Frequently Asked Questions

What is IRRICALC and how does it work?
IRRICALC is a single-layer soil water balance model developed by Aqualinc. It uses an equation to update the calculated soil water content on a daily basis given daily measurements or estimates of rainfall, irrigation, drainage and actual evapotranspiration. More detail on the equation and how IRRICALC works is provided in Bright (2009).

Where are the maps and how do I obtain a copy?
The maps for each of the Canterbury Plains regions are available on CD and on the Irrigation NZ website. At this stage Aqualinc have copies for distribution. Environment Canterbury is planning to incorporate the maps into its existing GIS system. This is a major task and the CD's will need to be used manually in the interim.

What is the purpose of the criteria and how do I use them?
A set of criteria have been developed in consultation between ECan, Aqualinc, and Irrigation NZ. These criteria are intended to provide consultants and farmers with a set of requirements for a model and data used to calculate seasonal irrigation volumes. They include the required capability of the model, documentation of methods, model parameters, model testing and input data, as well as the reporting of the model application. These criteria should be used to validate any predictions of seasonal irrigation volumes, if a model other than the customary Schedule WQN9v3 is used. The IRRICALC model has been added to ECan's approved list of methods of calculating seasonal irrigation volumes. ECan is satisfied IRRICALC provides an adequate method of calculating seasonal irrigation volume and is consistent with the proposed NRRP.

If my irrigator is less efficient than 80%, can I use the maps for the less efficient irrigation systems and still be permitted under Policy WQN17 of the PNRRP?
Irrigation systems will be assumed to be 80% efficient, even if the actual system has a lower application efficiency. If your system is more efficient than 80%, then the higher efficiency figure will be used. This is consistent with Policy WQN17(2), Chapter 5 of the PNRRP, which states:

> *"(2) When assessing water permit applications for irrigation…:*
> *(b) assume that there is an irrigation efficiency of at least 80% even if the actual system being used has a lower application efficiency. Where the water permit application is for an irrigation system with a higher application efficiency, the higher figure will be used."*

If I already have an annual volume (AV), can I use IRRICALC to increase my AV automatically?
Existing consents with an AV will continue to operate under the volume specified when the consent was issued. This AV will not be increased unless it is part of a new application process.

If I don't have an AV, can I use IRRICALC to get an AV?
If you have an existing consent that does not have an AV, you will be able to use IrriCalc to calculate a seasonal irrigation volume for your consent.

How do I use IRRICALC to get an AV?
Refer to attached document ""IRRICALC – How to Guide" for guidance on how to use the Soil Water Holding Capacity maps and the seasonal irrigation volume maps to derive an AV.

What situations may preclude use of the standard IRRICALC maps?
If your farm is located in an inland basin, such as the Mackenzie Basin. The IRRICALC method uses a crop factor that has been calibrated for growing conditions on the Canterbury Plains. The length of the growing season in inland, high altitude, basins is significantly shorter than the growing season on the Plains. This will change some characteristics of the crop factor to be used. The IrriCalc method should, in this situation, be used with a crop factor that has been constructed using information contained in FAO Paper 56, "Crop Evapotranspiration: Guidelines for computing crop water requirements", 1998. Justification of any subjective decisions made by the user in the construction of the crop factor is required.

What if I have system capacity issues?
The IRRICALC maps provide a prediction of a farms irrigation requirement and can be considered as the volume of water necessary for your crop assuming you can deliver the full irrigation volume on a daily basis. If there is a water volume shortfall between what is required for your crop, and the volume of water that is able to be delivered, then you should contact Aqualinc to look at ways to remodel your farms individual irrigation requirements.

What if I already have an alternative source of water (e.g. irrigation scheme water) on my property?
You should be guided by the conditions of Rule WQN25 of the PNRRP. You should seek pre-application advice from ECan's Consents section as each scheme will have individual characteristics that need to be considered on a case-by-case basis.

What is I have mixed soil types on my property?
Refer to attached document "IRRICALC – How to Guide" for guidance on mixed soil types.