

Wetland values and associated biodiversity - here today... what about tomorrow?



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South East Local Land Services



Wetland values

- What is a wetland?
- What's so great about wetlands?
- How are changes in climate likely to affect wetlands?
- What should we do about it?



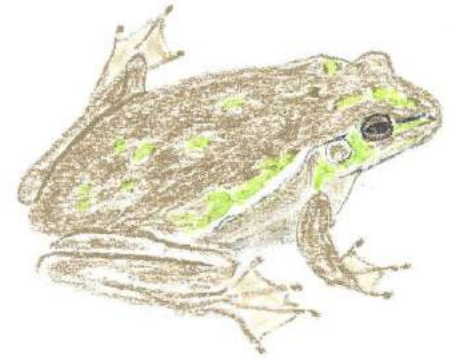
What is a wetland?

- Land temporarily or permanently covered with water that is slow moving or still
- Sometimes known as the boggy spot in the paddock
- Wetlands are not just flooded areas



Southern Tablelands wetlands

- Well over ten different, natural wetland ‘types’ recognised on the Southern Tablelands.
 - Palustrine (dominated by vegetation and eg. swamps, marshes, bogs, fens)
 - Lacustrine (large, open-water dominated eg. lakes, lagoons)
 - Riverine (contained in a waterway/channel)
- Farm dams





What's so great about wetlands?

- There are a variety of plants and animals that rely on wetlands to persist.
- Southern Tablelands wetlands support:
 - eighteen different wetland-associated vegetation communities
 - approximately twenty frog species!
 - Range of migratory birds
 - Four federally listed wetland communities
 - Diversity of threatened plants and animals



What's so great about wetlands?

- Nutrient and sediment filters
- Impede flow and de-energise high flow events
- Productive grazing environments
- Drought refuge
- Water security – sponge effect!

2/18/2014
2009 2015



Image © 2016 CNES / Astrium

Google earth

Tour Guide 2009

Imagery Date: 2/18/2014 35°18'37.39" S 149°56'31.03" E elev 616 m eye alt 1.25 km

