# Sponge cities: what role for stormwater infiltration?

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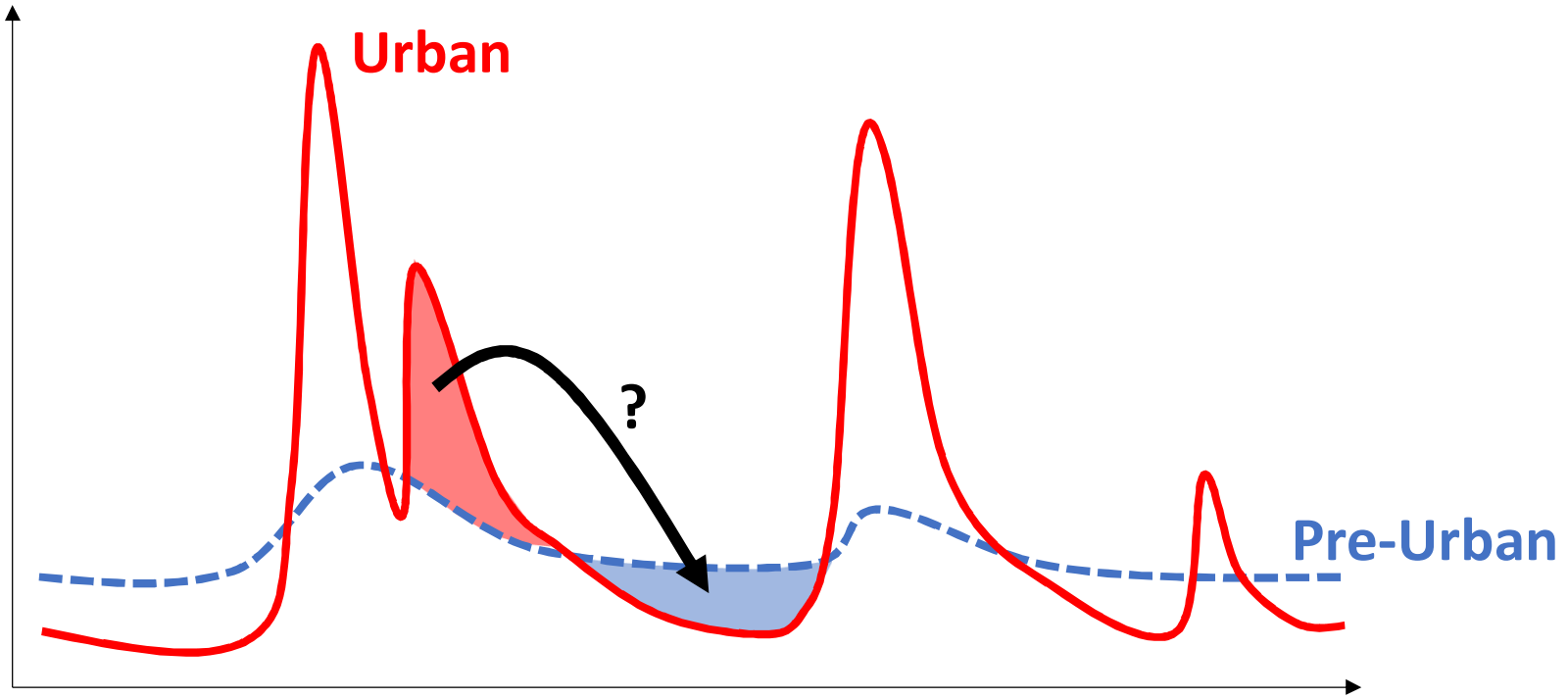
STORMWATER VICTORIA

