

Science Breakfast Event

Tuesday 12 November 2019

Dockside, Darling Harbour

#AdaptNSW2019



AdaptNSW

Science Division

Melanie Hawyes

Deputy Secretary, Policy, Strategy and Science



ADAPTATION IN ACTION - BUILDING RESILIENCE IN NSW

Science Division

- Our role is to provide:
 - The best available scientific information about the NSW environment to decision makers
 - Scientific foresight to program and policy changes
 - Rigorous integrated science and outcomes for end users



Science Division services



Research

- Provide informed advice for decision making
- Influence environmental policy



Evidence

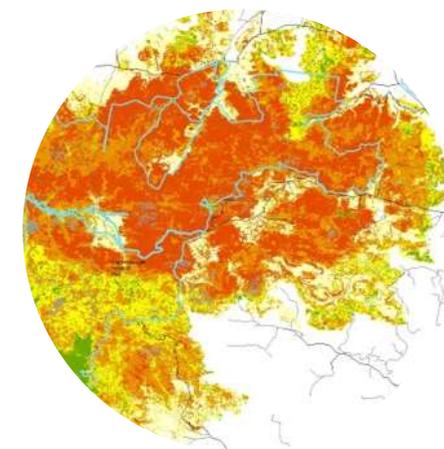
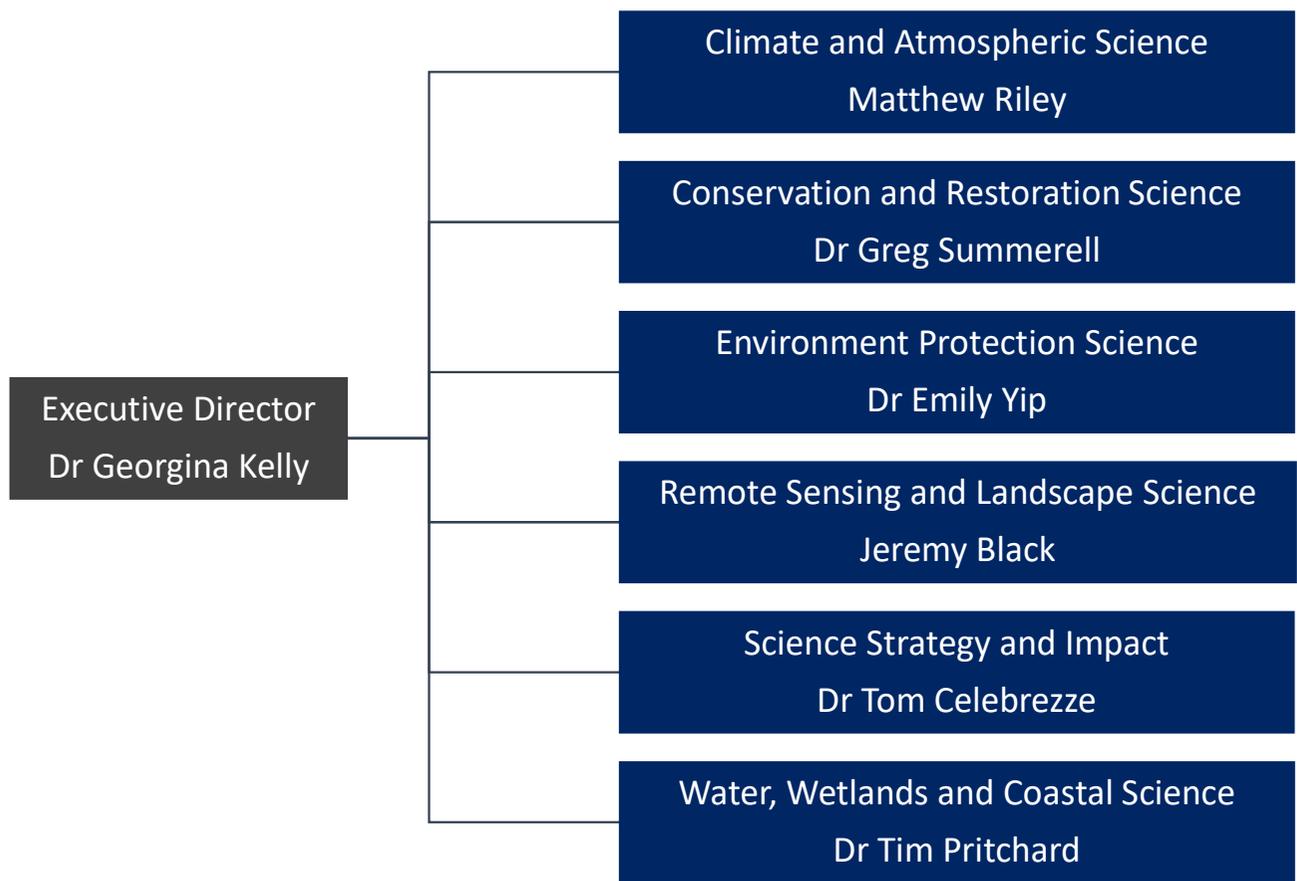
- Datasets to underpin decision making
- Evidence for policy and compliance action



Expertise

- Human experience to solve community problems
- Knowledge network of environmental experts

Science Division branches





Science Division Program Achievements 2019

 Goal 1 Delivering a coordinated approach to energy, climate change and sustainability	 Goal 2 Supporting resilient ecosystems and biodiversity for improved conservation outcomes	 Goal 3 Delivering best practice regulation, incident management, and mine safety for protecting environmental and human health	 Goal 4 Partnering with our customers, communities and stakeholders	 Goal 5 Providing rigorous, transparent and evidence-based advice
<p>Supporting NSW's transition to net zero emissions through economy wide emissions pathway modelling</p> 	<p>Developed the world-leading Biodiversity Indicator Program to assess biodiversity information</p> 	<p>Delivered land-use mapping for monitoring change and development pressures</p> 	<p>Developed the Koala Habitat Information Base, now accessible on SEED</p> 	<p>Reported on woody vegetation data</p> 
<p>Measured benefits of clean energy programs to air quality</p> 	<p>Published the Werriwa/Monaro Critically Endangered Ecological Community advisory map layer</p> 	<p>85 air quality monitoring stations with 97% valid real-time data</p> 	<p>Partnered with RFS to develop near-real time fire extent and severity maps</p> 	<p>Provided specialist advice for new coastal management framework</p> 
<p>Regional climate projections (NARCIIM 1.5) updated for major strategic planning</p> 	<p>Developed and launched the I-Spy-Koala app</p> 	<p>1000 new subscribers to air quality alerts</p> 	<p>7000+ km² of LIDAR mapping for coastal hazard assessment</p> 	<p>Established network to assess health of estuaries and coastal catchments</p> 
<p>Delivered data on urban green cover and heat vulnerability in Sydney</p> 	<p>Delivered a life-saving Wave Risk Rating Tool for Figure 8 Pools in Royal National Park</p> 	<p>Measured benefits of Return and Earn scheme, counting litter in 21 estuaries</p> 	<p>Sponsored the EES 2019 Eureka Award for Environmental Research</p> 	<p>Developed 1100 data-derived profiles for Plant Community Types in the largest pattern analysis ever completed</p> 
<p>Significant research into impacts of climate change on alpine regions</p> 	<p>Monitored 228 swimming sites through BeachWatch</p> 	<p>497 forensic investigations into pollution incidents</p> 	<p>Supported 2600+ citizen scientists to collect data valued at \$400,000+</p> 	<p>Supported 35+ <i>Saving our Species</i> projects with specialist advice</p> 
	<p>Delivery of Areas of Outstanding Biodiversity Value guidelines</p> 	<p>Risk assessment advice on 35 PFAS-affected sites</p> 	<p>Created a partnership journey with EPA that includes a program logic and Communication Plan</p> 	<p>Provided place-based packages to support planning decisions</p> 
	<p>Lord Howe Island rodent eradication</p> 		<p>Launched Enhanced Bushfire Management Program</p> 	<p>Developed the Aboriginal Site Decision Support Tool, critical to the ACH reforms</p> 



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NSW climate change science: now and for the future.