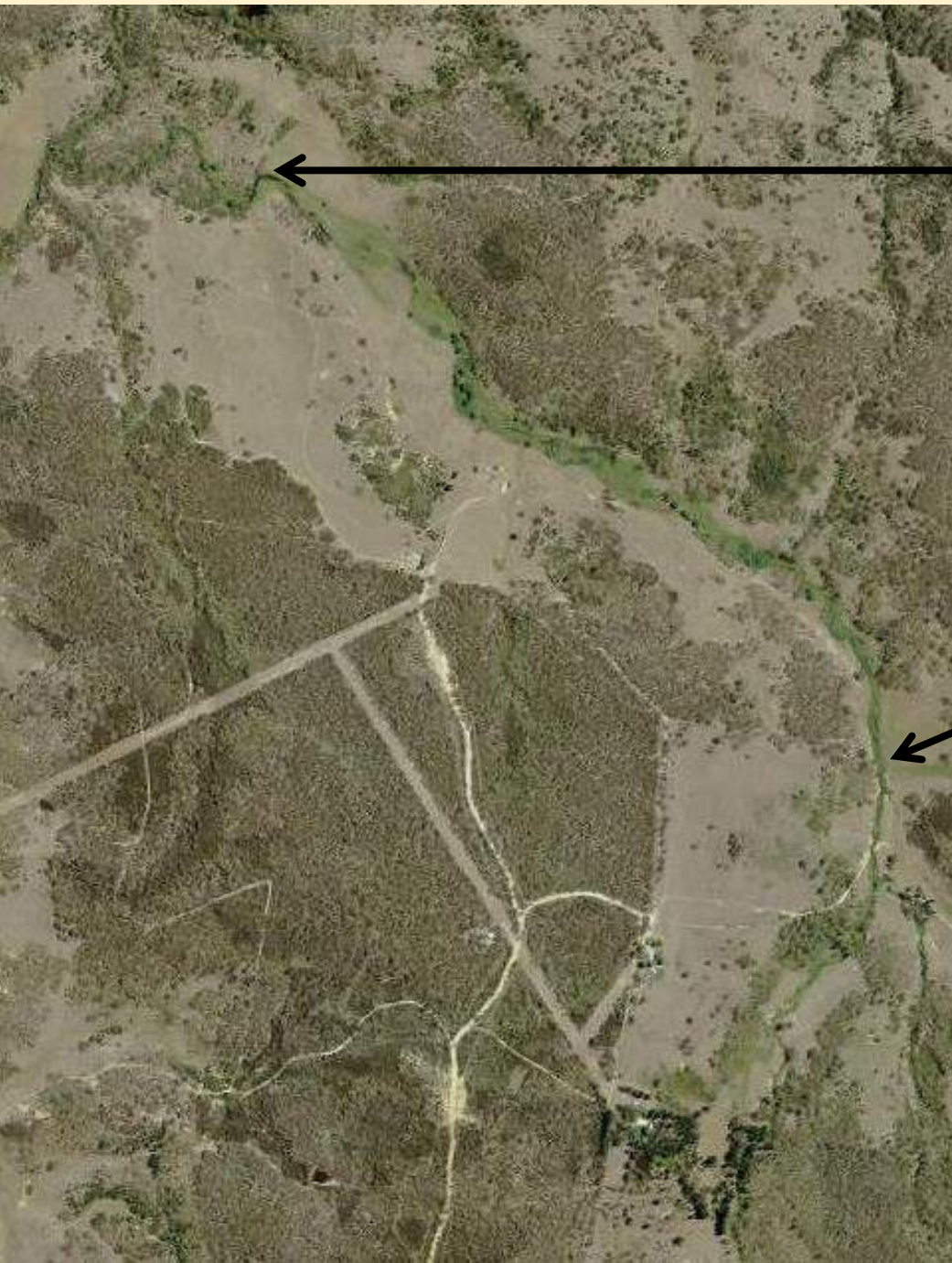
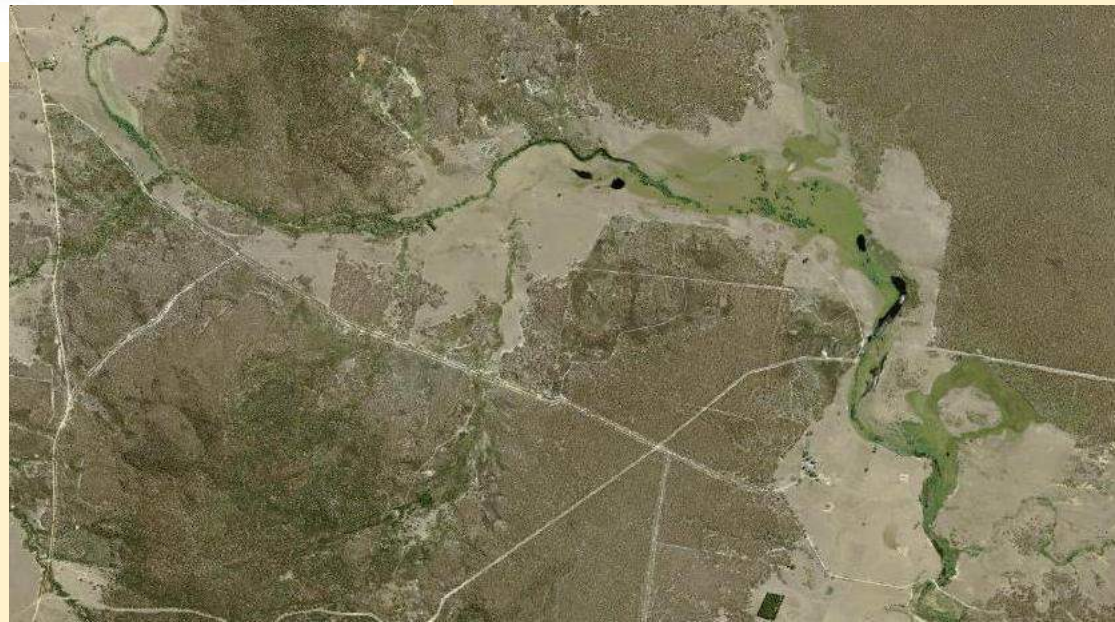
