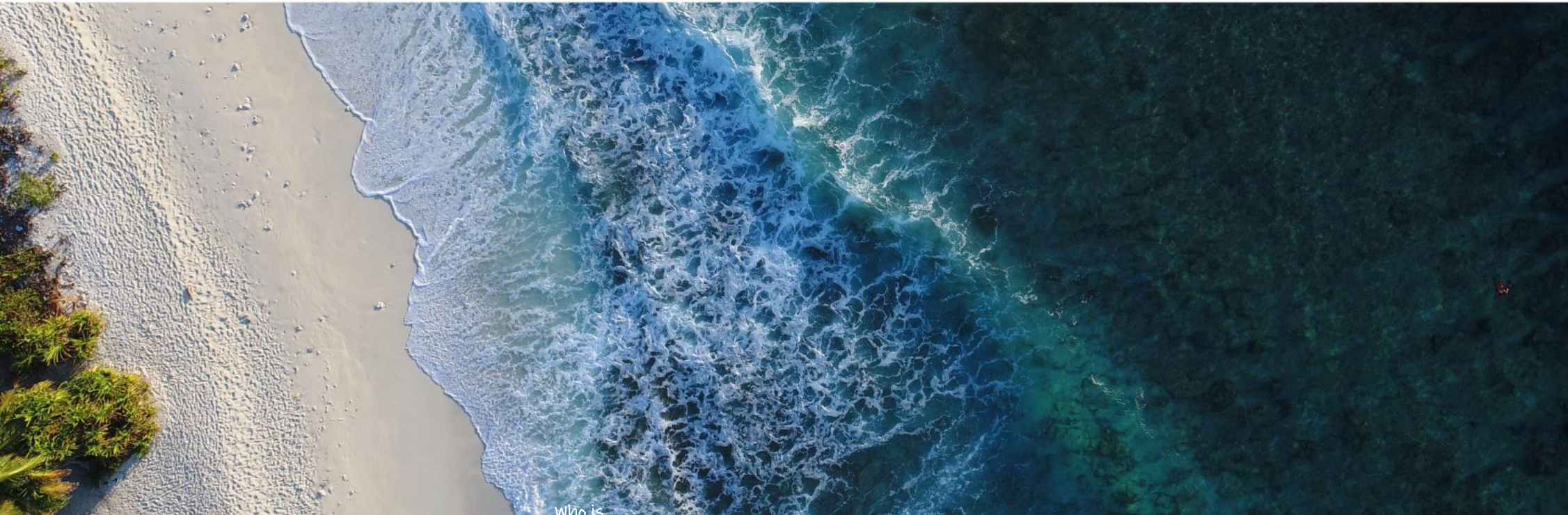




Brad Dalrymple

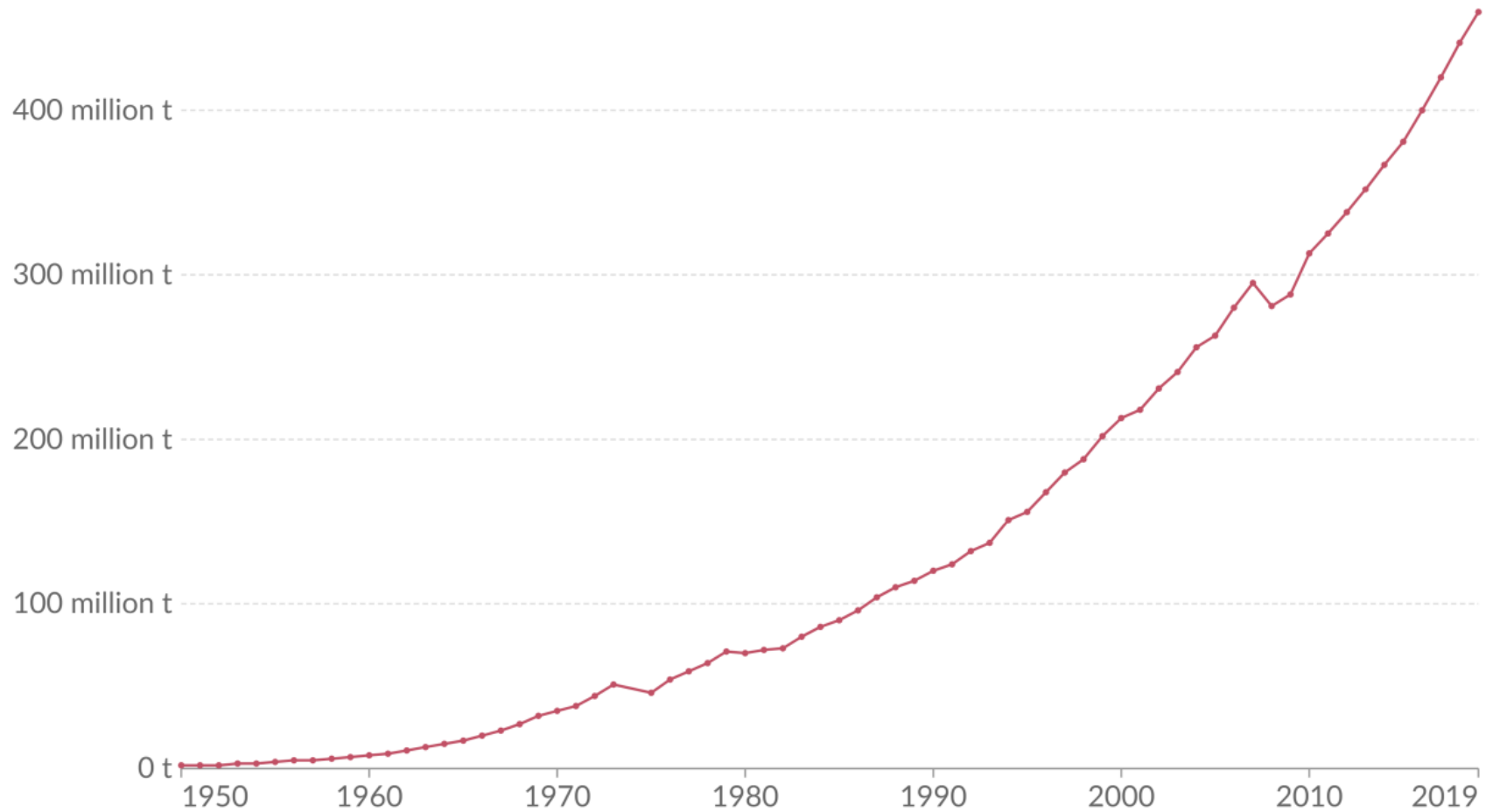


Who is

# Global plastics production

Plastic production refers to the annual production of polymer resin and fibers.

Our World  
in Data



Data source: Our World in Data based on Geyer et al. (2017) and the OECD Global Plastics Outlook

[OurWorldInData.org/plastic-pollution](https://OurWorldInData.org/plastic-pollution) | [CC