

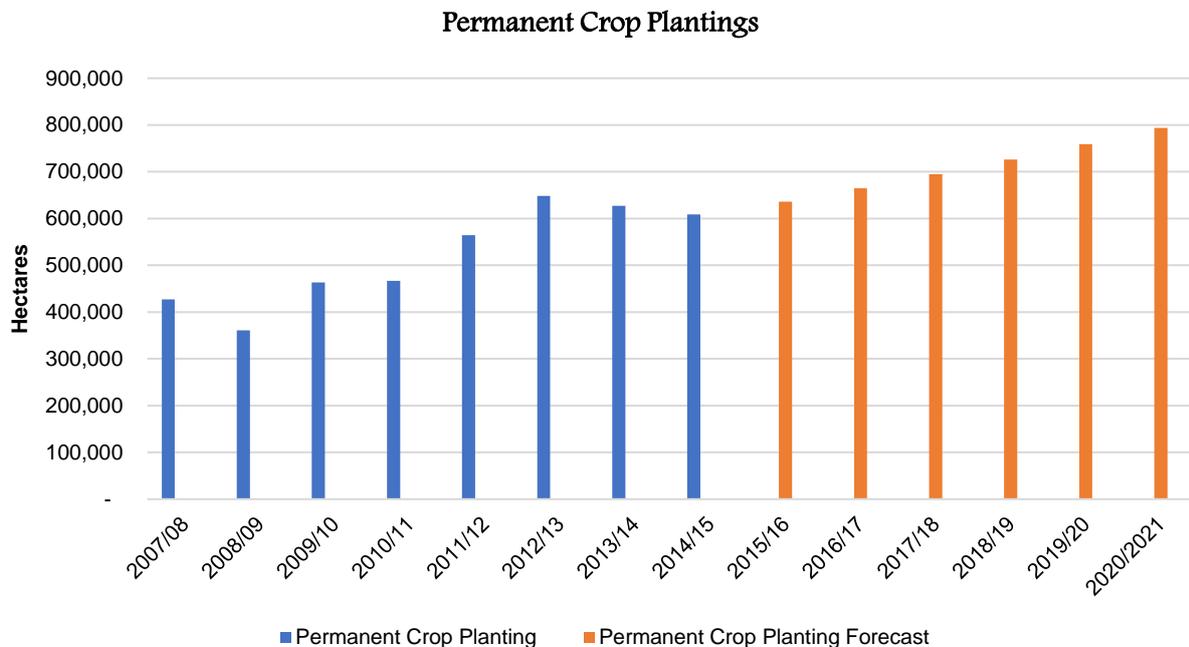
Future Water Usage in the Murray Darling Basin

The last major drought to occur in Australia was the 2007-2009 *Millennial Drought*. This drought reduced the amount of water allocated to irrigators along the Murray Darling Basin to 33% of the average in non-drought years.

Sustained levels of permanent crop plantings (fruit, nut and irrigated pasture) has occurred over the past 10 years. As such, if another drought was to occur, this may result in insufficient water for all irrigators. This would drive up the price of water as irrigators try to keep these crops alive.

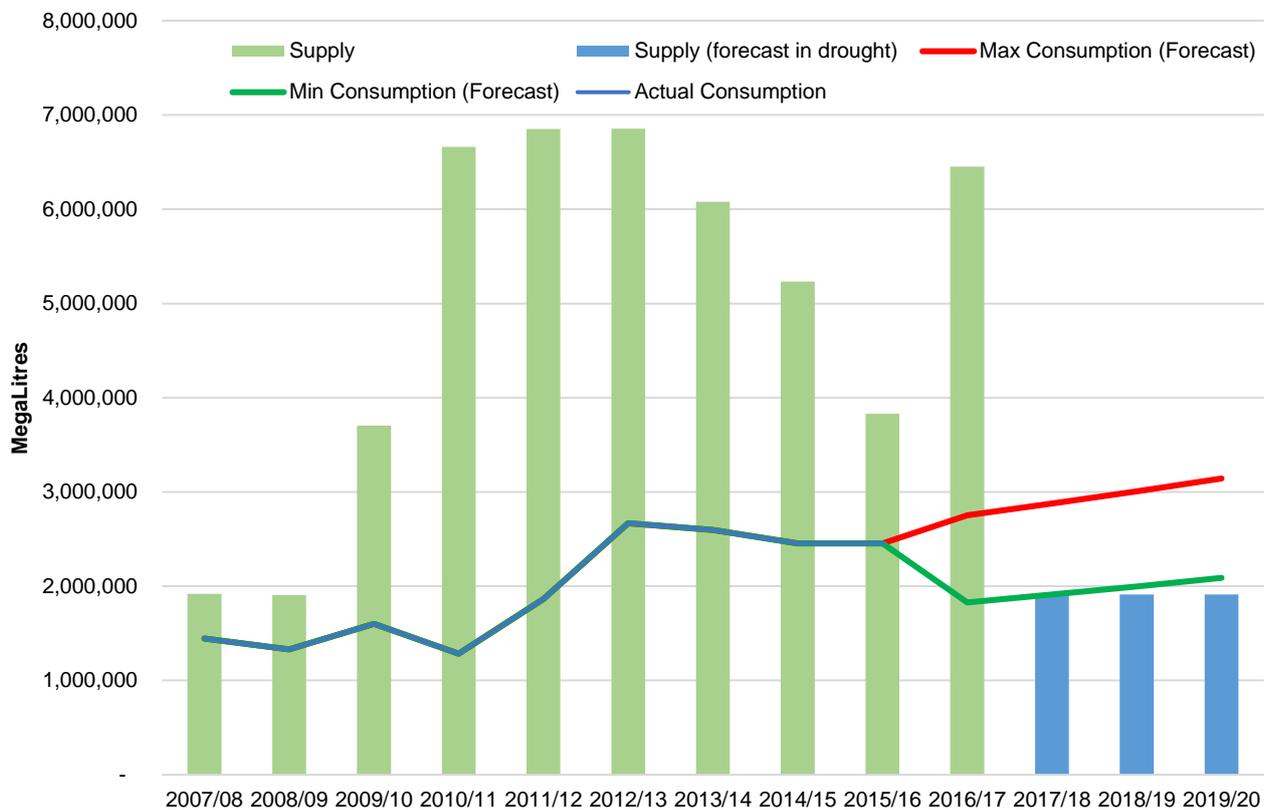
What Has Happened?

