

HydroCon Pipes improve stormwater drainage outfall at Altona Beach, Victoria



Figure 1 Altona Beach showing HydroCon pipeline pit cover. Photo taken looking west with pier in background and sea wall on right.

HydroCon permeable pipes have been used successfully to improve stormwater drainage outfall at Altona Beach in Victoria.

Improved stormwater management at Altona Beach was identified as an issue during a review of beach renourishment priorities under the Victorian Government's *Enhancing Our Beaches Program* for Port Phillip Bay announced in November 2006.

The review by coastal engineers, GHD Pty Ltd, commissioned by the Department of Sustainability and Environment (DSE), involved 30 bay side beaches, using assessment criteria developed by DSE in conjunction with the Association of Bayside Municipalities and GHD, which included the impact of stormwater outfalls. The review identified Altona Beach as the highest priority beach requiring renourishment.

GHD was subsequently commissioned to prepare and issue detailed design drawings for renourishment of Altona Beach. Working closely with Hobson Bay City Council, GHD assisted with tendering processes and provided construction advice on beach renourishment and foreshore drain diversion.

While HydroCon pipes are generally used in 'at-source' applications, GHD specified HydroCon pipes for this stormwater drainage outfall application, as the pipes offered considerable advantages over other options. The client (Hobson Bay City Council) considered the use of HydroCon pipes to be a very cost effective solution. Furthermore, the pipes are easy to install and clean, and are unobtrusive.

Design life issues in a marine environment included: (1) effect of salt water on the pipes themselves; (2) presence of the water table approximately 1.5 m; and (3) no exfiltration from the pipes when groundwater levels are elevated eg at high tide.

HydroCon advised that permeable concrete had as yet shown no detrimental effect from exposure to salt. The high water table limited the depth for placement of pipes given that the external vertical diameter of the pipes is 0.63 mm. Council accepted that there would be no exfiltration when groundwater levels are elevated, noting that exfiltration would occur for the majority of the time.

Foreshore drain diversion, which was funded by Council, required 244 standard 1 metre long, 500 mm diameter permeable pipes, which HydroCon delivered in March 2010.

The red line and arrow in the aerial photo below shows the approximate position of the HydroCon pipeline and direction of flow.



Figure 2 Altona Beach showing position of HydroCon pipeline. Photo source: Google Maps

The pipes were installed in the normal way at zero gradient with access pits approximately 50 metres apart. An overflow pit was placed at the end of the pipeline (eastern end across from Bayview Street) to allow water to surcharge during periods of high flow.

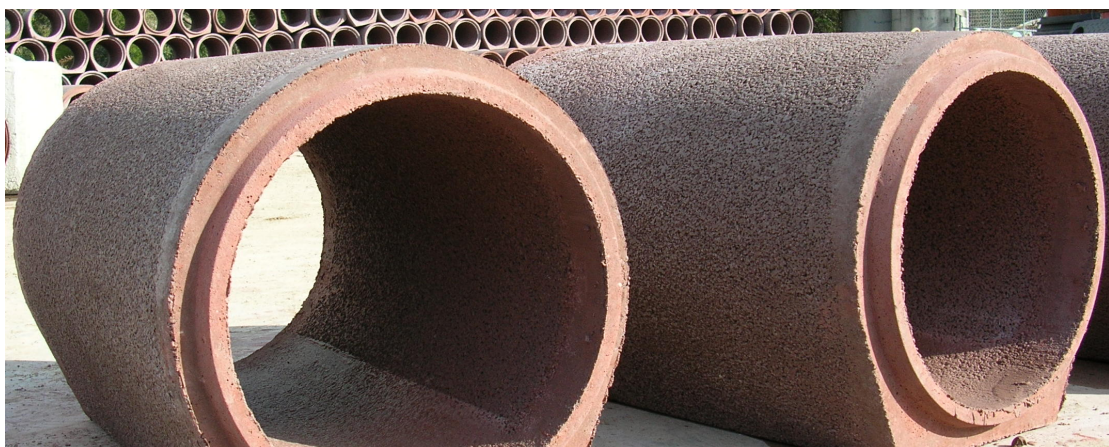


Figure 3 Standard DN500 HydroCon Pipes

Installation of the pipes within the sand well below the surface ensures that beach activities are unhindered, the only indication of the underground pipeline being the concrete pit covers at approximately 50 metre spacings.

Performance

HydroCon was advised by a Council engineer in October 2012 that the HydroCon pipe system was working well and had eliminated previous drainage issues in the Esplanade and nearby streets. Council maintenance staff reportedly clean the pipes regularly with high pressure hosing and eduction equipment and inspect condition with a pipeline camera.

November 2012