# 20. CUMULATIVE IMPACTS

## 20.1. Assessment of Indirect Impacts

A number of submissions questioned the potential for indirect impacts associated with use of irrigation water. The potential indirect impacts identified in submissions included additional land clearing on farms and changes in water quality associated with runoff from irrigated areas.

The DSITIA IQQM model includes all of the existing irrigation allocations. The irrigation water use by individual farmers has a three year rolling cap that needs to match their allocation. The maximum and mean annual water irrigation diversions in the IQQM are 20,005 ML and 10,688 ML respectively. The proposed irrigation water of 1,740 ML/year represents an increase of 16% in average years above existing irrigation entitlements.

Irrigation water has potential to increase economic output through:

- additional water security increasing production during dry periods;
- increasing production rates of high value horticultural produce (eg tomatoes, strawberries, broccoli); and
- some expansion of horticultural areas .

Tancred & McGrath (2013) identified the production areas for different agricultural products in the former Stanthorpe Shire Council area (presented in Table 20-1). The vegetable industry is the largest industry by area and value with 1,585 ha of vegetables grown. There are 1,443 ha of orchard crops grown, with the main being apples, followed by stonefruit. Tancred & McGrath (2013) advise that the cropped areas, particularly apples, have decreased substantially over the last 35 years (even though overall production has been maintained or increased) due to agronomic advances and water use improvements.

The annual water demand for irrigation in the region has been estimated using the production areas in Table 20-1 and assuming irrigation rates of 5 ML/ha for all the crops except grapes which are assumed to be 1 ML/ha. The estimated water demand in the former Stanthorpe Shire Council area is approximately 16,500 ML/year. The estimated water demand for irrigation exceeds the estimated annual irrigation entitlements of 15,300 ML/year.

Table 20-1 Areas of various crops and estimated water demand in former Stanthorpe Shire Council area

| Crop | Area | Percentage Area | Estimated Annual Water Demand for Irrigation |
|---|---|---|---|
| Tree fruit | 1,443 ha | 59% | 7,215 ML |
| Grapes | 504 ha | 9% | 504 ML |
| Berries | 124 ha | 8% | 620 ML |
| Vegetables | 1,585 ha | 19% | 7,925 ML |
| Specialty crops | 41 ha | 5% | 205 ML |
| Total Area | 3,697 ha | | 16,469 ML |

Source: Tancred & McGrath, 2013

There has been historic clearing of native vegetation in the region. Analysis of regional ecosystem mapping with approximately 50% of the former Stanthorpe Shire region mapped as non-remnant (or cleared). Native vegetation has generally been retained in areas with limited agricultural productivity (ie poor topography, poor soils or limited water availability).

The provision of irrigation water through the Project is not expected to result in additional land clearing of farms because:

- the proposed irrigation water entitlement of 1,740 ML/yr represents an 16% increase above the current mean annual irrigation entitlements;
- estimated water demand for irrigation already exceeds the estimated annual irrigation entitlements ; and
- there is sufficient cleared land to expand cropping areas without requiring the clearing of remnant vegetation; and
- the regulatory protections for the clearing of remnant vegetation under the EPBC Act, VM Act and NC Act.

Granite Belt farmers are currently very efficient water users and have implemented a number of measures to reduce water use and losses from water storages. Historically, irrigation water supplies have been taken from local rivers and creeks, rainwater tanks, on-farm runoff dams to collect rainfall and groundwater resources (when available).

The limited water availability for irrigation means growers have been early adopters of new techniques and technologies to improve water efficiency. The irrigation technologies typically applied in the region include micro-sprays, drip irrigation and soil moisture monitoring. These methods of irrigation seek to maximise the effectiveness of the available water resources in the region. Irrigation techniques that result in agricultural runoff are considered a wasteful ineffective use of water resources.

The provision of irrigation water through the Project is not expected to result in an increase in runoff from agricultural areas because:

- the proposed irrigation water entitlement of 1,740 ML/yr represents an 16% increase above the current mean annual irrigation entitlements; and
- growers will continue to implement water efficient irrigation technologies to maximise returns from the water provided.