




Information needs for the development of northern Australia

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Peter Stone & Cuan Petheram

The north has many development options

- tourism
- mining
- energy
- defence
- cultural & environmental economy
- agriculture
- aquaculture
- others

Potential to unlock value from a wide range of resources for a wide range of purposes

Why focus on agriculture?

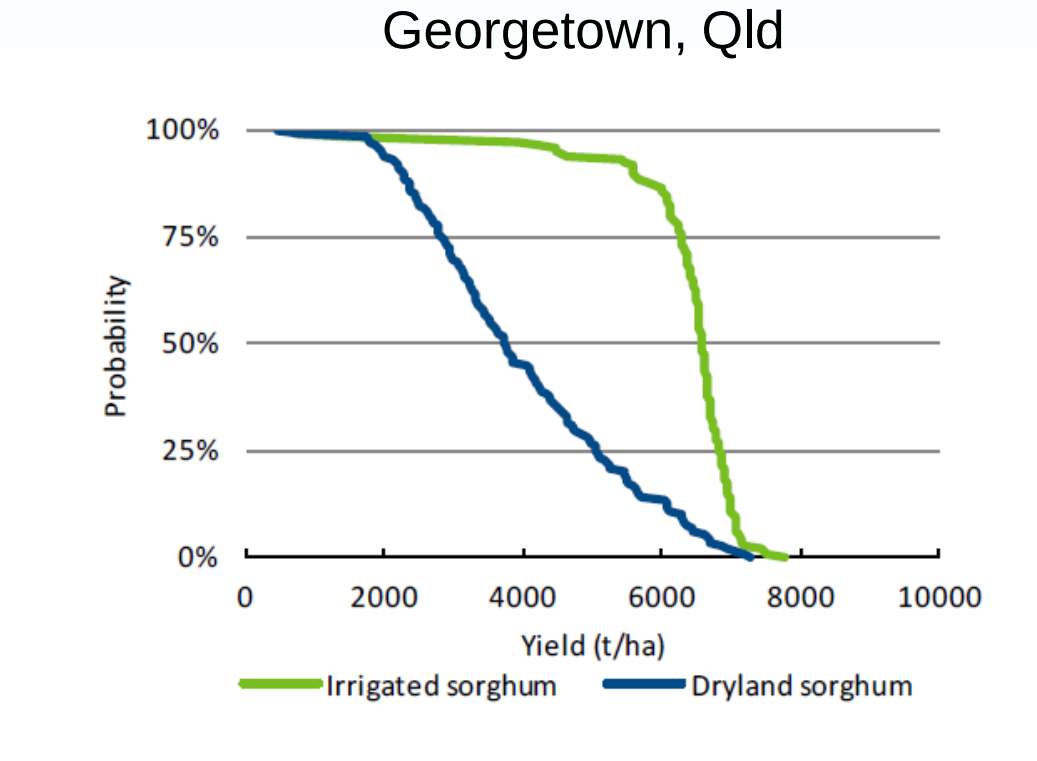
Physical resource potential:

- 1.5 million of irrigated land
- 1.75x national irrigation
- 11x northern irrigation
- food for 7.5 million mouths

