

# Sediment-sensitive stormwater management: understanding the urban coarse sediment regime to prevent stream degradation

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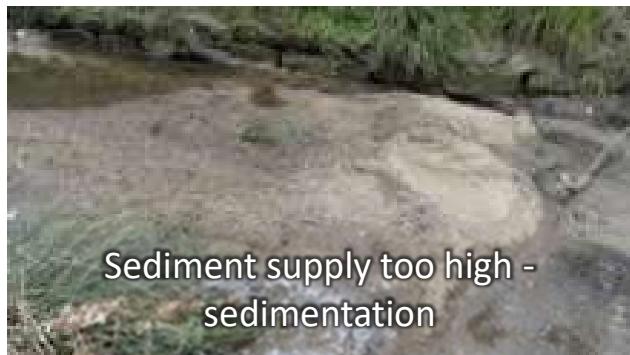
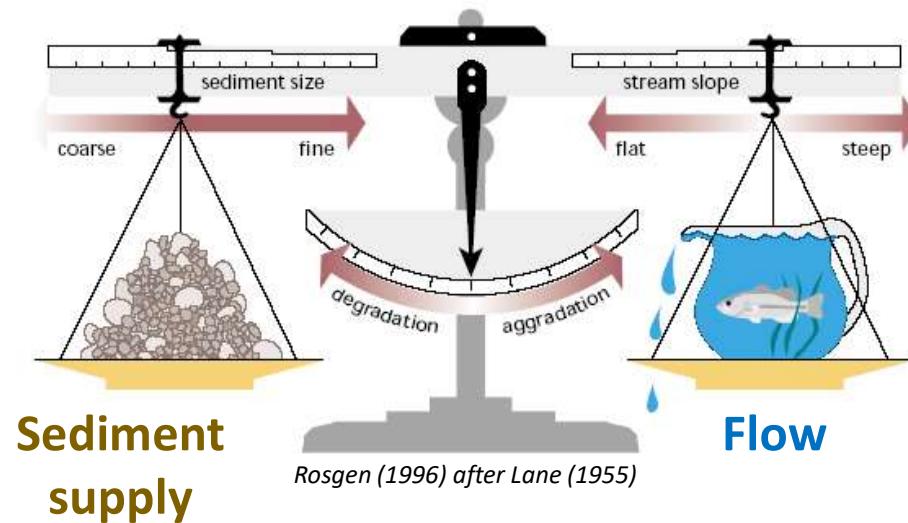
Geoff Vietz

