

WPI

Designing a Stormwater Management Plan for C-Section Road in Monwabisi Park

2010 WPI Stormwater Management Team
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Goal

To design a Stormwater Management Plan along a main road in C-Section, Monwabisi Park (MP), in order to reduce flooding in residents' houses, while using SUDS methods in informal settlements.

Why is Stormwater an issue?

- **Geographical** – sections located in low-lying areas
- **Social** – tensions and collaboration between neighbours regarding flooding prevention

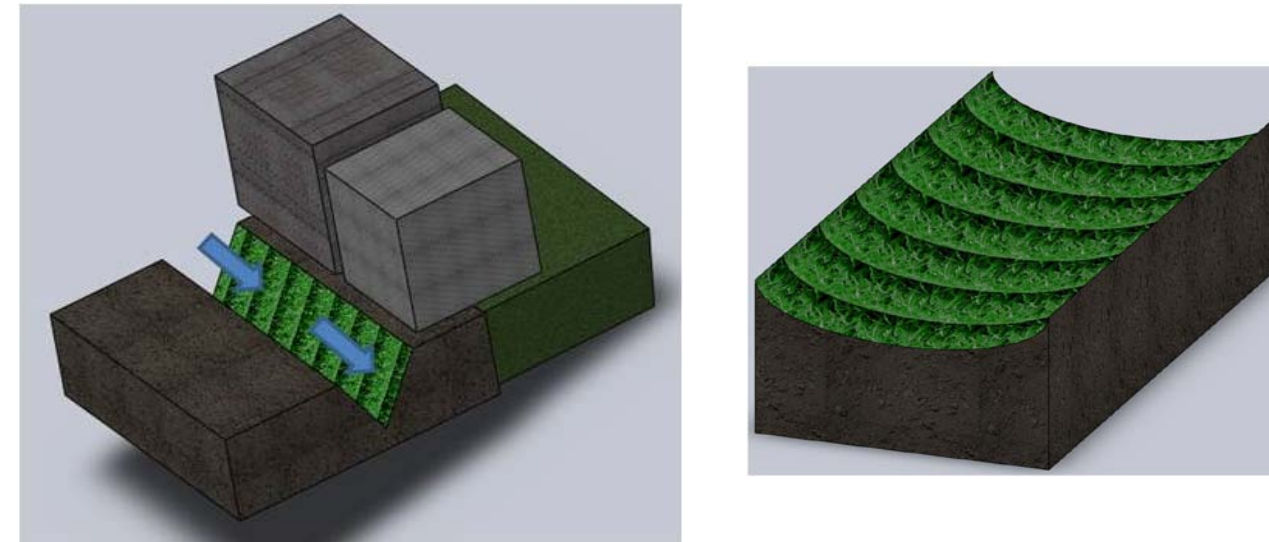
Hot Spots

In order to prioritize areas of high flooding, the team identified four main “hot spots” along the C-section road.