Matthew Riley

Energy, Environment and Science Group

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Session overview

- Introduction to Science Division (2 mins)
- Overview of Climate Science at the Department of Planning, Industry and Environment (5 mins)
 - Matthew Riley – Director of Climate and Atmospheric Science
- Branch
 - Dr Greg Summerell – Director of Conservation and Restoration Science
 - Jeremy Black – Director of Remote Sensing and Landscape Science
 - Dr Tom Celebrezze – Director of Science Strategy and Impact
 - Dr Tim Pritchard – Director of Water, Wetlands and Coastal Science
- Discussion – ask questions via www.Sli.Do Code is [#adaptNSW](https://twitter.com/adaptNSW)

Ask questions via Sli.Do

- Go to www.sli.do on your phone
- Enter in event code [#CliSciAdapt](https://twitter.com/CliSciAdapt)
- Write in your question

- Raise hand for microphone



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Dr Greg Summerell

Conservation and restoration science

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Bushfire Hub



A partnership between



WESTERN SYDNEY
UNIVERSITY



UNIVERSITY
OF WOLLONGONG
AUSTRALIA

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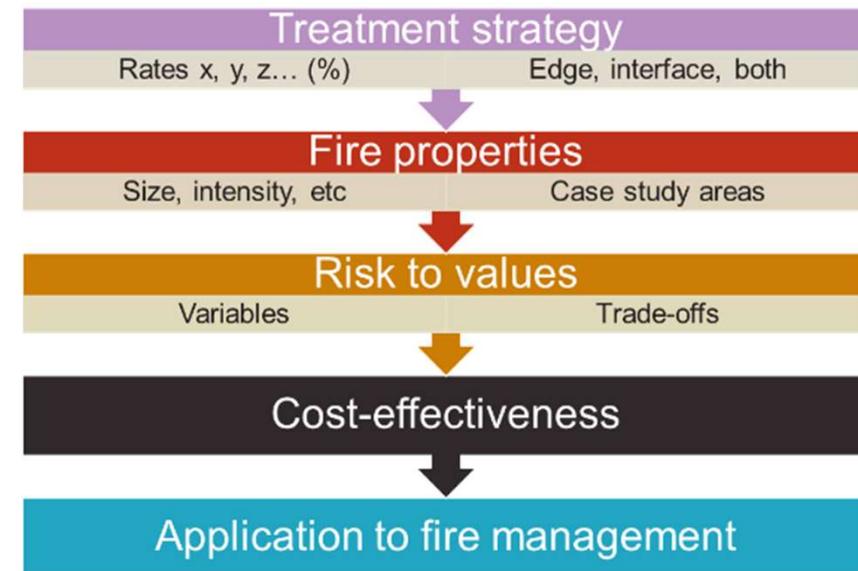
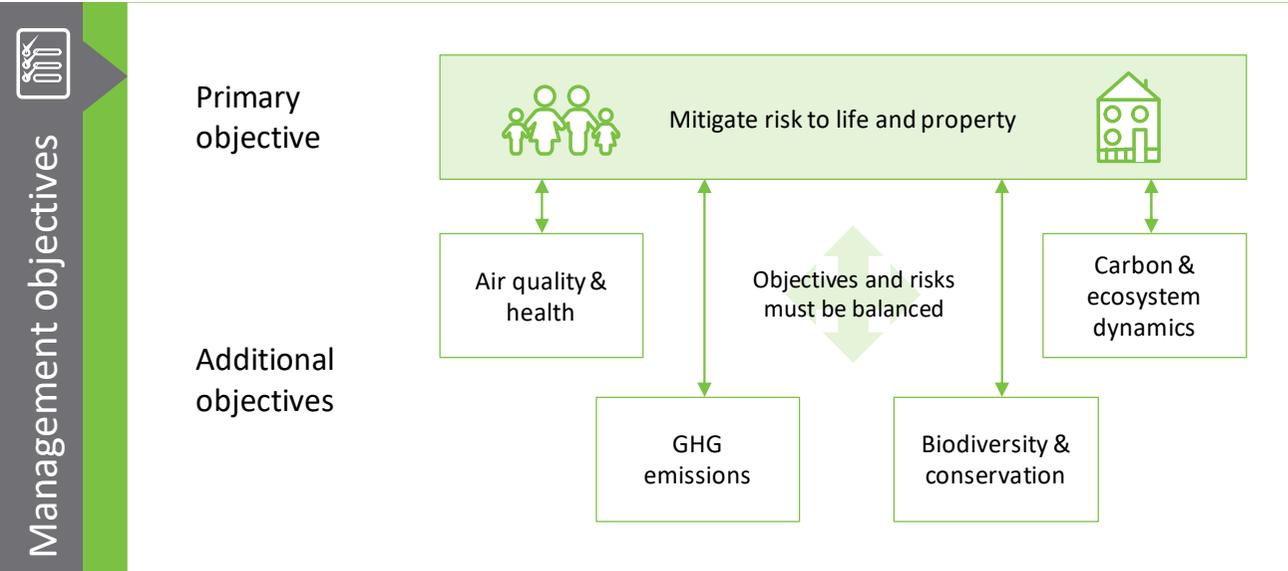
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Research impact



