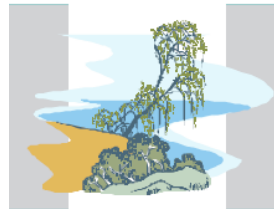


THE WATER AND SALT BALANCES OF THE BURDEKIN RIVER IRRIGATION AREA

Importance for strategic planning and institutional arrangements for the entire lower Burdekin.



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Issues

Two issues to be managed:

- Rising groundwater levels
- Salt concentrations in groundwater

Points to remember

Sustainable management of the groundwater of the lower Burdekin will be achieved through a mix of four mechanisms

- Deep drainage to remove saline groundwater
- Pumping of groundwater for irrigation
- Improved irrigation practices to reduce leakage beneath root zone
- Reduced channel leakage

Strategic planning, policy and pricing will need to be converged to get the right mix

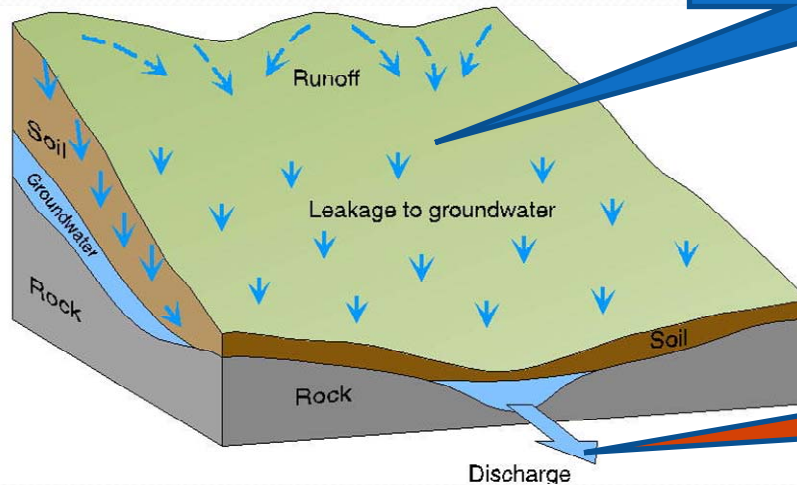
Starting point

- Project began in May 2007
- First stage Document of Discovery
 - talking to stakeholders
 - reviewing the science
 - bringing together a snapshot
- Key findings
 - a lot of science but no big picture
 - stakeholders working in different directions
 - issues important for whole lower Burdekin

How to move forward

- All stakeholders need to undertake a strategic planning process together to map out way forward
- Before this process can start people needed to have a feel for the problem
 - how big is it?
 - what is contributing to it?
 - what else do we need to know?
- With these things broadly quantified the next step of the process can begin