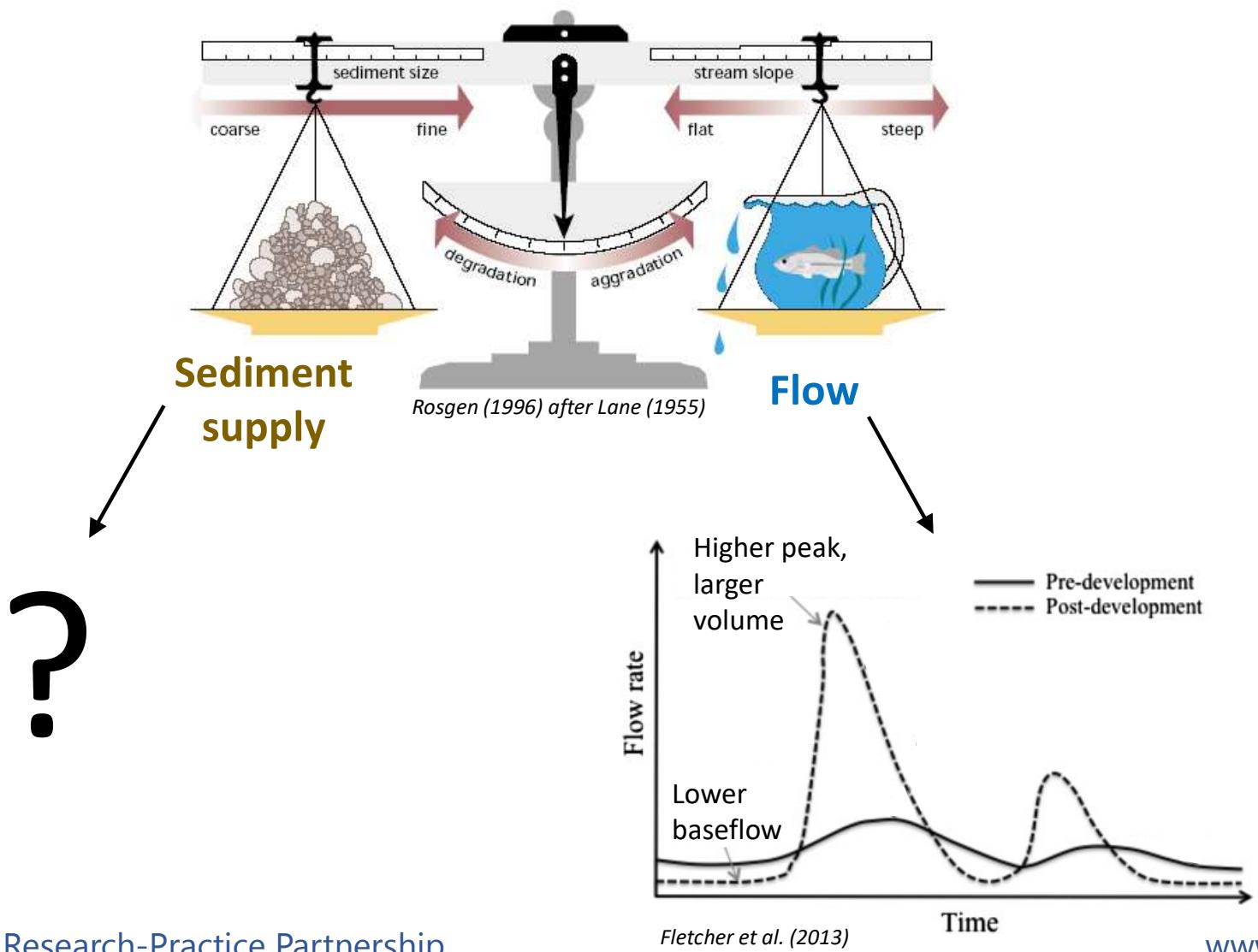


# The motivation: what's wrong with urban streams?

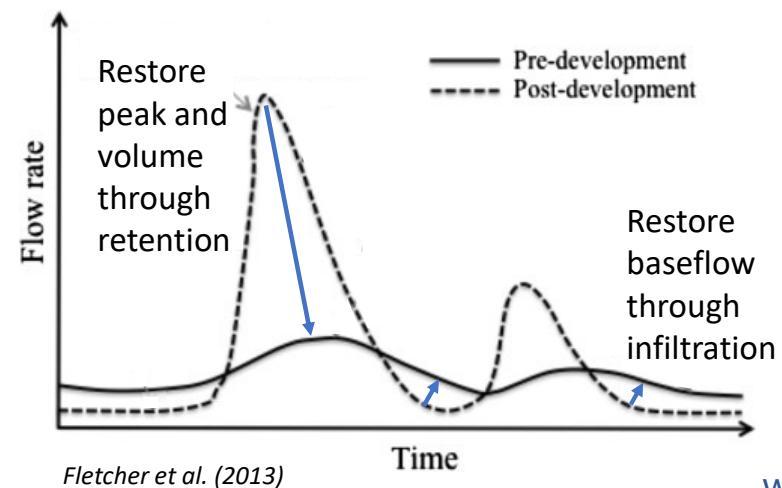
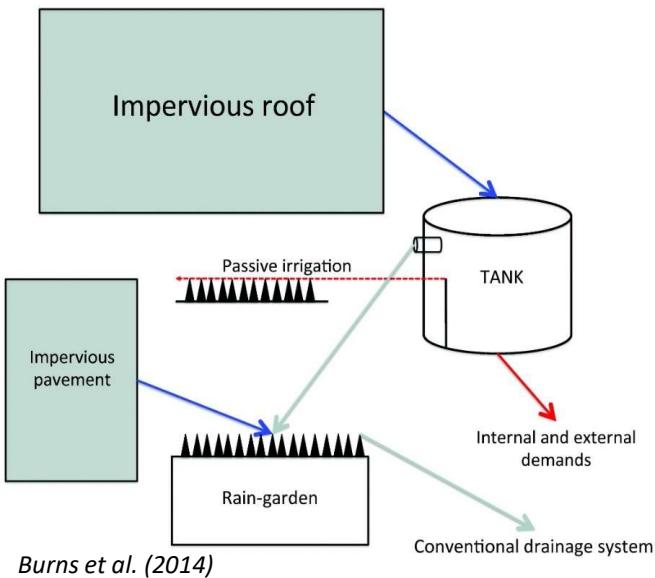


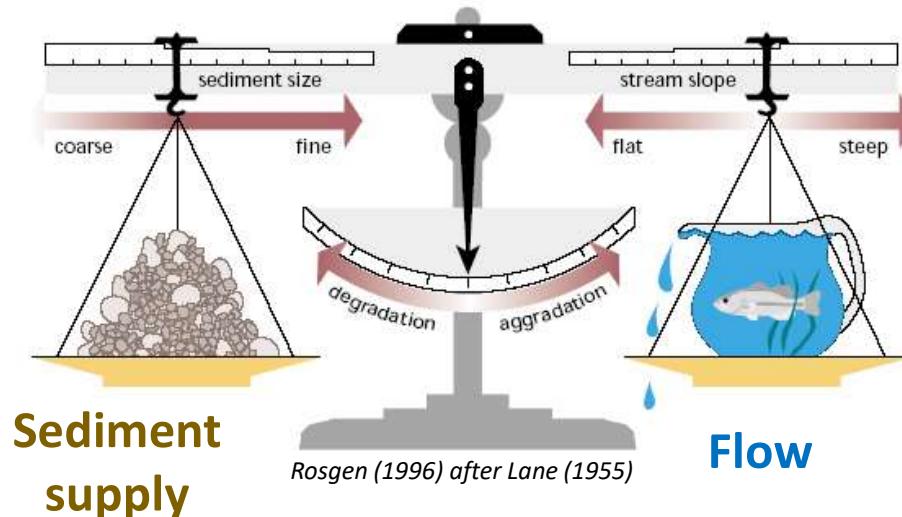
# Stream geomorphology – a balance between flow and sediment supply