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Our objectives



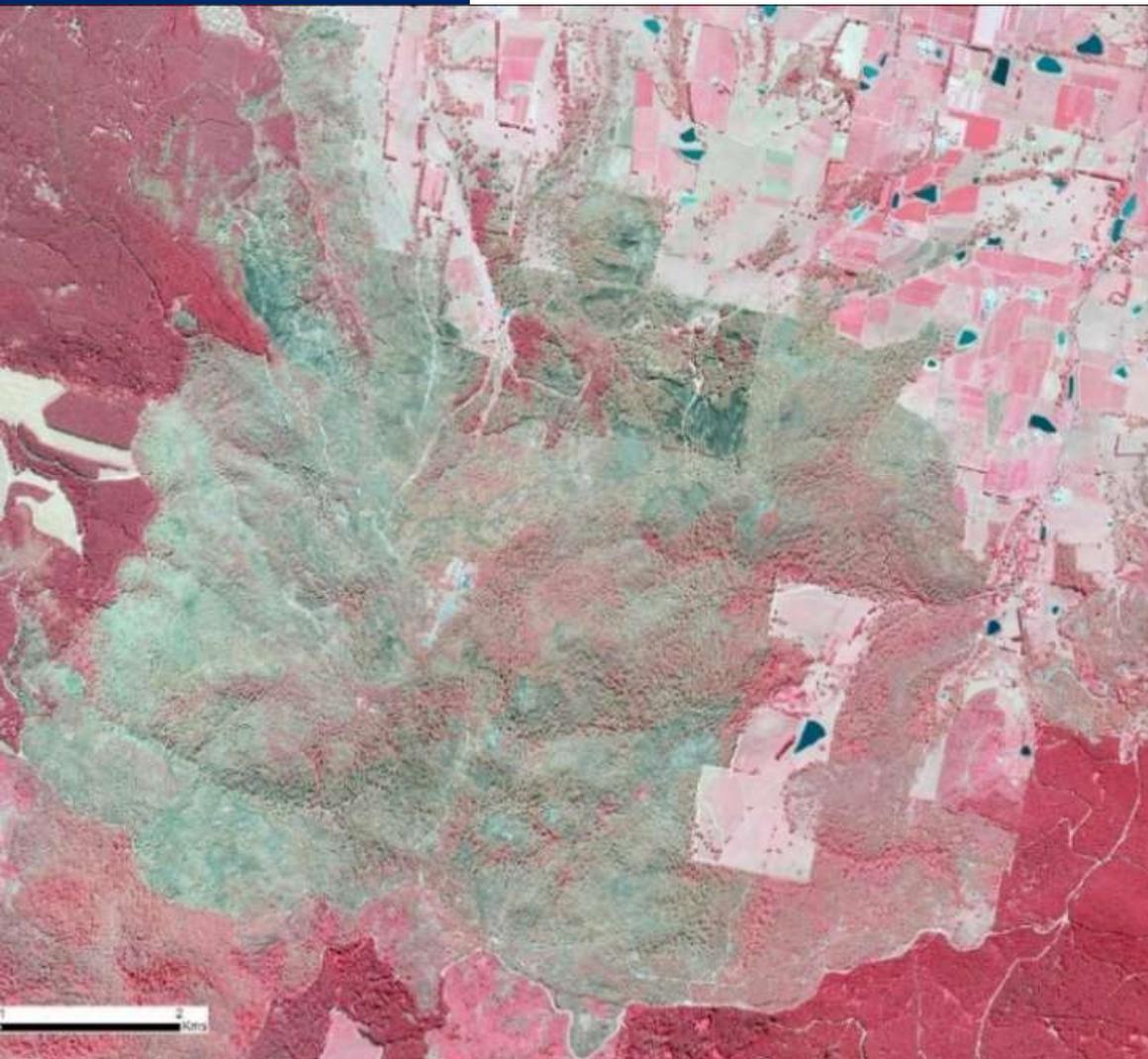
Value of work

Costs
Bushfire suppression
HRB actions
Mechanical mitigation
Air quality
Water quality
Amenity
Biodiversity
Cultural Artifacts
Carbon emissions

Benefits
Protect life
Protect property
Pest and weed management
Air quality
Primary industries
Amenity
Biodiversity
Cultural values
Carbon sequestration