Contributors - irrigation

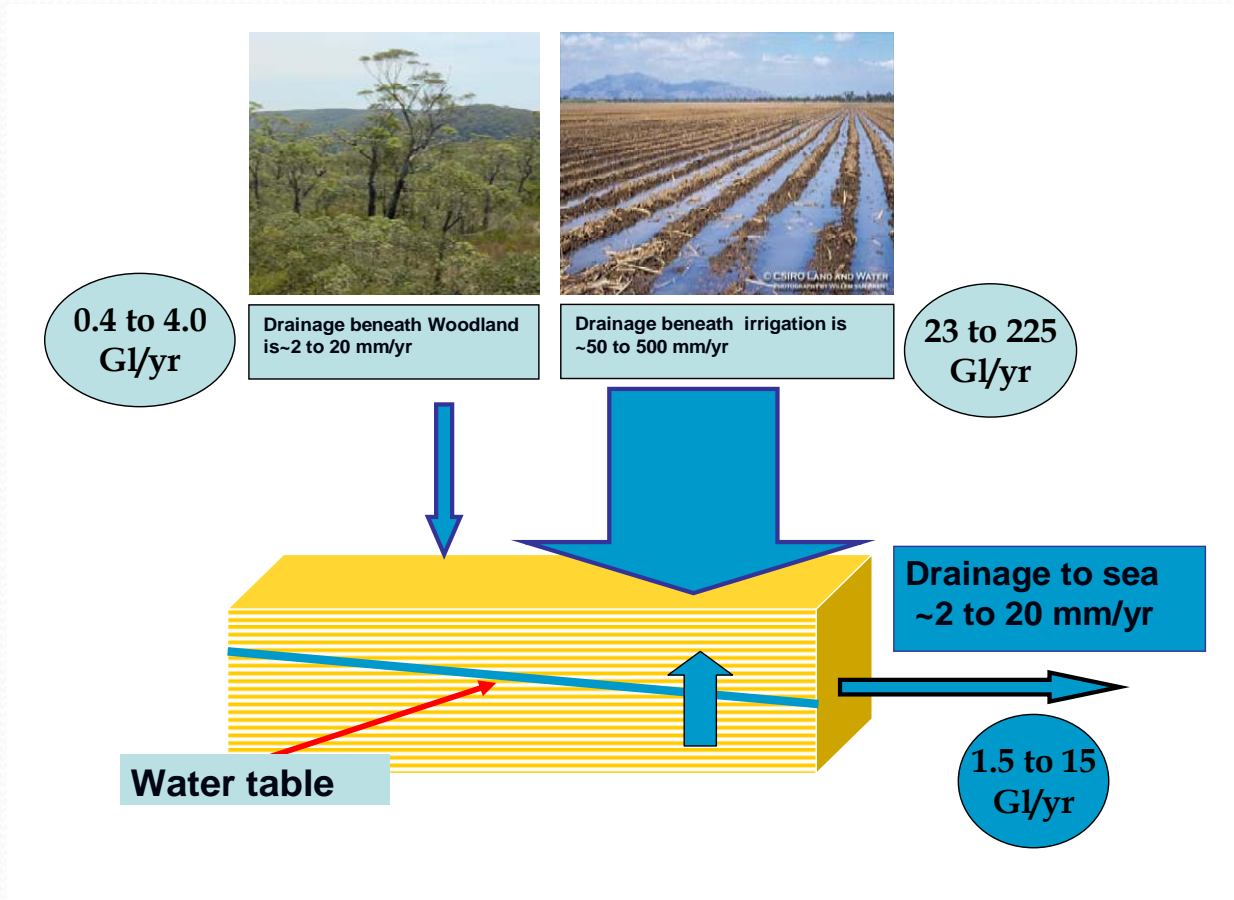


Leakage to
groundwater 48 – 455
mm/year

Discharge to sea
2 – 20 mm/year

It is much easier to add water to the groundwater system than drain it to the sea

