Stormwater2018
#stormwater2018
Working Together, Building Tomorrow

STORMWATER AUSTRALIA

8th – 12th October 2018
ANZ Stadium, Sydney Olympic Park, NSW Australia

A review of pollutant accumulation data for GPTs and SQIDs in NSW and Queensland

Mr Charles Coathup, Brad Dalrymple[1], Charles Coathup[2], Ben Penhallurick[2], Adyn De Groot[1]
[1]BMT, Spring Hill, Australia, [2]Renew Solutions, Burleigh Heads, Australia

Overview
Gross pollutant traps (GPTs) and other Stormwater Quality Improvement Devices (SQIDs) can be highly effective at capturing gross pollutants (and other stormwater pollutants) from diffuse (catchment-based) sources, subsequently protecting the health of our waterways. However, there is is limited data in relation to the generation of gross pollutants from land-based sources.

Despite this, the managers of GPTs and SQIDs often rely on MUSIC to predict likely gross pollutant accumulation rates in these devices to estimate maintenance frequencies (e.g. to remove accumulated material). Other common approaches to determine maintenance frequencies include the 'old milk run' (with maintenance undertaken at nominal (e.g. annual) intervals) or basic/ informal monitoring. In many examples, the devices are simply rarely (if ever) maintained.

The objectives of this study included the following:
•   evaluate available data in relation to the accumulation of pollutants (e.g. plastics, sediment and vegetation) from GPTs and SQIDs
•   compare the data with pollutant generation rates as predicted using MUSIC
•   use the data to inform appropriate monitoring and maintenance requirements for GPTs and SQIDs.
•   The authors of this study compiled information relevant to the performance of GPTs and SQIDs from three sources:
•   Blacktown City Council
•   Stormwater360
•   City of Gold Coast
•   This investigation has included the following key actions:
•   Collation and review of available performance data
•   Catchment modelling (using MUSIC)
•   Data analyses.
•   Key findings from our analyses included the following:
•   Significant quantities of stormwater pollutants are captured by GPTs and SQIDs
•   The aforementioned data typically shows significantly higher gross pollutant load generation rates relative to those predicted by MUSIC
•   Data shows high variability in accumulated pollutant loads per impervious area
•   MUSIC is highly unlikely to be suitable for predicting GPT and SQID maintenance requirements.

This study has shown that stormwater pollutant load generation rates are highly variable. Site specific inspections, monitoring and evaluation to augment the prediction of pollutant accumulation rates in GPTs and SQIDs is essential to their appropriate function.

Objectives

The objectives of this study included the following:
- evaluate available data in relation to the accumulation of pollutants (e.g. plastics, sediment and vegetation) from GPTs and SQIDs
- compare the data with pollutant generation rates as predicted using MUSIC
- use the data to inform appropriate monitoring and maintenance requirements for GPTs and SQIDs.

Method

The authors of this study compiled information relevant to the performance of GPTs and SQIDs from three sources:
- Blacktown City Council: including catchment details (e.g. area, imperviousness, land usage) and pollutant accumulation data (including proportion of litter, sediment and organics) for 164 GPTs from January 2014 to November 2016
- Stormwater360: including catchment details (e.g. area, imperviousness, land usage) and pollutant accumulation data for 85 sites within the Sydney metro area and South East Queensland between 2006 and 2017.
- City of Gold Coast: including catchment details and pollutant accumulation data (including proportion of litter, sediment and organics) for (TBC) GPTs from (TBC) to (TBC).

This investigation has included the following key actions:
- Collation and review of available performance data
- Catchment modelling (using MUSIC)
- Data analyses.

Results

Key findings from our analyses included the following:
- Significant quantities of stormwater pollutants are captured by GPTs and SQIDs
- The aforementioned data typically shows significantly higher gross pollutant load generation rates relative to those predicted by MUSIC
- Data shows high variability in accumulated pollutant loads per impervious area
- MUSIC is highly unlikely to be suitable for predicting GPT and SQID maintenance requirements.

Conclusions

This study has shown that stormwater pollutant load generation rates are highly variable. Site specific inspections, monitoring and evaluation to augment the prediction of pollutant accumulation rates in GPTs and SQIDs is essential to their appropriate function.