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Ron Avery

Remote sensing and
landscape science

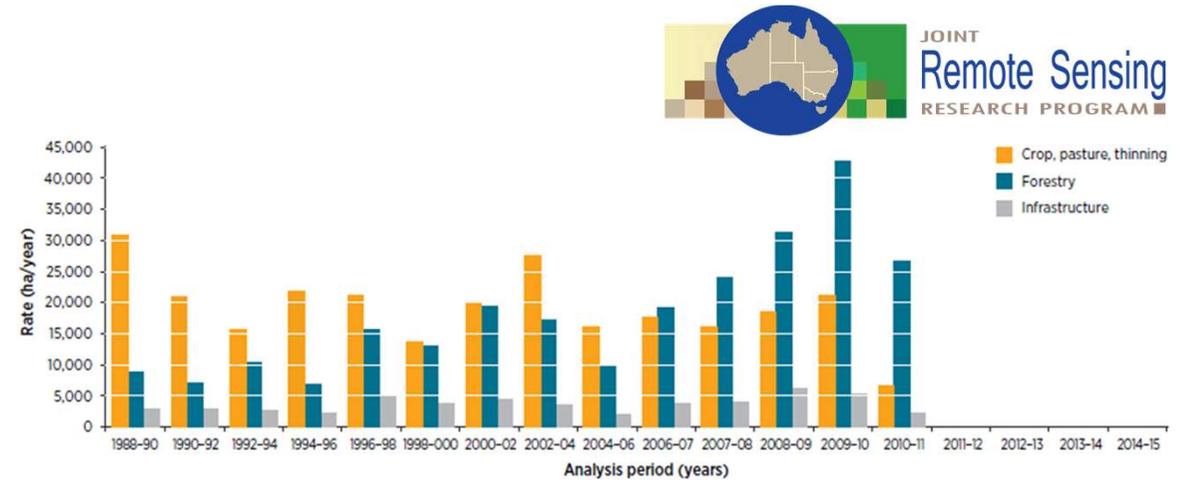
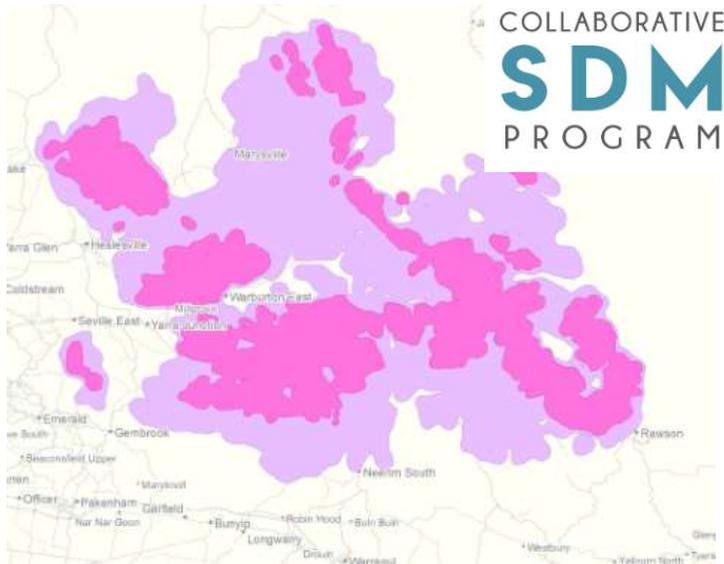
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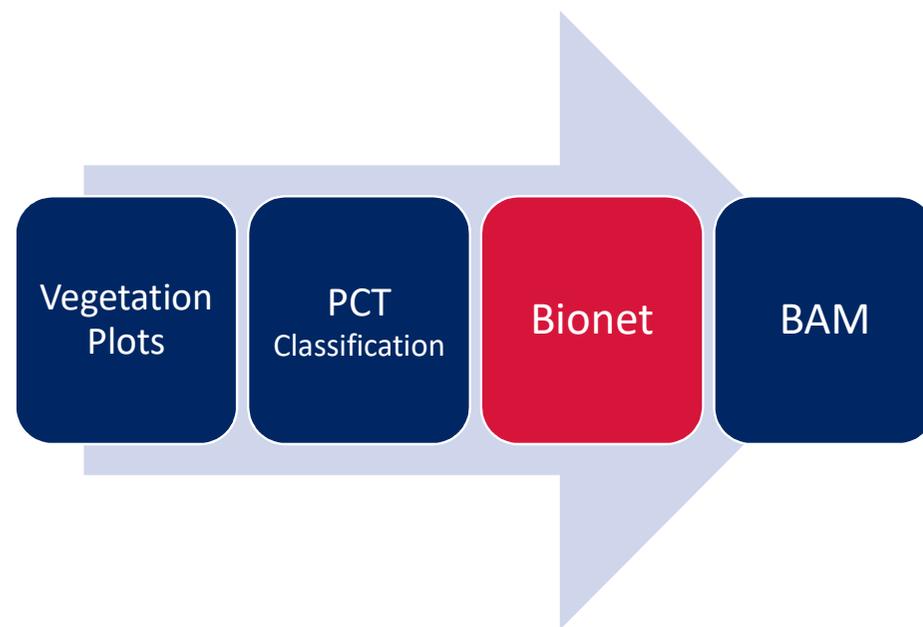
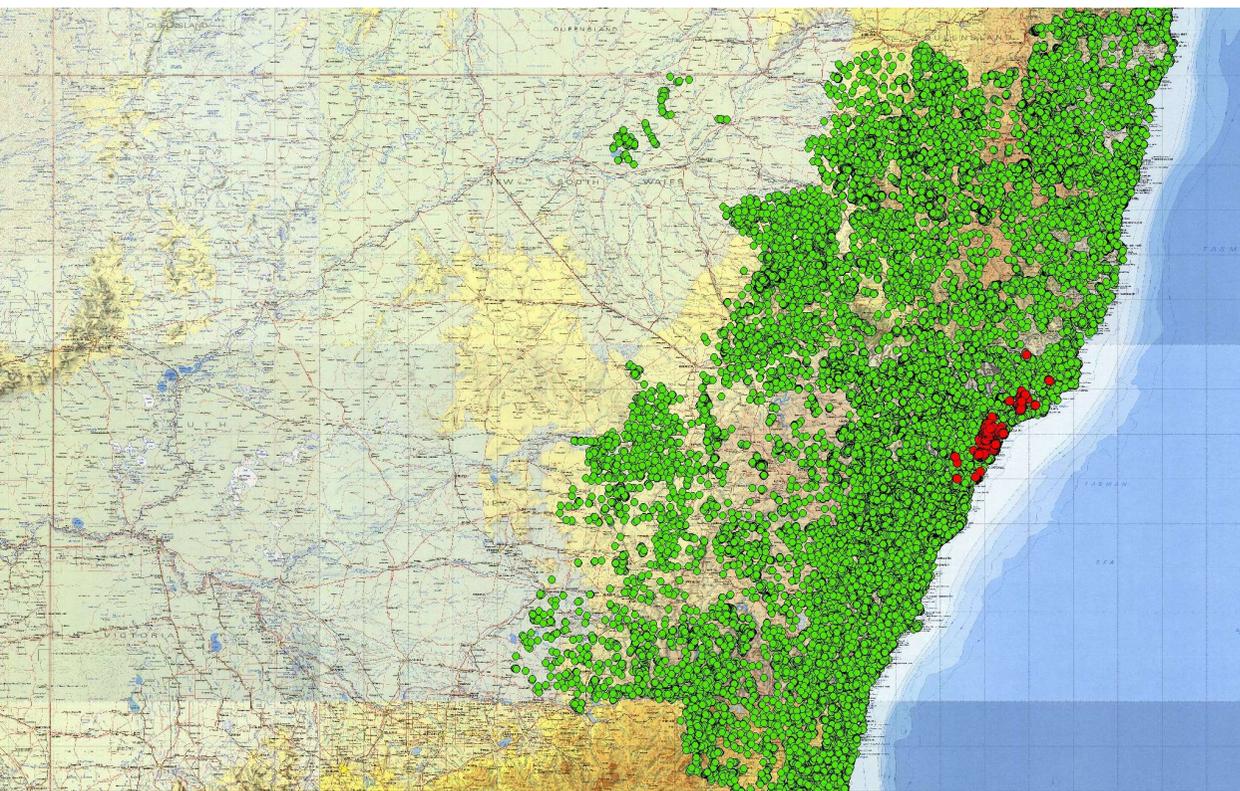
Collaboration



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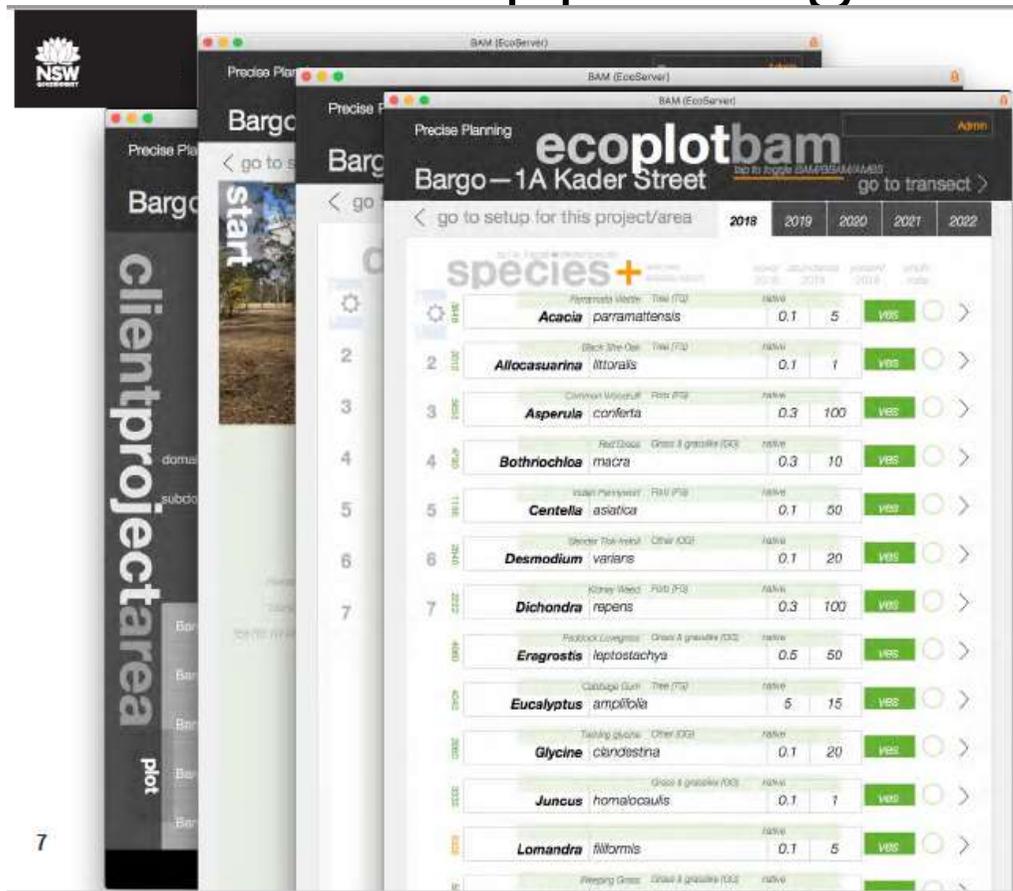
Standards supporting data