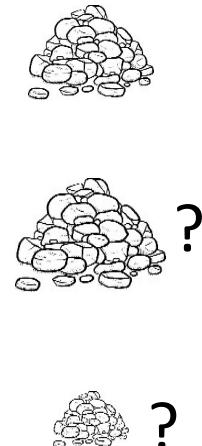


# Source control





**Sediment-sensitive  
stormwater  
management**



**Natural**



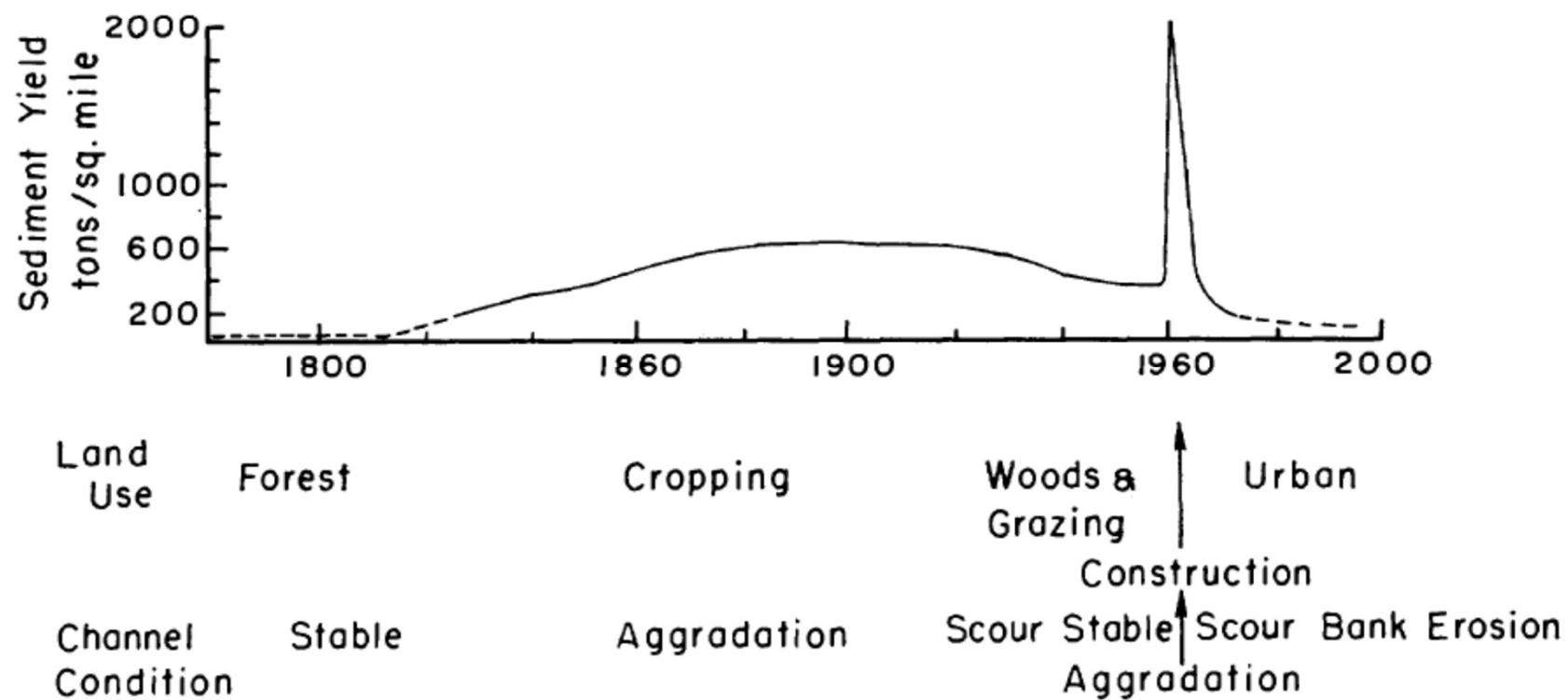
**Urban**

**Source control**

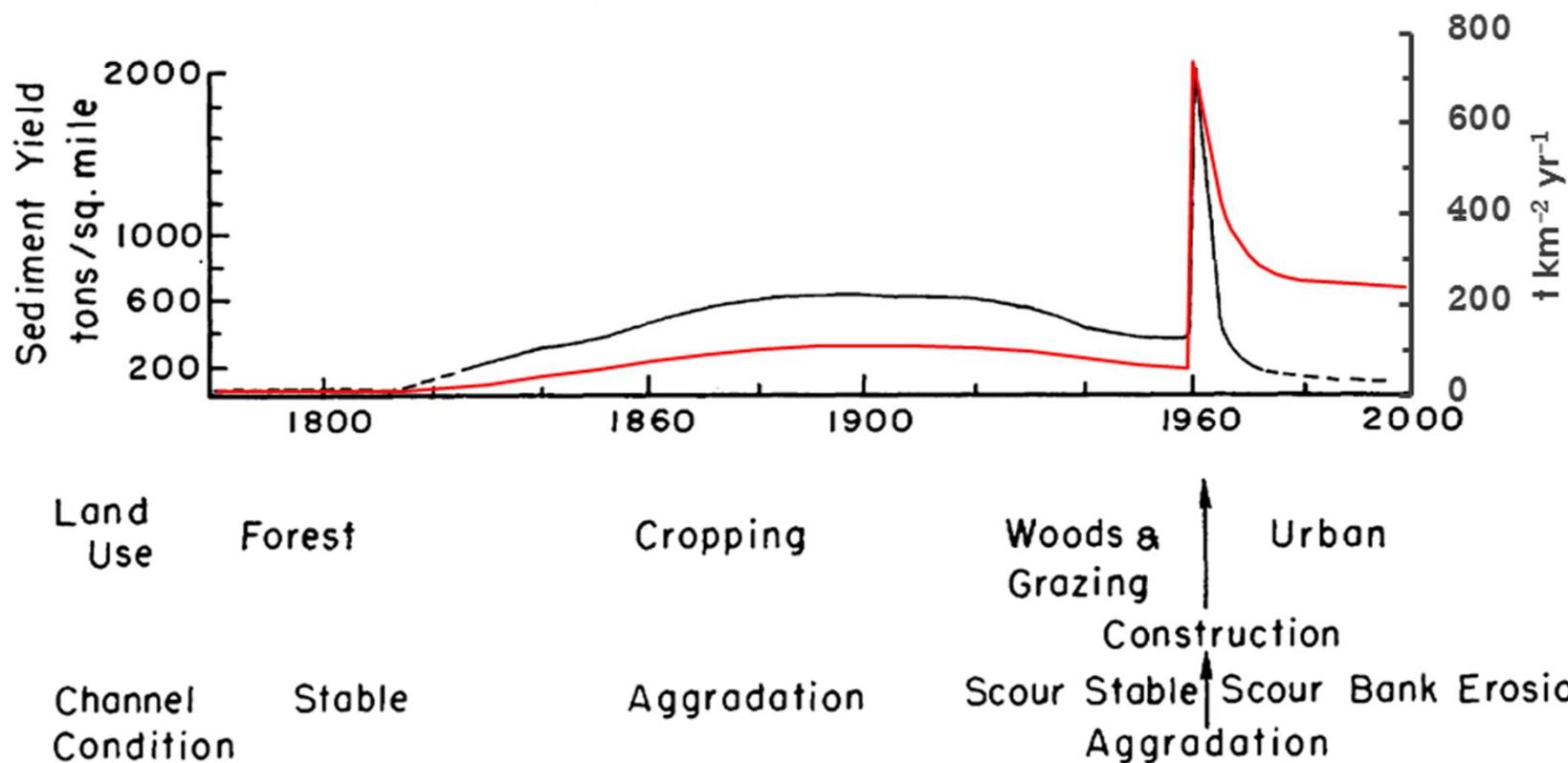
# Research program



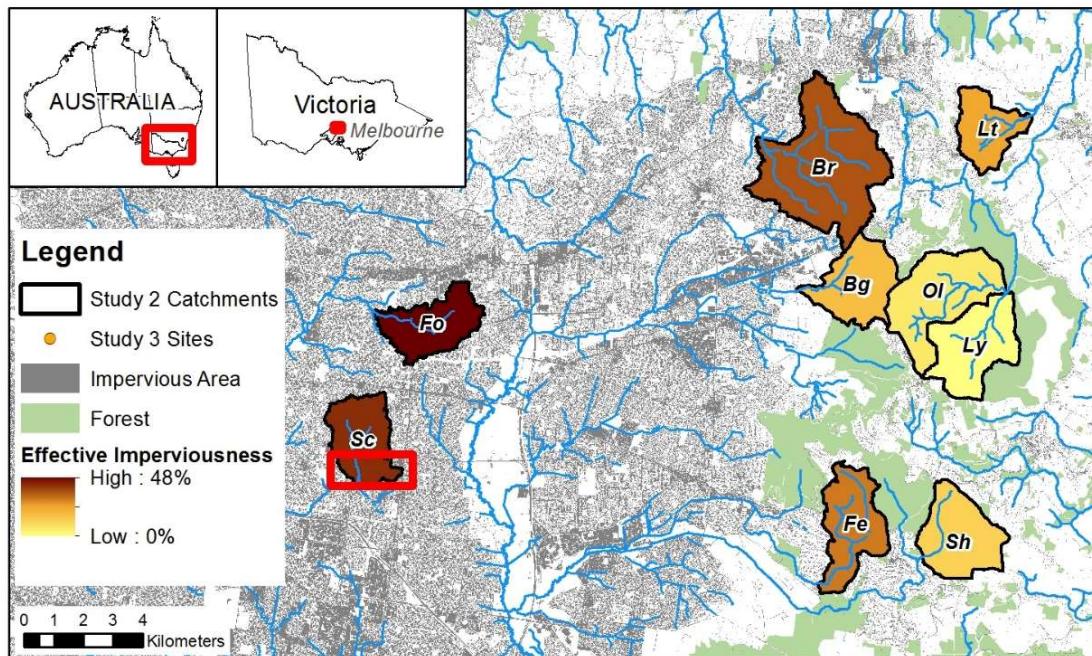
SCHEMATIC SEQUENCE: LAND USE, SEDIMENT YIELD  
AND CHANNEL RESPONSE  
FROM A FIXED AREA



