

Integrated Catchment - River Modelling of the Parramatta River to Support Achieving Swimmability Targets

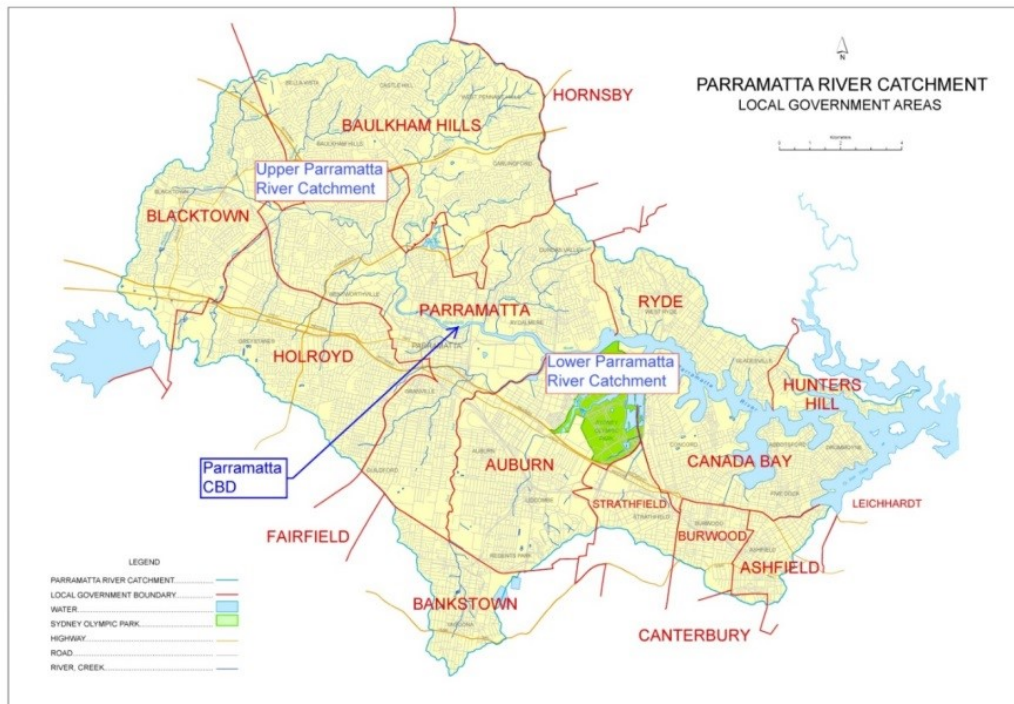


Lydia Cetin, Phillip Pedruco, Elizabeth Smolinska, Kate Byrnes – Jacobs
Pei Tillman, Jonathan Dixon, Natalie Quinn – Sydney Water
Sarah Clift – Parramatta River Catchment Group