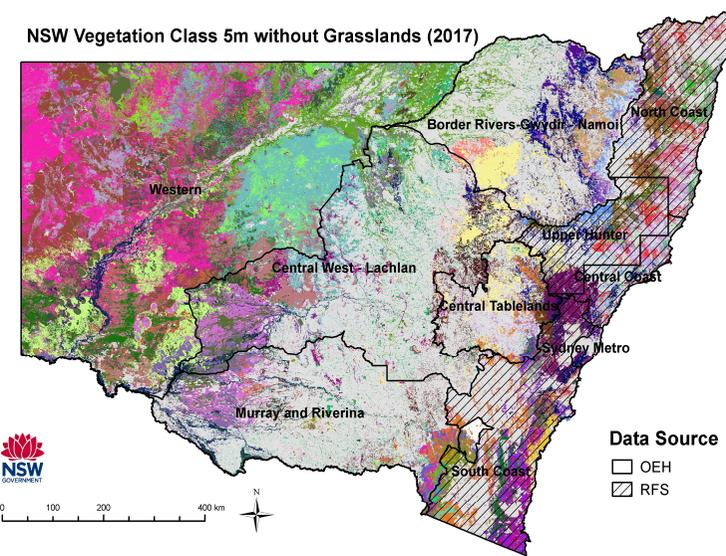
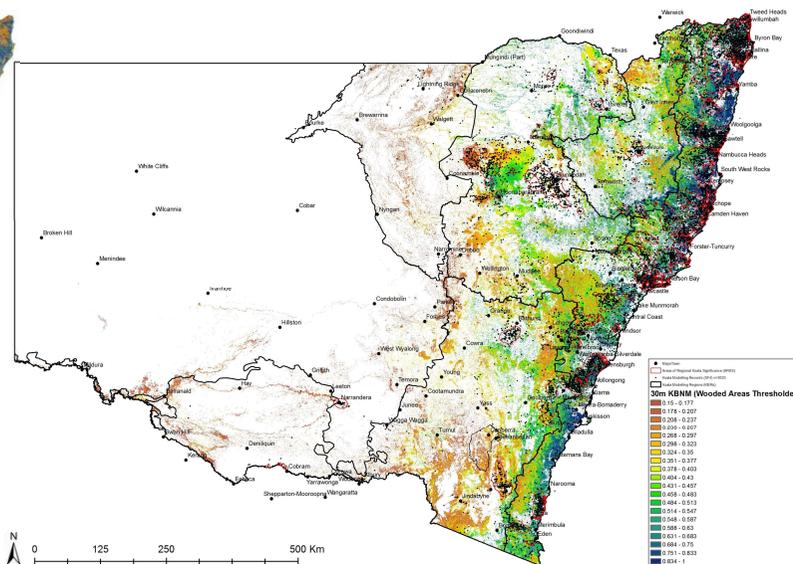
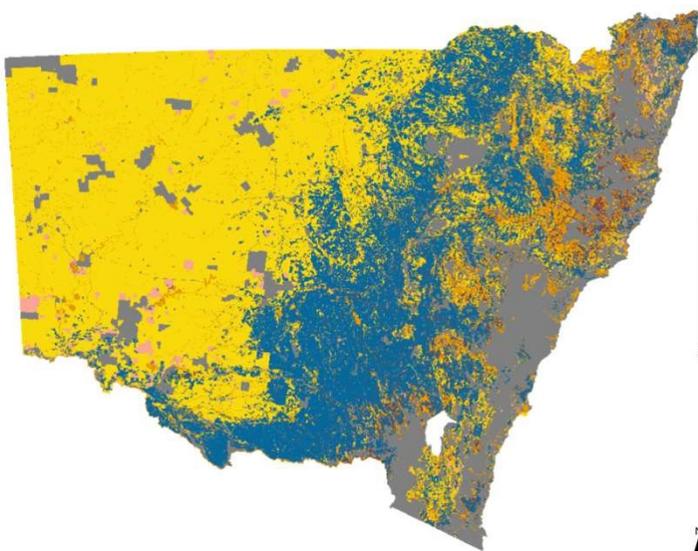
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Standards supporting innovation



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Decision ready tools



Native Vegetation Regulation Map (NVR Map)

Koala Habitat Information Base (KHIB)

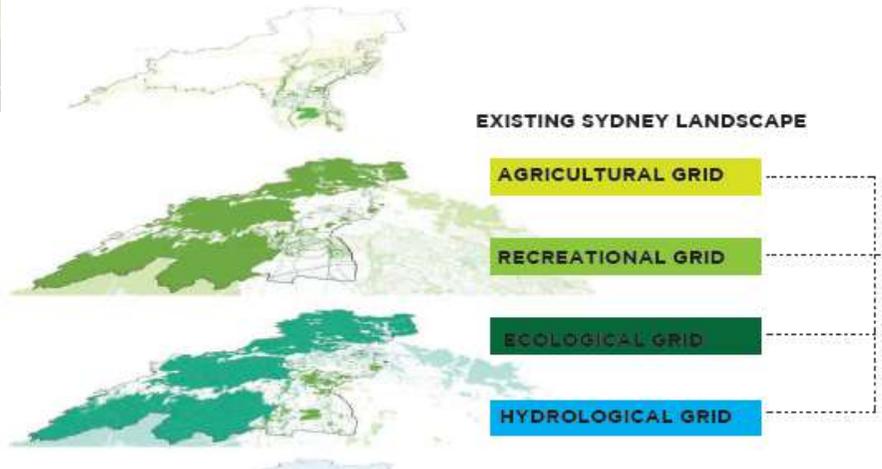
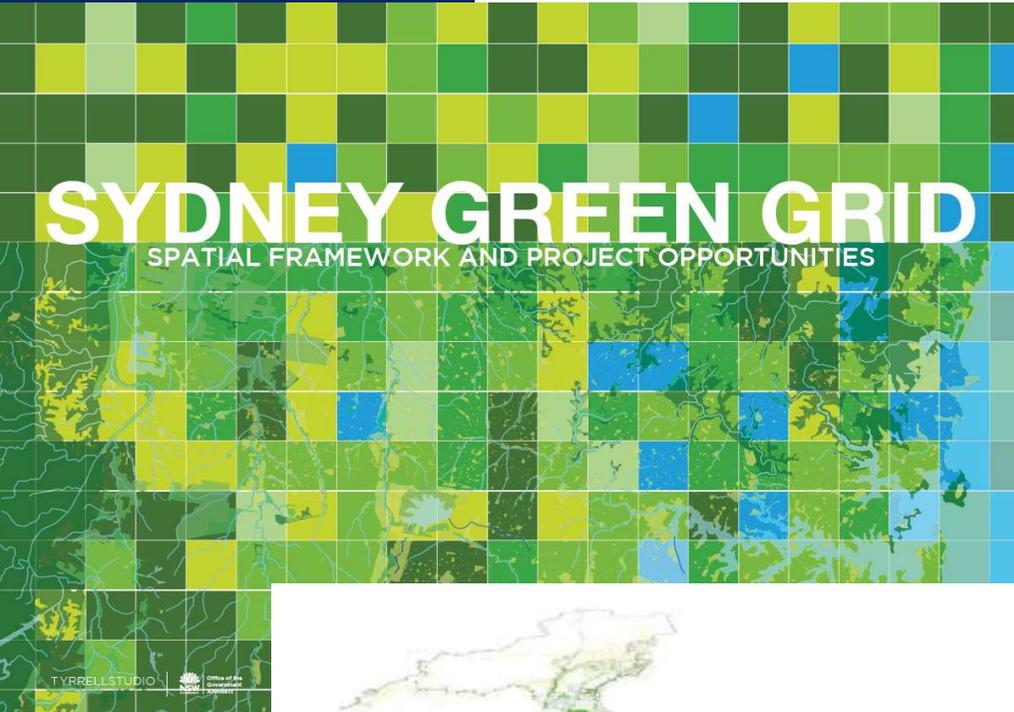
Plant Community Type (PCT)



