BIGG Water Planning Workshop

Water supply, capture, storage, distribution and monitoring options for your property.

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Australian Government | National Landcare Program

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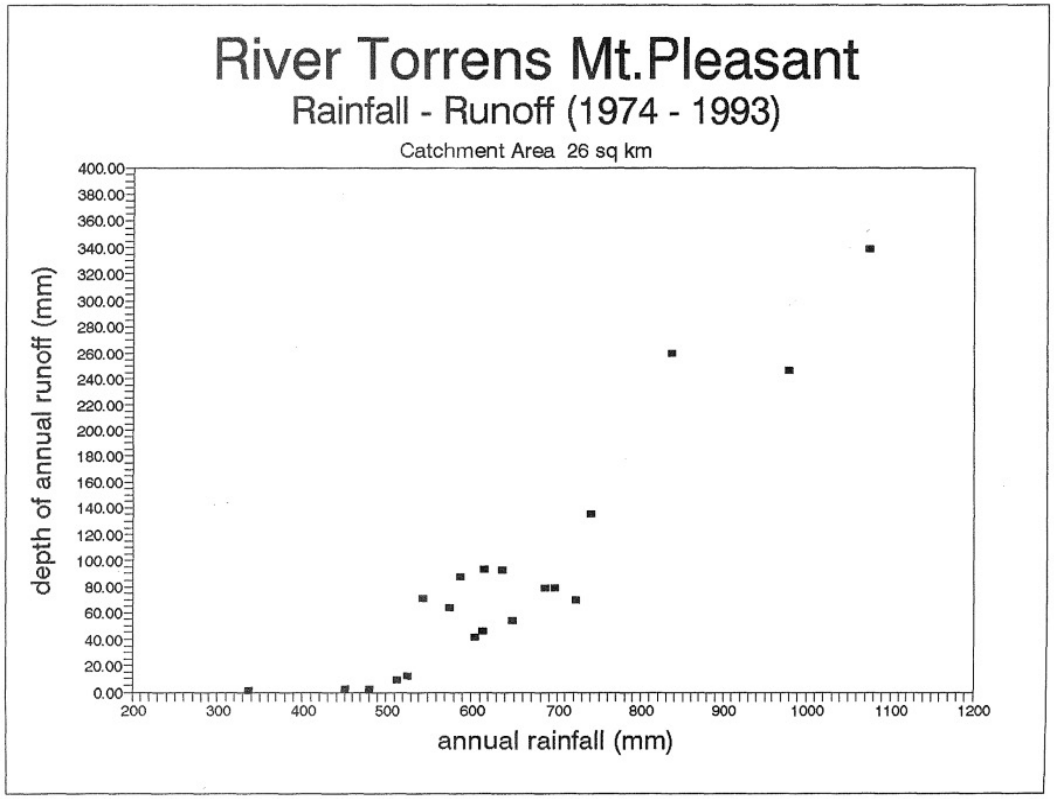
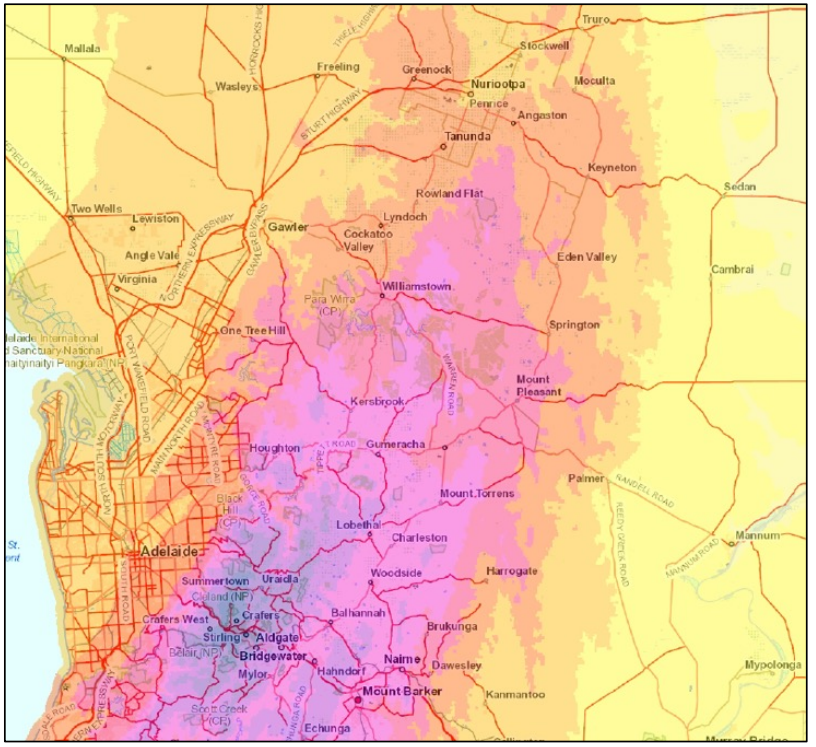
Government of South Australia
Department of Primary Industries and Regions