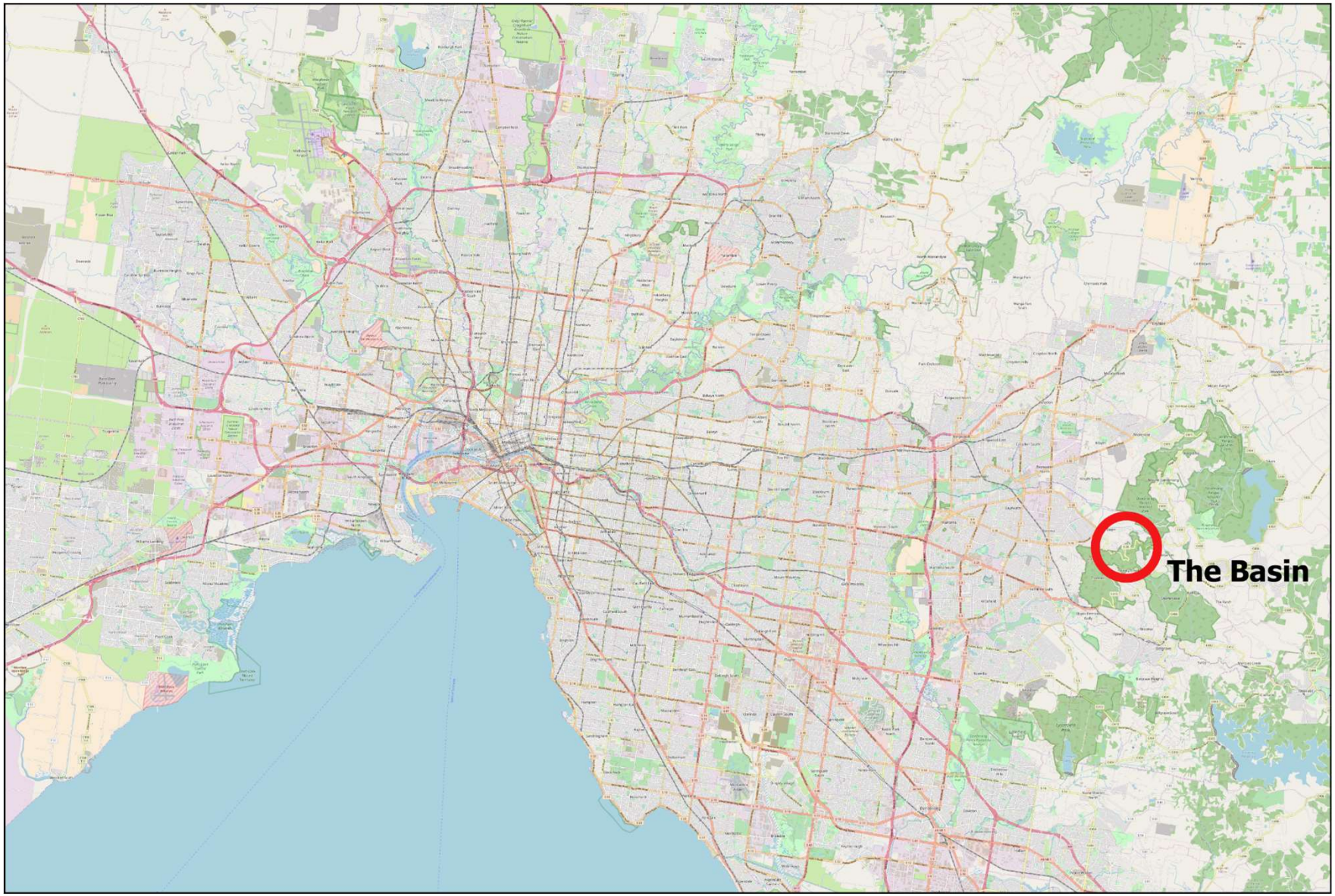



**Stormwater infiltration?**

# Wicks Reserve infiltration basin
## *A case study*

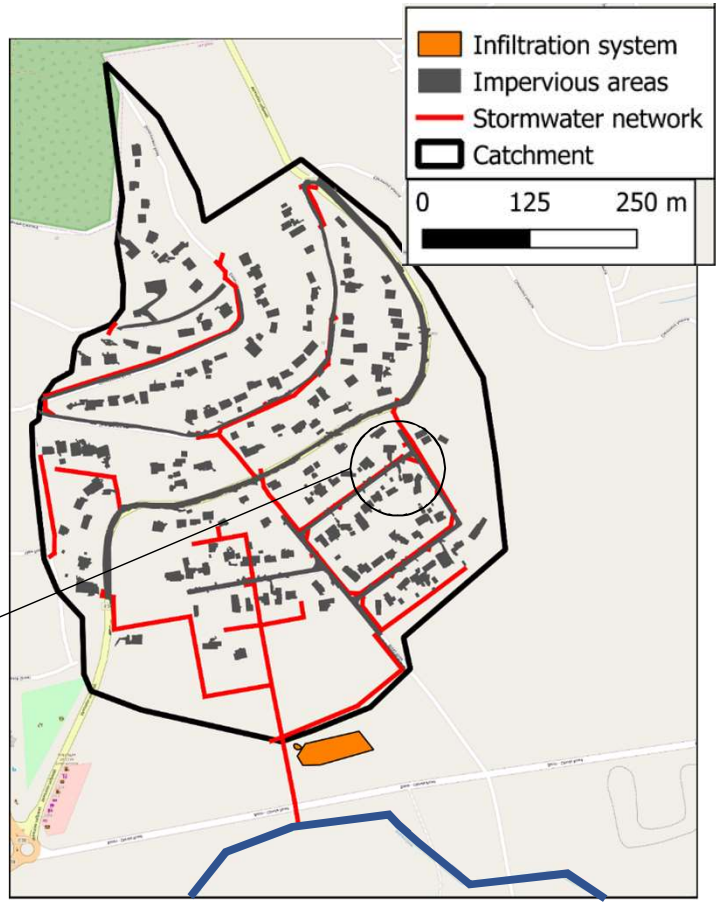
### *Goals*

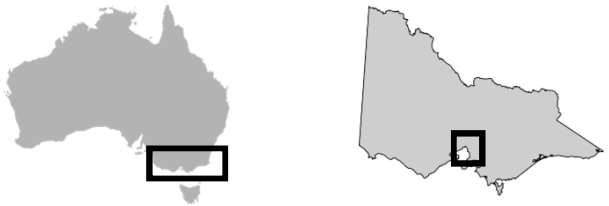