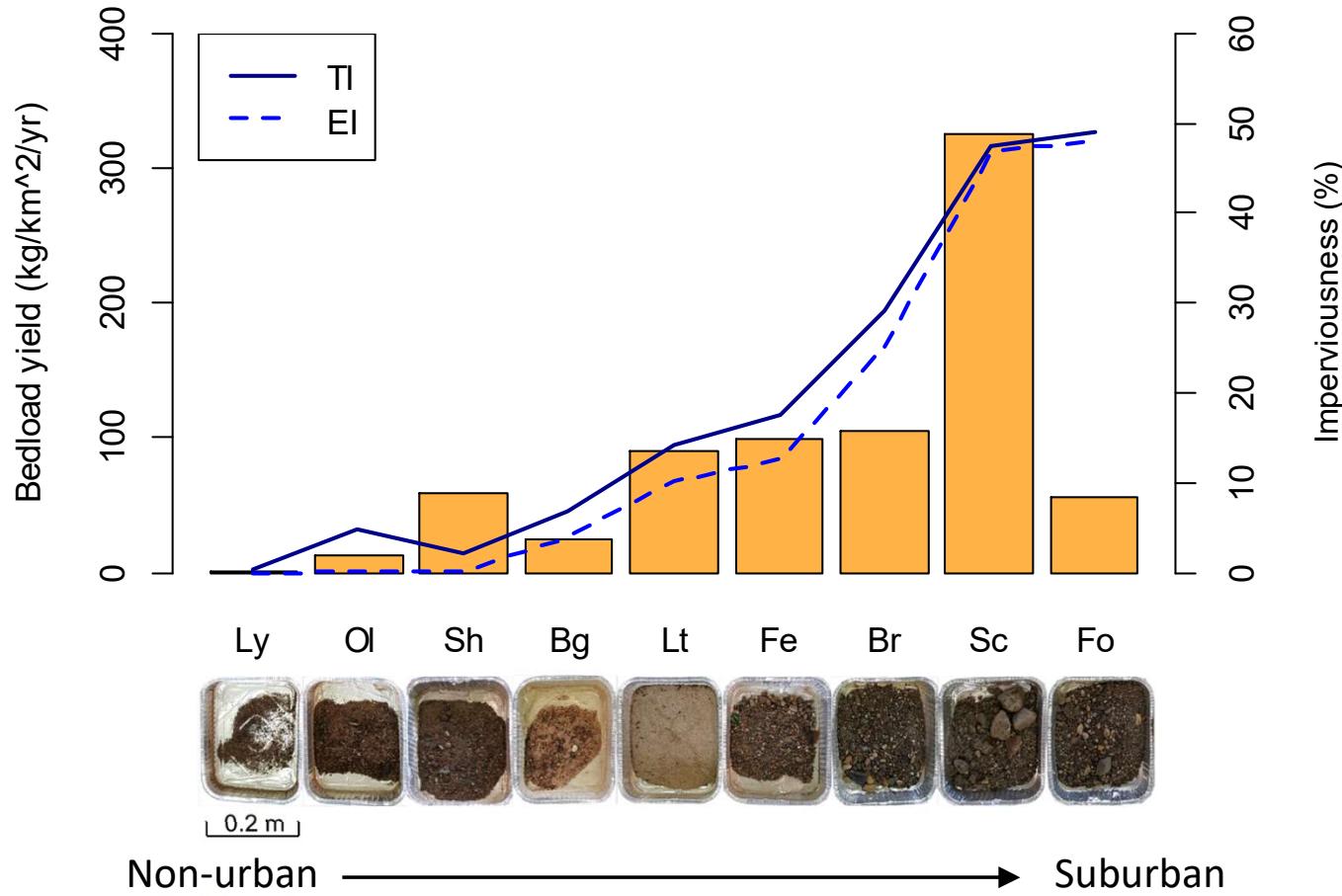
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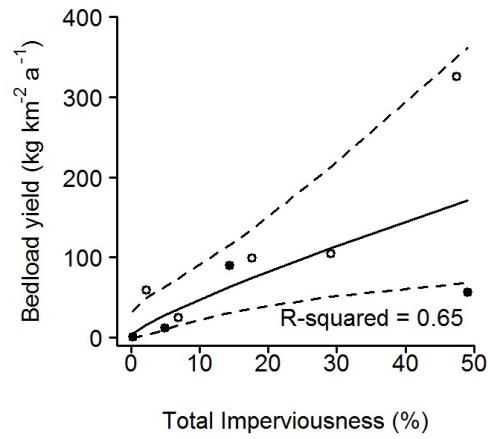
# Bedload sediment yield monitoring



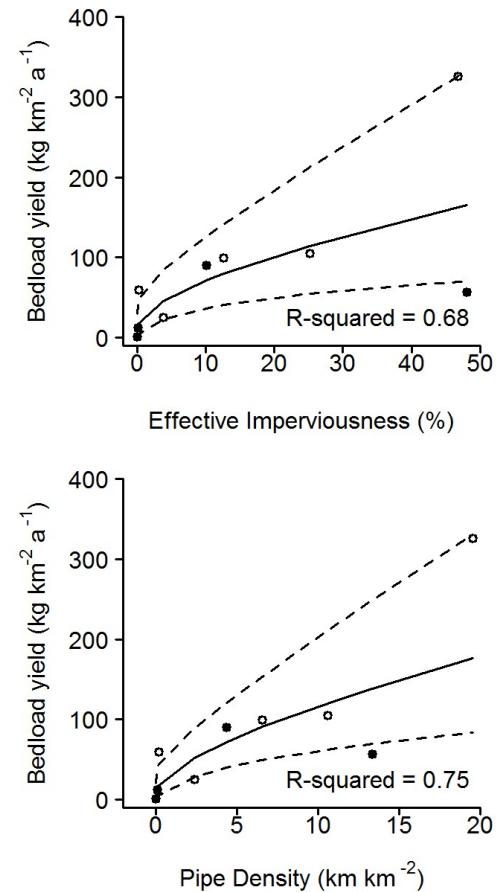
# Bedload sediment yield increases with urbanization



