



# Let's talk about GPTs' Performance

An overview on drainage socks, floating litter booms and floating litter traps

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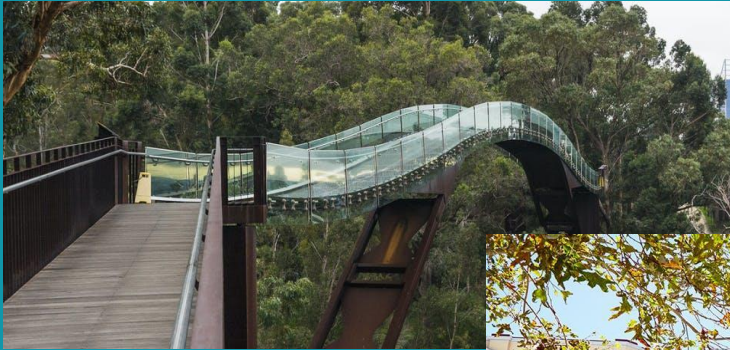




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# City of Kwinana's drainage socks



Pour tenter de limiter un tel fléau, les Australiens ont eu une idée toute simple mise en œuvre en 2018 à Kwinana, une ville de 40 000 habitants dans la banlieue de Perth : elle consiste tout simplement à poser des filets à la sortie des canalisations du réseau pluvial. Quand il pleut, tous les déchets qui sont charriés dans le réseau se retrouvent piégés dans les filets qu'il suffit donc de vider régulièrement. Pour cela, il faut mobiliser un camion muni d'une grue afin de relever les filets et de les vider avant de trier les déchets ainsi récoltés, tandis qu'on remet en place le filet jusqu'à l'épisode pluvieux suivant.



# City of Kwinana's drainage socks



**Spanish**

Foto: City of Kwinana.



**Italian**

INFORMARSI RIFIUTI & RICICLAGGIO

**L'Australia ha trovato un modo per salvare l'acqua dall'inquinamento da plastica (e possiamo fare lo stesso anche noi)**

«Загрязнение окружающей среды», «экология», «раздельный сбор мусора» — эти слова мы каждый день слышим и читаем в главных российских и мы давно приобрели планетарный масштаб. К счастью, недавно Австралия придумала недорогой и эффективный способ борьбы с «пластиковым супом», в ко

В австралийском городе Квинана (Квинана) жители гениально решили проблему загрязнения водоемов, куда попадают потоки ливневой канализации. Сточные воды приносят огромное количество пластика, битого стекла и прочего крупного мусора, который в дальнейшем попадает в реки, а н

## КАК ЭТО РАБОТАЕТ

На сточную трубу крепится сеть, спроектированная с учетом диаметра трубопровода. Размер отверстий такого устройства не пропускает крупные отходы, а воду не задерживает — та свободно устремляется дальше. При этом австралийцы учли, что водный поток обладает мощной разрушительной силой и что большую важность имеет прочность ячеек и надежность крепления кармана к кромок трубы. Поэтому такие сети — решение не на один сезон.

В итоге городские власти Квинана смогли одновременно улучшить экологию и сэкономить деньги налогоплательщиков. Раньше для очистки ливневых стоков требовались команды волонтеров или бригады сотрудников ЖКХ, которые собирали в большие мешки пластиковые отходы по берегам водоемов. Сегодня долговечные и практичные сетчатые карманы решают проблему более эффективно и экономично.

**Russian**

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**Avustralya'nın Basit Ama Etkili Çözümü**



**Turkish**

Bu yaz Avustralya'da plastik atık sorununu çözmeye yardımcı olabilecek etkili bir filtreleme sistemi geliştirildi. Oldukça basit bir yöntemle büyük atıkları toplayarak zararlı atıkların denizlere dökülmesini önleyen bir filtreleme sistemi bu. Kwinana kentinden yetkililerin Henley Reserve'ün drenaj borusuna yerleştirdikleri ağlar toplanan çöplerin sudan ayrılarak zararlı atıkların suya dökülmesini ve çevreyi kirlilemesini engelliyor. Ağlar atıkla dolduğunda özel olarak getirilen çöp arabalarıyla geri dönüşüme uygun



# City of Kwinana's drainage socks



## Nette oplossing afval in afwateringsysteem

THE OPTIMIST | 8 MEI 2019 | NATUUR & MILIEU

In Australië is een oplossing bedacht voor de grote hoeveelheden afval die mee in afvoerpijpen. Dit afval komt in het water terecht na regenval. De afvalstroom bedreigt voor het milieu en de dieren die rond de afwateringsystemen leven. Overheid in het plaatsje Kwinana bedacht een eenvoudig filtratiesysteem om het te vang.

