertaken on the highways drainage network meant working in a whole new way and finding an appropriate legal mechanism for this to happen. An agreement was made between DCWW and Carmarthenshire County Council for this work to take place and ensure that the new elements would be handed back to the highways authority with an appropriate maintenance schedule and agreement to facilitate the longevity of the scheme. Although this was a challenge by working closely with the local authority, a process developed that can be translated across to other schemes.

The scheme was progressed in a very tight timescale which meant that negotiations with a range of stakeholders had to take place within a matter of weeks.

Lessons have also been learnt and carried forward to other schemes in relation to the way customers are engaged on work that is undertaken and how best to keep them informed and up to date. Working closely with the community brings both opportunities and challenges and the lessons from these will be built upon for future schemes.

Interaction with the local authority

In order to ensure effective communication with the local authority throughout the programme of work across Llanelli, a facilitation group has been established with representatives of D?r Cymru W elsh Water (and their delivery partners) and Carmarthenshire County Council. This group ensures that there is a formal platform to raise issues and discuss the work being undertaken and is key to the successful delivery of schemes in Llanelli.

The group is made up of representatives from multiple departments across the two organisations and includes legal, planning, asset strategy, biodiversity, land drainage, communications, capital delivery,

design, street works, highways and land agents. By engaging with this multi disciplinary group on a regular basis, the right people are engaged at the right time to facilitate the efficient delivery of schemes and ensure that all relevant parties? objectives are considered.

Team and details

The scheme was designed and constructed by D?r Cymru Welsh Water and their delivery partners, M organ Sindall, Arup and EC Harris.

The work has been facilitated by a Memorandum of Understanding between DCWW, Natural Resources Wales and Carmarthenshire County Council and is supported by the Welsh Government and Ofwat.

More information can be found at http://www.dwrcymru.com/en/My-Wastewater/RainScape.aspx or by emailing RainScape@dwrcymru.com

Status: The scheme was completed in 2013, although the fencing around the site was left around the scheme until early 2014 to allow time for the plants and grassed areas to become established.