NEW STORMWATER OUTLET IMPROVES DRAINAGE AND REDUCES FLOODING RISK

Waeger Precast has manufactured a new stormwater outlet for Collaroy Beach, in Sydney's northern beaches.

The previous Collaroy Beach pipe was built in the 1970s, and over the years had been damaged by waves. After community consultation, the local Warringah Council decided to replace the existing structure in the same location. Part of the brief was that any visible portions of the concrete outlet be compatible with the beach environment, subject to technical and practical considerations.

The replacement unit manufactured by Waeger improves drainage in some Collaroy streets by increasing the amount of water that can be carried. It plays an important role to reduce any risk of flooding.

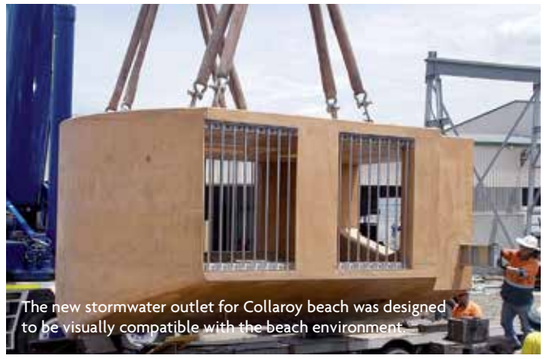
The new outlet is 2.1 metres in diameter and approximately 10 metres shorter than the original. The design includes a 3 square metre surcharge structure, 34 metres from the sea wall. This structure allows drainage under extreme rainfall conditions and high sea levels.

Waeger made two new units for the outlet, the larger one 50 tonnes and the smaller unit, 30 tonnes. Both units were cast using a marine grace concrete with coloured oxide, with all reinforcement galvanised.

Installation was carried out over the summer months to take advantage of better construction conditions for the works, with an extended beach sand profile and generally small wave conditions.

The new outlet was installed next to the current structure, which has subsequently been removed.

As per the project specifications, most of the structure will ordinarily be covered with sand, and the section that is visible is a narrower shape, to minimise any impact of waves.



The new stormwater outlet for Collaroy beach was designed to be visually compatible with the beach environment

Waeger Precast made two units for the outlet, cast using a marine grace concrete coloured with oxide.

RESOURCES FOR THE FUTURE - WHEATSTONE TRENCH CULVERTS

PERMAcast - Engineered for Efficiency

National Precast Member PERMAcast is playing a major part in one of the country's largest resource projects. The Wheatstone Project is a Liquified Natural Gas plant under construction, in the Ashburton North Strategic Industrial Area, 12 kilometres west of Onslow in Western Australia's Pilbara region. The foundation will include two LNG trains with a combined capacity of 8.9 million tonnes per annum, as well as a domestic gas plant.

The WA precaster is a vital part of the Wheatstone Project and has won the tender to supply precast trench units to Laing O'Rourke after a long, competitive and consultative tender process. Precast will be supplied for the ISBL and OSBL Concrete and Civil Works.

PERMAcast Sales and Marketing Manager Rasmus Sorensen says since expanding core capabilities in 2008, the company has focused on supplying customised products to meet exact specifications for clients in the mining and resource, infrastructure and oil and gas sectors.

"Not only does this project require a large scale modern precast manufacturing and storage facility, but this project is also technically very challenging," says Mr. Sorenson.

The precast involves more than 1000 individual trench units. The plan was to originally cast the trench units in-situ.

PERMAcast was able to assist the clients in coming up with an alternative design offering cost savings and efficiencies. PERMAcast's in-house engineers developed efficiencies in manufacturing methodologies to enable the trench culverts to be produced off site. The precast solution will see the trenches manufactured in PERMAcast's ISO 9001 quality controlled factory environment.

No two units are the same, with the average unit being 19 tonnes. Variable falls mean every trench unit has to be cast not only with the required gradient for drainage in the floor of the unit, but also to accommodate variable heights for ground level.

To cater for a potential emergency overflow of supercooled natural gas, 560 lineal metres of the trench will require lining with a perlite insulating concrete. Instead of containing normal aggregate, perlite concrete contains Portland cement, perlite aggregate and water. Perlite aggregate is an exceptionally light weight aggregate. It has a very low strength, which creates a raft of casting and handling challenges. The perlite concrete will be anchored to the inside face of the precast trench units, using 20,000 bolts.

"Finding a more efficient solution for the trenches once again demonstrates how the precast industry is able to accurately respond to crucial design specifications and initiate engineering efficiencies, which ultimately provides cost benefits for a project," Mr. Sorensen says. In this case, Mr. Sorensen says winning the Wheatstone tender precast package strengthens the company's position within WA.

"We have a history now as one of Western Australia's leading suppliers of precast and prestressed concrete products for some of the state's most prestigious infrastructure, oil & gas and resource projects. Our clients draw confidence from our proven ability to deliver technically challenging products on time and to specification."

PERMAcast has won the tender to supply precast trench units to the Liquified Natural Gas Plant The Wheatstone Project

PERTH CITY LINK PROJECT

As a project 100 years in the making, the Perth City Link has long been debated as the rail line that splits the city.

Reconnecting the CBD with Northbridge for the first time in 100 years, Perth City Link is an urban renewal and redevelopment project under construction in Western Australia's capital. It's a collaborative project, funded by three tiers of government. When completed, the project will deliver significant benefits for locals and tourists alike, delivering better access and connectivity, more public spaces and more residential, retail, entertainment and commercial opportunities.

One of the major aspects of the Perth City Link is the public transport infrastructure. The $360-million rail project was the first stage. It involved sinking of the Fremantle Line (between William Street and Lake/King Street) to create almost 600 metres of a new cut and cover section along the Fremantle Line.

Delta Corporation supplied the roof of the entire 600 metre long tunnel to sink the Fremantle Line as part of the Perth City Link project.

National Precast member Delta Corporation was contracted to supply the roof of the entire 600 metre long tunnel. A total area of 13,750m2 of planks was required. Construction began on these in early 2012 and panels were supplied over an 18-month period in line with the project program.

"There were a couple of significant challenges with this project," says Delta Executive Director Matt Perrella. "In regards to the product, we had to manufacture voids in the concrete planks, to lighten them. And in terms of manufacture, the program sequencing was critical. Different sized planks were required at different times as the rail tunnel was constructed."

Mr. Perrella praised his team for their dedication to the project.

"We met the demands for a high level of quality management, as well as the complicated program sequencing," he says.

High capacity precast prestressed concrete voided planks were manufactured, ranging from 8,500mm long up to 14,500mm, with a maximum weight of 24.0 tonnes.

The panels were wet cast in steel moulds with structural grey concrete to a class 2 finish. Panel profiles included 2225mm wide x 450mm thick (325No), 1815mm wide x 450mm thick (150No) and 1425mm wide x 550mm thick (130N0), were supplied.

Precast was the obvious choice for this project for several reasons. The congestion of the site, combined with difficult ground conditions, meant the roof slab could not be constructed using traditional in-situ methods of construction.

"We really are proud to have been involved in such a historical project. The City Link will forever change the face of Perth. The city will be seamlessly connected, and that's good for residents, business people and commerce," Mr. Perrella says.

The complex construction of the Fremantle Line Rail Tunnel has been recognised at a national level with the Perth City Rail Alliance receiving a Concrete Institute of Australia National Award for Excellence in the projects Engineering Category.

The judges commented on the design and construction techniques adopted, and the detail necessary for concrete mix design and placement methods.