

# NWP-21-0047 GABION LINED CHANNEL - VREDE VILLAGE NORTH WEST

## VREDE, NORTH WEST, SOUTH AFRICA

### Channelling Works

#### Problem

The construction of the Vrede residential housing complex in a flat, high-rainfall area necessitated the design & implementation of a robust stormwater management system to protect the surrounding infrastructure & community. Increased impervious surfaces due to construction activities can significantly alter natural drainage patterns & lead to flooding risks. Maranje Consulting, in collaboration with Maccaferri, developed a stormwater diversion channel system to address these concerns. The primary function of the channel is to efficiently convey stormwater runoff from the development area towards a designated non-perennial river located on the outskirts of the complex exclamation The estimated channel length is approximately 1.2 kilometers.

#### Solution

**Channel Capacity:** The channel was designed to accommodate the anticipated peak stormwater flow rates for the development area. This likely involved hydrological analysis to determine design storm events & calculate runoff volumes.

**Material Selection:** The channel utilized a Maccaferri solution that incorporates a patented polymer coating on the wire mesh. This coating offers a design life of 120 years & enhances durability against the potential aggressivity of urban pollutants often found in stormwater runoff.

**Erosion Control:** An energy dissipation structure was incorporated at the channel outlet where it meets the river. This structure helps to reduce the flow velocity of stormwater entering the river, thereby mitigating potential erosion issues within the riverbed.

**Environmental Integration:** The channel banks were lined with an erosion control blanket to promote the establishment of vegetation. This re-naturalization effort facilitates long-term channel stability & promotes ecological integration within the constructed environment.

**Project Benefits:** The Vrede residential development stormwater diversion channel exemplifies a well-designed civil engineering solution that addresses the challenges of urban stormwater management. The project successfully diverts stormwater runoff, protects surrounding infrastructure from flooding, & incorporates sustainable design elements for long-term functionality & environmental harmony.

**Client:** MOSES KOTANE LOCAL MUNICIPALITY

**Designer / Consultant:** MARANJE CONSULTING

**Contractor:** THINA ZJ CONSTRUCTIONS AND PROJECTS (PTY) LTD

#### Products used (Qty.)

- BioMaterials	14 823m <sup>2</sup>
- Gabions	3782 PMC units
- Nonwoven Geotextiles	MacTex N20.2 - 14 400m <sup>2</sup>

**Date of construction:** 12/2022 - 06/2023

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During Construction



During Construction



During Construction



Project Complete



Project Complete