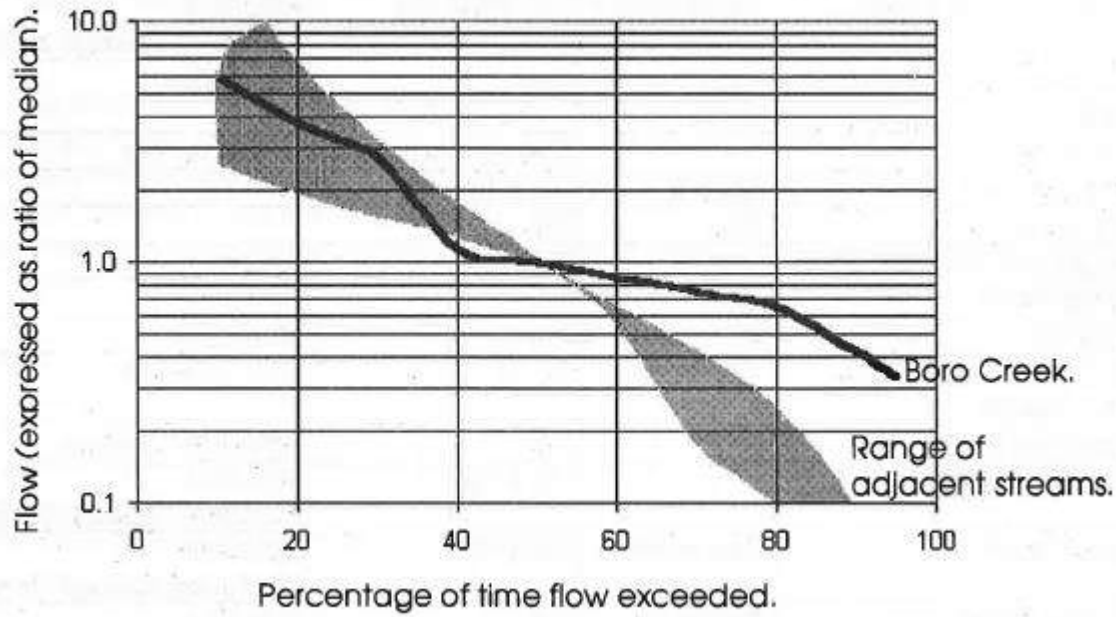
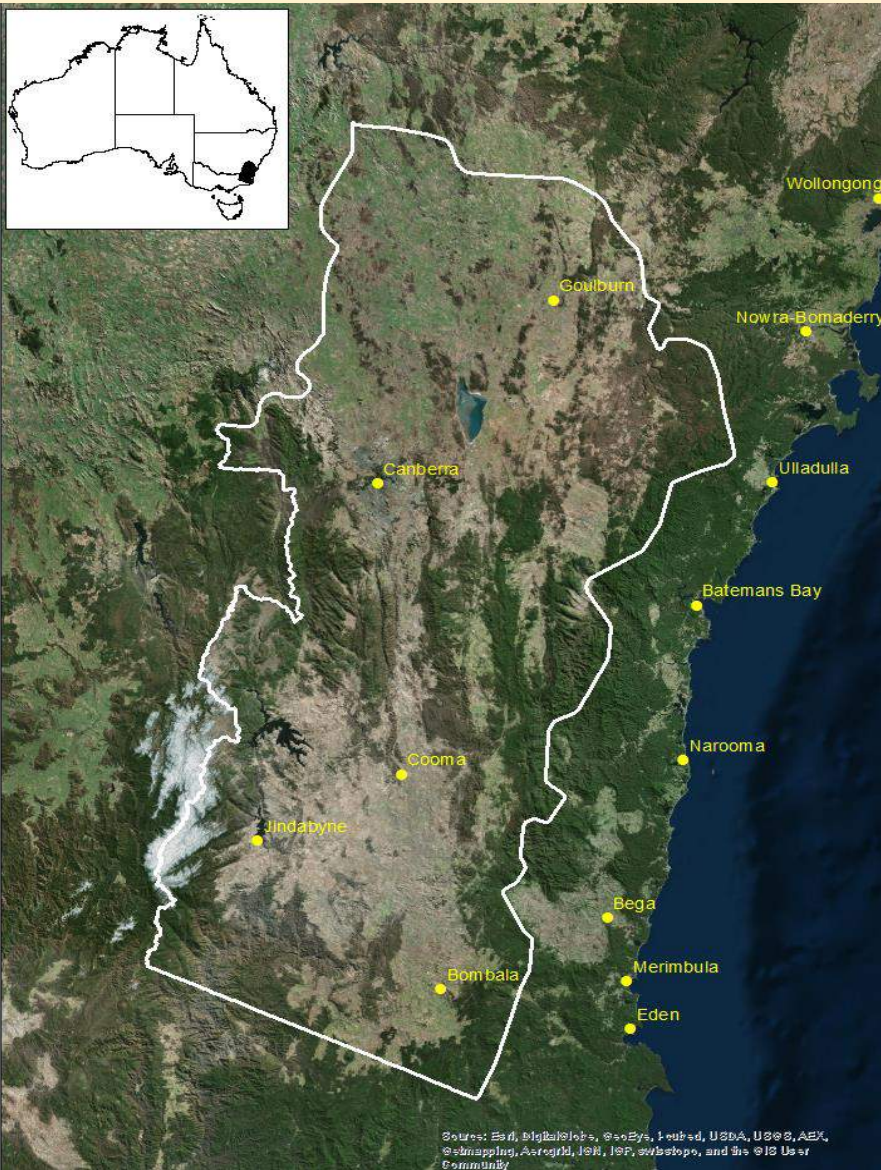