- Restoring flow regime
  - Peakflow reduction
  - Volume reduction
  - Promote low flows
- Water quality


The Basin

# *Land use*

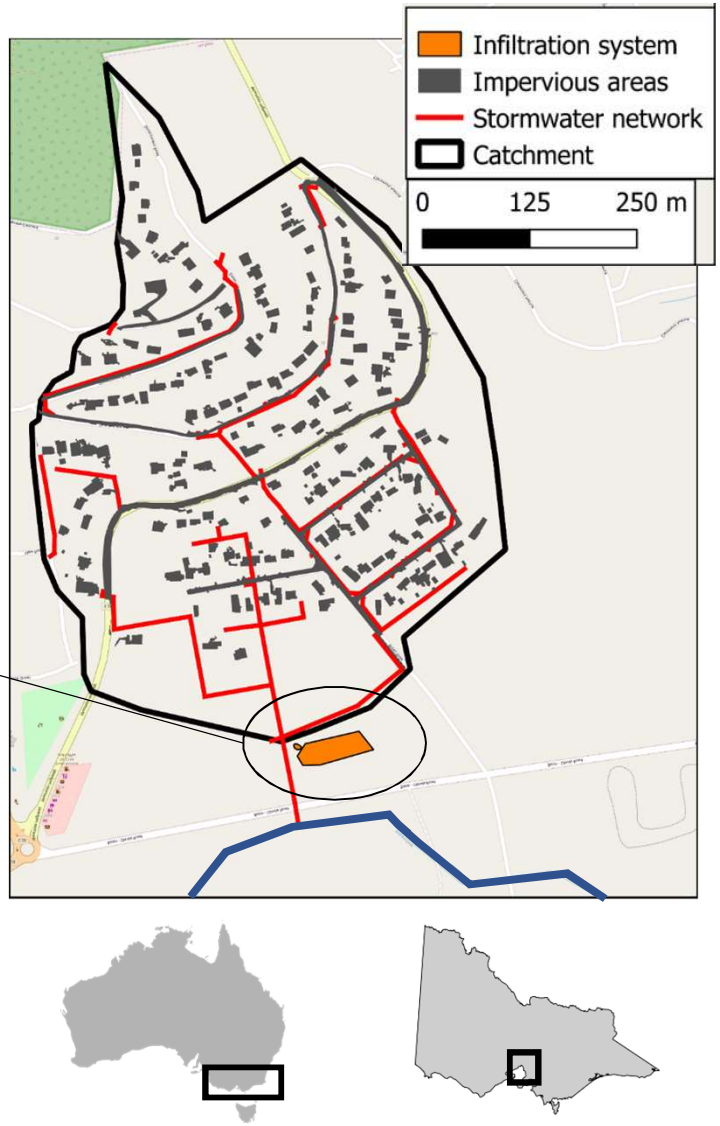
- Peri-urban
- 33 ha catchment
- 5 ha impervious
- Stormwater network