Contributors – irrigation



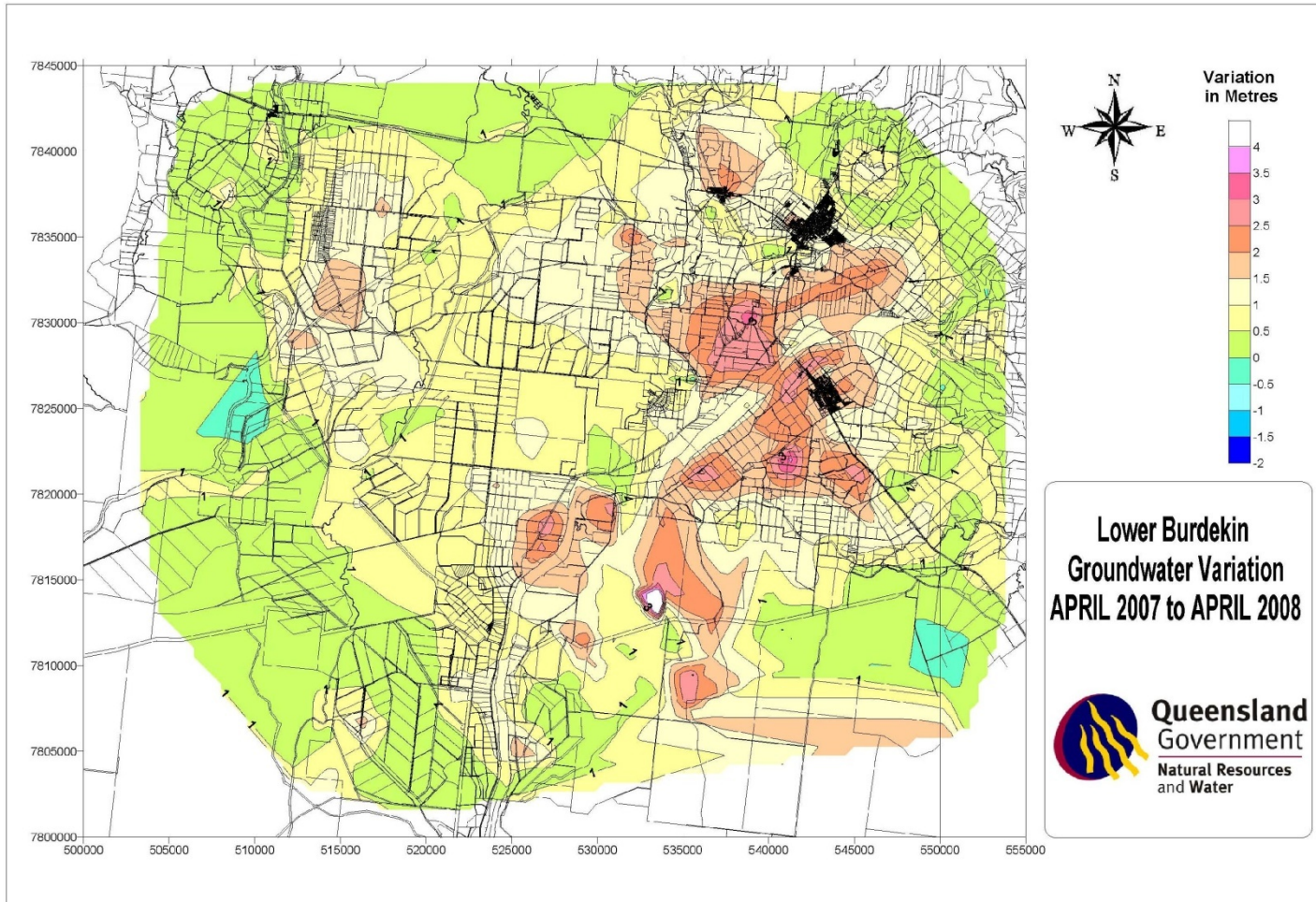
Contributors - irrigation

Leakage beneath irrigation (mm per year)	Leakage beneath woodland (mm per year)	Area of irrigation (ha)	Total area (ha)	Landscape drainage capacity (ML)	Water leaking to groundwater (ML)	Water in excess to landscape capacity (ML)
100	12	45,000	63,000	15,000	47,000	32,000
200	12	45,000	63,000	15,000	92,000	77,000
400	12	45,000	63,000	15,000	182,000	167,000

Contributors - irrigation

Leakage beneath irrigation (mm per year)	Water excess to landscape capacity (ML)	Estimated rise in watertable (mm per year)
100	32,000	508
200	78,000	1,230
400	167,000	2,650