Figure A3.1. Boro Creek flow duration curve compared to adjacent sites.
(Flows at each site are expressed as a ratio of the median flow.)



How are changes in climate likely to affect wetlands?



Wetland hydrological vulnerability to climate change and prioritisation within the Southern Tablelands of the South East Local Land Services Region

Final technical report for the NSW Environmental Trust project 'wetland conservation in the face of climate change'

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^C NSW Department of Primary Industries

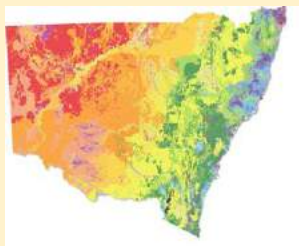
^D Office of Environment and Heritage NSW

^E South East Local Land Services



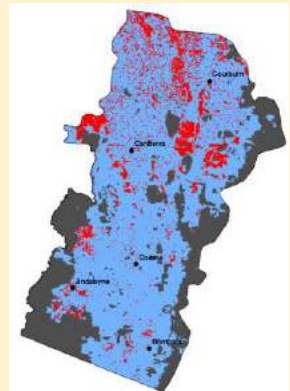
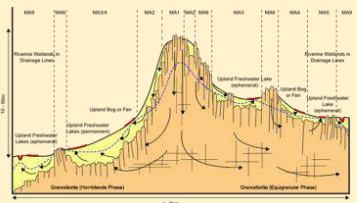


NASA

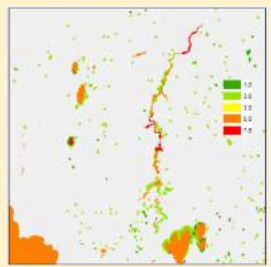


Climate change predictions (NARCLiM)

Localised differences in landscape hydrology (HGLs)