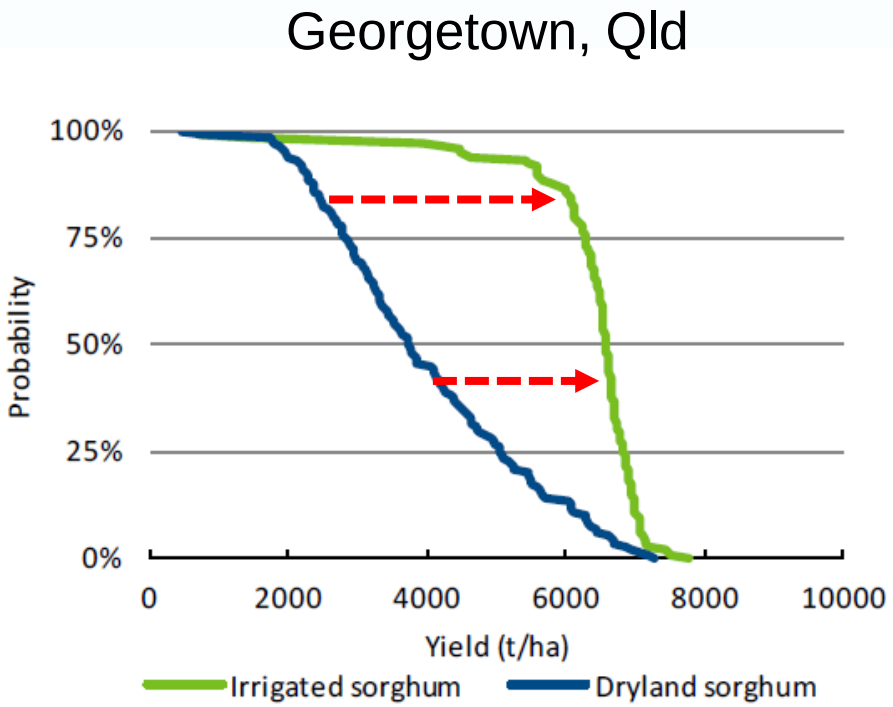
that’s not to be sneezed at

...nor is the existing food production

The future is irrigated

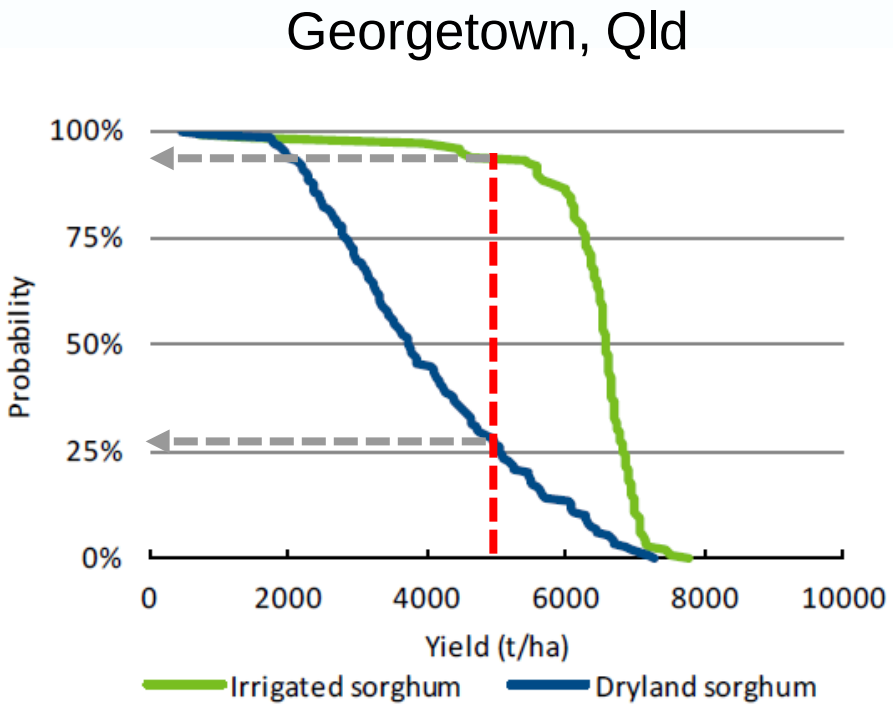


The future is irrigated



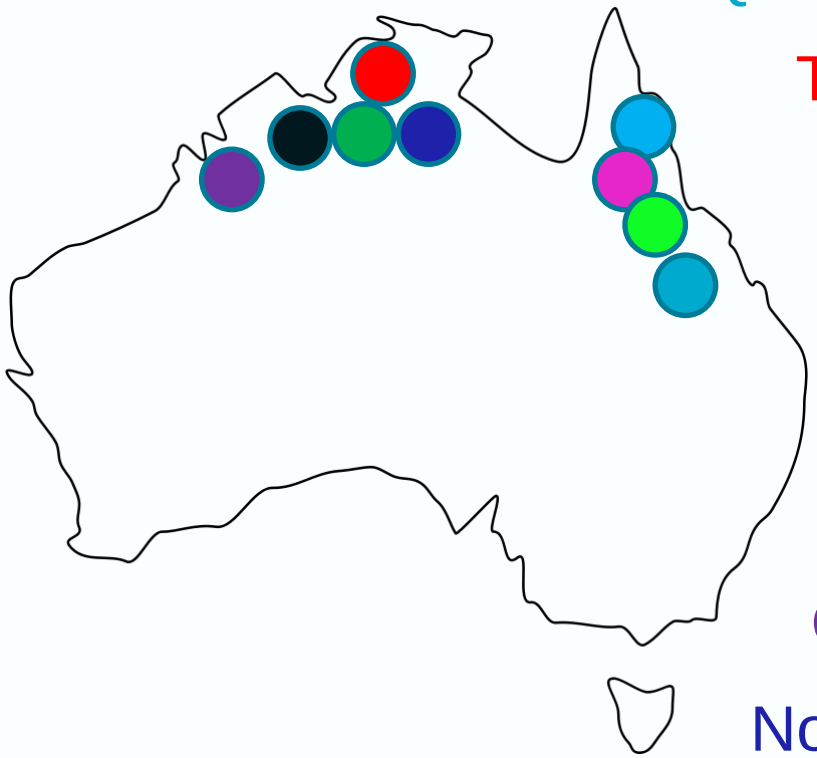
irrigation increases yield

The future is irrigated



irrigation increases profit

A history of irrigated development attempts



Qld-British Food Corporation (1948)

