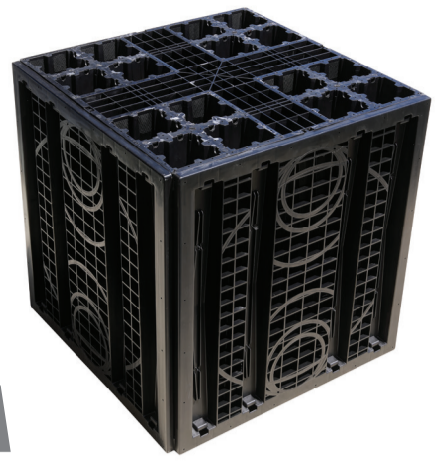


CASE STUDY

PEMBROKE TERRACE

SUBDIVISION

STORMWATER SYSTEM



AQUAFORT, DURAFORCE



ADVANCED GEOSYNTHETIC SOLUTIONS

PROJECT INFORMATION

Pembroke Terrace is a highly sought after residential subdivision in Wanaka, offering 360-degree mountain views for approximately 140 new sections. With four stages already near completion, stage six is about to be developed. A soakage pit for stage six was originally designed using a traditional plate system, but with the release of the new AquaFort system, Cirtex worked in conjunction with the contractor and the engineer to upgrade the design and speed up the installation programme.

DESIGN

Cirtex worked closely with the project engineer and QLDC to upgrade the designs and get the product approved. Originally designed as a 144m³ traditional plate system, the upgrade to AquaFort offered several benefits. AquaFort modules provide 40 tons/sqm of compressive strength versus the traditional plate system, which has a compressive strength of 27 tons/sqm. This provides increased resilience in design and gives more flexibility around system inverts due to the reduced cover material requirements.

While the overall void ratio stays the same at 95%, traditional crate systems have internal dividing plates throughout the system, whereas the upgraded AquaFort system has open channels where inspection and maintenance can take place.

The new AquaFort system was wrapped around the top and sides with DuraForce nonwoven geotextile. The bottom layer of geotextile was omitted so the system could be placed directly on a free draining drainage aggregate.

INSTALLATION

One of the largest benefits of AquaFort is the speed of installation. While traditional plate systems require assembly and then double handling to be placed into the excavation, AquaFort requires no assembly and the units are delivered straight into the excavation and simply placed in position. This makes the AquaFort 10 times faster to install.

Cirtex provided a high level of onsite installation support for the contractor installing the new system. The contractor had originally allowed 2.5 weeks to install the traditional plate system. Once the pit was excavated and levelled, the entire AquaFort system was installed in a day and a half. The units are light and easy to handle, so even a small crew can install the entire system efficiently and with ease.

By upgrading to the new AquaFort system, developers were able to speed up their programme due to the faster system installation time, while allowing better access for future maintenance into the system once the development is complete.

The AquaFort provided the following benefits to the project:

- Greater system strength when compared to traditional plate systems.
- Improved maintenance accessibility
- 10 x faster installation speeding up project programme.