BY](https://creativecommons.org/licenses/by/4.0/)









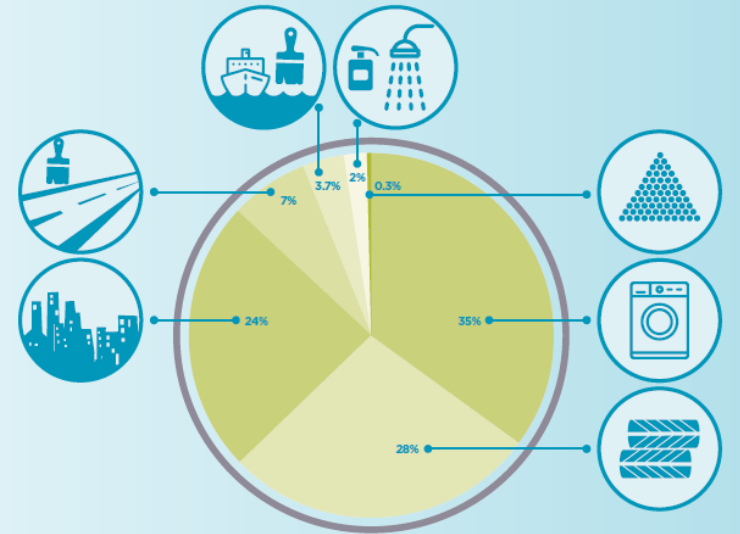
Primary Microplastics in the Oceans:

a Global Evaluation of Sources  
 Authors: Julien Boucher, Damien Friot



INTERNATIONAL UNION FOR CONSERVATION OF NATURE  
 MAVA ea GOVERNORALE POSTKOD FLOTTMINT GALLIFREY FOUNDATION

GLOBAL RELEASES OF PRIMARY MICROPLASTICS TO THE WORLD OCEANS BY SOURCE (IN %).