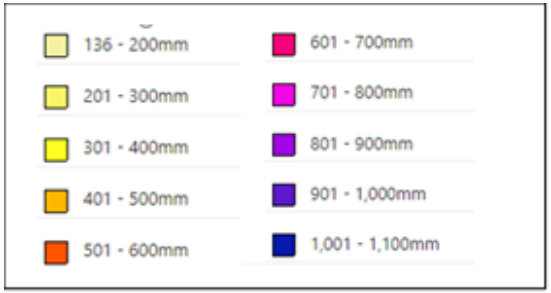
Sources of water:

Rainfall & runoff



Average annual rainfall (mm/yr)





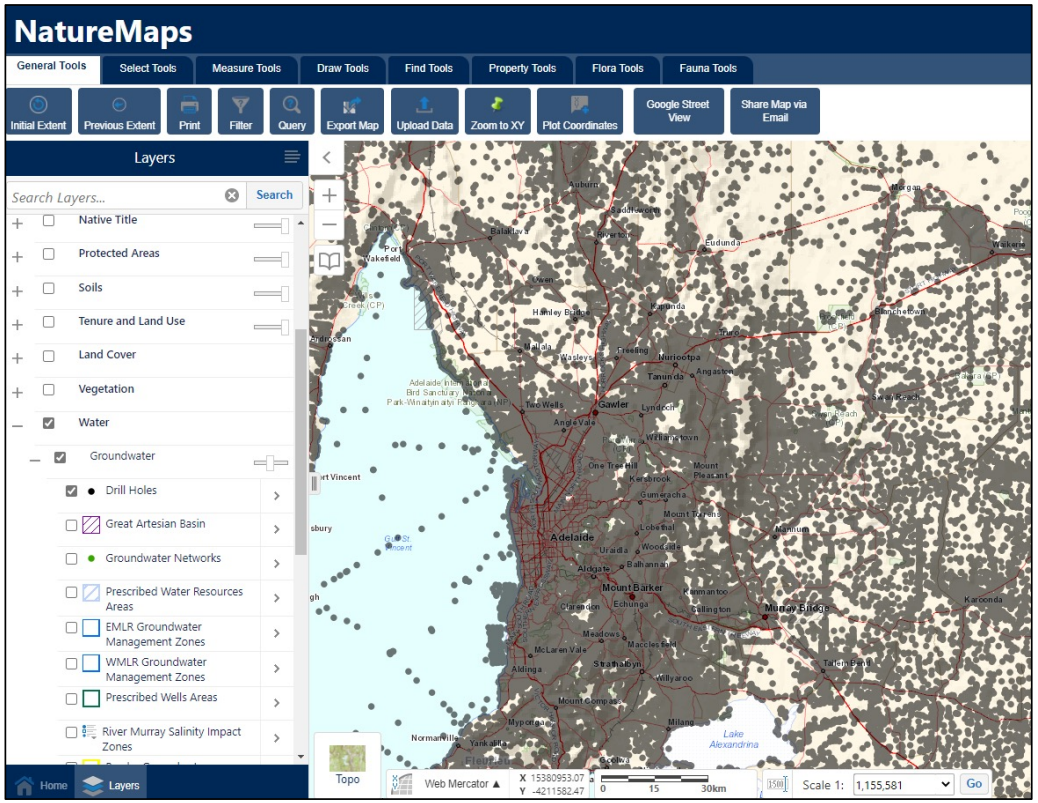
Harvesting / capturing runoff

Natural runoff

Roaded or sheeted catchments

Roofs

Underground water



Water salinity and yield of various drill holes in Barossa and surrounds

Drillhole No.	Location (Hundred)	Total Dissolved Solids (mg/L)	Yield	
			(L/s)	(L/hr)
169947	Jutland	1,149	3.0	10,800
74402	Jutland	365	2.0	7,200
75905	Jellicoe	2,143	0.1	360
74143	Jellicoe	3,252	0.3	900
182485	Moorooroo	1,861	2.3	8,100
59180	Para Wirra	547	1.9	6,732
49199	Barossa	1,998	2.3	8,172
75529	Tungkillo	3,147	3.0	10,800