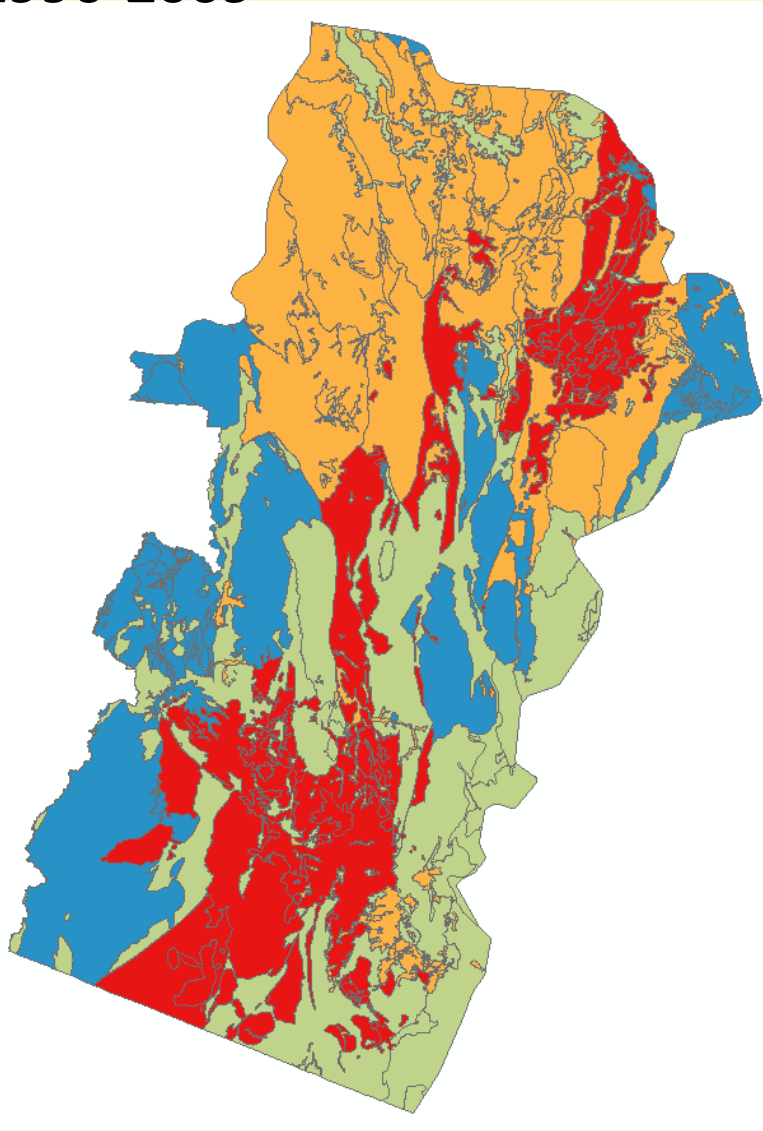
Spatial variability in biodiversity



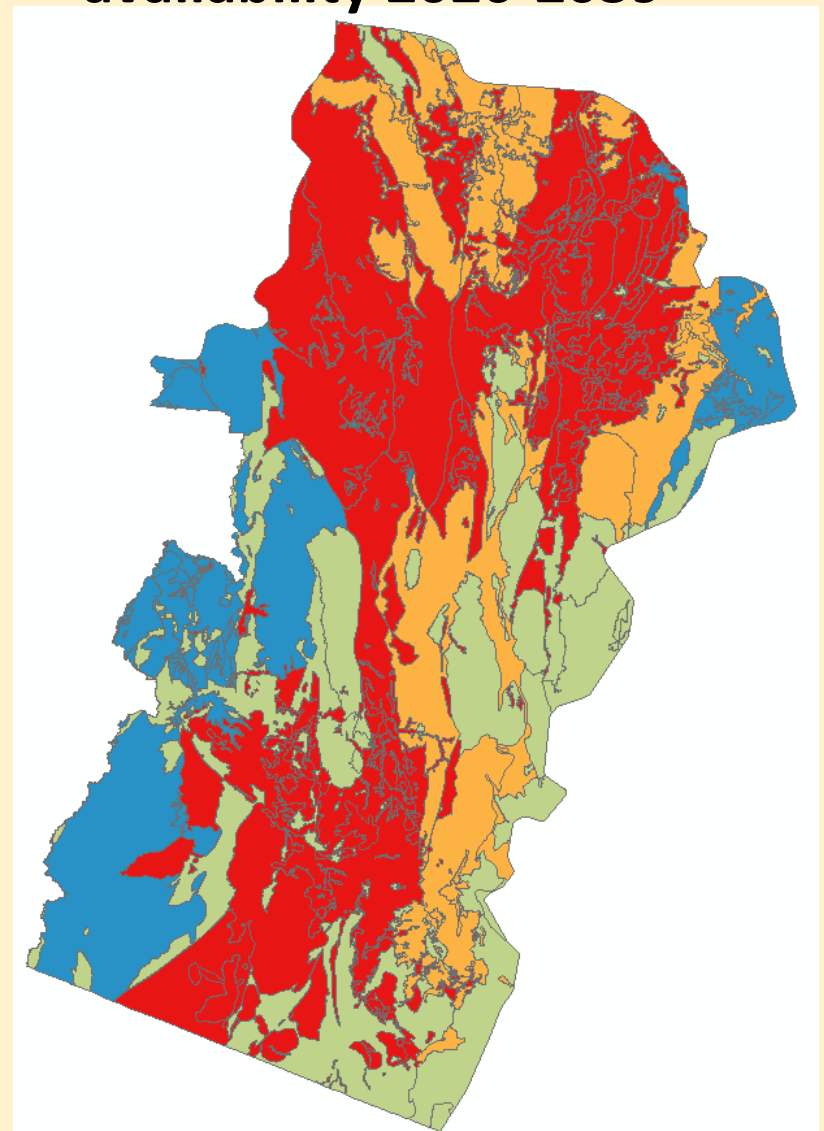
On-ground decision making



CURRENT annual water availability 1990-2009