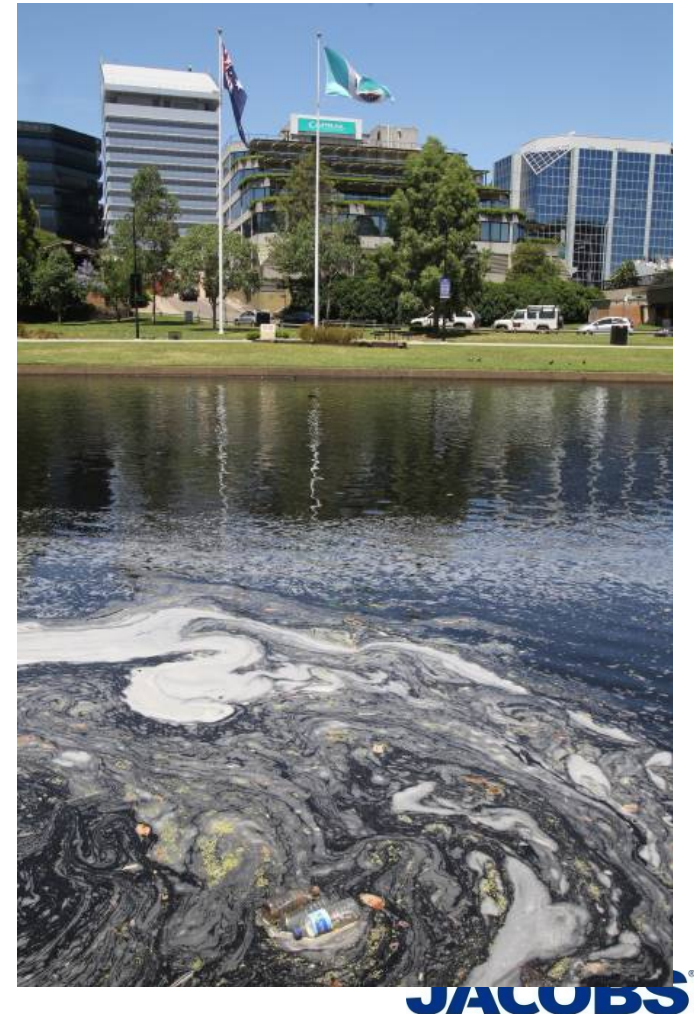


www.jacobs.com | worldwide

Parramatta River



Parramatta River

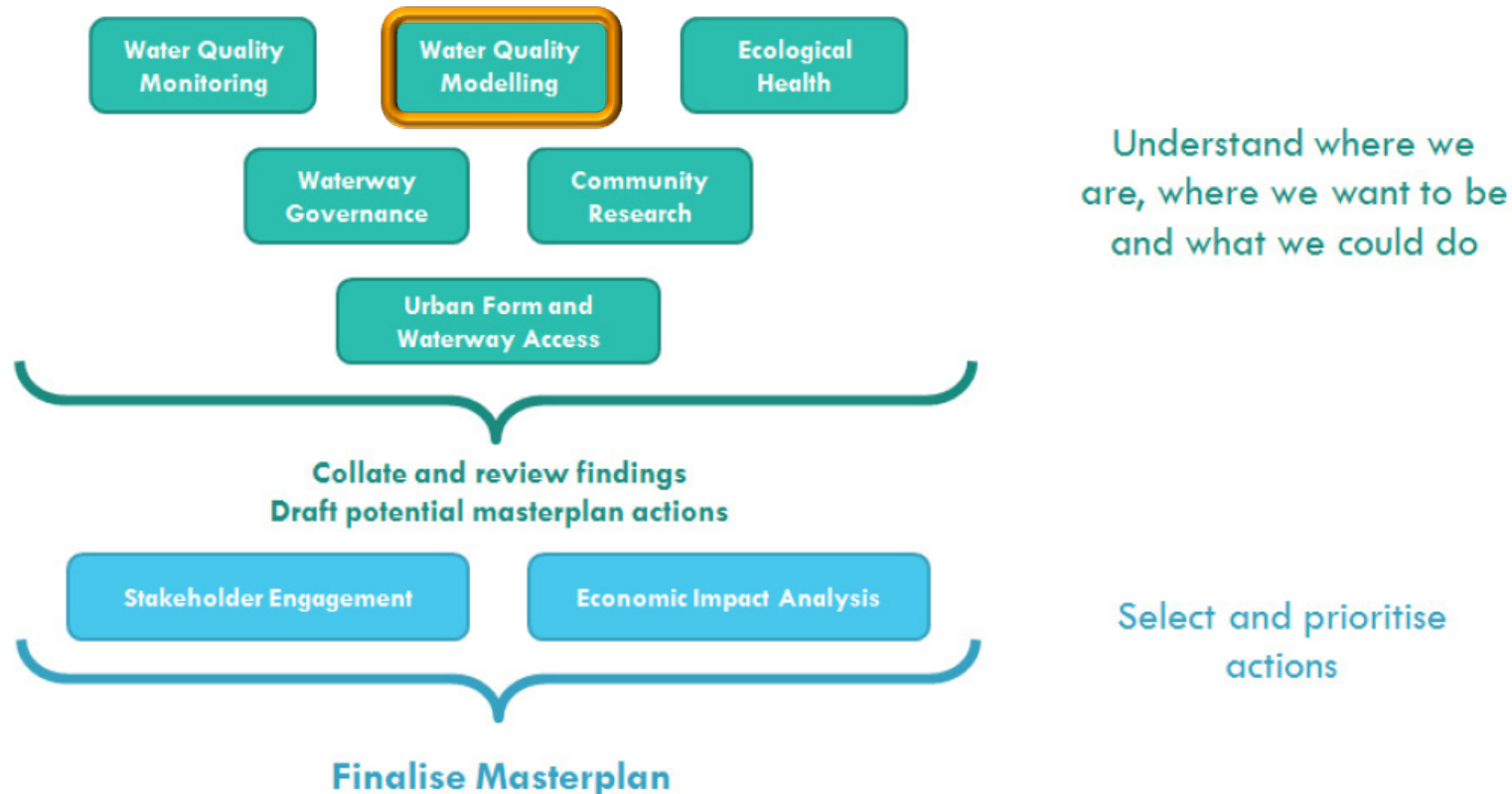


‘Our Living River’ initiative

- Parramatta River Catchment Group est. 2014 with the mission of making the river swimmable by 2025
- Develop evidence based strategy, the Parramatta River Masterplan
 - make lasting improvements to the local environment
 - provide tangible benefits to the local community
 - bringing together issues of sewer and stormwater pollution
 - provide direction on what can be done with best cost benefit



Parramatta River Masterplan Process



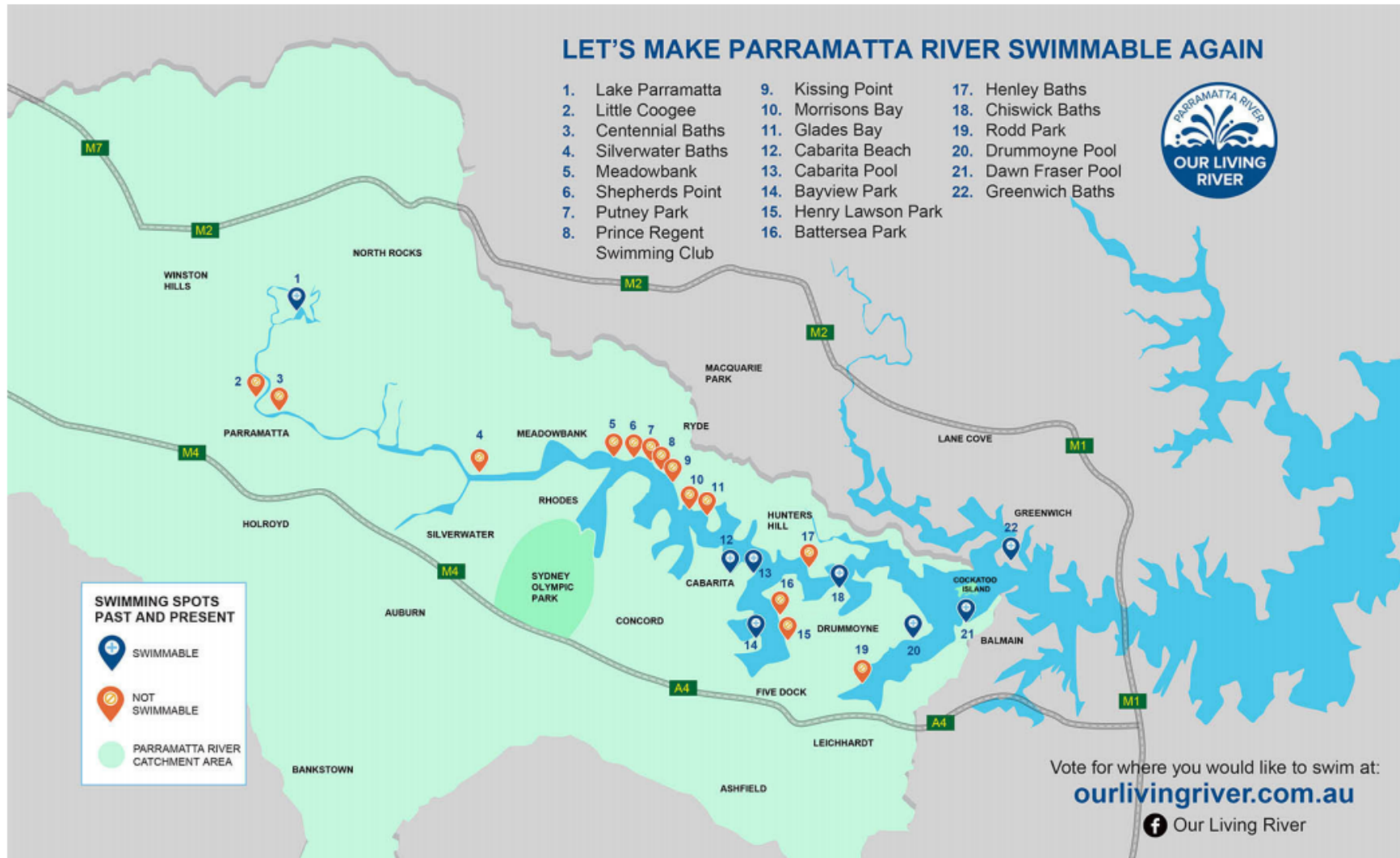
LET'S MAKE PARRAMATTA RIVER SWIMMABLE AGAIN

