

TAMAN SPPK, SEGAMBUT, MALAYSIA

# Subgrade stabilization for stormwater management



<b>Industry:</b>	Site development
<b>Application:</b>	Stormwater management
<b>Location:</b>	Malaysia
<b>Product:</b>	MIRAFI® HPa

## Overview

Climate change and poor water resource management, such as river channel and floodplain mismanagement, have increased flooding and erosion problems. Insufficient drainage and sewerage capacity in urban areas exacerbates the risk of flooding. To address these issues, detention and retention systems are commonly employed in urban planning and development to prevent flooding.

## Challenge

This project is located at Taman SPPK, Segambut in Malaysia. Due to inadequate drainage, the area faces a high flood risk during intense thunderstorms. To mitigate this, an underground stormwater detention system called StormTrap® Double Trap was implemented. This system stores water runoff in an underground chamber before releasing it back into the drain.

StormTrap is a leading provider of stormwater management systems that offer cost-effective solutions for engineers, owners, and municipalities. The land above the underground system will be utilized for playgrounds and parking lots. However, the construction was hindered by soft subgrade soil.

The project area had a soft soil depth of 7.0 m (22.97 ft), with the groundwater table nearly at the same level. The soft soil consisted of 3.0 m (9.84 ft) of marine soft clay at the top and 4.0 m (13.12 ft) of very soft sandy silt at the bottom before reaching firm ground. To address the issue of the soft subgrade, a stable load transferring platform was required to support the underground stormwater detention system.

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## CASE STUDY

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## Solution

The construction process began with the installation of sheet piles around the entire project perimeter, followed by excavation to the designed depth for the load transferring platform. Bakau piles were installed with a spacing of 500 mm (19.69 in). A thin layer of soil was then backfilled to create a flat surface for laying the geotextile. **MIRAFI® HPa** geotextile was placed over the entire platform area. Finally, a 500 mm (19.69 in) thick layer of compacted aggregate fill was added on top of the **MIRAFI® HPa** geotextile to complete the construction of the stabilized load transferring platform. The subsequent construction involved installing the StormTrap system and backfilling the soil on top.



## Result

Geosynthetics, such as **MIRAFI® HPa** geotextile, have proven to be effective in enhancing the performance of roads and load support structures. The **MIRAFI® HPa** geotextile provides functions of separation, reinforcement, lateral confinement, and permeability, which help stabilize the soft subgrade and transfer the load from the stormwater detention system to the piles.



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