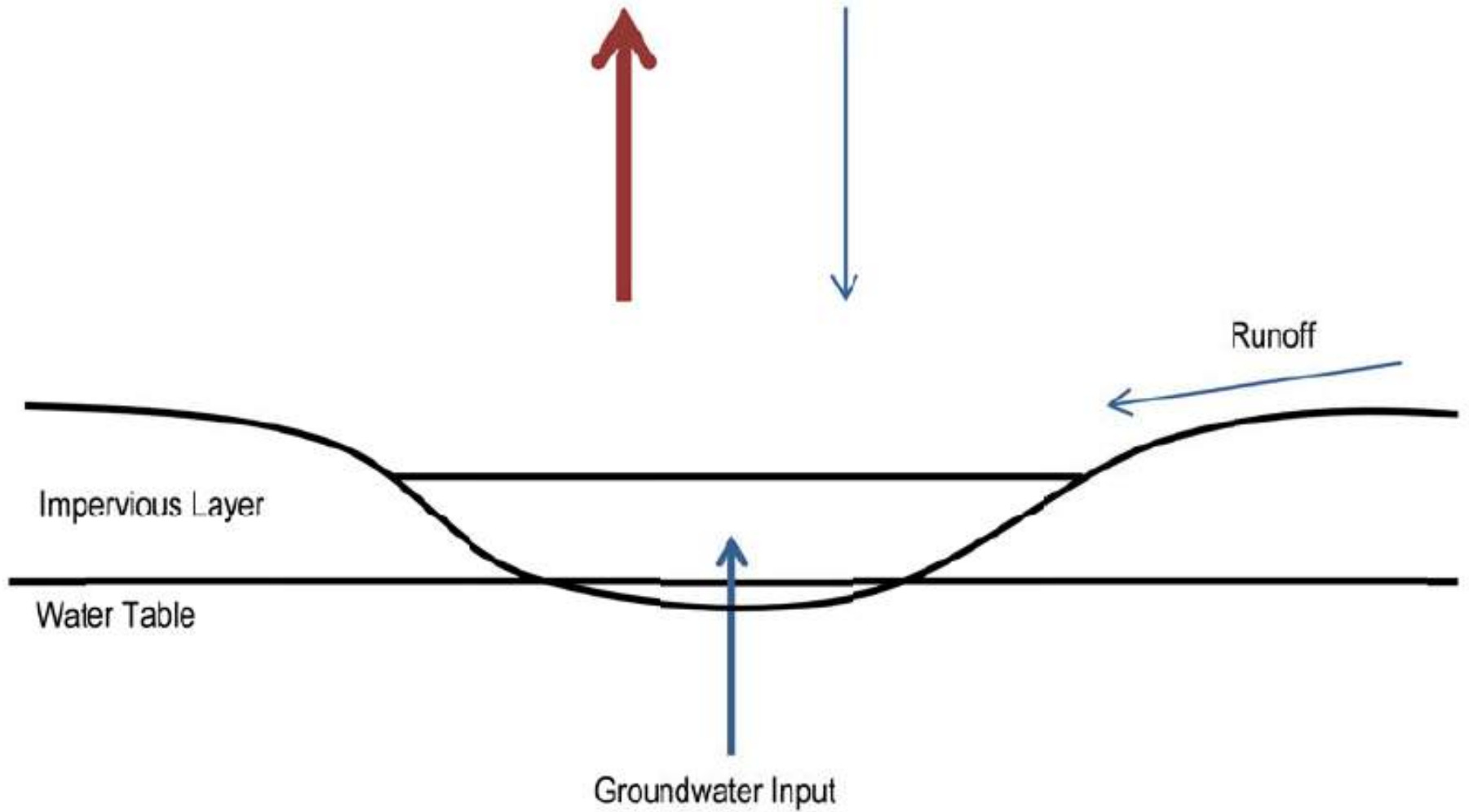
NEAR FUTURE annual water availability 2020-2039



Dela Cruz *et al.* (2005)

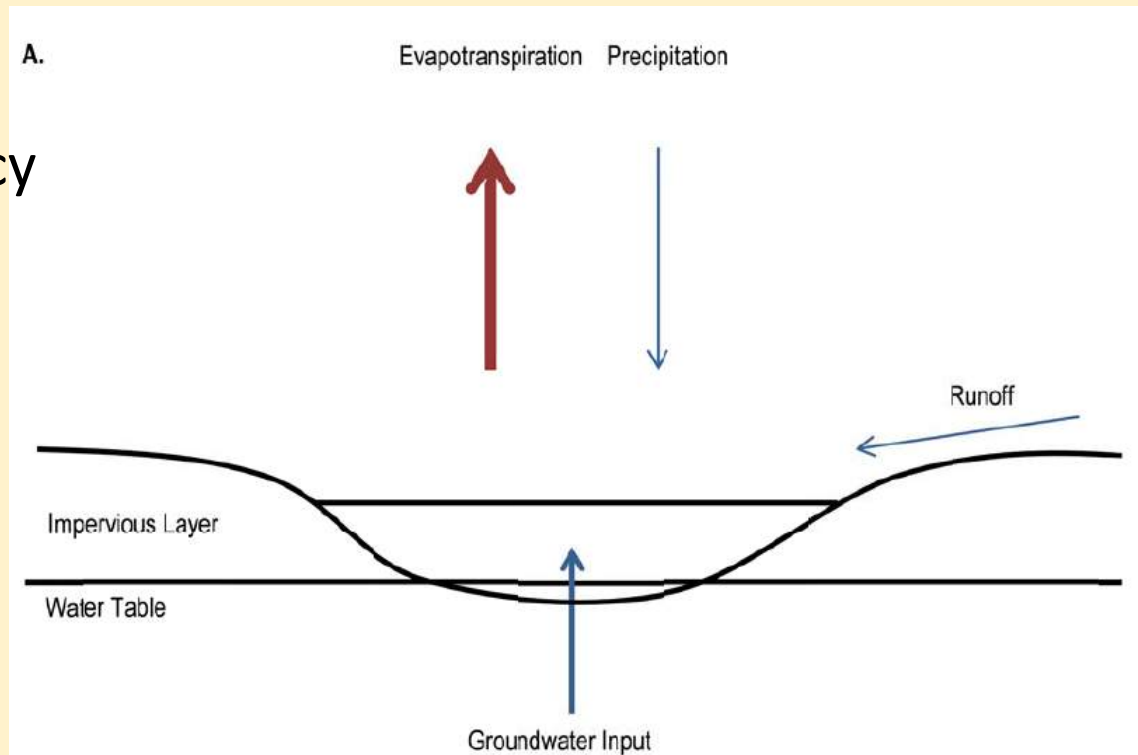
A.