- | | | |
|--------------------------------|-----------------------|----------------------|
| 1. Lake Parramatta | 9. Kissing Point | 17. Henley Baths |
| 2. Little Coogee | 10. Morrisons Bay | 18. Chiswick Baths |
| 3. Centennial Baths | 11. Glades Bay | 19. Rodd Park |
| 4. Silverwater Baths | 12. Cabarita Beach | 20. Drummoyne Pool |
| 5. Meadowbank | 13. Cabarita Pool | 21. Dawn Fraser Pool |
| 6. Shepherds Point | 14. Bayview Park | 22. Greenwich Baths |
| 7. Putney Park | 15. Henry Lawson Park | |
| 8. Prince Regent Swimming Club | 16. Battersea Park | |




SWIMMING SPOTS PAST AND PRESENT

-  SWIMMABLE
-  NOT SWIMMABLE
-  PARRAMATTA RIVER CATCHMENT AREA



Vote for where you would like to swim at:

ourlivingriver.com.au

 Our Living River

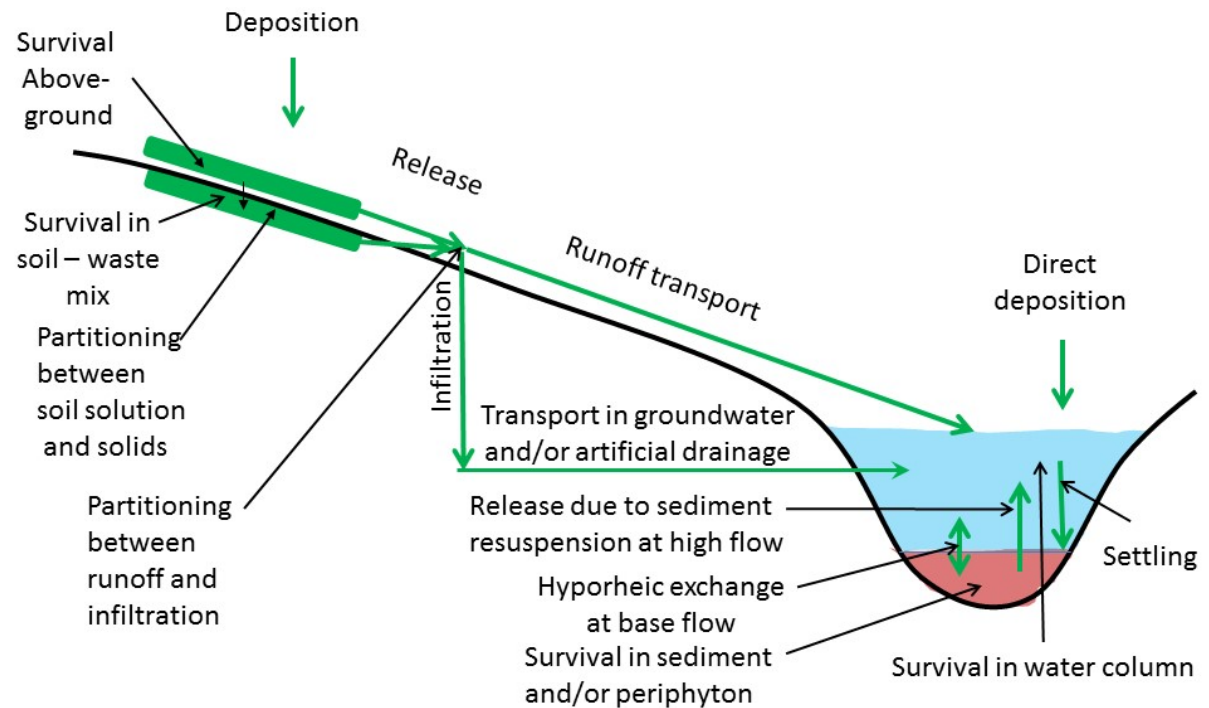
Water Quality Modelling

- Developing an evidence base to:
 - Modelling Enterococci - correlates to current primary recreation risk assessment frameworks
 - Identify measures to improve Enterococci levels
 - Model and scenario development informed through stakeholder workshops