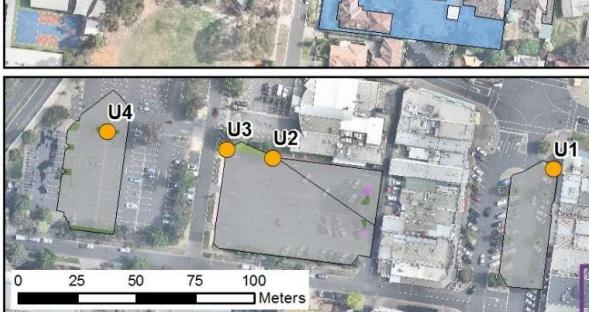
Urban land cover is a good predictor of sediment yield



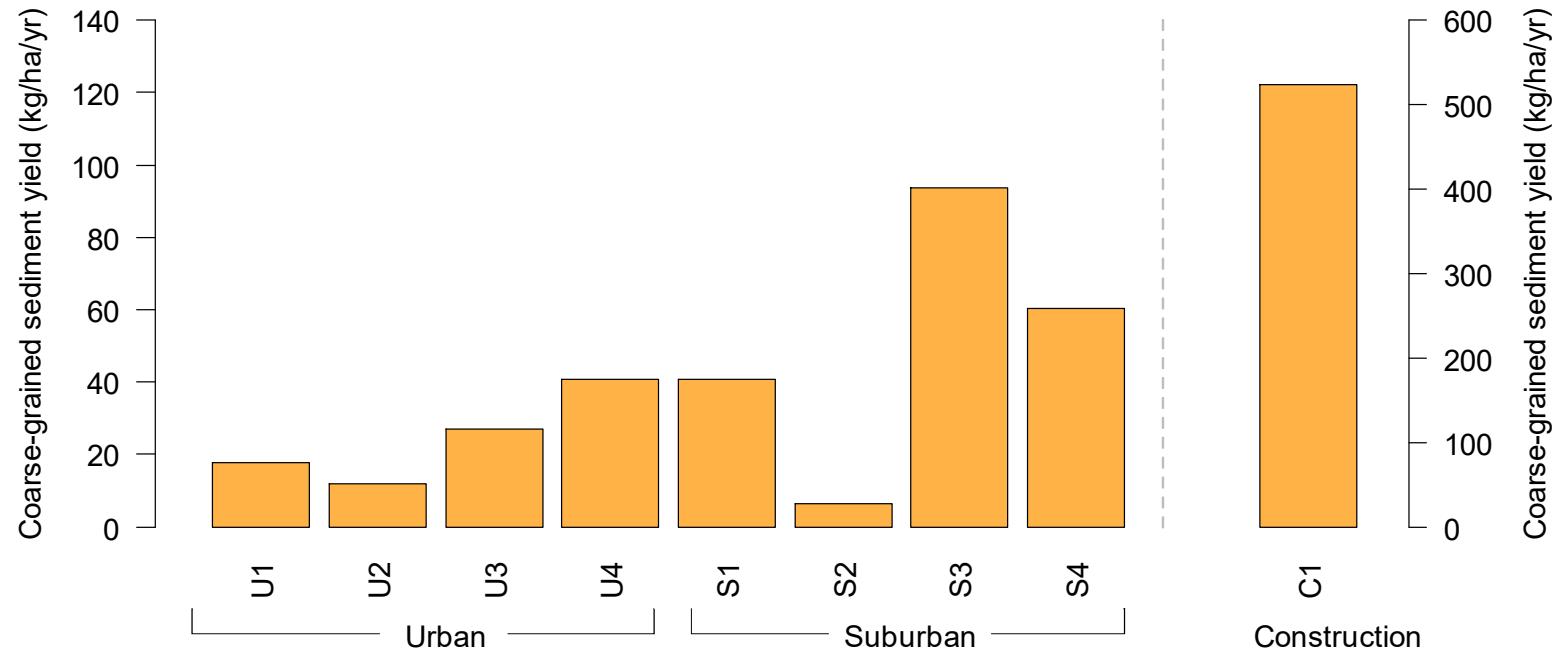
Urban drainage connectivity is better!



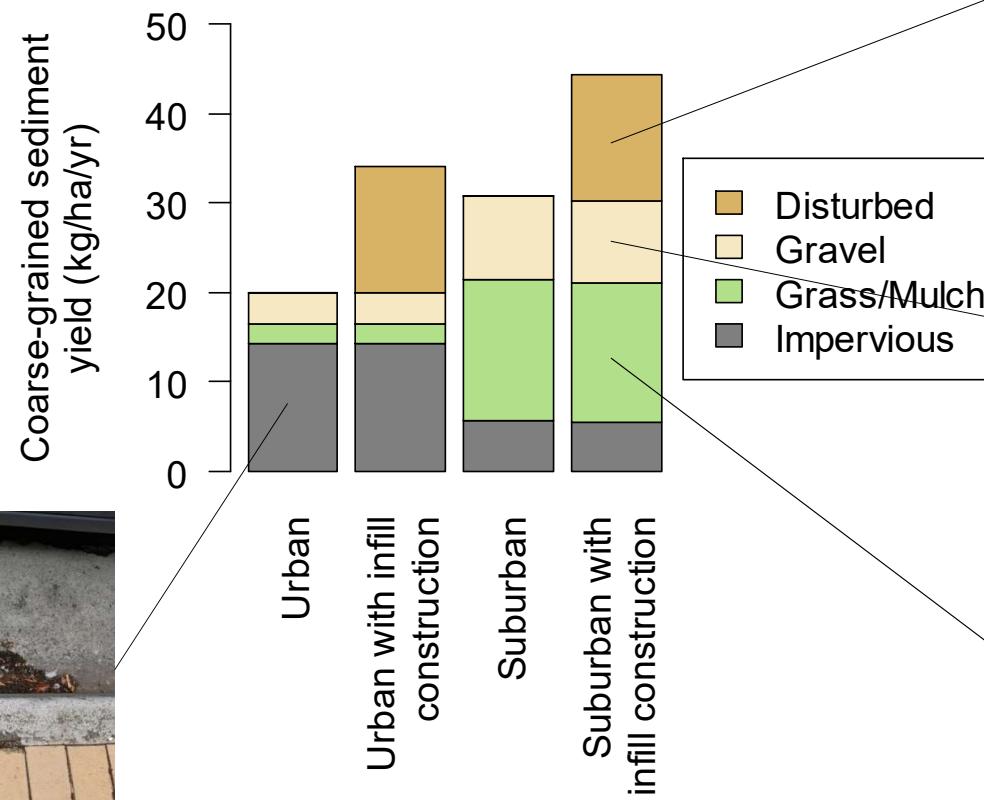
# Upland coarse-grained sediment supply monitoring