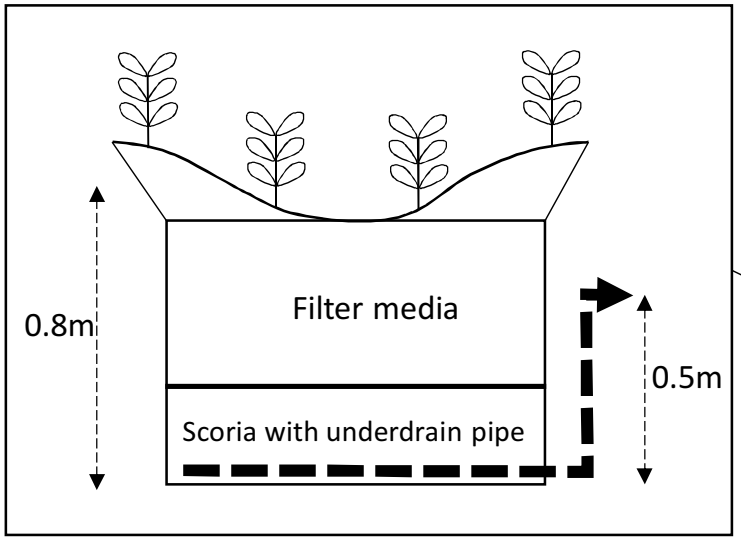



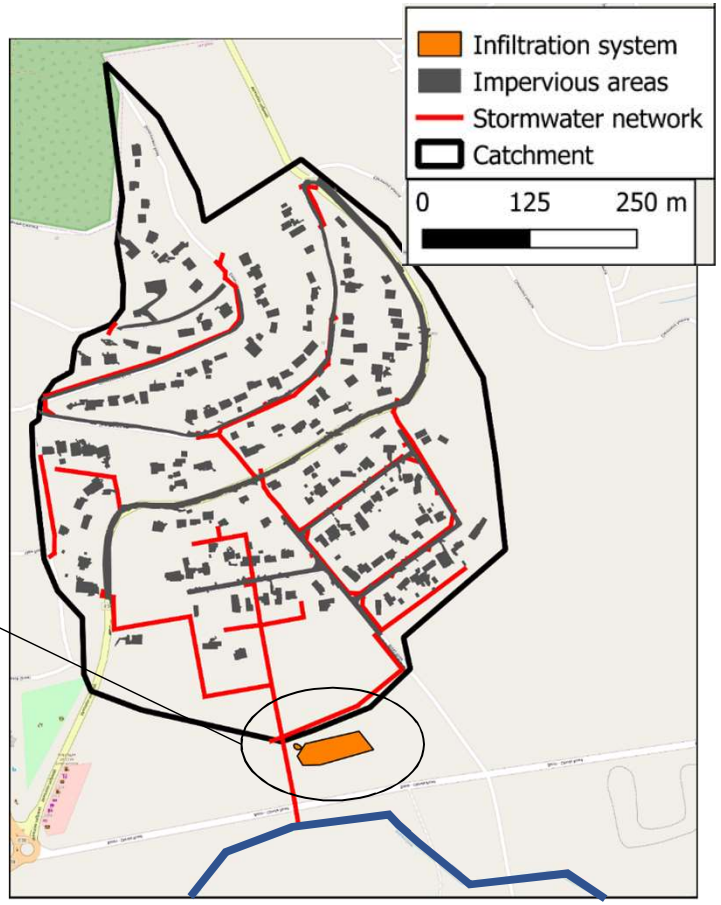
# *Infiltration system*

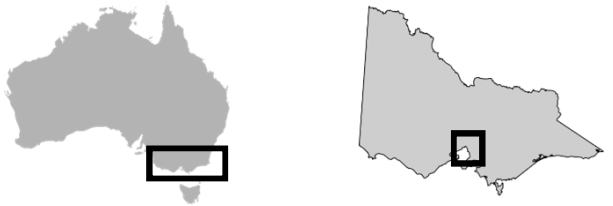
**1800 m$^2$ - 3.6% of impervious catchment**



