



Annual Volume – Why?

- Groundwater is a finite resource – need to protect against over-allocation.
- To effectively manage the resource and maximise efficient use of the resource.
- Protect reliability of supply for existing users.



Annual Volume – Why?

- Aim is provide enough water to meet demand 4 years out of 5.
- To encourage efficient irrigation and reduce over-irrigation and wastage.
- Just for irrigation, does not include stockwater and domestic water.



Annual Volume Calculation

- Schedule WQN9 of the proposed regional plan sets out a way to calculate the annual volume.
- Modified version (version 3) being used for the consent reviews.
- Purpose of the review is to limit amount of water annually - efficient and reasonable for the end use.



What is WQN9?

- Method for calculating annual volume limit for each consent.
- Based on irrigation records collected in 1998/1999 irrigation season for properties throughout Canterbury.
- Data used to provide enough water in line with ECan's policy (reliability of supply 4 years in 5 and application efficiency 80%).



WQN9 Annual Volume

= total amount of water required to irrigate the area of land minus rainfall

= total seasonal demand – effective irrigation seasonal rainfall



Determining water requirements

- WQN9 is one tool.
- Other tools:
 - Water use records
 - Irrigation records
 - System audits and irrigator information
 - Soil moisture records
 - Climatic data
 - Pump power records



WQN9 Annual Volume

- Takes into account:
 - Current land use.
 - Total water required.
 - Local soil info.
 - Summer rainfall.
 - Area irrigated



Current land use

- Aim is to meet water requirements for current land use.
- Intensive pasture or arable.
- Based on information on consent file and from consent holder.

Total water required

- ‘Total seasonal demand’.
- Total water required to meet plant water needs during main growing period.
- Demand is met by rainfall and irrigation.
- Provides for:
 - 80 % application efficiency
 - Demand conditions 4 out of 5 years
 - Nominal irrigation season 1 Oct – 30 April



Local soil info

- Soil profile available water or PAW.
- PAW = soils capacity to hold water for the soil profile to a depth of 0.9 metres (mm).
- From ECan's GIS.
- Can supply own information eg. soil surveys.



Summer rainfall

- ‘Effective irrigation season rainfall’
- Rainfall predicted to occur 4 out of 5 years.
- Based on 30 years of data (1973-2003)
- Excludes rainfall events < 5 mm or continuous rainfall > 50 mm.
- From ECan’s GIS.



Area irrigated

- Total area consented for irrigation (ha).
- Consent holders should check this information.

- Example:
 - = total water required – rainfall
 - = 722.5 mm – 285 mm
 - = 437.5 mm

 - = 10.03 ha x 10 (conversion factor)
 - = 43,881.3 m³ / year.

If system capacity < 4 mm/day this will be adjusted.

Stock and domestic water

- Not usually included on consents - permitted under regional plans.
- For takes starting before 2004:
 - Properties > 20 ha = 100 m³/day
 - < 20 ha = 20 m³/day
- For takes starting after 2004 permitted to take 10 m³/day per property.