

WSUD

Water Sensitive Urban Design

Stormwater Treatment Devices

Why do we have these devices?

- Stormwater carries pollutants and sediment (off of roads, rooves, landscapes)
- Extra pollutants and sediments end up in waterways and the ocean



- Since 2006 legislation has required development to treat stormwater using WSUD devices to remove these pollutants

Types of WSUDs

Gross Pollutant Traps

- Engineered Infrastructure option
- Capture larger trash and organics (leaves)
- Different types – effective in different applications



Wetlands and Sediment Ponds

- Great when integrated with a park
 - Long life cycle
 - Create habitat and community connections
 - Found threatened species in our WSUDs
 - Community stewardship
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- Logan has 32 constructed wetlands
 - Designs changing
 - Sediment basin's are costly to cleanout and rehab but should take years to fill
 - Unless.....



Shailer pioneer park wetland



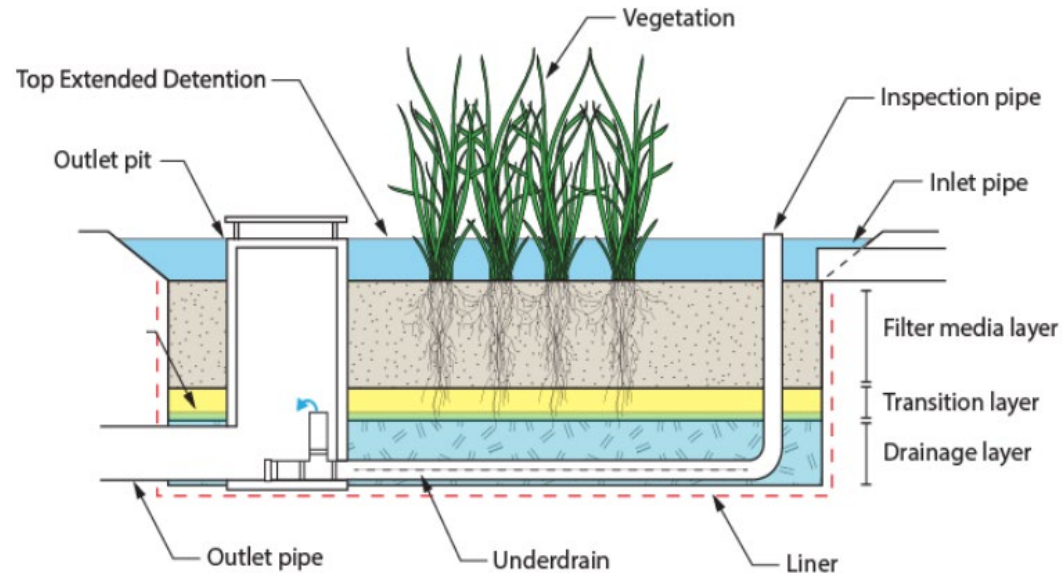
Yarrabilba sediment basin cleanout

Bioretention Systems

- Most WSUDs in Logan are bioretention systems
- Uses filter media and plants to treat stormwater (nutrients)
- These things keep me up at night!



Showcase bio in Bannockburn



We have 182,400 m² public filter area in Logan

What about private?????

Usual problems with bioretention in Logan



Erosion around sediment forebays

- Bypass the filter media
- Standing water
- Weeds (bullrush), algae

Forebays filled with sediment
Outlets not suitable



Sediment deposition on surface

- Reduces water infiltration
- Death of plants



Failed basin

Structurally sound but does not work as:

- all vegetation is dead,
- surface is sealed with sediment

Visually ugly

Surrounding community dumps rubbish

Dispersive or slaking soils



- No strong planning scheme requirements
- Generally gypsum not applied
- Site material used to create bunds
- Problematic in Logans south west EDQ area



Handovers

- Bioretention is required to be protected until 80% developed
- Logan currently has a 12 month on-maintenance period



Established vegetation means resilience

We want to see maintenance during the on-maintenance period



Things to look out for



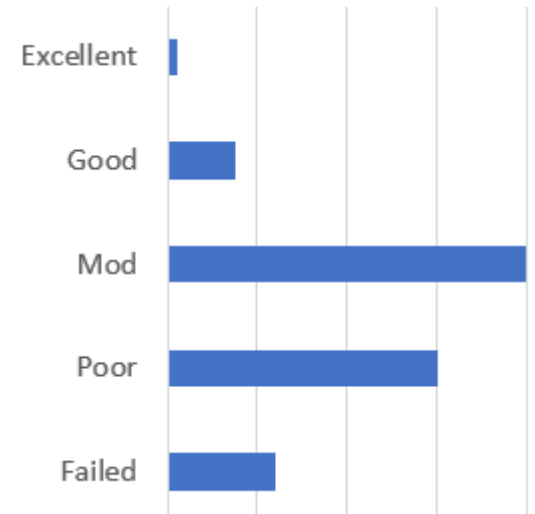
Sediment Forebay protection
Expected sediment loads

Plant species, density and location

Vortexing and blockage

What problems are we facing with WSUDs?

- Didn't know what we had – or what's coming
 - A large number are in medium to poor condition
 - Receiving poor condition assets from developers
 - Restricted funds means prioritisation with many assets missing out and degrading
 - Access in older designs is poor or non-existent
 - Community understanding of these assets
 - Not enough specialty available in small scale rehab
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- In good condition maintenance is ~ \$7/m²
 - Renewal of only vegetation is ~ \$60/m²
 - Add in renewal of eroded infrastructure, sediment disposal and establishment watering costs.....\$\$\$\$



Initial design, rehab and renewal of WSUD devices

- Understanding the soil material
- Having the right filter media and media depth - avoid compaction
- Not enough organics!
- Underdrainage with enough fall to allow it to clean itself via flushing during events
- Mulch and pinning (eg jute) is critical
 - Ensure standard drawings show a mulch layer
- Protection around forebay jet points
 - The right sized rock and width of rock (usually 300- may not be enough)
- Trees – I'm a fan



When the design is right –
Establishment of vegetation is the
number 1 priority

Thank-you

Questions?

I'd love to hear your opinions and ideas

Kylie Drapala

WSUD Management Officer

kyliedrapala@logan.qld.gov.au