Review  
**Wear and Tear of Tyres: A Stealthy Source of Microplastics in the Environment**

Pieter Jan Kole <sup>1</sup>, Ansje J. Lohr <sup>1</sup>, Frank G. A. J. Van Belleghem <sup>1,2</sup> and Ad M. J. Ragas <sup>1,3,\*</sup>

<sup>1</sup> Department of Science, Faculty of Management, Science & Technology, Open University of The Netherlands, 6419 AT Heerlen, The Netherlands; P.J.Kole@studie.ou.nl (P.J.K.); Ansje.Lohr@ou.nl (A.J.L.); Frank.vanBelleghem@ou.nl (F.G.A.J.V.B.)

<sup>2</sup> Zoology: Biodiversity and Toxicology, Centre for Environmental Sciences, Hasselt University, BE 3590 Diepenbeek, Belgium

<sup>3</sup> Institute of Water and Wetland Research, Faculty of Science, Radboud University Nijmegen,

**Concentrations of Tire Additive Chemicals and Tire Road Wear Particles in an Australian Urban Tributary**

Cassandra Rauert,\* Nathan Charlton, Elvis D. Okoffo, Ryan S. Stanton, Alon R. Agua, Michael C. Pirrung, and Kevin V. Thomas

Cite This: *Environ. Sci. Technol.* 2022, 56, 2421–2431

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ECOTOXICOLOGY

**A ubiquitous tire rubber-derived chemical induces acute mortality in coho salmon**

Zhenyu Tian<sup>1,2</sup>, Haoqi Zhao<sup>3</sup>, Katherine T. Peter<sup>1,2</sup>, Melissa Gonzalez<sup>1,2</sup>, Jill Wetzel<sup>4</sup>, Christopher Wu<sup>1,2</sup>, Ximin Hu<sup>3</sup>, Jasmine Prat<sup>4</sup>, Emma Mudrock<sup>4</sup>, Rachel Hettinger<sup>1,2</sup>, Allan E. Cortina<sup>1,2</sup>, Rajshree Ghosh Biswas<sup>5</sup>, Flávio Vinicius Crizóstomo Kock<sup>5</sup>, Ronald Soong<sup>5</sup>, Amy Jenne<sup>5</sup>, Bowen Du<sup>6</sup>, Fan Hou<sup>3</sup>, Huan He<sup>3</sup>, Rachel Lundeen<sup>1,2</sup>, Alicia Gilbreath<sup>7</sup>, Rebecca Sutton<sup>7</sup>, Nathaniel L. Scholz<sup>8</sup>, Jay W. Davis<sup>9</sup>, Michael C. Dodd<sup>9</sup>, Andre Simpson<sup>5</sup>, Jenifer K. McIntyre<sup>4</sup>, Edward P. Kolodziej<sup>1,2,3,\*</sup>

In U.S. Pacific Northwest coho salmon (*Oncorhynchus kisutch*), stormwater exposure annually causes unexplained acute mortality when adult salmon migrate to urban creeks to reproduce. By investigating this phenomenon, we identified a highly toxic quinone transformation product of *N*-(1,3-dimethylbutyl)-*N*-phenyl-*p*-phenylenediamine (6PPD), a globally ubiquitous tire rubber antioxidant. Retrospective analysis of representative roadway runoff and stormwater-affected creeks of the U.S. West Coast indicated widespread occurrence of 6PPD-quinone (<0.3 to 19 micrograms