Evapotranspiration Precipitation



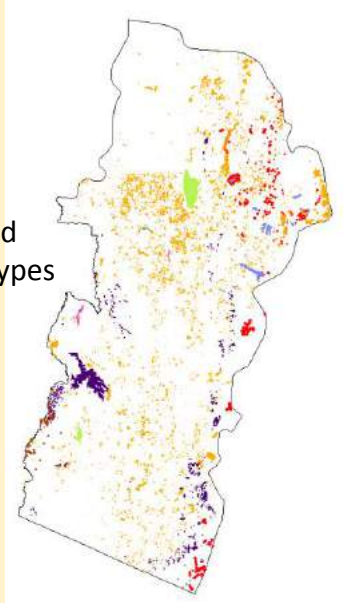
Biological and physical impacts

- Loss of habitat during breeding season
- Changes to growing seasons
- Changes in species composition and diversity
- Weed incursion
- Increased fire frequency
- Salinisation

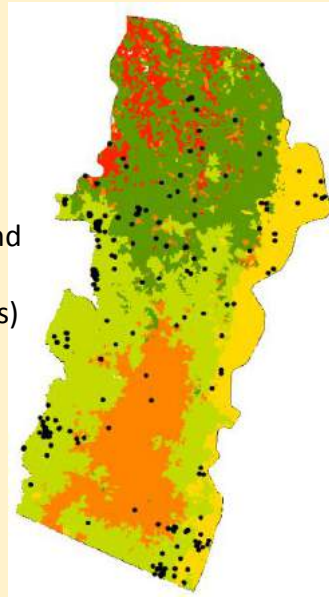


Surrogates for Wetland Biodiversity:

