

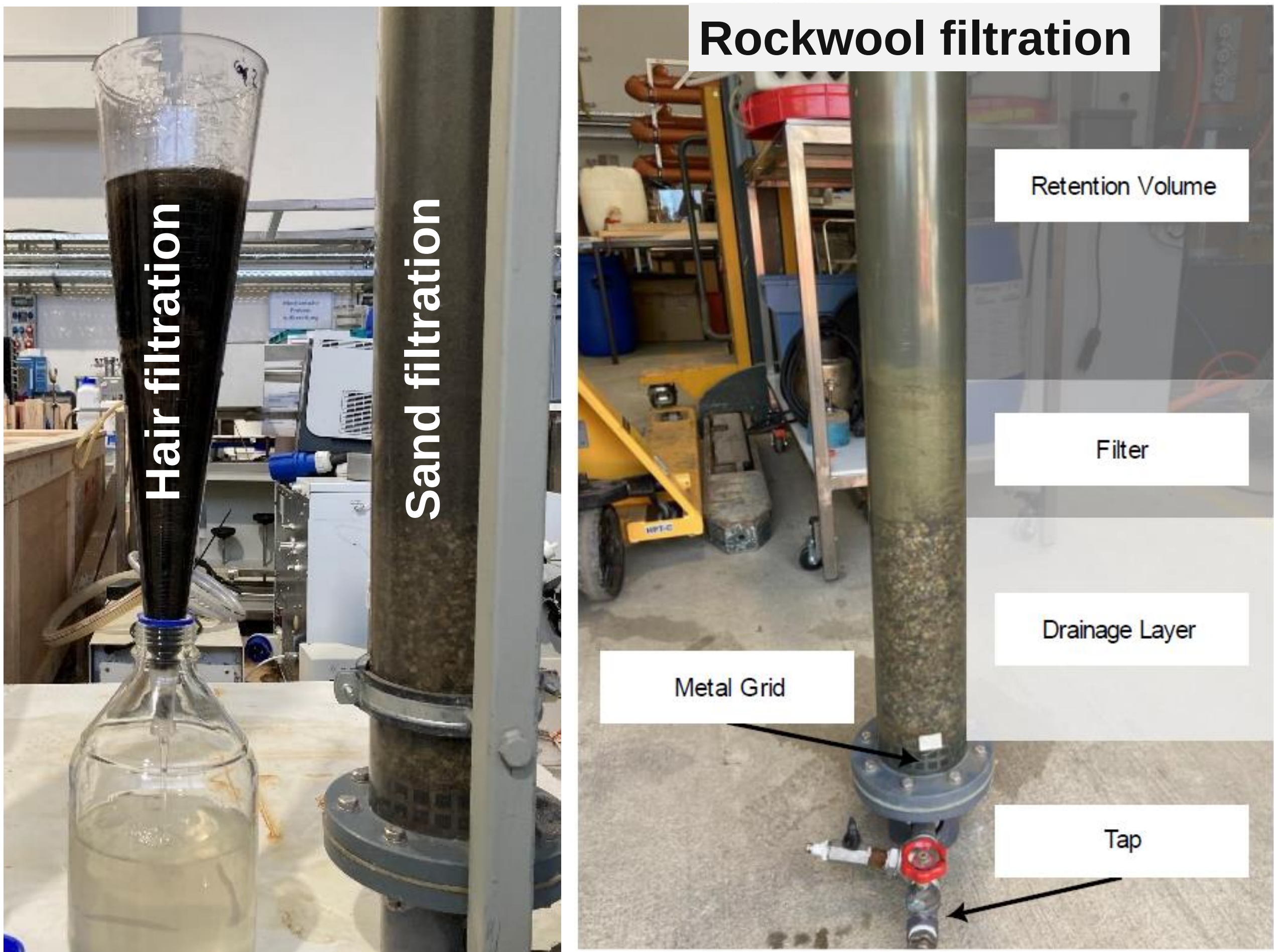
Decentralised treatment of stormwater runoff – demonstrator DeTox

Introduction

The treatment of stormwater runoff from heavily frequented roads, or road runoff for short, is an essential component in achieving sustainable wastewater management and protecting natural resources. It is known that the reduction of the fine fraction of total suspended solids (TSS_{63}) makes a decisive contribution to the reduction of pollutant and ecotoxicological loads. This significant reduction is achieved by minimising particle-bound pollutants that could otherwise be released into the environment. Filtration techniques using sand or rock wool, for example, can significantly minimise the TSS_{63} load and many ecotoxicological drivers.