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SYDNEY GREEN GRID

SPATIAL FRAMEWORK AND PROJECT OPPORTUNITIES



Dr Tom
Celebrezze

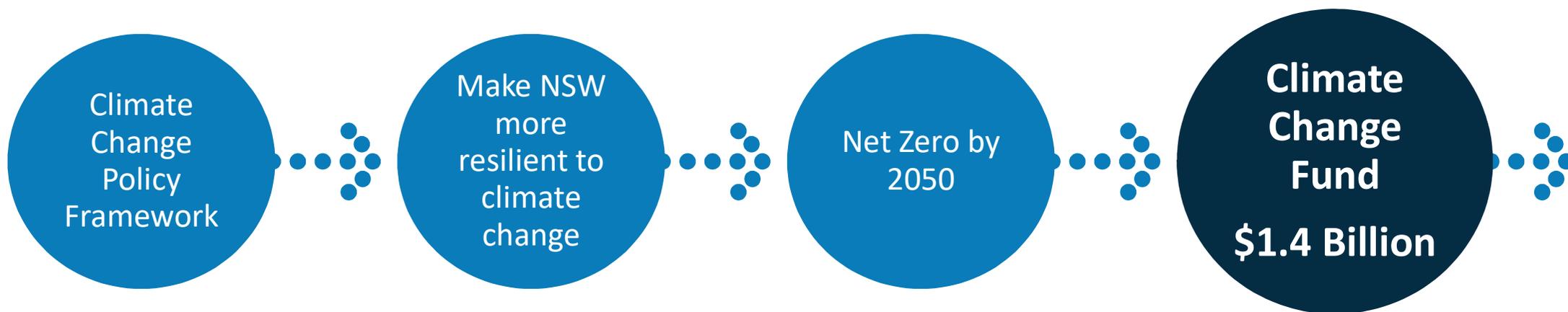
Science Strategy and
Impact

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Climate change fund evaluation





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Modelling and mapping future impact



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Hydrology
Climate Change Impact Snapshot



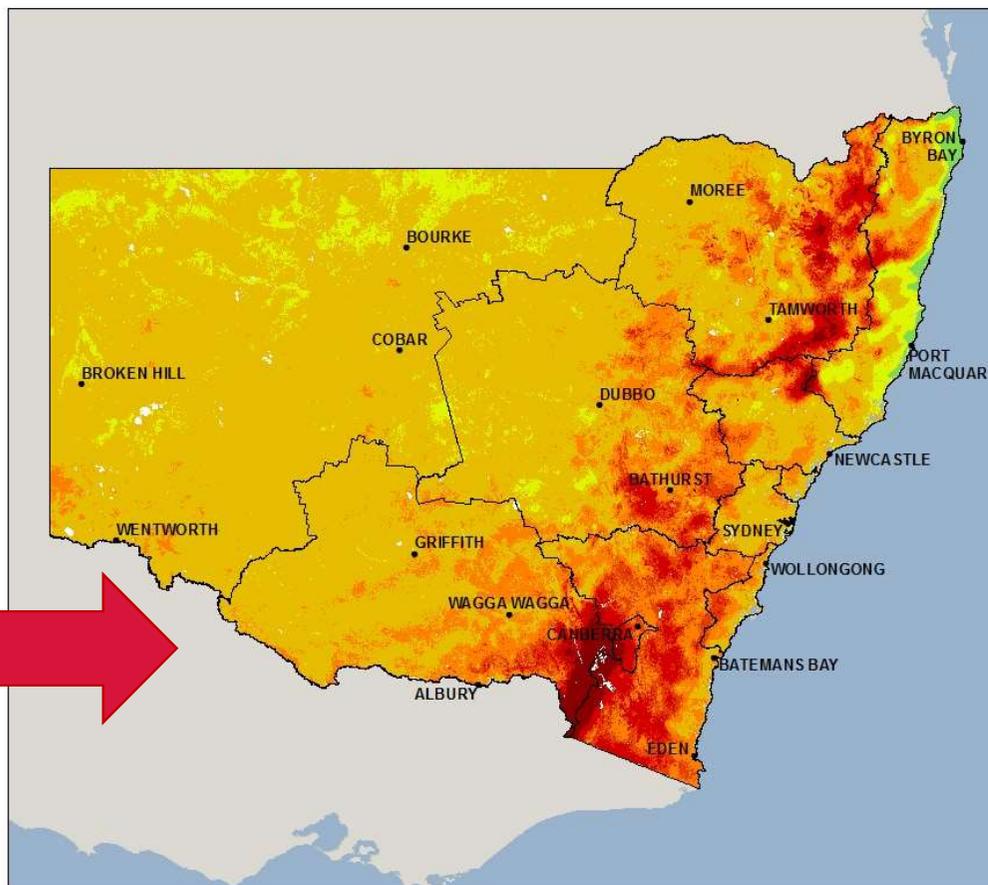
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Soil Erosion
Climate Change Impact Snapshot



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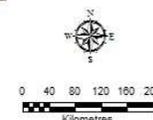
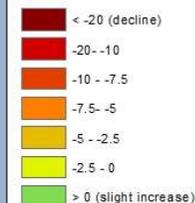
Soil Properties: NSW Climate
Change Impact Snapshot
2nd edition



