Project: Retaining Walls And Erosion Control  
Date: September 2011  
Client: North East Industrial Ltd - NEIL  
Location: Palmerston North

Neil is an Industrial Subdivision, options were considered to obtain the maximum land for the subdivision. Another major contributing factor was that part of this project involved a large stormwater storage zone. This zone minimised the risk of flooding in the Mangaone Stream which flows through the centre of Palmerston North. Options included Rip Rap or Gabions. Gabions were confirmed as the preferred option due to looks and availability of rock locally.

The use of Gabions gave an appealing look, as well as an environmentally friendly site for a wide variety of wildlife including birds, fish and insects. Birds including Paradise Ducks, Pukekos, and Brown Ducks were already settling into the new environment. Rip Rap also meant a slope of 45 degrees, which meant loss of industrial land. The use of Gabions maximised the return to the owner and provided stormwater attenuation that was also required for the site. Besides providing the maximum land space, it also provided the maximum stormwater capacity, and adapted to the rapid infill and drawdown likely to be experienced in flood events.

The site involved 17 months of work, with total earthwork volumes of 560,000 cubic metres (including topsoil, gabions, cut to fill, & other earthworks). The site had 8 different soil layers, including very soft blue pugs and sand, in places up to 2.8m depth had to be excavated for imported crushed AP65 material for the gabion wall foundation. Continual testing of the subgrade in front of the wall was done, a lot of the work was completed throughout a wet winter and subsequent wet summer.
Construction was extremely challenging, involving work around a live stream flowing through the site, and realignment of the stream where required. Erosion and Sediment control was also strictly monitored by Horizons (using a Waikato Regional Council method). Biomac coconut erosion control matting was used along the channel between the gabions to promote rapid growth of vegetation by creating a micro climate for seed to germinate. This was a site that set demanding conditions, the construction of the gabion wall is now a testament to both the Contractor and the Client.

Numerous machinery was on site, for the gabion construction this included 2 x 14 tonne excavators on average over the 17 month of gabion construction. Twelve workers a day on average, with 6 gabion frames made to purpose. The record achieved was 870 cubic metres in 1 month, daily record was 23 x 2x1x1 Gabions with 8 crew (46 cubic metres) with 1 excavator. Ten bracing wires (instead of 8) were used per 2x1x1 gabion, as the ends were braced as well, to minimise excessive bowing. Following completion of this work, Higgins and Goodman Contractors were given a Merit Award for Civil Construction works at the end of 2012 NZ Contractors Federation Conference.