Territory Rice Limited (1955)

Mareeba-Dimbulah (1958)

Ord River Irrigation Area (1960)

Tipperary Land Corporation (1967

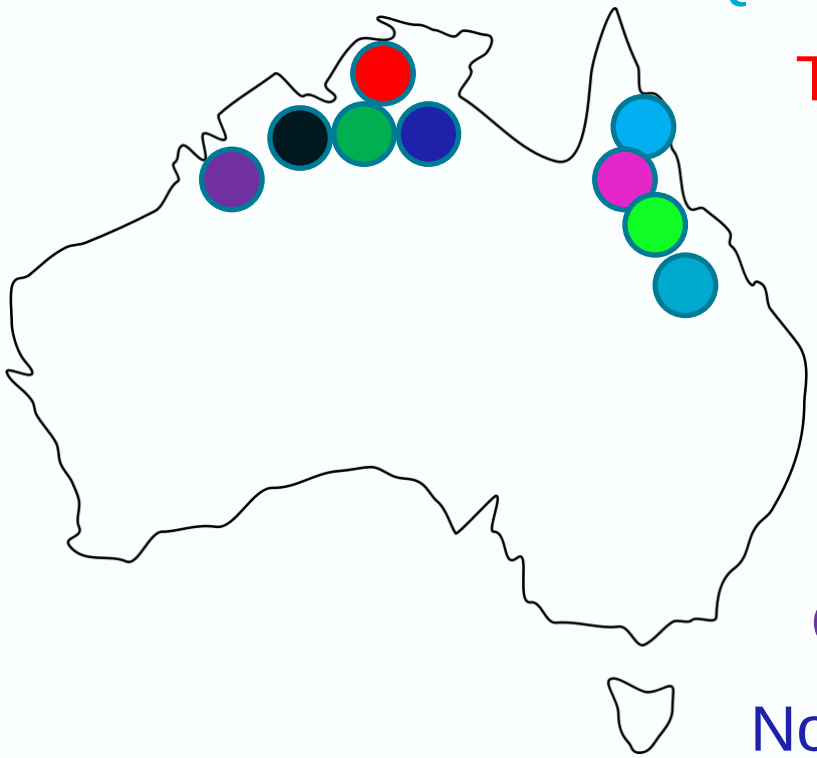
Lakeland Downs (1968)

Camballin Irrigation Area (1969)

Northern Agricultural Development Corporation (1970)

Burdekin River (1987)

A history of irrigated development success



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Anatomy of failure

- natural environment challenging but not main source of failure
- management, planning & finances most important
- overcapitalising early, before lessons learned

lack of data not the problem

Investment requires confidence

- The challenges and uncertainties of northern agriculture deter investment
- Unlocking new investment requires renewed confidence and certainty...
- ...about the scale and nature of opportunity and risk

Where do the major opportunities and risks lie?

Six key issues

1. tenure
2. water
3. soil
4. agricultural production
5. markets
6. transport

What are the challenges? What are the solutions?