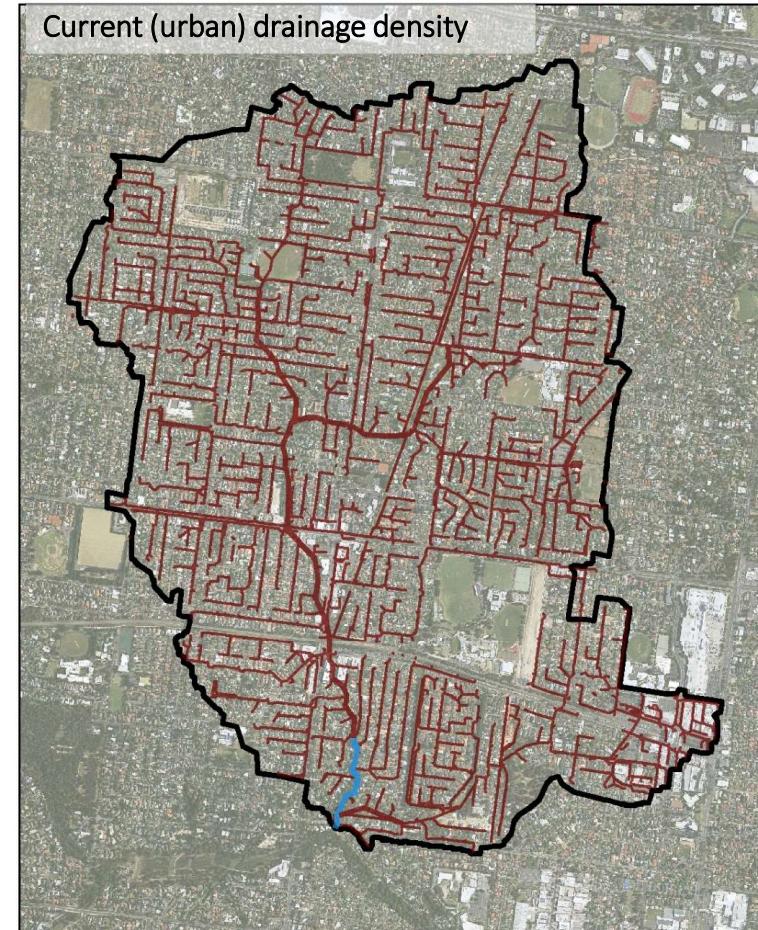
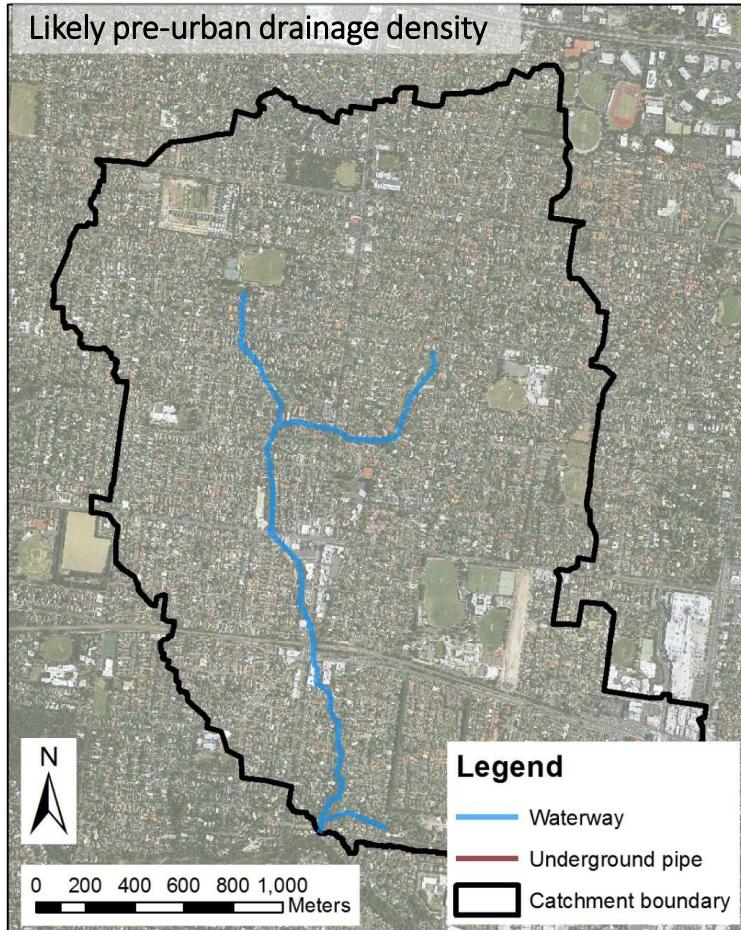
Coarse-grained sediment supply is plentiful in urban catchments