# *Infiltration system*



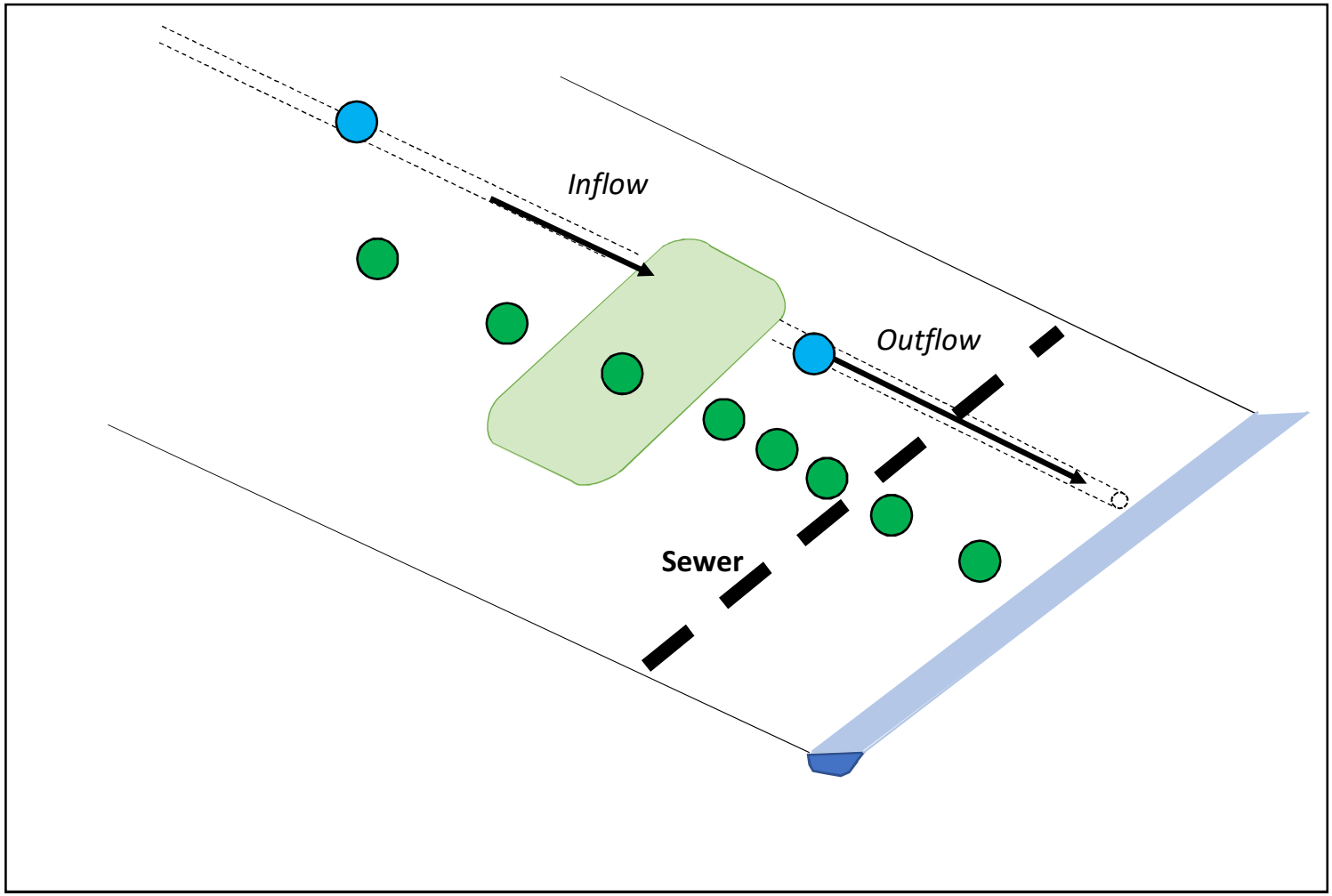



# *Monitoring system*

**Flow data**

**Groundwater bores**



*Goals*

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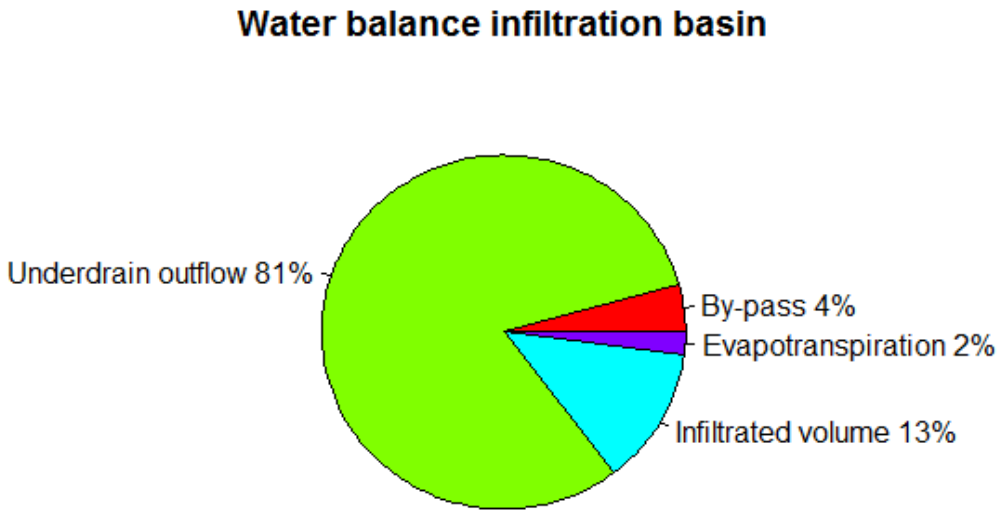
    - Peakflow reduction
    - Promote low flows
- Water quality

