Dŵr Cymru
Welsh Water

Short Sea Outfall Consent Variation - AN0306001.

Date: 6th August 2018

Background

Following completion of the Jacksons Bay bathing water assessment in 2008 the AMP 5 & 6 delivery strategy was developed to bring further improvements in performance to several of the key DCWW terminal assets. The Western Valley CSO & Tank was a key asset within the strategy. The Root cause analysis and option development highlighted the requirements for amendments to its current consent to deliver the improvements, these included:

- Removal of storage within the Tanks before spills.
- Removal of requirement to return stored flows to PFF.
- For Tidal tank storage of 10,193m3 to be utilised when the outfall capacity is restricted by the tide. This tidal storage will be utilised when required at high tides and emptied during low tide conditions.

Tank operation once commissioned spring 2019

Once commissioned Storm flows from the Western Valley tank will pass through the new CSO structure and dual 6mm screens, travel through the old East storage tank and discharge to the Severn Estuary via the Long Sea outfall (LSO) . The hydraulic capacity of Long Sea outfall (LSO) is limited depending on the tide position. During high tide the LSO capacity's is reduced and thus the future operation of the tank will be to store the storm water.

Investigations have highlighted the provision within the outfall structure of a Short Sea Outfall (SSO). Immediately in front of the Sea defence is the original outfall chamber, within the structure is a Tideflex valve to prevent sea water ingress inland. The structure is fitted with original letter box type openings with cast iron flap valves.

Grid reference ST2921180995.

Figure 1 - GIS plan of Outfall structure ('outfall sluice chambers')

Figure2- Image of sea bound outfall structure and external flap valve arrangement

Further amendments required to consent

It is requested that the provision of this original operation of the asset is included within the revised consent under both High tide and Emergency conditions, such as failure of the LSO structure or blockage. The asset will have Event Duration Monitoring (EDM) installed.

A temporary remote cello unit has been installed within the outfall structure in order for DCWW to better understand the operation of the SSO, the table below highlights the analysis of two events during storm discharge from the tanks.

The SSO will operate when: Certain peak high tide conditions restricting discharge capacity along the LSO, align with heavy rainfall storm periods within the Western Valley Catchment.

Event Date	**Recorded Tide Level**		**Cello Data Reading**	
	Chart Datum (m)	Ord. Datum (mAOD)	%	Corresponding Level (mAOD)
26/02/2017 @ 19.30	12.25	6.44	94.11%	7.25
05/03/2017 @ 12.00	11.00	5.19	69.90%	5.95

Table 1 - Level analysis of SSO outfall against tide levels. *Note: MHWS at Newport is 6.1mAOD*