Approximate tolerances of livestock to salinity in drinking water (TDS in mg/L)

Livestock	A salinity (mg/L)	B salinity (mg/L)	C salinity (mg/L)
Beef cattle (mature, dry on pasture)	0–4000	4000–5000	5000–10 000
Beef cattle (feedlots)	0–4000		>4000[b]
Dairy cattle (mature, dry)	0–2400	2400–4000	4000–7000
Dairy cattle (milking)			3500
Sheep (mature, dry on pasture)	0–4000	4000–10 000	10 000–13 000[a]
Sheep (mature, dry, feedlots)	0–4000		>7000[b]
Sheep (mature, dry, confinement Feeding)	0–4000		>7000[c]
Sheep (weaners, lactating and pregnant on pasture)	0–4000		6600
Sheep (lambs, intensive feeding)	0–4000		>4000[b]
Horses	0–4000	4000–6000	6000–7000
Poultry	0–2000	2000–3000	3000–4000
Pigs	0-4000	4000-6000	6000-8000

Pasture and fodder crop tolerance to irrigation with saline water on loamy soil

Crop	0% yield loss EC (mS/m)	10% yield loss EC (mS/m)	25% yield loss EC (mS/m)
Birdsfoot trefoil	330	400	500
Cocksfoot	100	210	370
Couch	270–635	No data	No data
Kikuyu grass	270–635	No data	No data
Lovegrass	130	210	330
Paspalum dilatatum	270–635	No data	No data
Perennial ryegrass	370	460	590
Phalaris	310	380	530
Puccinellia	635–2365	No data	No data
Red clover	100	160	240
Rhodes grass	270–635	No data	No data
Saltwater couch	635–2365	No data	No data
Strawberry clover	100	160	240
Sub clover	100	110	240
Sudan grass	190	340	570
Tall fescue	260	390	570
Tall wheat grass	500	660	900
White clover	90	No data	No data
Barley (hay)	400	490	630
Lucerne	130	220	360
Maize	110	170	250
Sorghum	450	500	560

Source: WA Department of Primary Industries and Regional Development

Ways of reducing salinity of underground water:

Shandying

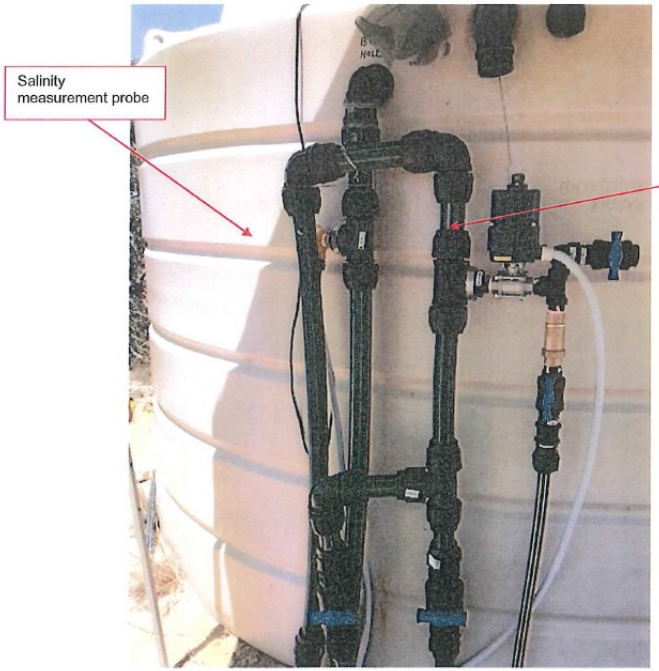


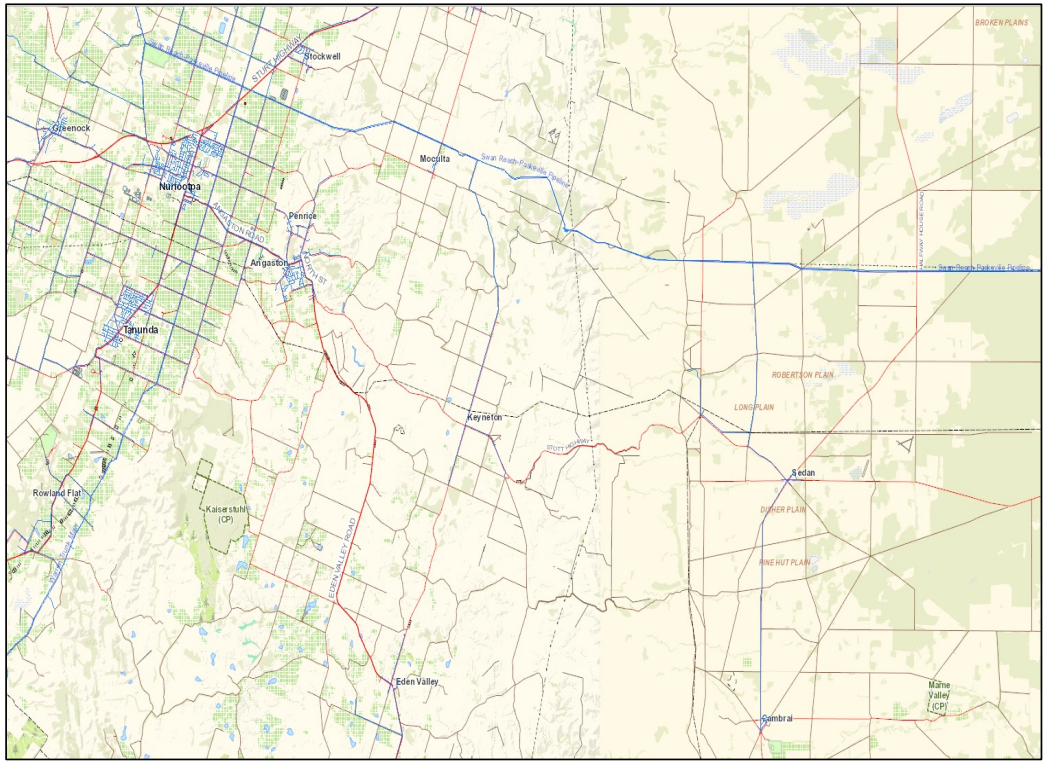
Figure 3

Existing water blending tank with three sources of water input (SA Water, smaller input pipe on the right) and two groundwater input pipes (50mm green stripe poly). The automated blending valve is marked. A salinity probe is also marked on the final input (blended) water source.