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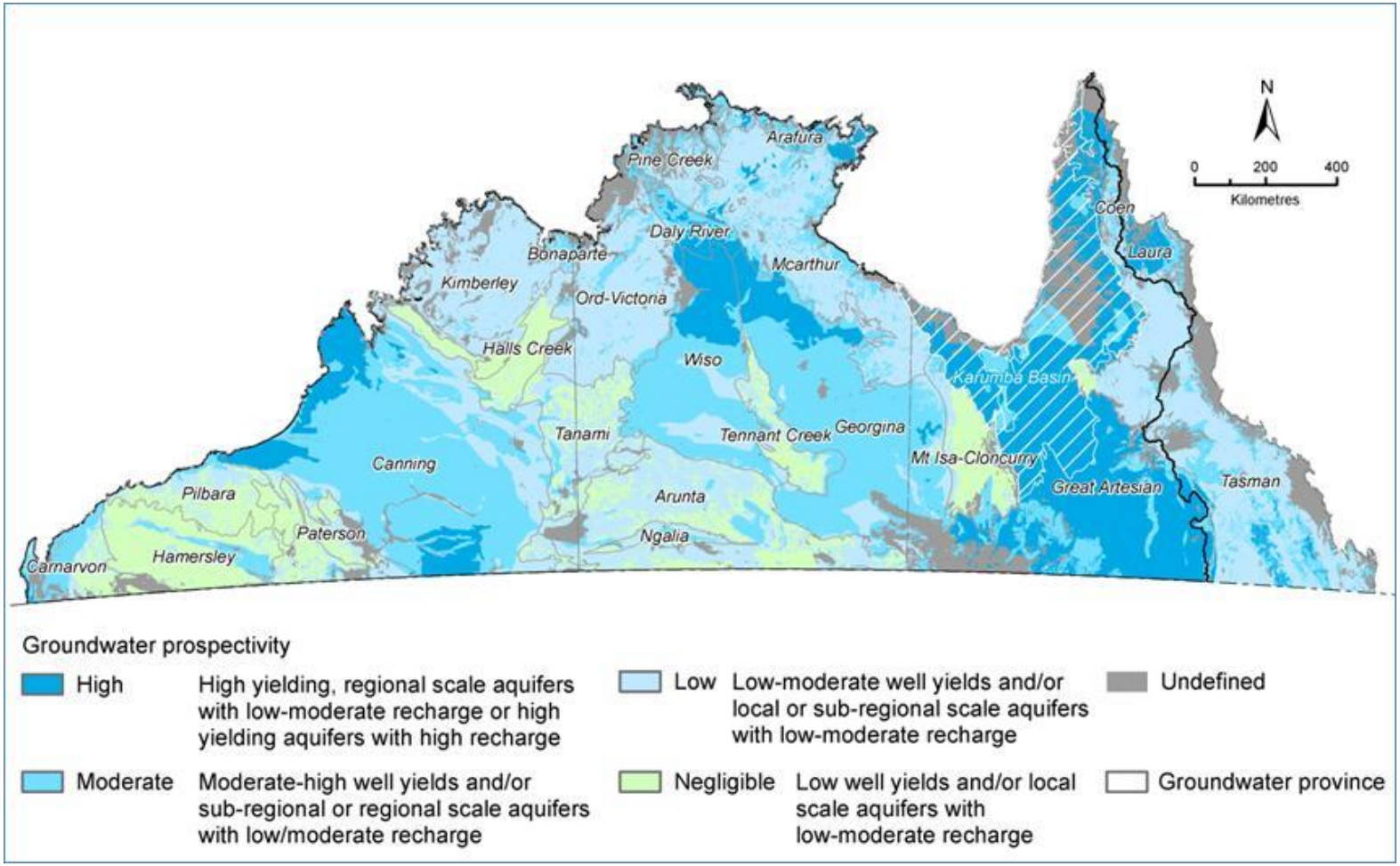
What are the challenges? What are the solutions?

Groundwater



Can do better

Groundwater knowledge needs

Shallow, alluvial groundwater...offers widespread opportunities for small-scale development

...without enormous resources, it's not possible to map local, shallow resources and their yields...

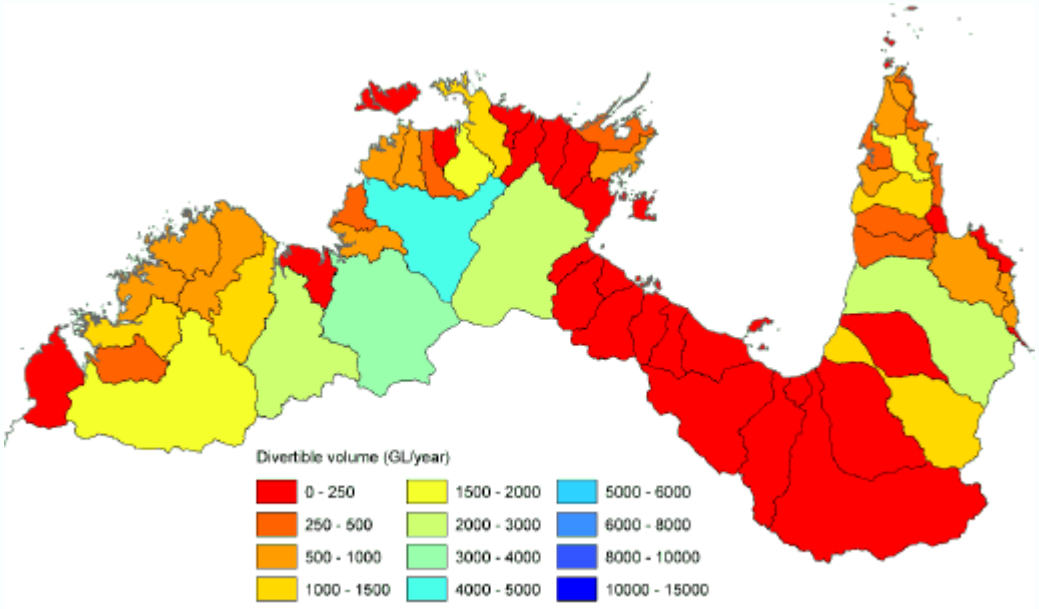
Deep groundwater resources...offer potential for larger developments...