Groundwater rise



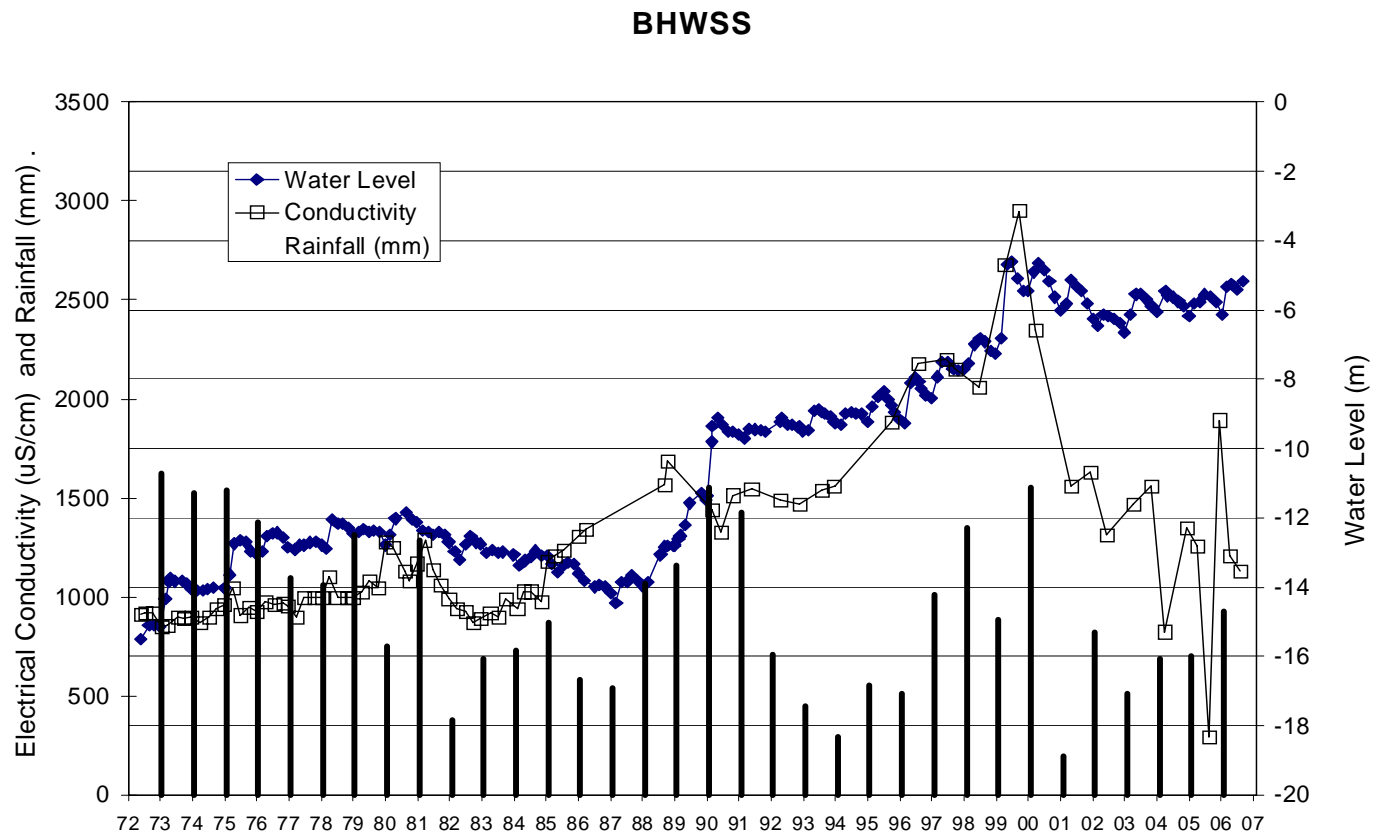
Contribution channel leakage

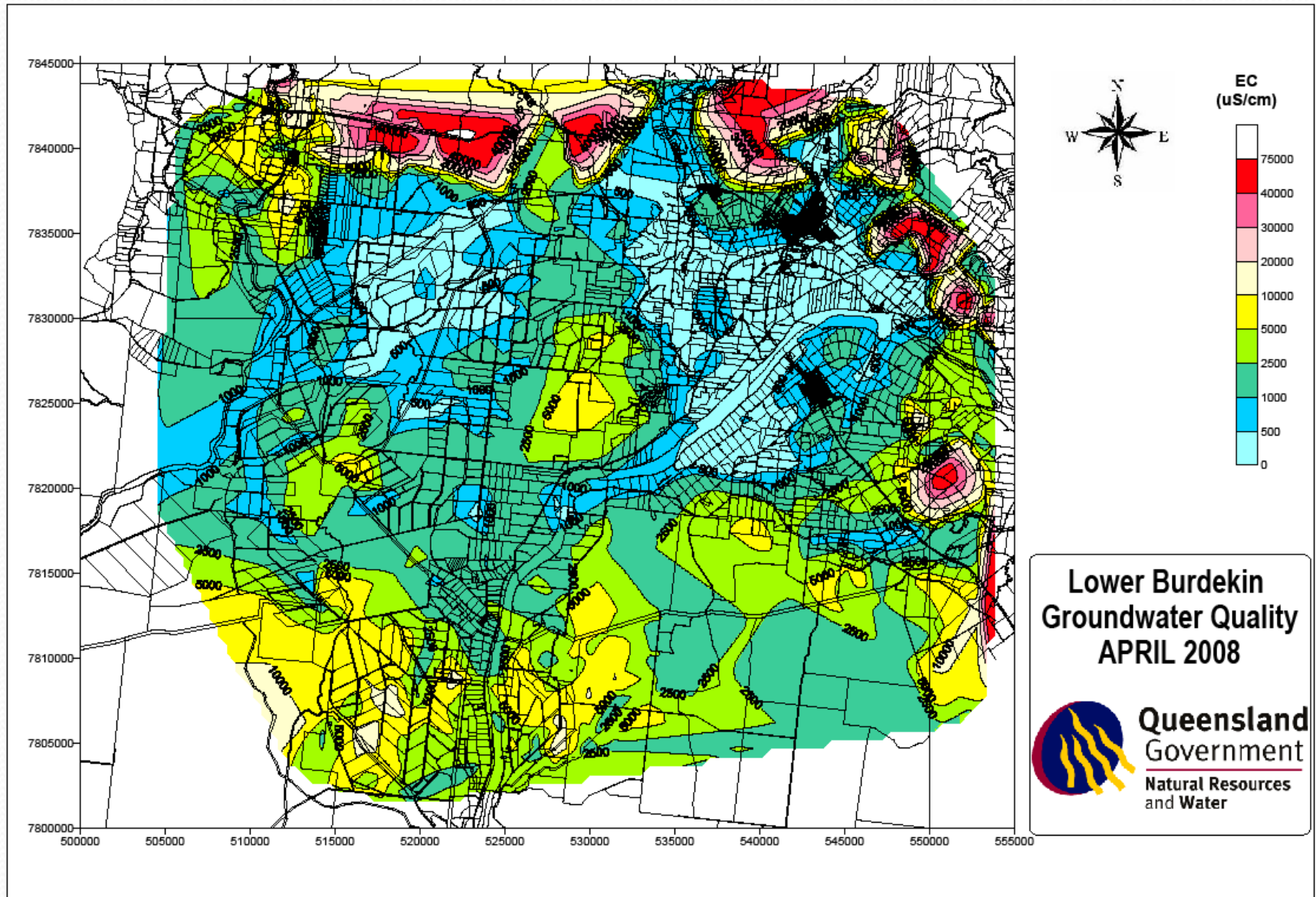
System	K=1 mm/day	K=5 mm/day	K=10 mm/day	K=100 mm/day
Haughton	0.18	0.90	1.81	18.08
Barratta	0.12	0.58	1.17	11.71
Total (GL/yr)	0.30	1.48	2.98	29.79

