



Are current urban stormwater management guidelines suitable for managing micropollutants?

SUSE Workshop 2023



A3P

Aquatic Pollution
Prevention Partnership



A collaborative research partnership delivering practical management solutions to reduce pollution in our waterways

Pollutants and Ecological Impacts

Nutrients

Suspended Solids

Litter

Metals

Detergents and Surfactants

Pesticides:
Insecticides (Synthetic Pyrethroids)
Herbicides
Fungicides

Estrogens

Oils and Hydrocarbons

Plastics and microplastics

Pharmaceuticals & Personal
Care Products

Salinity

PFAS



Land use Types/Sources

Roads & Associated Infrastructure

Industrial

Treated Wastewater

Untreated Wastewater

Firefighting facilities

Road Construction Sites

Residential Construction Sites

Residential

Golf Courses/Ovals



Pollutants and Land use (first attempt)

Land use/Source	Nitrogen	Phosphorus	Suspended Solids	Metals	Estrogens (EDCs)	Macro Litter	Microplastics	Surfactants	Hydrocarbons & Oils	Pesticides	Pharmaceuticals and Personal Care	PFAS
Roads & Associated Infrastructure	Medium	Low	Low	Very High	-	Medium	Very High	Low	Very High	Medium	-	Low
Industrial	High	High	Low	Very High	-	Medium	Medium	High	High	High	-	High
Treated Wastewater	High	Medium	Low	Low	High	Low	Medium	Low	Low	Medium	High	Medium
Untreated Wastewater	Very High	Very High	High	High	High	Low	High	High	High	Medium	Very High	High
Firefighting facilities	Low	Low	Low	Low	-	-	-	Very High	-	-	-	Very High
Road Construction Sites	-	-	Very High	-	-	-	-	-	-	-	-	-
Residential Construction Sites	-	-	Very High	-	-	Very High	Low	-	-	Very High	-	Low
Residential	Medium	Medium	Low	Medium	Low	High	Medium	Low	Medium	High	Low	Low
Greenspace (i.e. Golf Courses/Ovals)	High	High	Low	Low	Low	Medium	Medium	-	Low	Very High	-	Low



Pollutants, Land use and Treatment

Roads

Major Pollutants: Metals, Microplastics, Hydrocarbons

Controls

Structural	Non Structural
Spill Capture Basin – Hydrocarbons, microplastics?	
Clay Lining - particulates	



Pollutants, Land use and Treatment

Residential

Major Pollutants: Macro litter, Pesticides, Nutrients

Controls

Structural	Non Structural
GPT - litter	Education/Behaviour Change
Wetland/Bioswale/Floating Wetlands – pesticides, nutrients	Council Cleaning
Drain disconnection	Community ownership



Pollutants, Land use and Treatment

Industrial

Major Pollutants: Metals, Pesticides, Hydrocarbons, Nutrients, Surfactants, PFAS, hydrocarbons

Controls

Structural (base and first flush)	Non Structural
Triple interceptor	Regulation
Spill Capture Basin	Behaviour change



Conclusions

- All stormwater contaminants may not be adequately addressed by just considering nutrients and suspended solids
- Understanding different urban land uses and the pollution they generate can lead to more targeted stormwater treatment