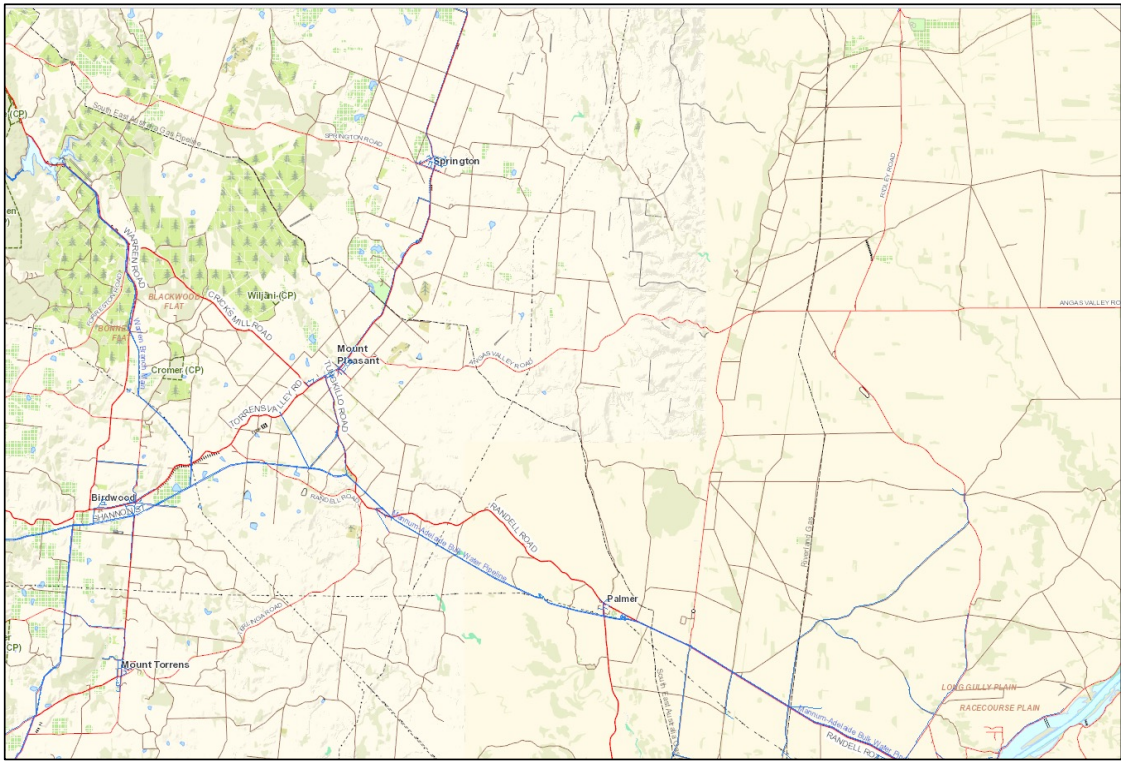
Desalination

Mains Water

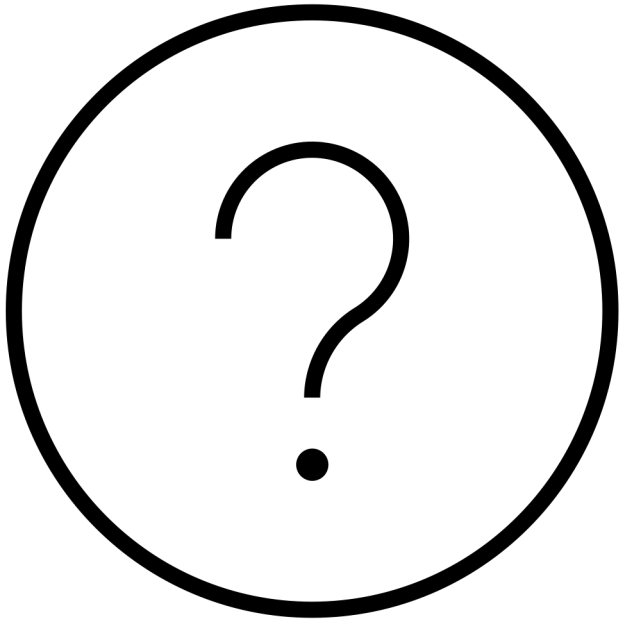
Swan Reach (River Murray) to Paskeville pipeline