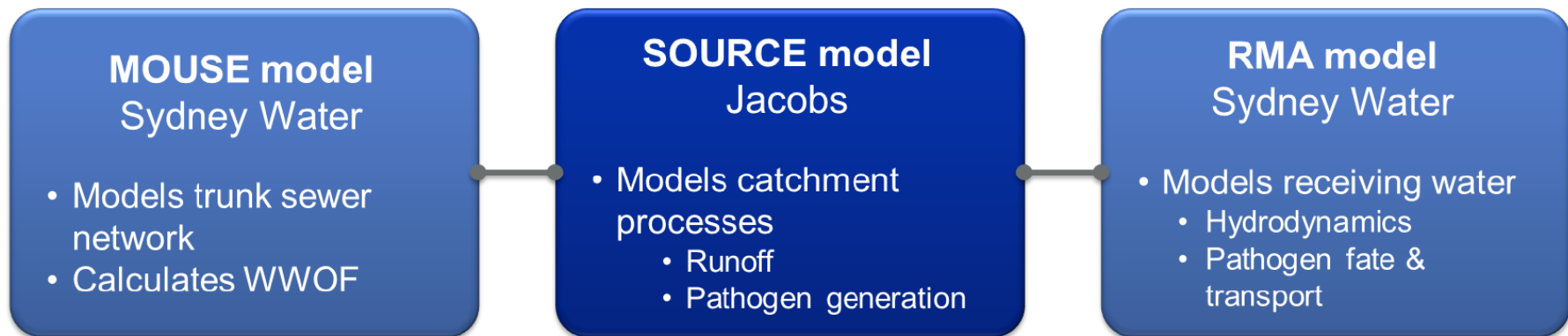


Evidence base - Modelling

- Sources
 - Diffuse
 - Point sources
- Pathways
 - Stormwater
 - Overflows
 - Waterways
- Receptors