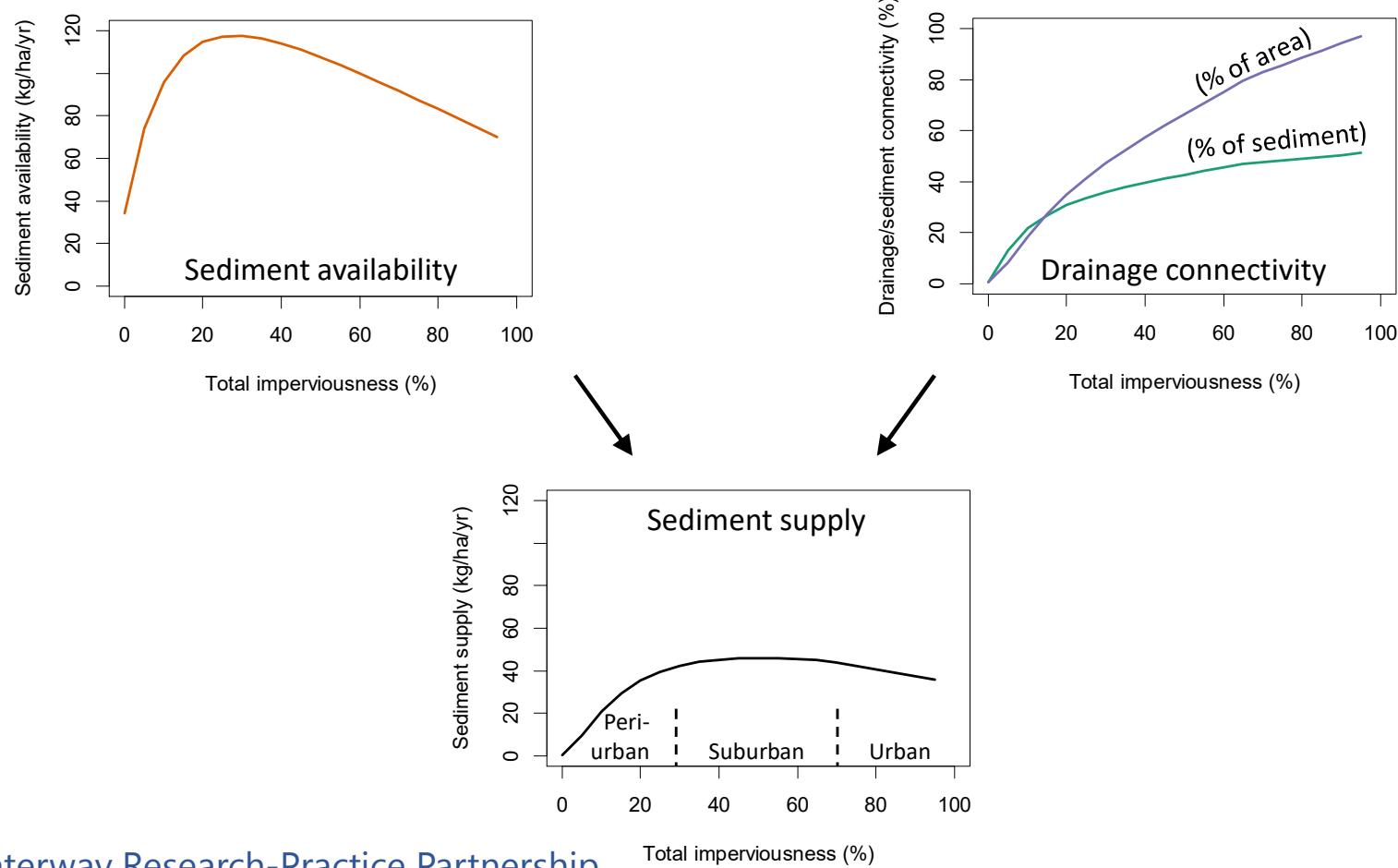
## Typical rates of coarse sediment supply for urban and suburban land



