considered until agreement was reached."

THE VERIFICATION OF REGISTRATIONS

The next questions put to Mr Schoeman concerned the verification of registrations and the significance of the process in practice. He put us in the picture:

"The registration process required that all water uses, without consideration of legal status, had to be registered. The only requirement was that it must be an existing use, whether lawful or not. The verification of registered water use is critical since lack of proper verification may lead to a situation in which the injustices of the past, such as where a water user is using more than his fair share, are perpetuated unnoticed.

"After a detailed study and a comparison of every registered water use against water use entitlements, controls and restrictions, and after all other supporting material such as satellite imagery, aerial photographs and field survey information have been consulted, the registrations can be classified as shown in Table 1.

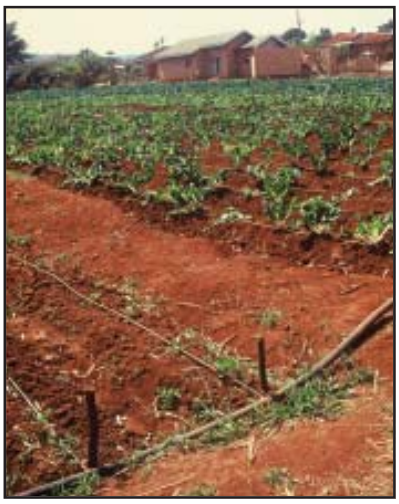
TABLE 1

Category	Description
Correct registration	Users who have registered all their water use entitlements correctly.
Over-registrations/ unlawful use	Users who have registered uses to which they are not entitled.
Under-registration	Users who have omitted to register uses to which they are entitled, and are using in fact.
Failure to register	Users who have not registered any identified water use at all.
Insufficient information	Users where there is insufficient information available to make a determination.

"The process of data verification and capture on GIS is exhaustive. It involves the acquisition and validation of information on existing entitlements, title deeds, cadastral updates and all the data created by the registration process - quite apart from the detailed evaluation of the crop irrigation requirements."

The approach to arriving at crop irrigation requirements is an extension and refinement of the process followed when doing the registrations. Here it is even more important to standardise water volumes to avoid a scenario in which the same crop differs materially as a consequence of the variations in irrigation method and management. This has been achieved to a satisfactory degree by the following procedure:

- Homogeneous climatic zones are defined by using the data available in SAPWAT and WR 90 as well as agricultural information. From experience, these climate zones will follow the boundaries and will include one or more quaternary catchments.
- A summary of all the crops registered within a zone can be produced. This summary includes the total hectares under irrigation for a particular crop under a specific irrigation system.
- Target efficiency values are defined for use in SAPWAT after consultation with DWAF regional personnel.
- With the list of crops and target efficiencies, crop irrigation requirements can be determined for each identified climatic zone. An irrigation quota is developed on the basis of the weighted average crop and irrigation system, for a specific climate zone.
- New water use requirements are now calculated for each registration. A specific user's water requirements may either be case specific, or may be based on the quota. The latter is a welcome simplification that is generally accepted, but where case specific consideration is justified SAPWAT facilitates the development of defensible values.



The objective of registration was to establish a reasonable estimate of actual water use, not irrigation efficiency or even legitimacy. That will come later in the process!

The process that has now commenced is immense and demands meticulous attention to detail, informed judgment and the very latest in technology.