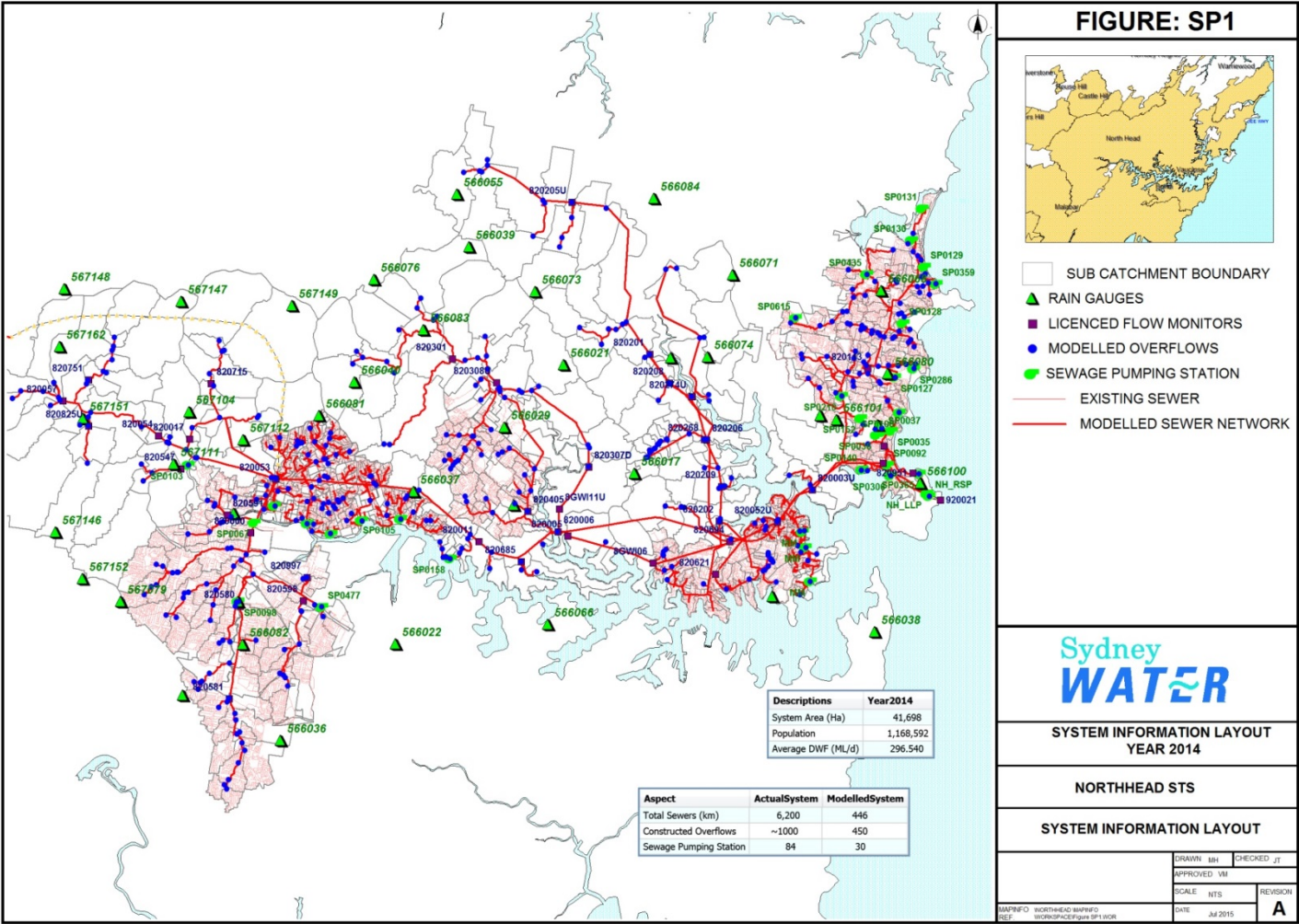


Integrated modelling framework

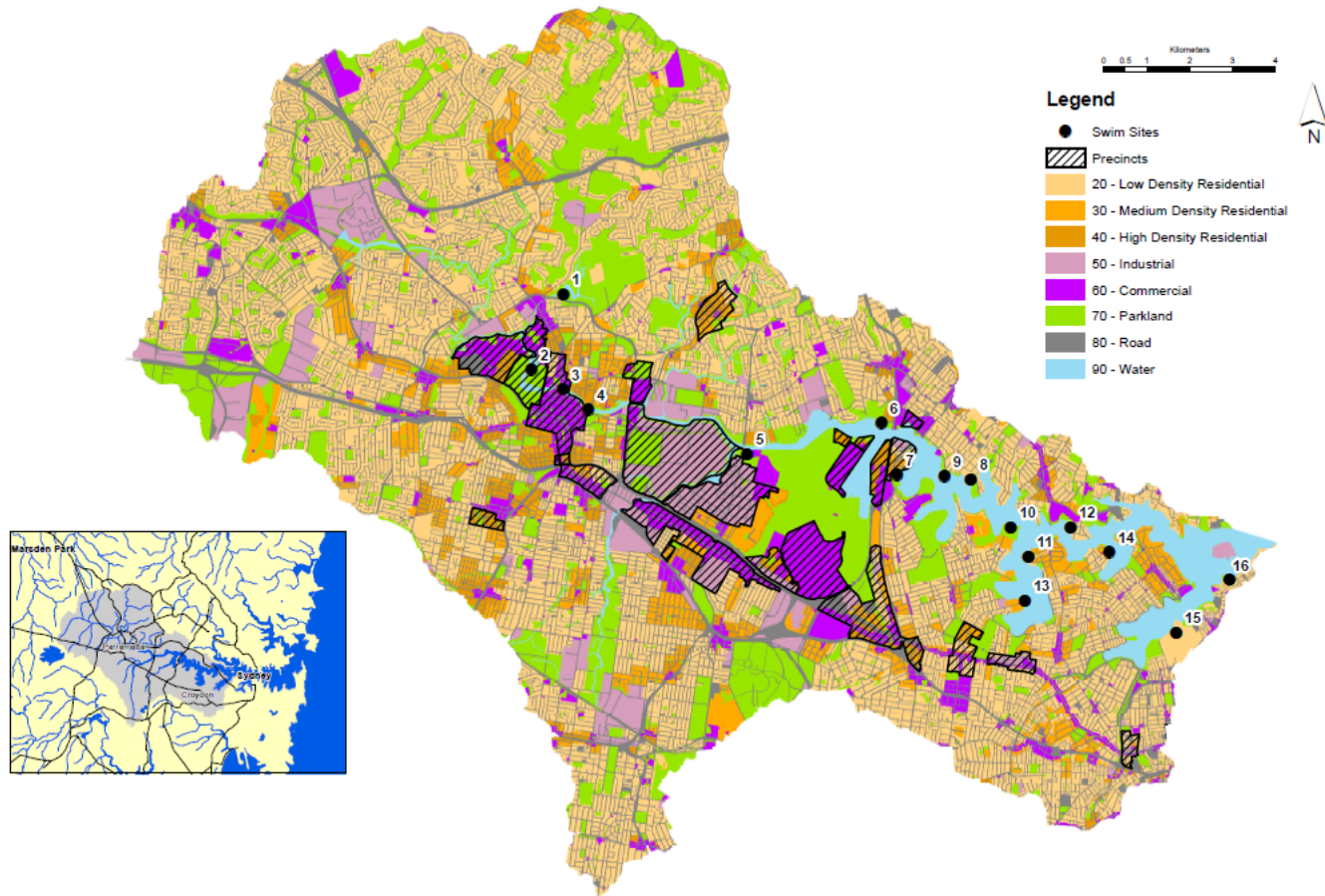


- Sub-daily simulation
- Captures spatial & temporal changes in flow and concentrations (loads)