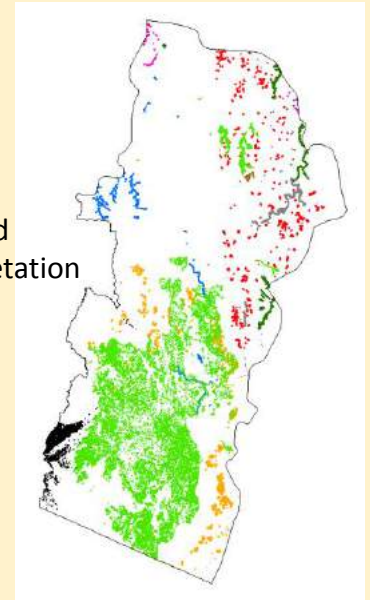
mapped
wetland types

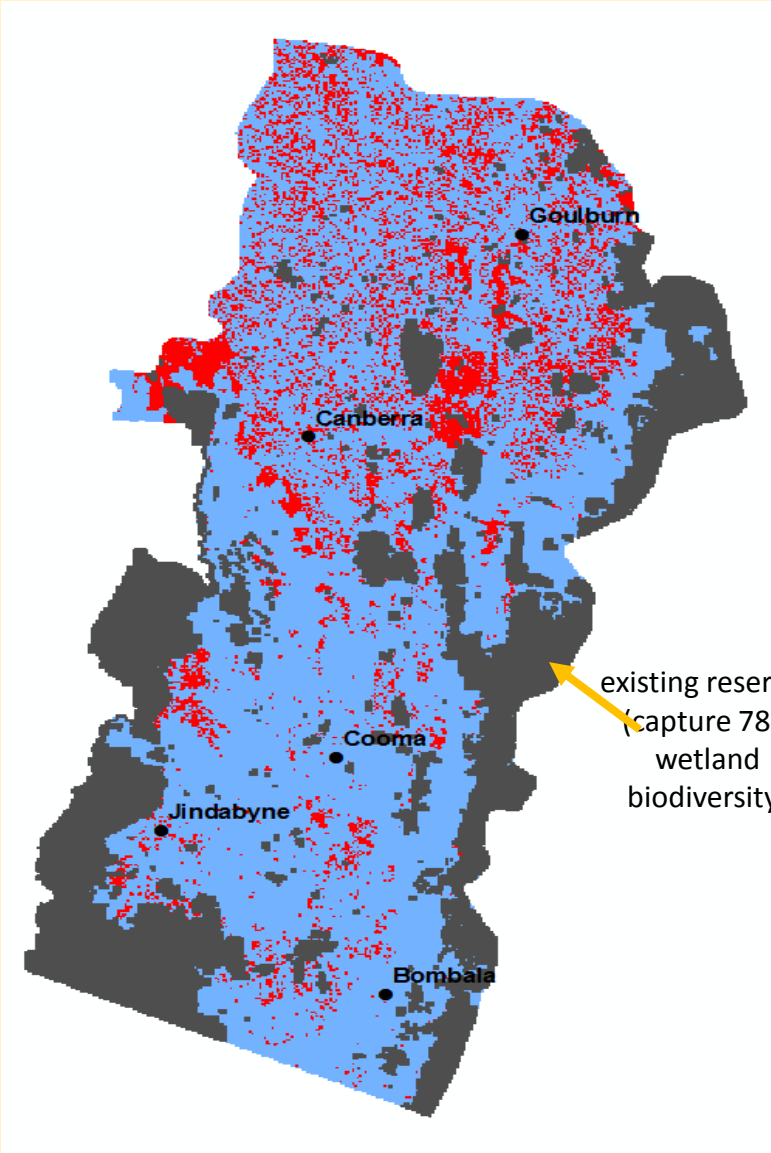


frogs
(spatial groups, and
endangered or
vulnerable species)



mapped
wetland vegetation



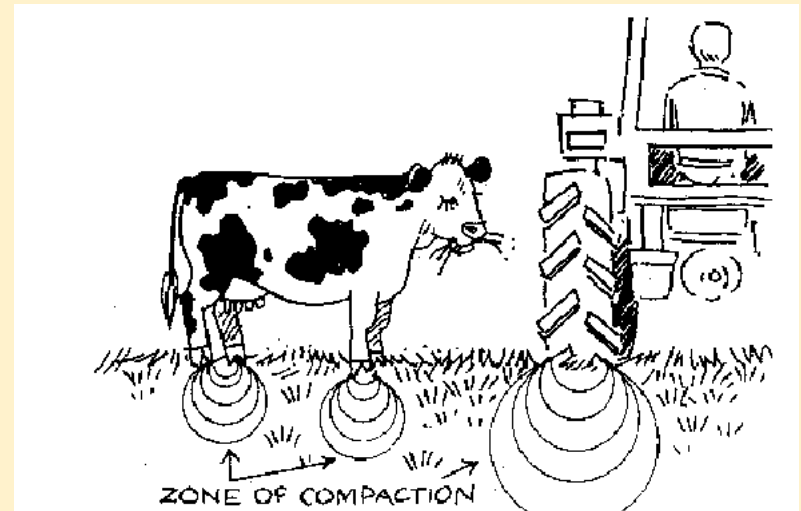
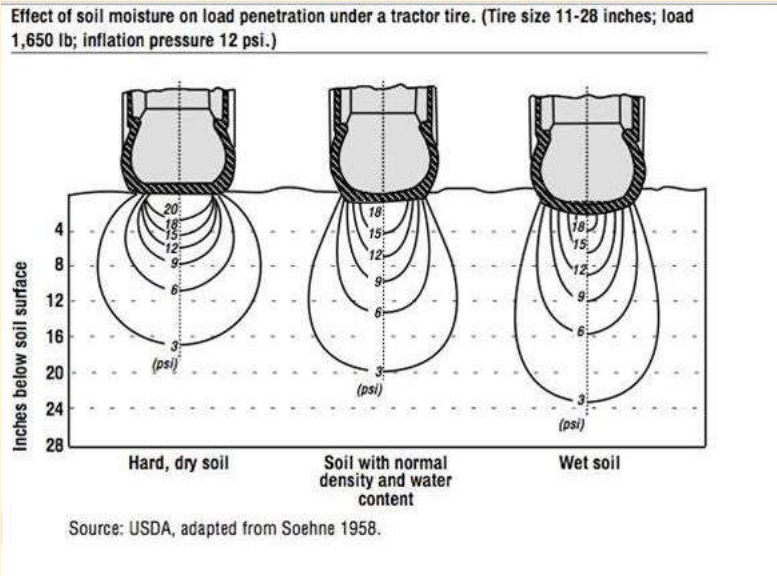


Key messages

- Drying is predicted (ie. less water available overall)
- Wetlands most at risk are those in poor condition that are ground water dependant
- Wetlands outside reserves have a key role to play in conserving wetlands biodiversity in the Southern Tablelands

So....what should we do about it?

- Maintain the sponge!
 - Avoid soil compaction in flow lines, floodplains and wetlands
 - Exclude cattle during wet periods



Lines Kelly 2004

So....what should we do about it?

- Maintain the sponge!
- Minimise evaporation
 - Encourage emergent and riparian vegetation
 - Provide wind breaks



So....what should we do about it?

- Maintain the sponge!
- Minimise evaporation
- Maintain ground cover
 - Maintain a litter layer to minimises moisture loss
 - Apply grazing regimes that provide rest time for plant recovery and recruitment



So...what should we do about it?

- Maintain the sponge!
- Minimise evaporation
- Maintain ground cover
- Minimise disturbance
 - Chemical use
 - Nutrient input
 - Sediment input
 - Water extraction
 - Draining
 - Cropping