**Dutch**

Het filtratiesysteem bestaat uit een net dat aan het uiteinde van de afwaterings. De netten vang veel van het afval op dat uit de buizen van de afwatering komt maanden van de test vingen twee netten al vierhonderd kilo afval op. Dit was v berekend en de hoeveelheid afval liet de noodzaak van de netten zien. Burgeme Adams is blij met de resultaten en heeft veel positieve feedback gekregen van l en milieugroepen, aldus dagblad The West Australian. De zorgen die zijn geuit, schadelijke gevolgen van de netten voor dieren, zijn tot nu toe ongegrond. Er zi dieren in de netten terechtgekomen.



Foto: City of Kwinana.

австралийцы учли, что водный поток обладает мощной разрушительной силой и прочность ячеек и надежность крепления кармана к кромке трубы. Поэтому такие сети.

В итоге городские власти Квинана смогли одновременно улучшить экосистему наводопольщиков. Раньше для очистки ливневых стоков требовались команды сотрудников ЖКХ, которые собирали в большие мешки пластиковые отходы по берегам водоемов. Сегодня долговечные и практичные сетчатые карманы решают проблему более эффективно и экономично.



**Portuguese**

Iniciativa

## Cidade australiana começou testar uma rede de drenagem com malha

11 de novembro de 2018 | Solam | 0 comentários | curiosidades, iniciativa, invenção, poluição, Resíduos Sólidos, rio, soluções ambientais, sustentabilidade

Me piace 75

Tweetar

A cidade de Kwinana, na Austrália, está testando uma solução que permite diminuir as descargas de lixo dos sistemas de drenagem: a instalação de redes nas saídas dos canos que prendem o lixo, impedindo-o de sair do tubo.



# Drainage Nets



- Simple design: stainless-steel sleeve extension that is fitted with a heavy-duty net
- Direct screening mechanism and debris larger than the pore size is retained
- Release mechanism to prevent flooding risk





# Ecosol Net-tech: Performance



- The supplier states that the capture efficiency of gross pollutants is up to 93% (with standard mesh size of 50 mm)
- A study in Melbourne confirmed the trapping efficiency value of the supplier: efficient at capturing 90% of gross pollutant volume (93% of litter volume and 87% of organic volume)
- Little field performance data available
- The responses from the consultations reveal varying degree of performance of the drain socks installed across their jurisdictions

# Ecosol Net-tech: Performance



Reported efficiencies and issues	Local Government
Performance is very catchment specific and impacted by how they were originally installed	Hornsby Shire Council
Have to be correctly sized for the catchment	Paramatta River Catchment
Less reliable the bigger the pipe and in areas with high level of rainfall	Hornsby Shire Council Paramatta River Catchment
Ease of access is essential for frequent maintenance	Central Coast Council Melbourne Water Hornsby Shire Council City of Kwinana
Visually unpleasing	Sunshine Coast Council
Water quality issues if not frequently maintained (content decomposition, needle stick injury, odours).	Sunshine Coast Council Central Coast Council Melbourne Water
Prone to vandalism and/or ripping	Sunshine Coast Council City of Kwinana Hornsby Shire Council
Costly to maintain	Sunshine Coast Council

# Ecosol Net-tech: Maintenance



Local Government	Maintenance Frequency	Inspection frequency
Central Coast Council	Triggered by inspection result	Every 6 months
Sunshine Coast Council	Monthly	
Hornsby Shire Council	Selective based on inspection. Every 3 months on average	After rainfall event >10 mm
City of Kwinana	Twice per month during wet season and every 2-3 months during dry period	After heavy rainfall event >10 mm
<b>RECOMMENDED</b>	Wet Season: Twice per month Dry Season: Every 2-3 months	After heavy rainfall event >10 mm