PHOTO: RODERICK CHEN/GETTY IMAGES

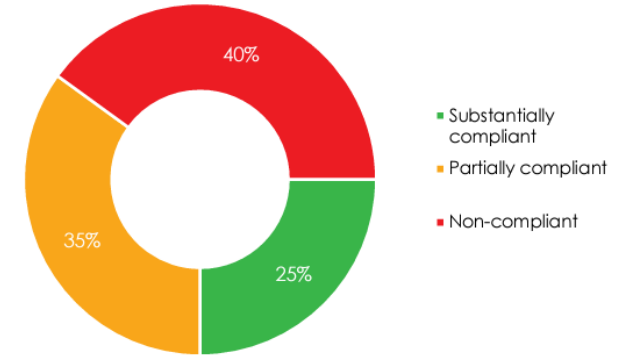


# “Low hanging fruit” for healthier rivers

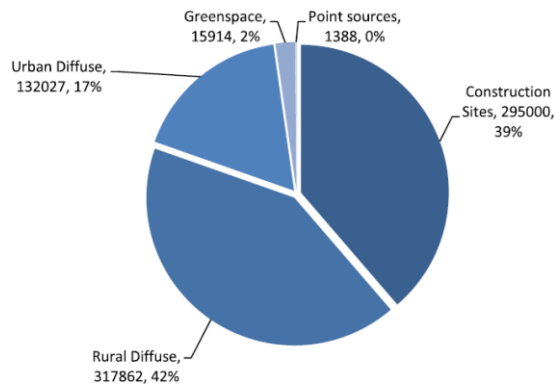
## Enforce erosion & sediment control practices on construction sites



Examples of non-compliant building and development sites.



Overall ESC compliance rating for 135 building sites in seven LGAs



Estimated annual contributions of sediment to receiving waters in SEQ  
Figures are in tonnes/ year and percentage contribution from that land use/ activity. Source: Hoban (2012)



The sediment plume from the 2022 SEQ floods entering southern Moreton Bay (Sentinel-2 imagery from European Space Agency).



# “Low hanging fruit” for healthier rivers

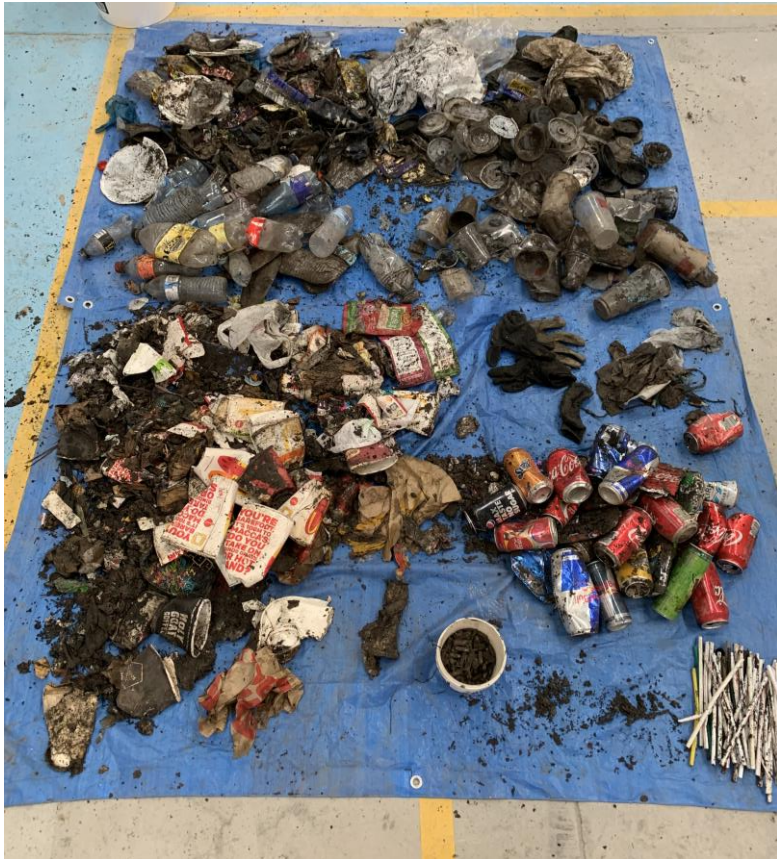
- © Remove pollution from stormwater treatment assets





# “Low hanging fruit” for healthier rivers

- ⦿ Ban (&/ or tax) “single use” plastics



From 8 x gully pit baskets:

- ⦿ 2720m<sup>2</sup> urban area in Western Sydney, 5 months
- ⦿ 850 pieces of plastic
- ⦿ 130kg of sediment