# *Event analysis*

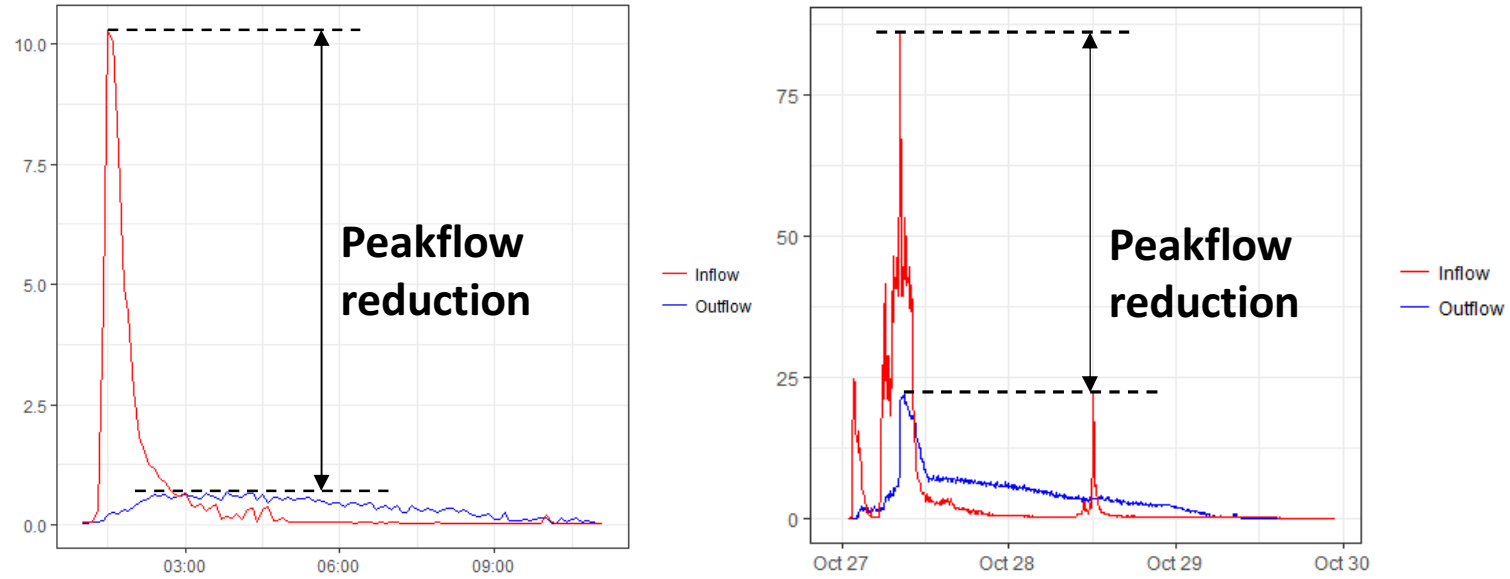



**Average volume reduction ≈ 15%**

# *Event analysis*

**N = 88**

Flow (l/s)




**Average peak reduction ≈ 80%**

# *Water quality*

**N = 10**

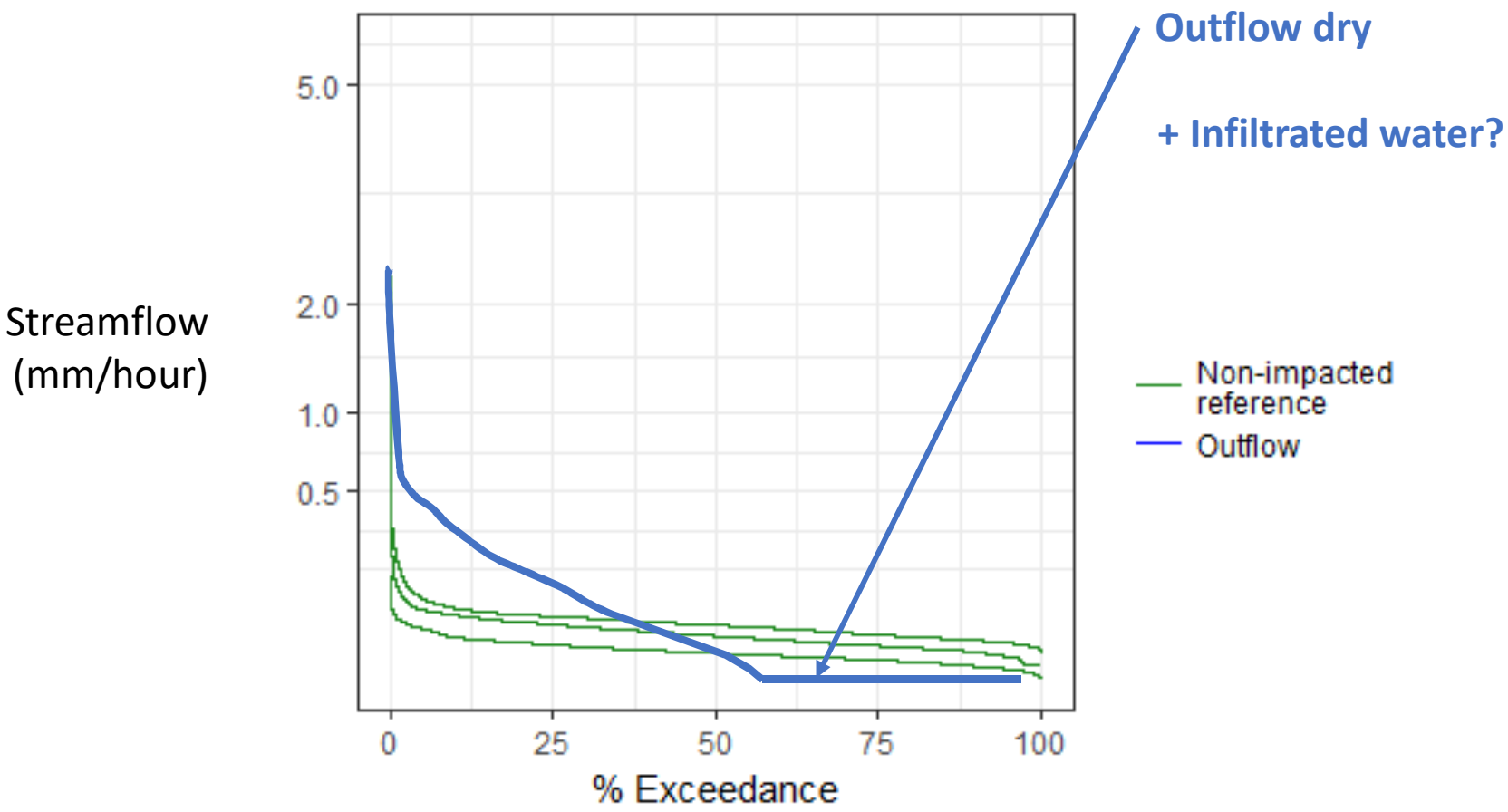
| **Pollutants (mg/L)** | **TSS** | **TP** | **TN** | **NH3** | **NOx** |
|---|---|---|---|---|---|
| Inflow (mg/L) | 123.9 | 0.18 | 1.35 | 0.021 | 0.476 |
| Outflow (mg/L) | 2.8 | 0.02 | 0.32 | 0.028 | 0.007 |
| **Average reduction** | **97%** | **84%** | **73%** | **-26%** | **99%** |