# City of Kwinana's case study



- The City of Kwinana actually has five Net-Tech devices installed on its drainage system:
  - 2 installed in 2018
  - 3 installed in 2020

Drainage Net Location	Waste Collected (tonne) in 2018/2019	Waste Collected (tonne) in 2019/2020	TOTAL (tonne)	Composition
Henley Reserve	1.2	0.7	2	Organic matter (90%) Plastic bottle and cans (10%)
Whitebread Way	0.35	0.12	0.5	Organic matter (90%) Plastic bottle and cans (10%)



# City of Kwinana's Maintenance cost



Item	2018 Cost	2019 Cost
Approx time to clean 1 drainage net	<b>2 hours</b> (Each), 2 crew	<b>1 hours</b> (Each), 2 crew
Machine hours	128 hours per year (Cost of not included)	128 hours per year (Cost of not included)
Approx cost to clean 1 Drainage net	<b>\$304</b>	<b>\$152</b>
Annual cost to clean 1 drainage net (6 cleaning cycles)	\$1824	\$972.00
Vandalism- Cod end clip stolen	\$220	\$220
Cost for waste disposal (per tonne)	\$80	\$80

# Floating Litter Booms



- Partly submerged booms and a mesh attached with shackles to the booms
- Do not affect the hydraulics of the drains
- Best suited to areas with low flow velocity, as during high flows trapped material may be forced under and/or over the boom
- The capture efficiency for floating material ranges from 12% to 50%



# Floating Litter Traps



- Collection booms direct floating pollutants toward a one-way gate
- Compared to the floating booms, the traps have improved retention of floating gross pollutants once captured
- Performance of floating litter traps is only qualitative: very limited information



# Floating Booms/ Traps: Performance



Reported efficiencies and issues	Local Government
Very high success rate in capturing floating litter	City of Cairns
Low efficiency in capturing submerged litter	Melbourne Water
High risk that the captured debris is washed downstream or escapes the trap in tidal environment	Central Coast Council City of Cairns Melbourne Water
Prone to vandalism and to break because of large tree-trunks	Parks Victoria Melbourne Water
Visually unpleasing	Central Coast Council Melbourne Water
Booms and traps require greater preventive maintenance because of their various moving parts.	City of Cairns
Captured volume is rainfall-dependent	Parks Victoria
Collect approximately 1500 m3 per year of litter, debris and organic matter	Parks Victoria
Efficiency of the trap may be also related to the water depth	Parks Victoria



# Floating Booms/ Traps: Maintenance



	Maintenance Frequency	Inspection frequency
City of Cairns	Triggered by inspection result	Monthly
Canterbury Bankstown Council	Weekly	Weekly
Sunshine Coast Council	On an as-required basis	
Melbourne Water	Twice per month (small boom) Monthly (medium boom)	
Parks Victoria	Triggered by inspection result	After heavy rainfall event
<b>RECOMMENDED</b>	Every two to four weeks	After heavy rainfall event >10 mm

The maintenance may be carried out with different equipment:

- By using an excavator or vacuum truck (a lot of water extracted)
- Manually with a pool scoop or pinch forks
- From the water with a skimmer vessel

# Summary and Considerations



Field data on the trapping efficiency of GPTs often doesn't allow comparison of performance between different structures

## Drainage Nets

- Limited independent field performance data
- No assessment of the impact on water quality
- No assessment of the impact on hydraulic of the drain
- No standard maintenance method and reporting requirements

## Floating Litter Booms

- Little performance data
- No assessment of the impact on water quality
- No standard maintenance method and reporting requirements

## Floating Litter Traps

- No warranted performance rating
- No assessment of the impact on water quality
- No assessment of the impact on hydraulic of the drain
- No standard maintenance method and reporting requirements

**Thank you for  
listening!**

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**Many thanks to:**

City of Kwinana  
Shire of Hornsby  
Parks Victoria  
Sunshine Coast Council  
Central Coast Council  
Melbourne Water  
City of Cairns  
Paramatta River Catchment



# Questions?