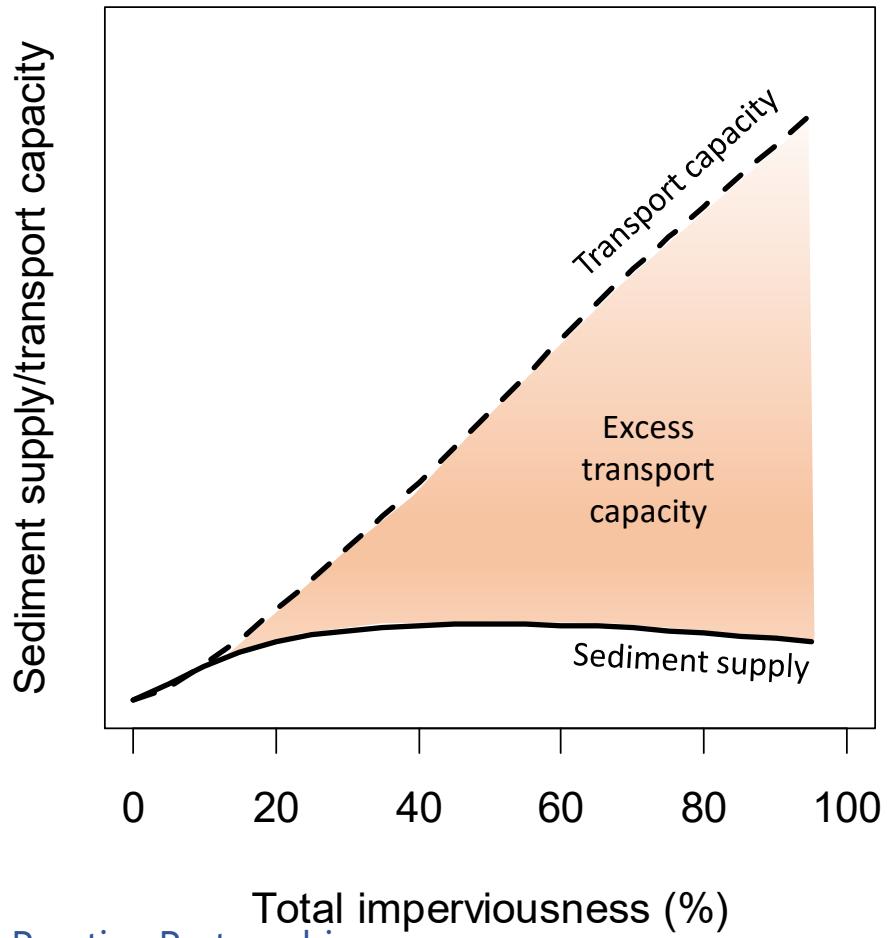
# Urban drainage connectivity is key



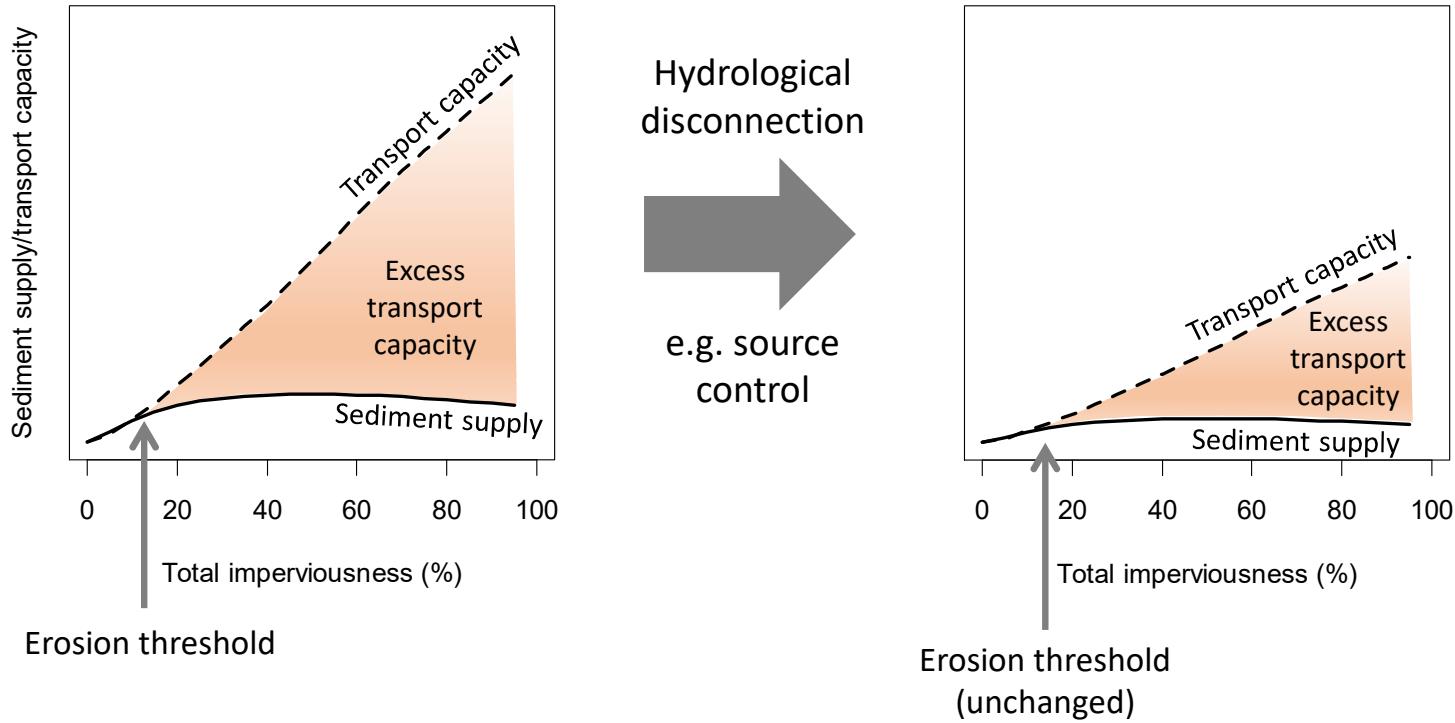
# Conceptual Model – Sediment Supply



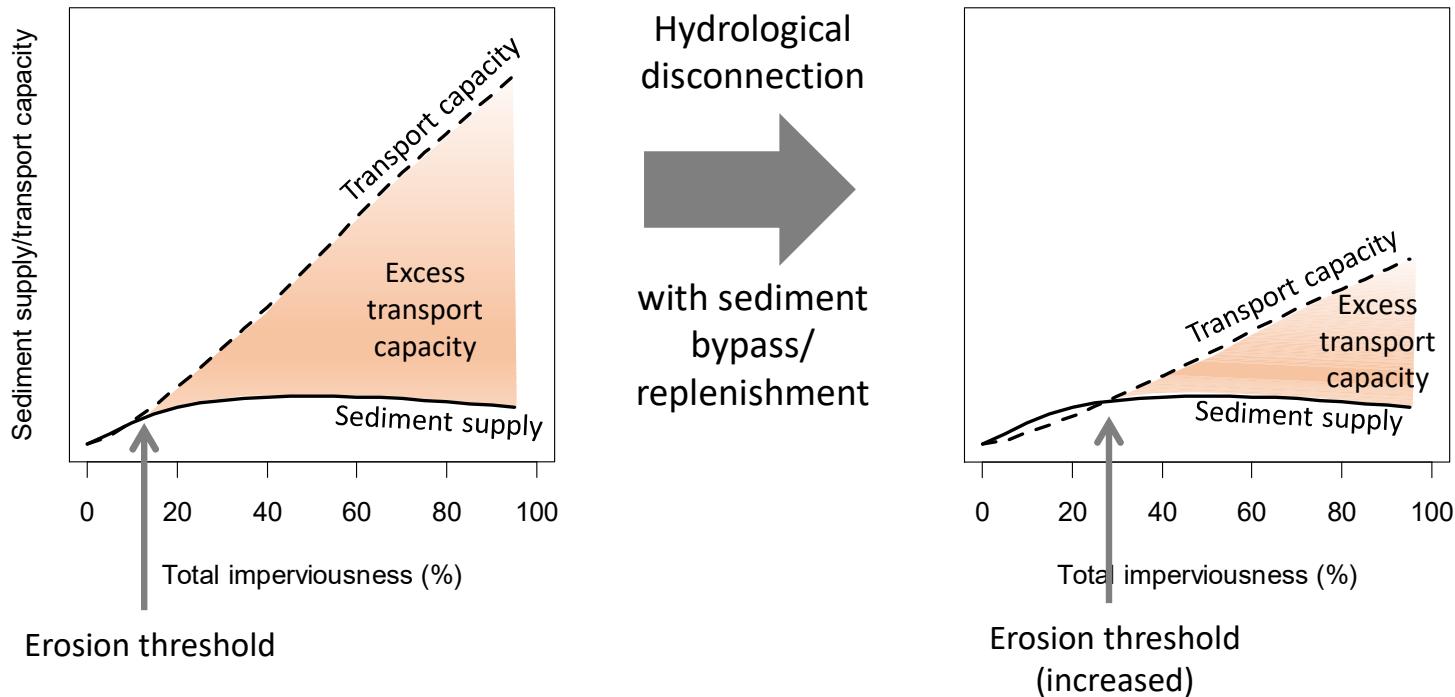
Sediment transport capacity is increased more than supply



## Hydrological disconnection is part of the solution



## Sediment replenishment is also required



# What might this look like?

Dobsons Creek  
sediment  
replenishment –  
Arezou Houshmand



Houshmand et al. 2016



Mt Evelyn coarse-grained  
sediment bypass grate



TASM Full Paper

Houshmand et.al. – A Review of Urban Sediment Contamination

## Improving Urban Stream Condition by Redirecting Sediments: A Review of Associated Contaminants

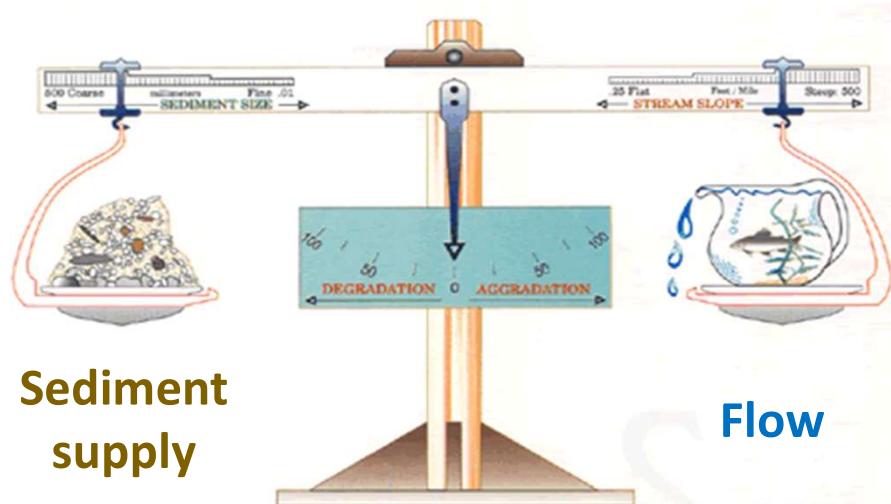
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# The goal: sediment-sensitive stormwater management



# Thanks!

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Melbourne Water