Mannum (River Murray) to Adelaide pipeline



Barossa New Water Project



Storage

Dams

- Earthen
- Lined
- Lined & covered

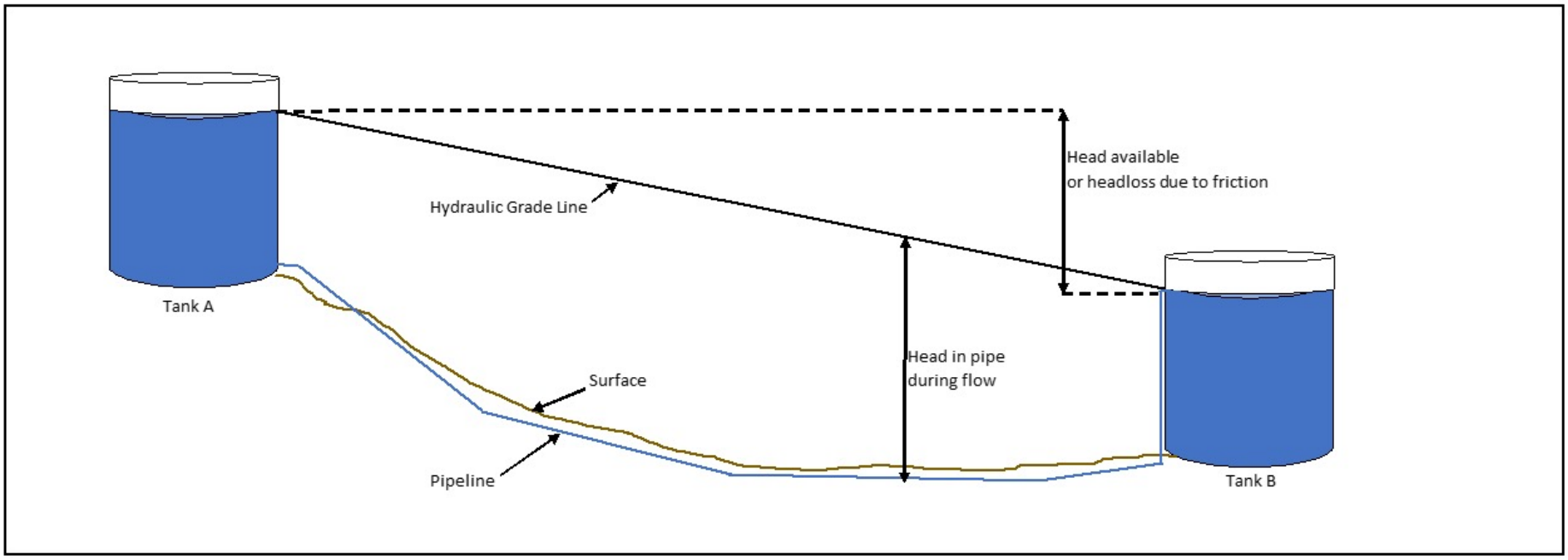
Tanks

- Poly
- Concrete
- Steel
- Fibreglass

Water distribution

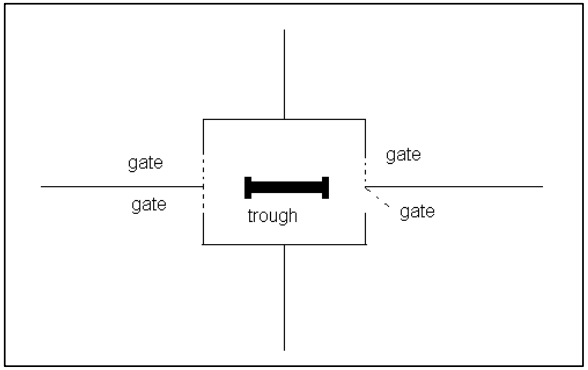
Understanding pressures, flow rates, pressure drop and head loss

Pressure and friction losses in a pipeline



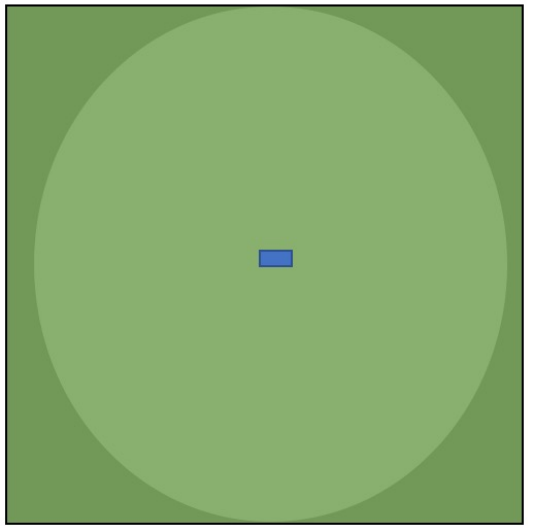
Monitoring equipment

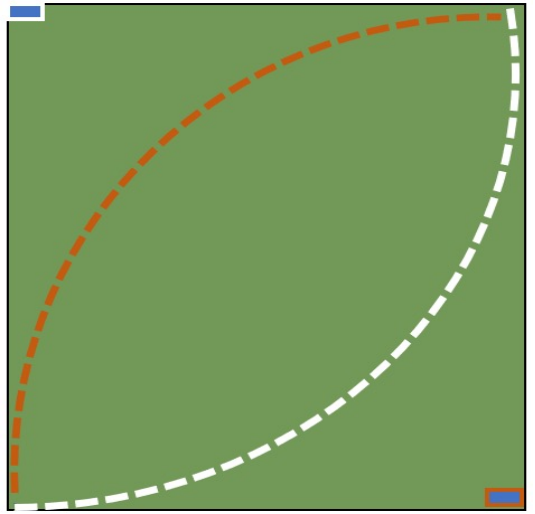
Water distribution as a grazing management tool



Stock movement from paddock to paddock

Timing and frequency of stock watering





Grazing pattern influenced by watering points