*Goals*

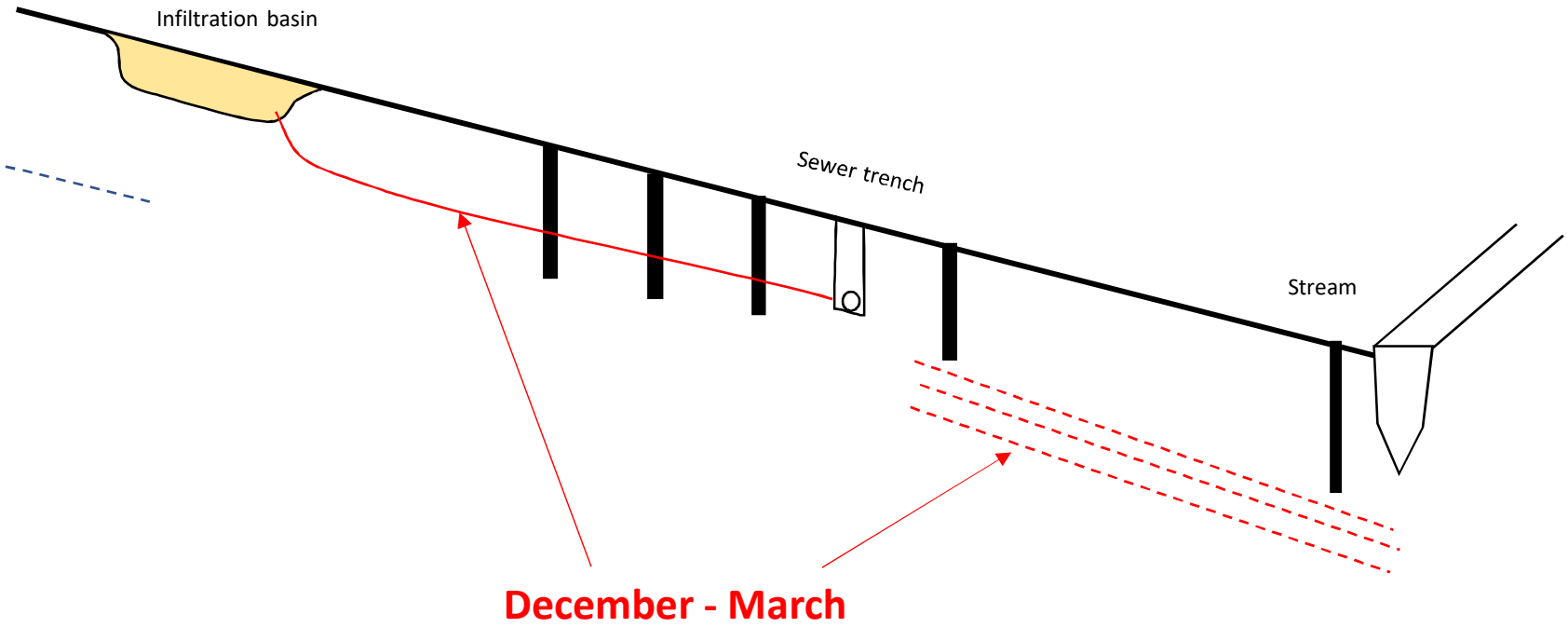
- Restoring flow regime
  - Peakflow reduction 
  - Volume reduction 
  - Promote low flows 