...only a handful of regional-scale aquifers have been simulated using numerical models...

...for the majority of northern Australia, sub-basin scale mapping of groundwater prospectivity is not possible due to the paucity of data at sufficient resolution...

http://www.regional.gov.au/regional/ona/files/mosaic_irrigation_technical_report.pdf

Surface water



Can do better

Surface water knowledge needs

Streamflow data

available at the required spatial and temporal resolution only for ca two of the 50+ catchments in northern Australia

Enables:

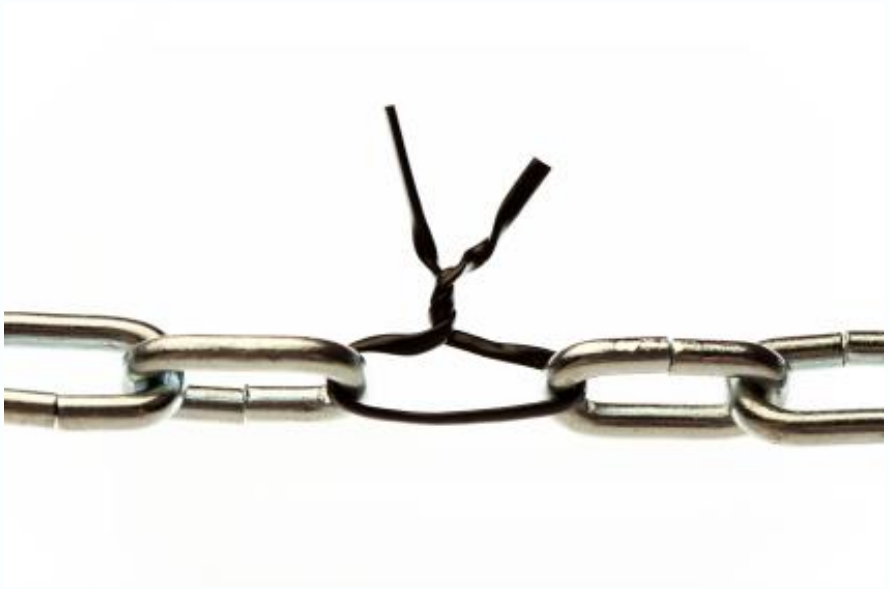
- location, scale and risk of development opportunity
- design and cost of best-matched water infrastructure
- quantification of impacts
- assessment of trade-offs
- evidence-based regulation, which tends to increase water allocation

Flooding

Surface water-groundwater connection

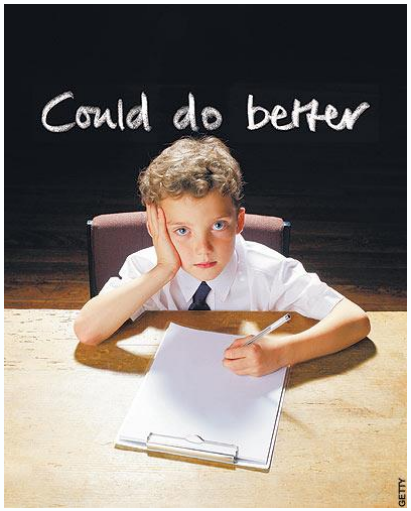
Greater geographic coverage of the basics

Climate data



Can do better, but not a limiting factor

‘Nice to have’ knowledge improvements



- > spatial resolution of rainfall data
- sub-daily rainfall data
- fine resolution satellite-derived river height data

And many more...but greater geographic coverage of daily streamflow is most limiting

Propositions – northern Australia

Water	Climate		
✗	✓	1.	Do not need new information, just better quality
✗	✓	2.	Understand important processes well enough
✓		3.	Basic hydrological processes poorly understood/quantified
	✗	4.	Basic climate processes poorly understood/quantified
✗	✗	5.	Need more analysis of historical record
✗	✓	6.	Don't need new data, just communicate current data better
✗	✗	7.	Need better and faster access to existing data
		8.	Focus on making satellite data cheaper and easier to use
✗		9.	Main priority is groundwater data
		10.	Less focus on future, more on present and past

Thank you

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