North Coast Regional Water Strategy

"You will know the true value of water when the well runs dry"
Benjamin Franklin

The Moran family has occupied the Sullivans Creek area of Missabotti for 150 years. The acute drought of 2019 produced the most severe water shortage in the family's history. Even the Federation Drought and the WWII Drought, although of much longer duration, did not produce the same depletion of groundwater as that occurring in the recent drought.

Planning by the department seems to rely almost exclusively on desktop modelling. Both the International Water Resources Association (IWRA) and the International Association of Hydrogeologists (IAH) produce journals with a wealth of material relevant to planning for climate change. A recurring theme in journal articles is the paucity of groundwater monitoring; this may be improved as the GRACE satellites refine their measurements.

The extent to which various town water supplies depend on groundwater varies considerably, reaching 100% for the Nambucca Valley Shire. Many upriver rural properties also depend heavily on groundwater. This source has declined markedly in reliability over the past 40 years. Sullivans Creek has always been an ephemeral stream, flowing only in high rainfall, but Missabotti Creek itself now has extensive periods of no flow.

Current options for surface dams on 1st and 2nd order streams provide no reliability at all. Deep bores are better, but not 100% reliable, and depend on pumping infrastructure. Underground storage is a far more efficient way to guarantee water security for farms where groundwater has always been the main source for stock and domestic use. Even the USA Army Corps of Engineers is using MAR technology to manage water (IWRA Conference 2020). The Romans were using it and it is widespread on every inhabited continent except Australia.

It makes far more sense to concentrate on farm storage in one underground MAR than multiple small aboveground dams (options 14, 15). This would not necessitate an increase in harvestable rights but would mean that such storages would have to be on 3rd or 4th order streams. MARs loose no surface area to grassland, minimise evaporation and can even recharge long lost wetlands (as is the case on Moranco property at Missabotti). Far from taking water from the aquifer, a MAR retains it, and prevents downstream users (irrigators and town supplies) from depleting the aquifer. The temporary interruption to groundwater flow is minimal and the total impoundment is far less than the maximum harvestable rights dam. An important additional benefit is the creation of a reliable source of fire-fighting water when the surface streams are dry.

Although there is no prohibition on underground MAR in NSW, there is also no provision for it in the legislation or regulations. MAR would be applicable in many areas of the North Coast with multiple small tributaries overlying gravel aquifers. There is no reason why it couldn't be used on a massive scale (as in Japan) for entire town supplies. It is suggested that the time has arrived for the authorities to allow upstream rural properties to utilise this method of guaranteeing their water security, without deleteriously affecting the environment or downstream users.