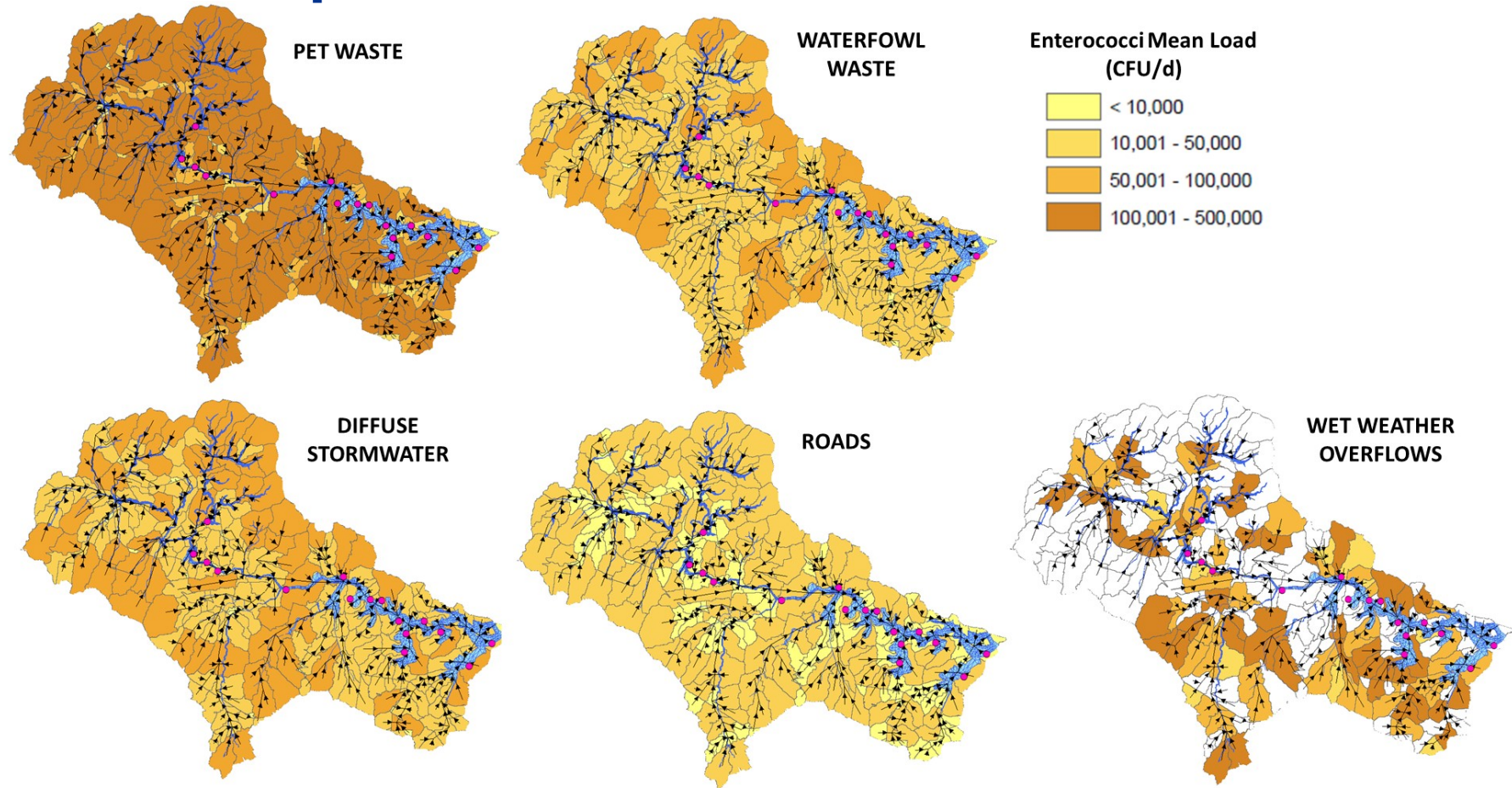
MOUSE Model



Catchment model – Source Generation

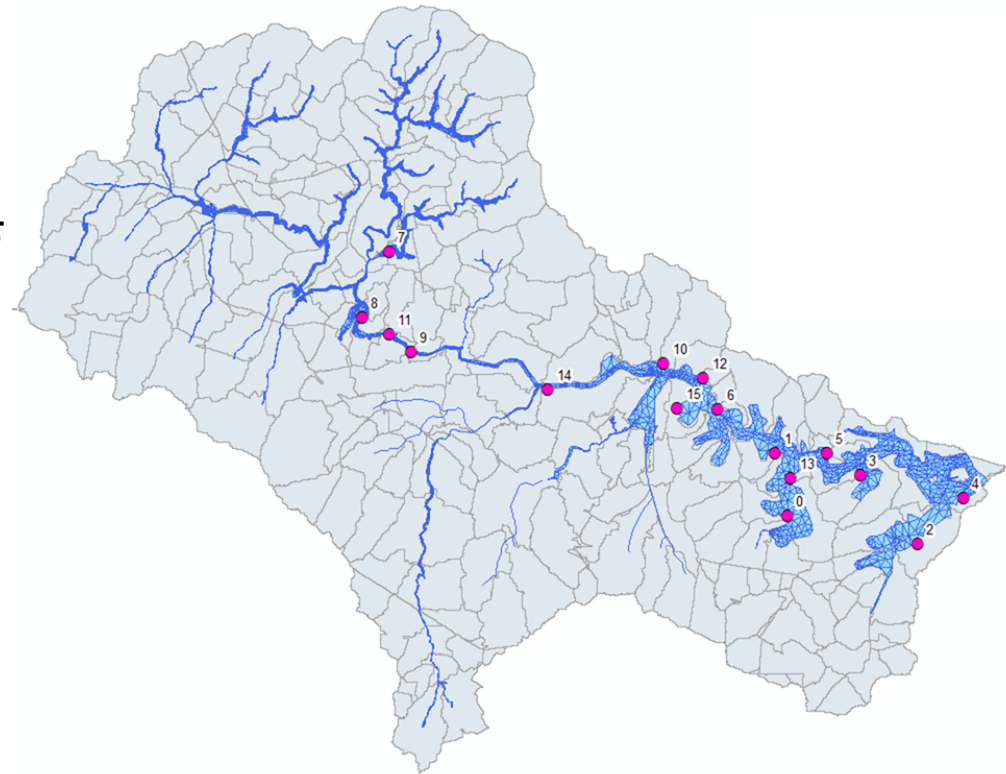


Source Input loads

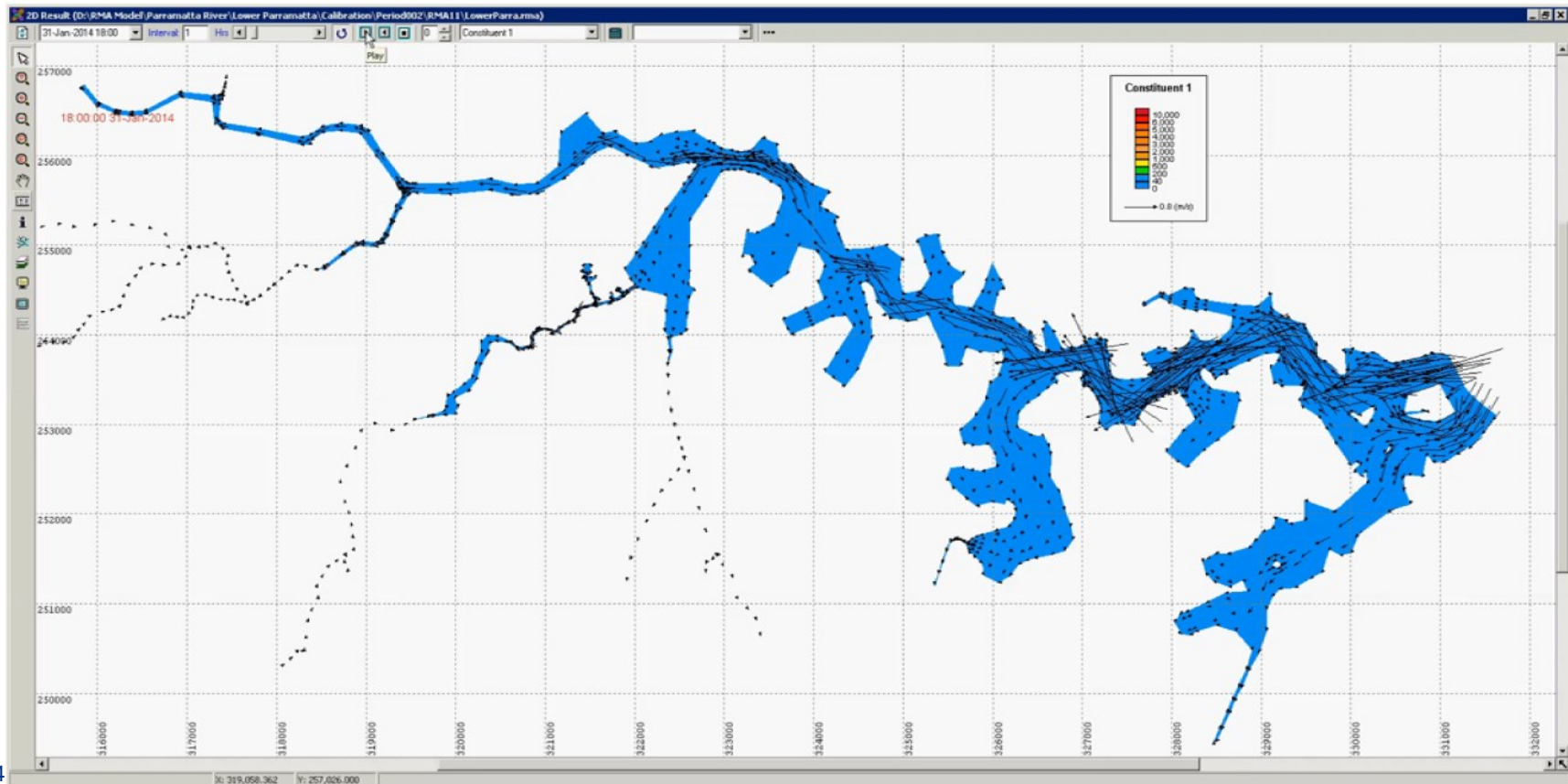


Receiving water model – Fate & Transport

- Detailed modelling of the Parramatta River and Estuary ~ 30km length of river
- Inflows from Source (incl. WWOFF and Diffuse)
- Beach Watch criteria - 95th percentile concs to assess swimmability



Simulation for Lower Parramatta Feb. 2014



Baseline mean concentrations – initial draft results

Swim Sites Legend

- 1 - Lake Parramatta
- 2 - Little Coogee
- 3 - Parramatta CBD
- 4 - MacArthur St Bridge
- 5 - Wilsons Park
- 6 - Meadow Bank
- 7 - Brays Bay
- 8 - Putney Park
- 9 - Kissing Point Park
- 10 - Cabarita Beach
- 11 - Quarantine Reserve
- 12 - Henley Baths
- 13 - Bayview Park
- 14 - Chiswick Baths
- 15 - Callan Park
- 16 - Dawn Fraser Pool

PARRAMATTA RIVER CATCHMENT GROUP Parramatta River Catchment Model

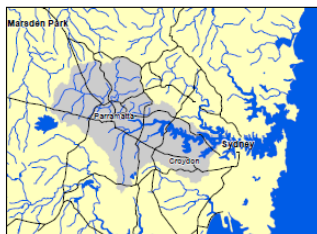
Baseline Model
Enterococci Mean Concentrations (cfu/100mL)

Kilometers
0 0.5 1 2 3 4



Legend

- Swim Sites
- Precincts
- SOURCE Links
- Link Mean Conc
 - < 200
 - 200 - 500
 - 500 - 1000
 - 1000 - 5000
 - 5000 - 10,000
 - > 10,000