- Water quality 

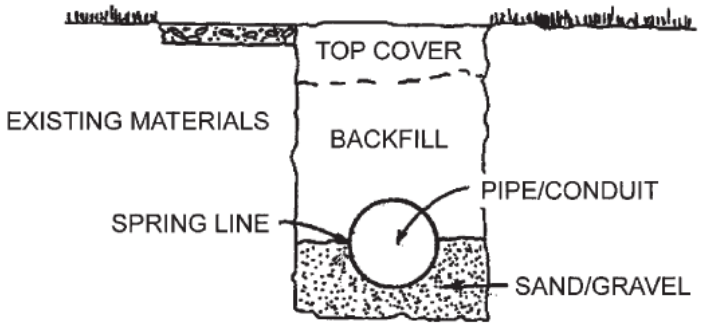
# *Restoring flow regimes?*



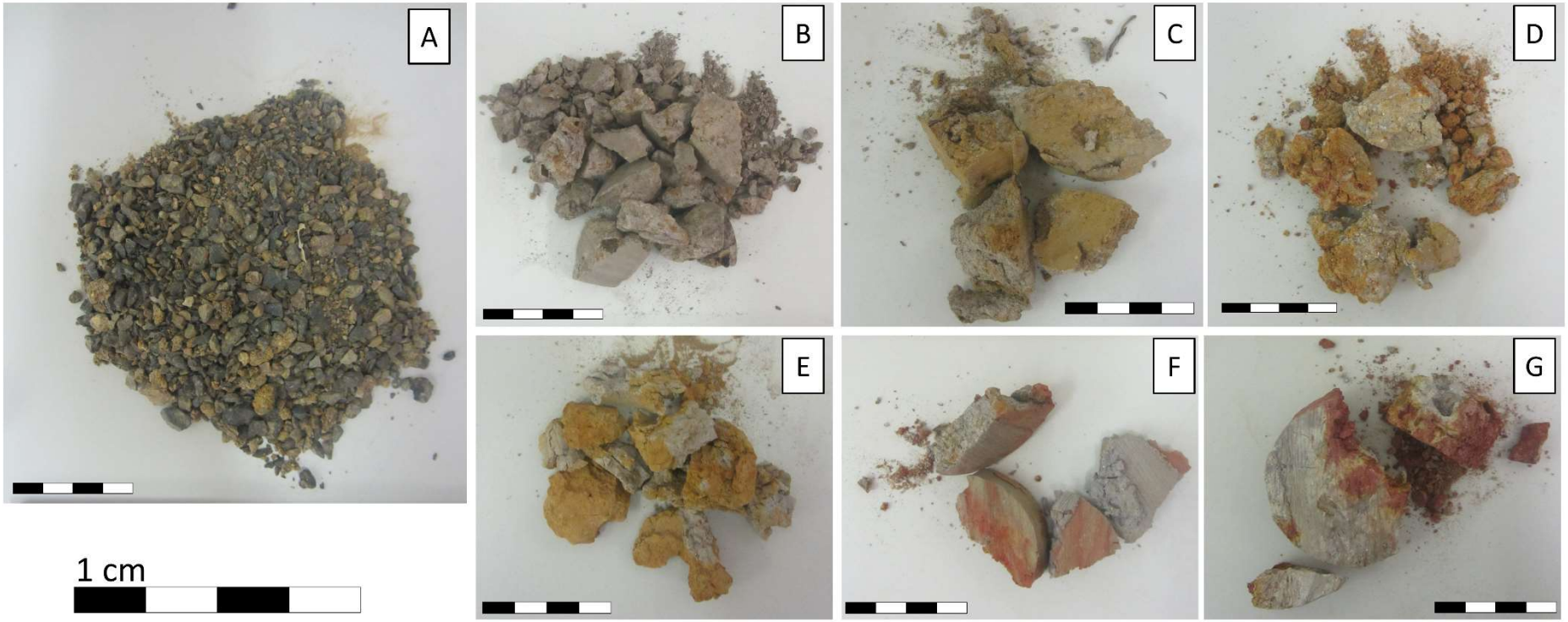
# *Infiltrated stormwater*



# *Soils*




*From Sharp (2010)*



- Restoring flow regime
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*Take home:*

- Man-made structures might interact with groundwater pathways

- Water in the ground is better than water in pipes – **overall great performance**

- Additional benefits

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