Since 2007 the level of permanent crop plantings has increased by an average of 4.53% per year. If this level of planting is to continue, by the year 2020/21 a total of 793,628 hectares of permanent crops will be irrigated within the Murray Darling Basin.



As seen in the chart below, permanent crop consumption of water represented approximately 73% of water allocations available during the 2007/08 and 2008/09 water years. Assuming that the current level of permanent plantings per year is sustained, a drought as severe as the 2007-09 drought occurs and water supply returns to historic lows, permanent crop water usage would equate to 96% of total water supply available in 2016/17.

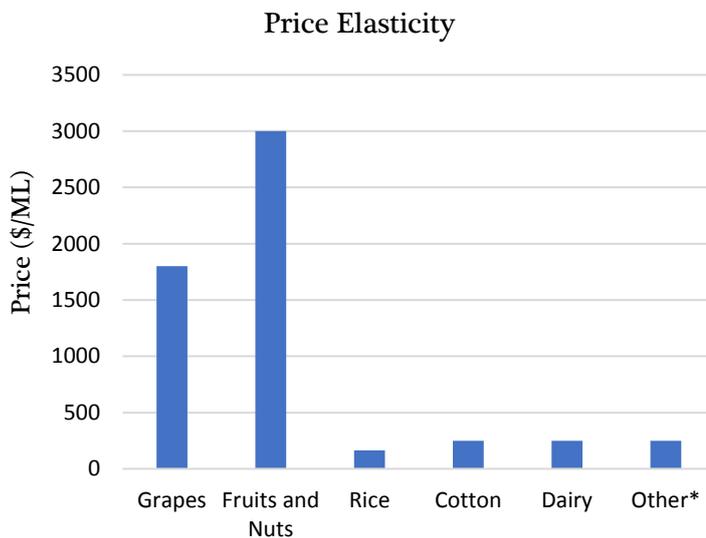
Water for Consumptive Use vs Water Consumption from Permanent Crops



What Does This Mean For Duxton Water?

Given these planting projections, a *Millennial Drought* event in 2017/18 would result in the minimum quantity of water required for permanent crops to be greater than the total water available.

As a result of increased permanent plantings in the Murray Darling Basin, water demand is expected to reduce in elasticity¹ as irrigators fight to keep their crops alive. This change has the potential for prices to increase past the \$1,034/ML historical high in October 2007.



Industry	Cut-off Price (\$/ML)	Elasticity of Demand
Grapes	\$1,800	-0.5
Fruits and Nuts	\$3,000	-0.4
Rice	\$165	-1.9
Cotton	\$250	-1.3
Dairy	\$250	-1.3
Other*	\$250	

*Other industries make up 15-20% of agricultural irrigation in the Murray Darling Basin

¹ Different agricultural industries have different opportunity costs. Grapes, fruits and nuts have the highest cut-off water prices and are also the least responsive to changes in water prices. The cut-off water price is the price of water (\$/ML) such that production or the given industry is no longer profitable.

The price elasticity of demand gives the percentage change in the volume of water demanded in response to a one percent increase in the price of water. For example, an elasticity of -1 indicates that the volume of water demand would fall by approximately 1% in response to a 1% increase in price of water. As shown, grapes, fruits and nuts are the least responsive to changes in water prices.

Calculation Methodology:

Water Supply

Water available for consumptive use is defined as the water allocated to entitlement licenses in the Murray Darling Basin. Water availability varies significantly ranging from a record low of 1,905,700ML in 2008/09 to a record high of 6,855,900ML in 2012/13, since inception of the Basin Plan.

Water Consumption from Permanent Crops

Water consumption from permanent crops is defined as the water used to irrigate plantings of fruit and nut trees as well as pasture for livestock. These crops are classified as permanent because water is required to sustain production; to stop irrigation would require new plantings and multiple years to reach previous production levels.

Total plantings and total water usage of permanent crops were tracked from 2007/08 to 2014/15 in order to derive the average water volume used per hectare in the Murray Darling Basin. Historically, in extremely dry years permanent crops received approximately 3.5ML/ha, compared to wet years of 4.15ML/ha.

By finding the minimum water requirement of permanent crop plantings a yearly total minimum water consumption can be derived in the Murray Darling Basin.