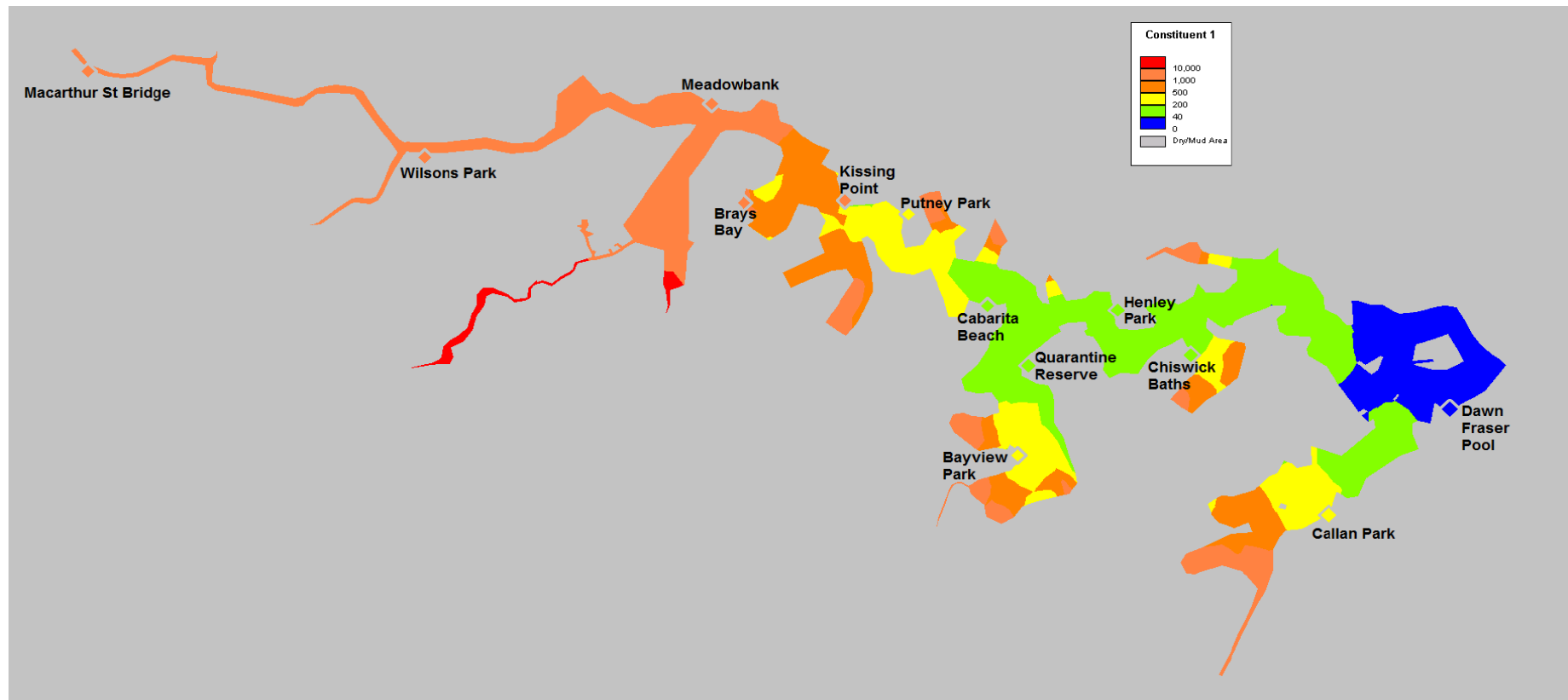
JACOBS

COPYRIGHT: The concepts and information contained in this document are the copyright of the Parramatta River Catchment Group.
Use or copying of the document in whole or in part without the written permission of the Parramatta River Catchment Group constitutes an infringement of copyright.
This document was prepared for the Parramatta River Catchment Group by Jacobs.
Jacobs does not warrant that this document is definitive nor free of error and does not accept liability for any loss caused or arising from reliance upon information provided herein.

Refer to Jacobs document:
J:\IE\Projects\04_Eastern\115600\00Data\Working\Arc\10\Scenarios\ScenarioResults_MXD\Baseline_Parramatta_Links_MeanConc_V07.mxd

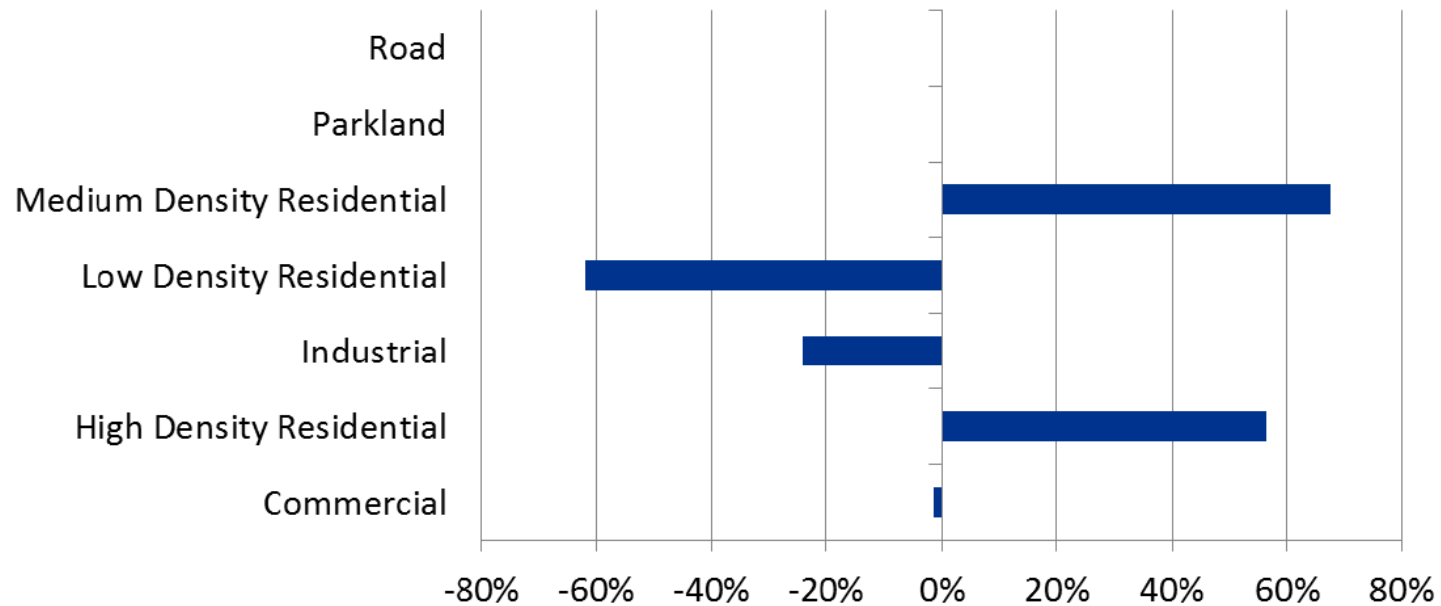
JACOBS

Water quality targets: enterococci 95th percentile over 2 years



Business as Usual 2025 scenario

BAU 2025 % change in landuse area



How to fix - Options

Options	Approach	Scale	Cost
Animal Management	Awareness	Source – Regional	\$
Stormwater Harvesting	Planning / Engineering	Source – Local	\$\$
Target high impact WWOFs	Engineering	Regional	\$\$\$



Integrated Catchment - River Modelling of the Parramatta River to Support Achieving Swimmability Targets

Dr Lydia Cetin

Lydia.Cetin@jacobs.com

© Copyright Jacobs

May 12, 2017

JACOBS[®]

www.jacobs.com | worldwide