NSW and ACT



Change in SOC stocks,
0-30 cm (t/ha)
1990-2009 to 2060-2079
Multi-model mean

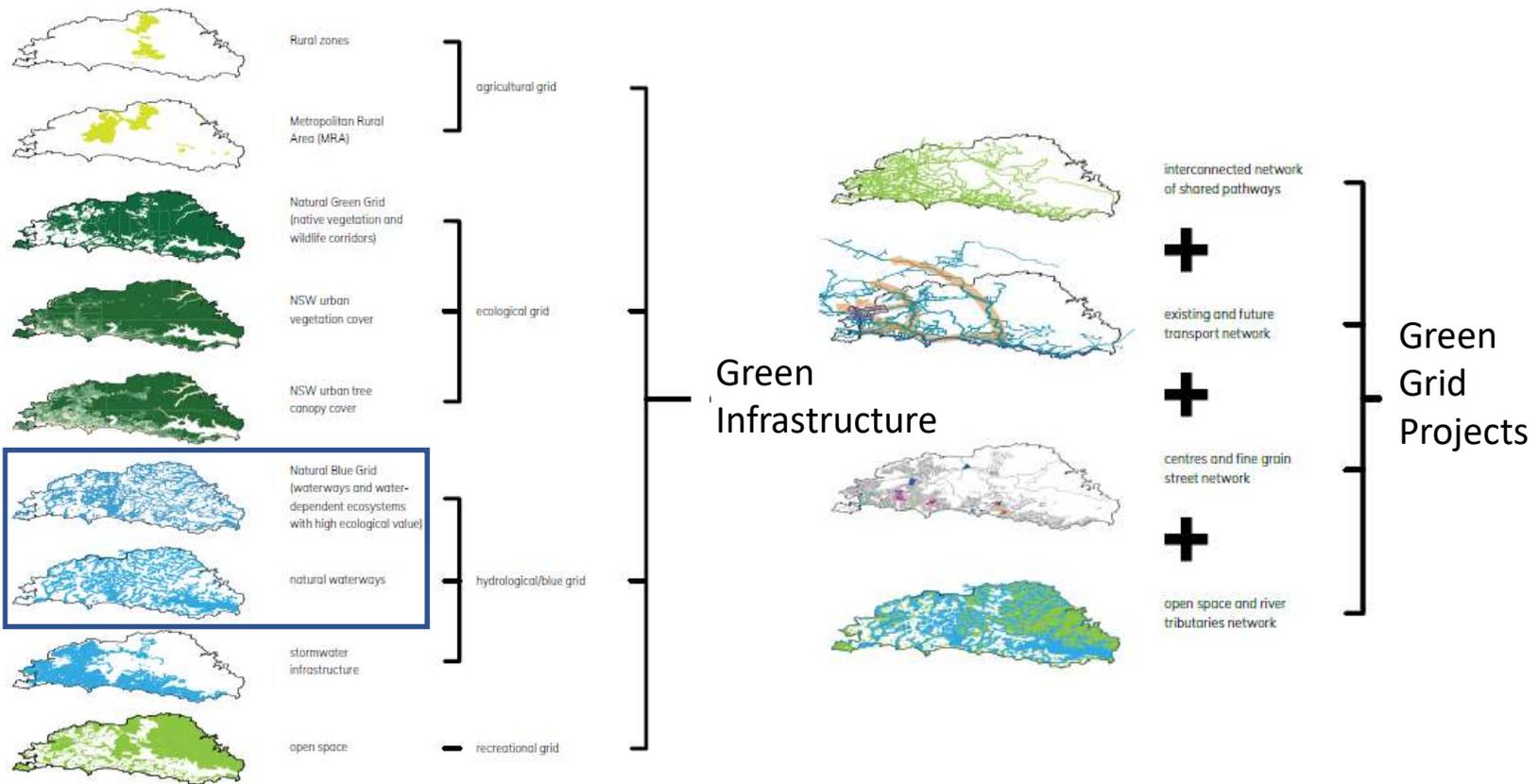


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Water sensitive urban design – HEV Tool

Northern Beaches local green grid, green infrastructure and green grid projects



Towards 2040

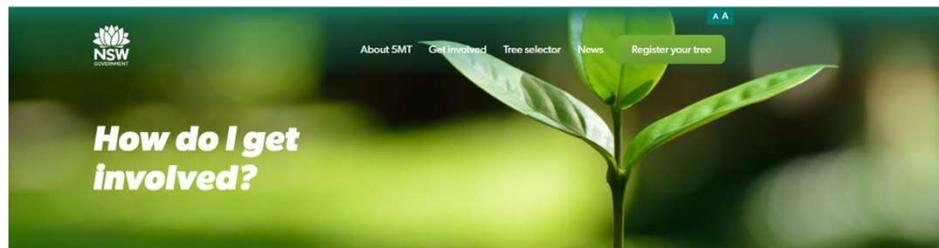
Draft Local Strategic Planning Statement



A 20 year land-use vision for the Northern Beaches September 2019



Citizen science for climate change



Trees registered **178,573**

We can't do it alone! We all need to do our part.

We want everyone to get involved. Residents, community groups, organisations and government are all working together to plant Five Million Trees across Greater Sydney.



Individuals

Plant a tree on your property and make it count by registering your tree online.

Not sure what tree to plant?

Use our Tree Selector to quickly and easily find tree species that grow best in your area. It is also recommended you talk to a professional for advice about what tree would best suit your site.

This could be someone at your local nursery, a qualified arborist or contact someone at your local council.

No room at your place to plant a tree?

Get your hands dirty at a tree planting day! Alternatively, some Councils may allow planting of trees in a naturestrip but this can only be undertaken with the approval of your local Council.



1 000 000
TREES PLANTED

I'M AVAILABLE.

Are you?

[GET INVOLVED >](#)

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[ATTEND A TREE PLANTING](#)

[REQUEST A STREET TREE](#)

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YOU'RE ONE IN A MILLION
We did it! One million trees for New York City!



STREET TREE PLANTING

New street trees are being planted this spring! [Learn More](#)



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Get in contact

Tom Celebrezze

Director of Science Strategy and Impact



Tom.Celebrezze@environment.nsw.gov.au



Tom Celebrezze



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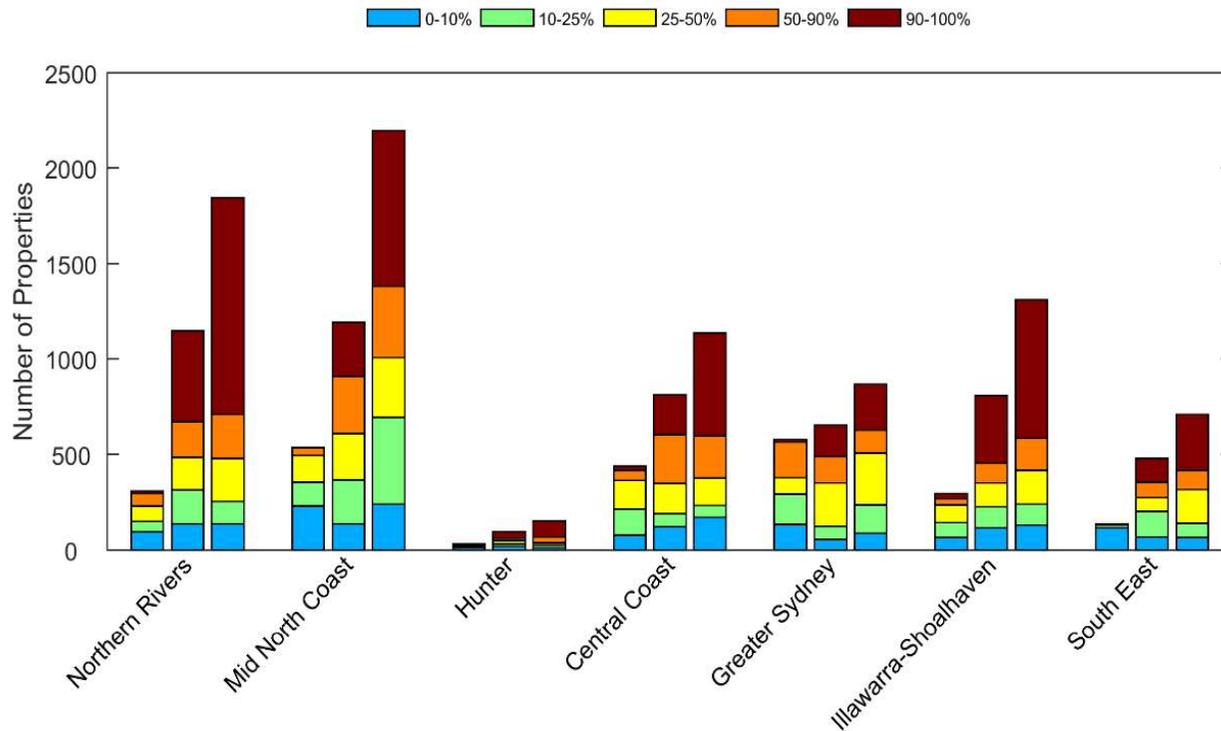
Dr Tim Pritchard