Methods

Preliminary tests on a laboratory scale



- Sedimentation (2h)
- Combined processes
- Hydrocyclone
- div. filtration

Pilot plant design



- Retention volume: 2x 4 m³
- Filter area: 2x 2m²
- Drainage: 30 cm Gravel 2/8 mm
- Filter layer: 30 cm Rockwool Filter

Results

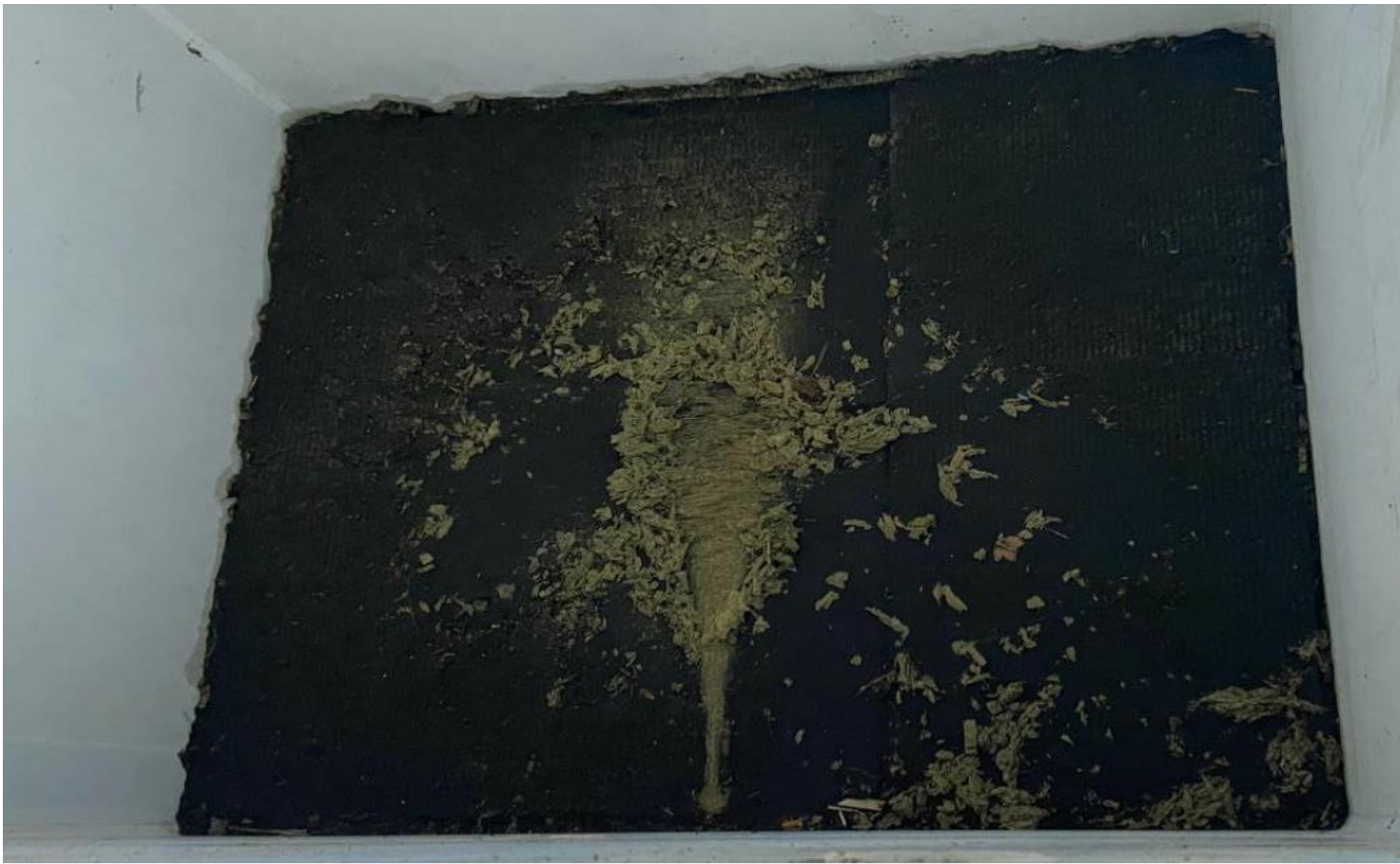
Efficiency TSS_{63}

Treatment method	n	η_{TSS63} [%]
Sedimentation	5	33
Sedimentation + filtration	3	80
Hydrocyclone	2	23
Hair filtration	2	80
Sand filtration	5	85
Rock wool filtration	4	85

Stormwater runoff before and after filtration through Rockwool filter



Filter cake formation / Maintenance



Conclusion and open questions

- Filtration-based treatment systems achieve the highest treatment performance for TSS_{63} in laboratory tests
- Pilot plant: Preferential flow paths on rock wool filters lead to higher TSS_{63} concentrations in the effluent than expected
- Easily scalable modular system, but still needs to be designed in terms of surface area connected
- **Open questions:** Storage capacity and technology. Possibilities / need for reuse on site still open

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