Combined leakage

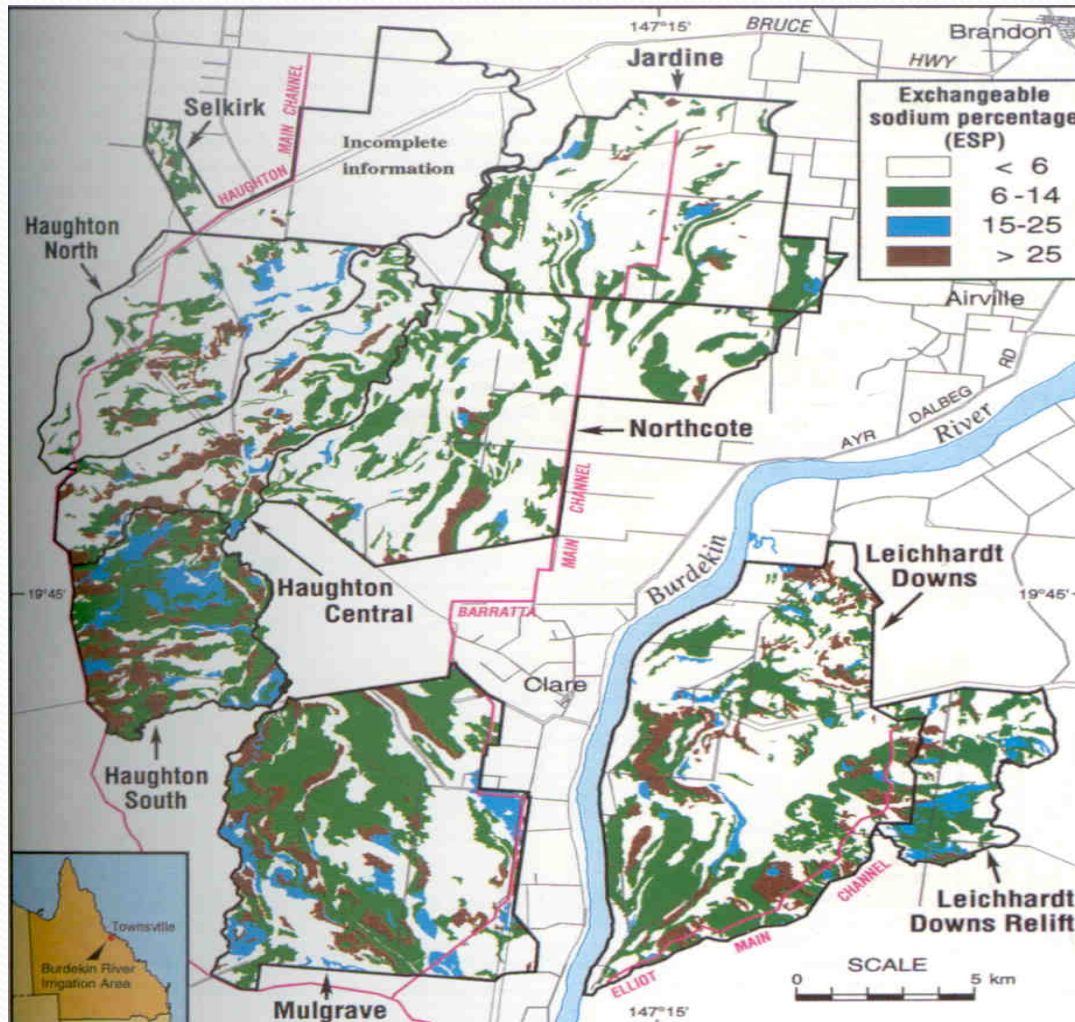
- However SunWater figures estimate is 67.6 GL/year
- This channel leakage input combined with the irrigation leakage means:
 - 160 GL/year entering the landscape
 - 15 GL/year can naturally drain
 - 145 GL/year addition to landscape
- This would give double the rise in observed groundwater levels – water is escaping from the system
- But where – what is the relationship and connections with the aquifers of Burdekin delta irrigation district?