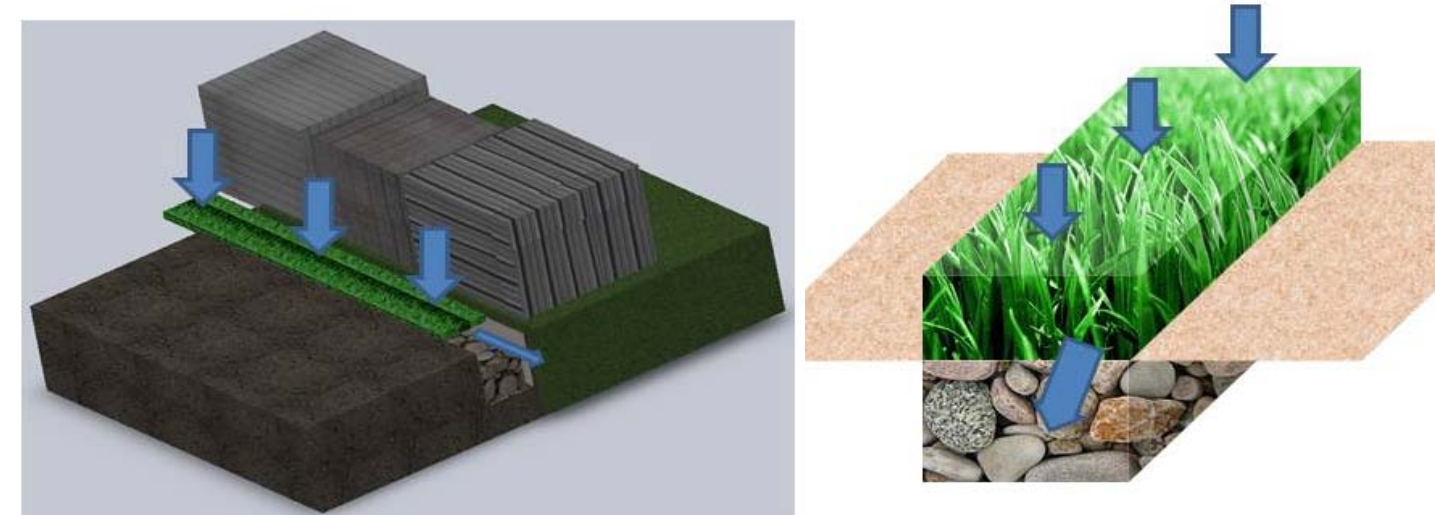


Residents had implemented a range of solutions to managing flooding with varied success in these hot spots

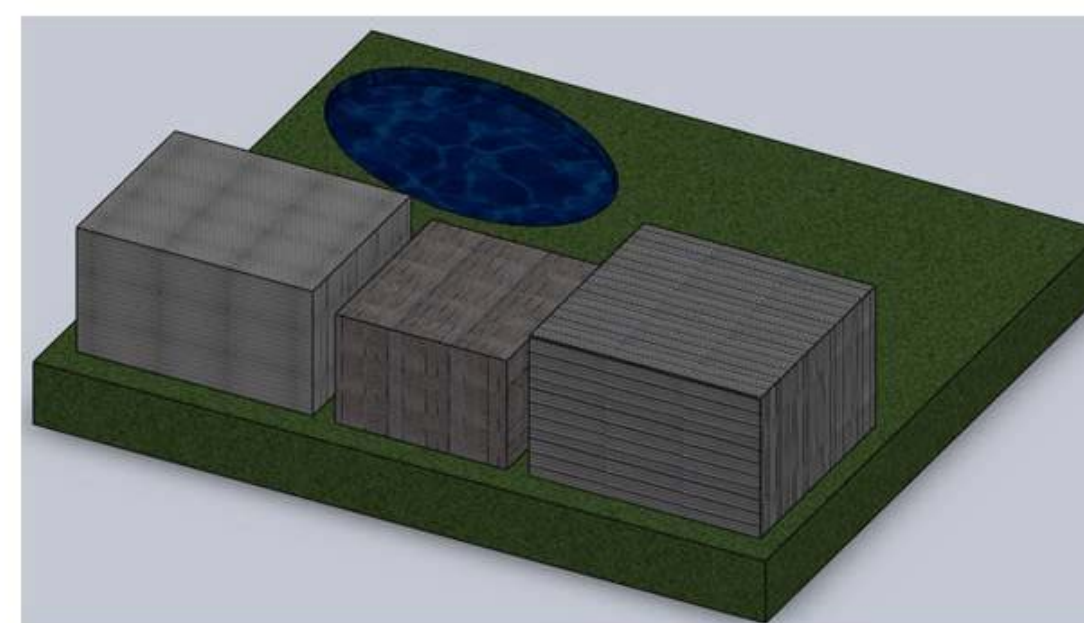
Possible Solutions: Sustainable Urban Drainage Systems (SUDS)



Swales – Shallow disk-shaped culverts with vegetation constructed along roads, collecting water runoff and redirecting it away from houses



Soakaways – Built culverts with layers of different sized stones and a cover of grass, collecting water runoff and allowing it to percolate into the ground



Wetland – Natural or constructed depression in the land, where water can be redirected and stored

Current Local Solutions

- Tyres** – Stabilize the sand of Monwabisi Park
- Culverts** – Redirect runoff water away from houses
- Fences** – Physical barrier against water runoff
- Vegetation** – Plants prevent soil from moving and help control the flow of water



Tyres



Culverts



Fences

Management of Proposed Solutions

The team found mixed reactions regarding the potential management of solutions:

- Negative: “Every man for himself”
 - Positive: “We like each other here, so we just do things together”
- The team concluded this showed enough willingness in certain areas for neighbours to maintain any of the proposed solutions.

Conclusion

Through interviews, it was concluded that there was enough social capability for cooperation of the management of the solutions. The team also concluded that areas with steep gradients would benefit from swales, while low-lying areas would use soakaways. Both solutions would serve to redirect water to a wetland.