## Ban on Single-Use Plastics

SCORECARD Australian State / Territory Policy Commitments

Plastics (single-use) banned as of 1 September 2023	ACT	NSW	NT	QLD	SA	TAS	VIC	WA
Balloon sticks/ties					2024			
Bread tags					2024			
Carry bags - lightweight	✓	✓	✓	✓	✓	✓	✓	✓
Carry bags - heavyweight	2024		2025 PROPOSED	✓	2024			✓
Coffee cups containing plastic					2024			2024
Confetti					2024			
Cotton bud sticks	✓	✓		✓	✓		✓	✓
Cups and lids					2024			2024
Cutlery	✓	✓	2025 PROPOSED	✓	✓		✓	✓
Drink Stirrers	✓	✓	2025 PROPOSED	✓	✓		✓	✓
EPS food trays	✓				2024			✓
EPS loose fill packaging	✓		2025 PROPOSED	✓				✓
EPS moulded packaging (i.e. for electronics)			2025 PROPOSED					2025 PROPOSED
Fruit and veggie produce bags					2024			2024
Fruit and veggie stickers					2025			
Helium balloon releases*			2025 PROPOSED	✓			✓	✓
Microbeads	✓	✓	2025 PROPOSED	✓				✓
Pizza savers					✓			
Plates and bowls	✓	✓	2025 PROPOSED	✓	✓			
Polystyrene food and drink containers	✓	✓	2025 PROPOSED	✓	✓		✓	✓
Pre-packaged & attached items (straws, cutlery etc)		2025			2025		2026	
Soy sauce fish					2025			
Straws	✓	✓	2025 PROPOSED	✓	✓		✓	✓
Takeaway containers					2024			2024

KEY: ✓ Banned    ○ Ban yet to commence    ○ Proposed (not confirmed)

EPS - Expanded Polystyrene

\*Most anti-littering laws only consider balloons litter when they hit land or sea, making it difficult to enforce due to the long distances balloons travel. This scorecard recognises states that have legislated a ban on the act of releasing a balloon.

marineconservation.org.au





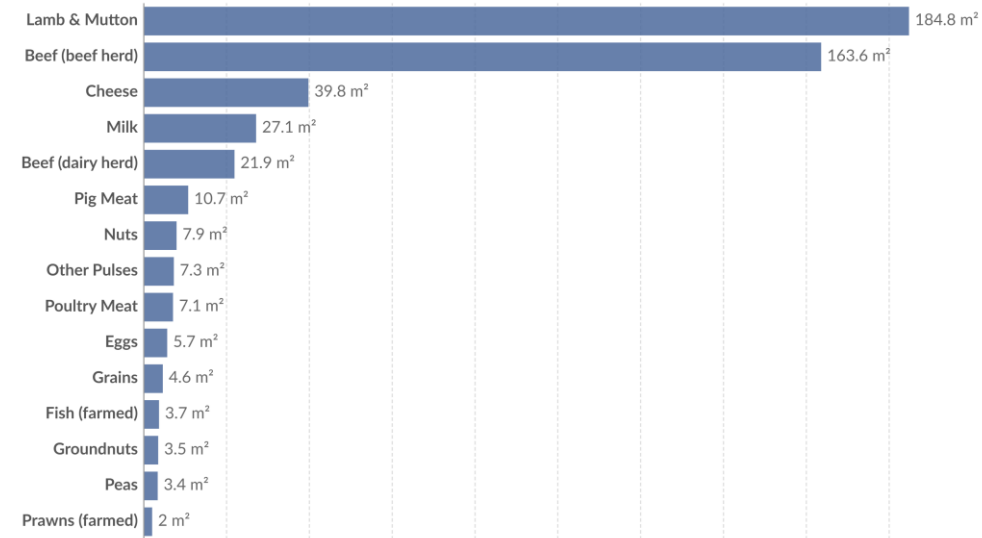
# “Low hanging fruit” for healthier rivers

## ☉ Eat more plants

### Land use per 100 grams of protein

Land use is measured in meters squared (m<sup>2</sup>) per 100 grams of protein across various food products.

Our World  
in Data



Data source: Joseph Poore and Thomas Nemecek (2018). Additional calculations by Our World in Data.  
[OurWorldInData.org/environmental-impacts-of-food](https://OurWorldInData.org/environmental-impacts-of-food) | CC BY



*The Livestock sector is ... “probably the largest sectoral source of water pollution”*

- Food and Agriculture Organization of the United Nations



**How Australia became one of the worst deforesters in the world**

POSTED WED 31 OCT 2018, 3:34PM Updated Wed 31 Oct 2018, 6:10pm

Like 20K



# “Low hanging fruit” for healthier rivers



Source: [bookme.com.au](http://bookme.com.au)



Source: [Bicycle Queensland](http://Bicycle Queensland)



Source: [eat South Bank](http://eat South Bank)





[www.oceanprotect.com.au](http://www.oceanprotect.com.au)

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# THANK YOU

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Principle Environmental Engineer

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