Watertable rise

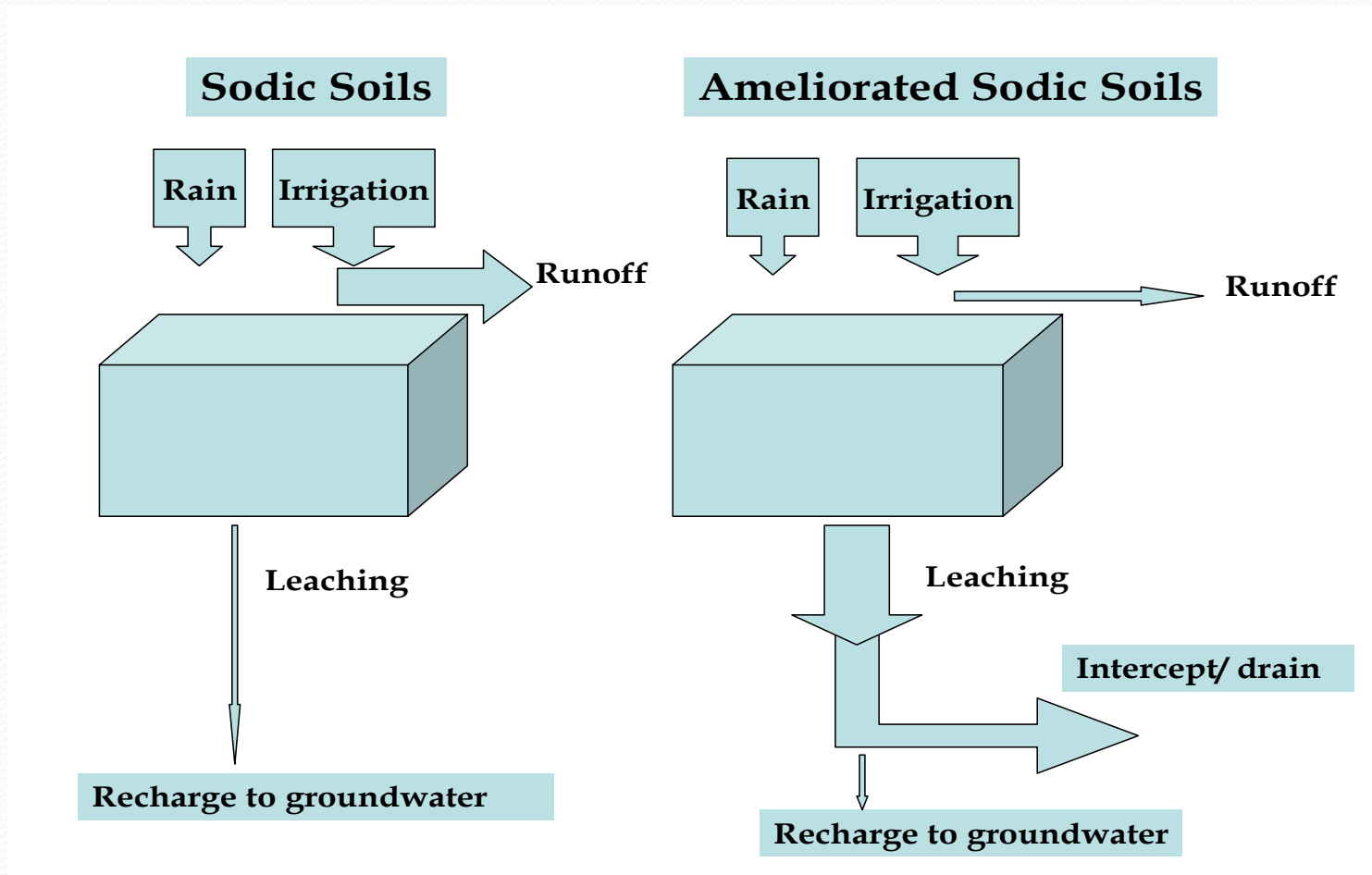




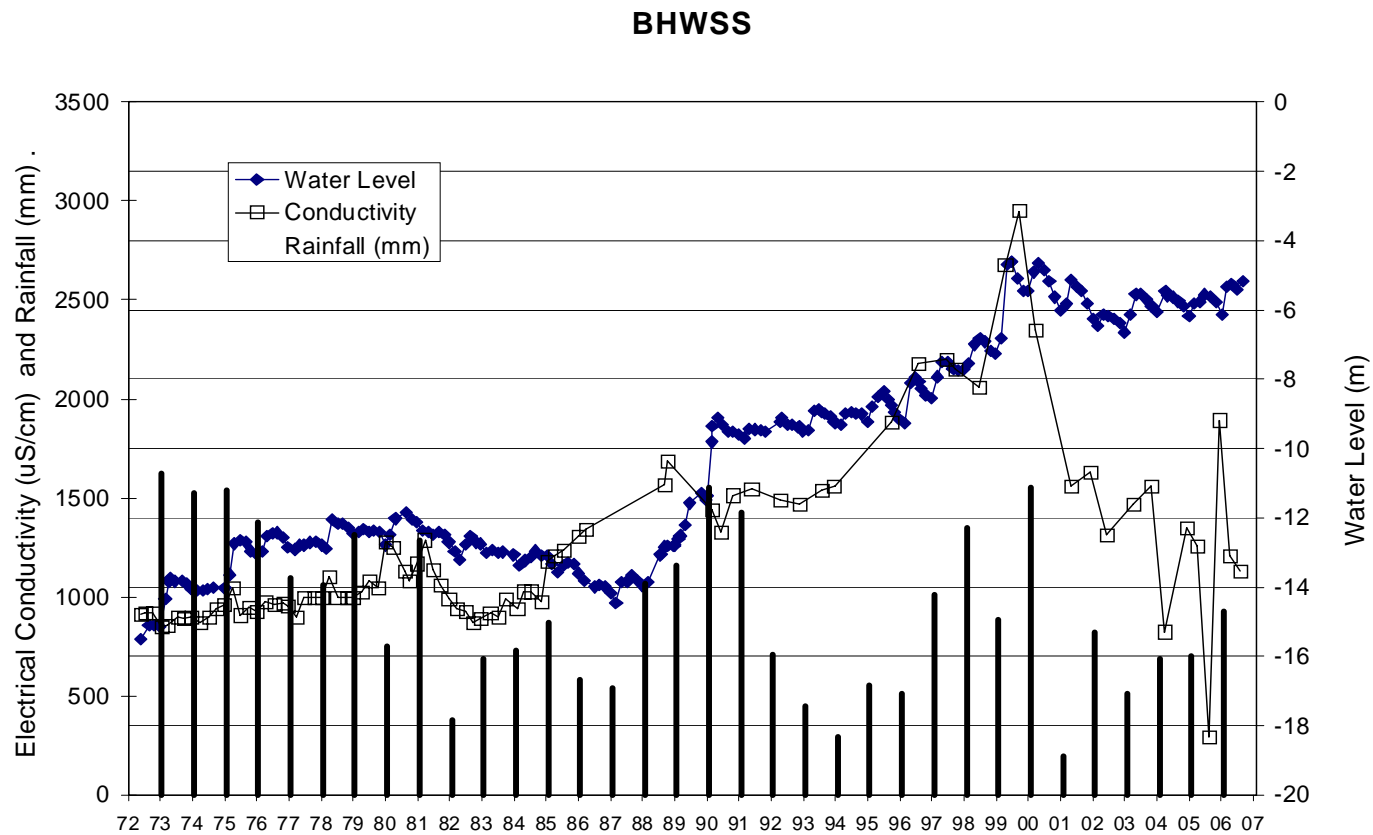
Sodic/Saline soils



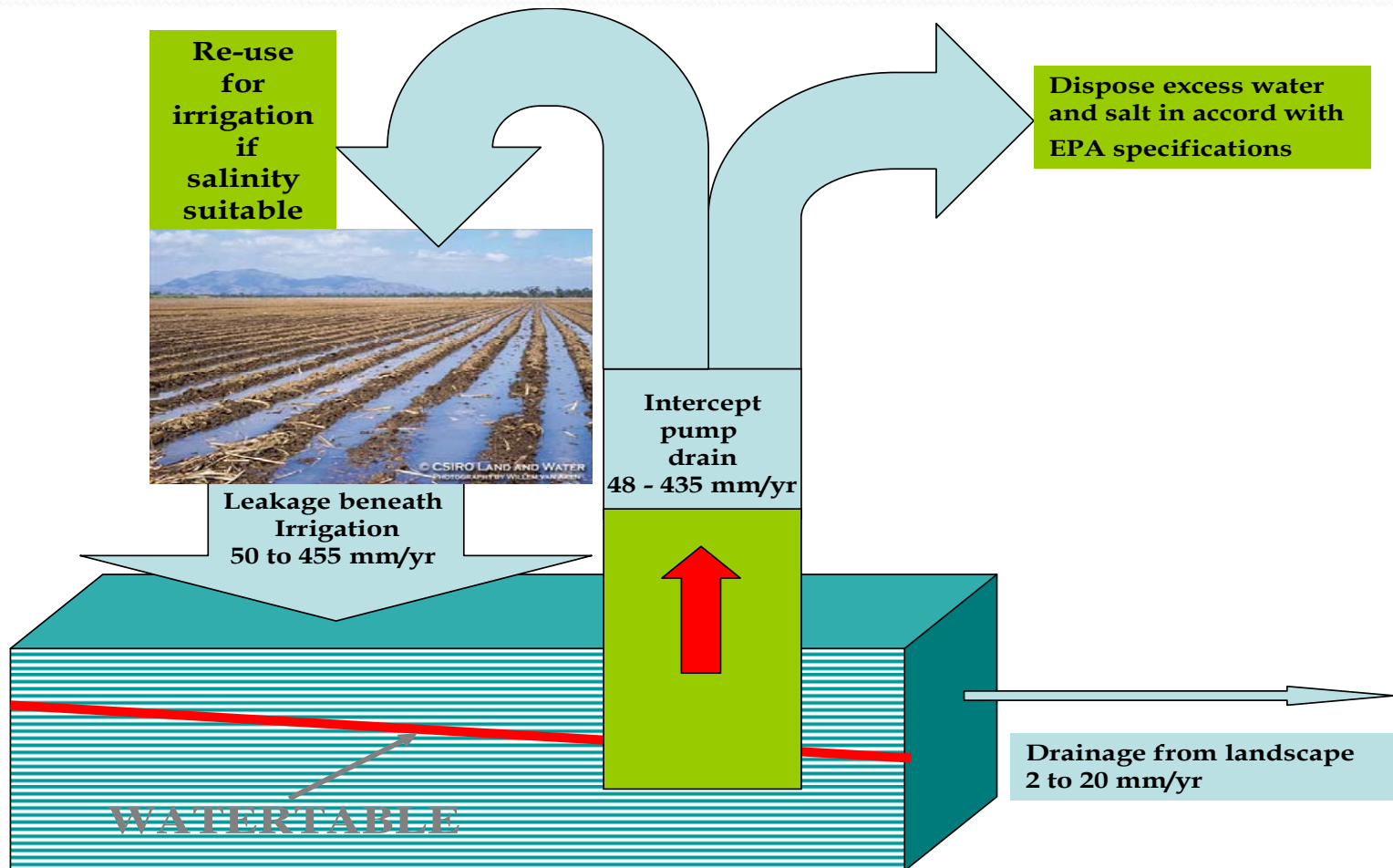
Sodic/Saline soils



Relationship of salt and groundwater



What are the options?



Where to from here?

- All stakeholders feel they know the way forward
- Need to share that vision and agree
- Need to work together to develop knowledge to fill gaps in the picture
- Need to work together to develop a Strategic Plan for how to achieve the vision using the options available
- Plan must contain targets and actions which all stakeholders agree with
- All stakeholders must combine their efforts to deliver the Plan

Timelines

- This may take some time:
 - it took 20 years to make the mess
 - important to get the planning right
 - some old wounds that may take some time
- May need an interim set of criteria for any project undertaken before the Plan is complete
- Any projects must be able to show they are reducing recharge or removing water/salt
- Cost benefit assessment done to determine which projects deliver the best value for money

Any questions or suggestions?

