

## Characterisation of sediments in urban catchments found in infiltration systems – Kingswood case study

Harsha Sapdhare PhD – Research and Development Manager Baden Myers PhD – Research Fellow, University of South Australia David Lawry OAM – Director, Space Down Under <u>harsha@spacedownunder.com.au</u> <u>https://www.spacedownunder.com.au/</u>

### Case study site: Eynesbury Ave, Mitcham, South Australia



### **Catchment characteristics**



Study catchment area – 2.7 ha. The longitudinal slopes 1 to 1.4 % Pervious area – roofs, roads Semi-impervious area – driveways, footpaths, other paved areas

Pervious area – nature strips, vegetated and non-vegetated areas

# **R300 TREENET inlet: Capture zone**





# Leaky wells – Infiltration zone



Total 28 TREENET inlets with infiltration systems (leaky wells)
Filter media

Gravel x 7
Water treatment solids x 7 (SPACE)

Sandy loam x 7Clay x 7

# Sediment collection – Capture zone





# Sediment collection – Infiltration zone

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### **Chemical characteristics**

Heavy metals	Contaminants mg/kg ± SD
Arsenic	7.25 ± 3.34
Chromium	13.75 ± 3.41
Copper	20.5 ± 9.60
Lead	22 ± 11.76
Manganese	176 ± 82.44
Nickel	7.5 ± 2.06
Zinc	51.25 ± 5.06
Total petroleum	940 ± 171.46
hydrocarbons	
Organophosphorus pesticide	$101.05 \pm 6.43$
surrogate	



### **Source of sediments**

Source	EMC, mg/L
Bare ground	736
Car park	64
Commercial	61
Construction site	1200
Grass	40
Road	229
Roof	16.3





# Current models: TREENET Inlet Systems



# **TREENET Inlet Systems**





Drew Street, Two Wells Catchment Area - 3.85 hectare



a. Catchment area – 3.85 hectare b. Capture zone – 5 \* R750 double slots (TREENET inlets) c. Infiltration zone – 5\* R275 L (Trench) d. Installation date –July 2021 e. Tree species – Golden rain trees (koelreuteria paniculate) f. Soil Type – Sandy loam

Hare Street, Kapunda Catchment Area - 1 hectare



a. Catchment area – 1 hectare
b. Capture zone – 5 \* R750 double slots (TREENET inlets)
c. Infiltration zone – 5 \* R275 L (Trench)
d. Installation date – July 2021
e. Tree species – Cupaniopsis anacardioides (Tuckeroo)
f. Soil Type – Medium clay

Heritage Drive, Wallaroo Catchment Area - 0.33 hectare a. Catchment area – 3.85 hectare b. Capture zone – 5 \* R750 double slots (TREENET inlets) c. Infiltration zone – 5 \* R275 L (Trench) d. Installation date – 15<sup>th</sup> June 2021 e. Tree species - Araucaria heterophylla (Norflok Island pine) f. Soil type - Sandy





- 4.19 ha catchment area
- Urban residential street
- Soil type sandy clay
- Tree Species Japanese elm (Zelkova serrata)
- 25 Trees with inlets
- 26 Trees with drip irrigation
- 4 Trees with control irrigation



### Summary

- Public WSUD Infrastructure
- Harvests stormwater directly from existing kerb design
  - Design sensitive
  - Cost effective
  - Reusing runoff to irrigate street
     trees
  - Collect pollutants at their source (heavy metals, sediments)









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### **Particle size distribution**





Sediment