Water, wetlands and coast
science

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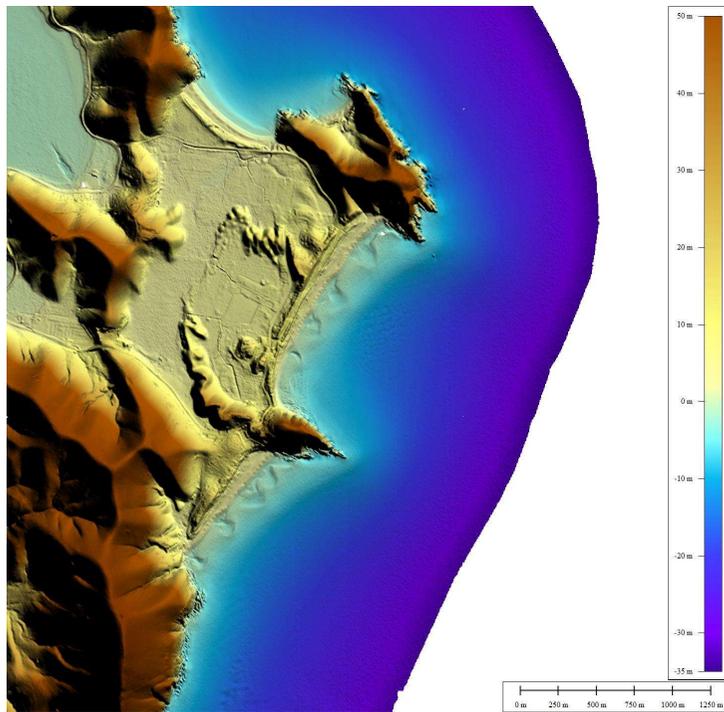
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State wide erosion and inundation mapping and exposure assessments

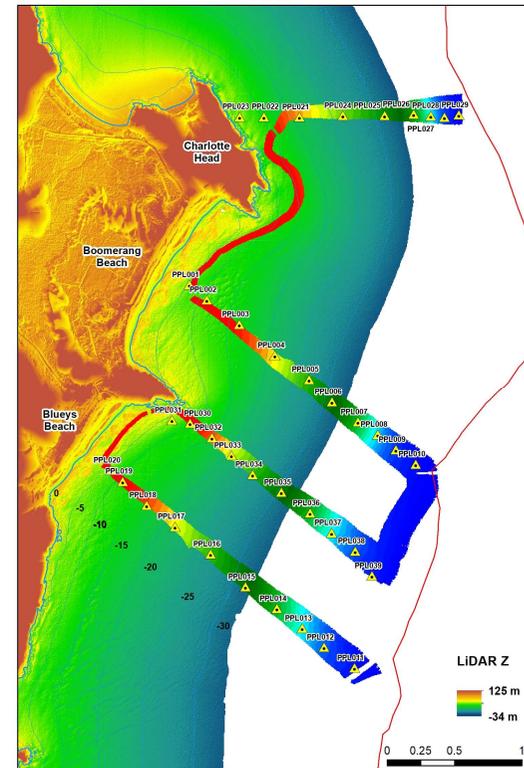


State wide seabed mapping

Blueys and Boomerang LiDAR

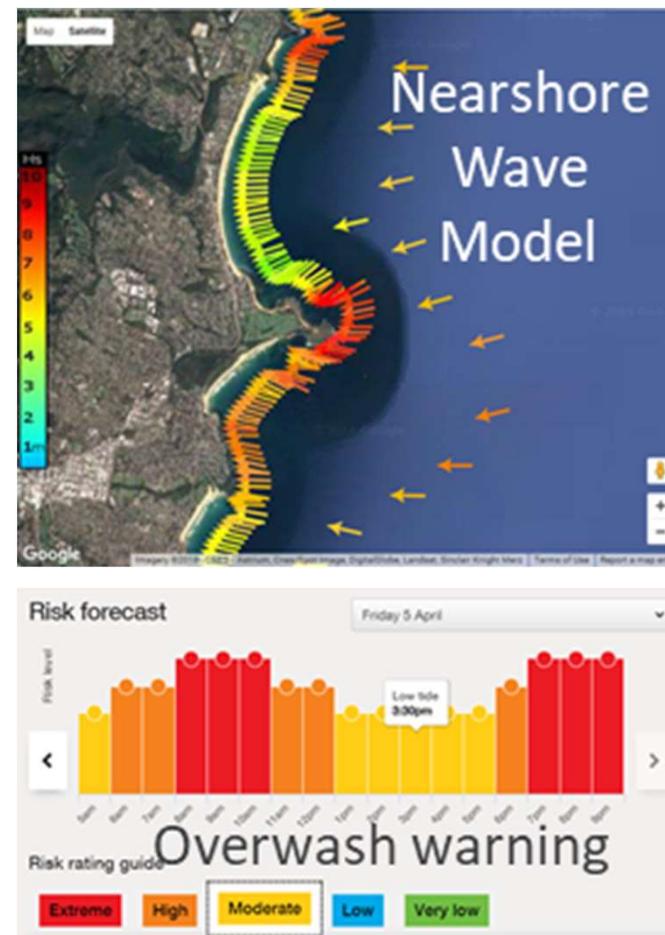


Sediment Sampling



Development of tools/methods

- Probabilistic coastal erosion modelling
- Nearshore wave model
- Wave risk forecast tool
- Coastal Processes Node
- CoastSnap





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Collaborative, rigorous science, open data



Baird AUSTRALIA



CoastSnap
community beach monitoring



MACQUARIE University



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Discussion

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Put hand up for roaming microphone in room

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Thank you

Useful links

- AdaptNSW: <https://climatechange.environment.nsw.gov.au/>
- Sharing and Enabling Environmental Data (SEED) portal: <https://www.seed.nsw.gov.au/>