

### 3.0 ISSUES ADDRESSED IN THIS PLAN

#### 3.1 Effects on the Environment

##### 3.1.1 *Characteristics of Farm Dairy Washwater*

Untreated farm dairy washwater has the following typical characteristics:

Characteristic	Biochemical Oxygen demand (BOD <sub>5</sub> )mgO/l	Total Nitrogen mg/l	Total phosphorus mg/l	Total potassium mg/l	Total solids mg/l
Average	1500	200	35	160	7000
Range	1000-3250	100-325	10-50	100-430	5000-12000

1. Vanderholm et al (1984)

The adverse effects that can occur from the discharge of farm dairy washwater are summarised below. Appendix A provides more information.

##### 3.1.2 *Effects on Surface Waters*

- Decreased dissolved oxygen in the water, due to biochemical decomposition, can result in the 'suffocation' of fish and other aquatic life as they compete for the limited oxygen in the water.
- High levels of ammonia in farm dairy discharges can create a toxic environment for fish and other aquatic life.
- Increased nutrient levels (eutrophication) can result in nuisance weed and algal growths, which affects water/flood flow, ecology and aesthetic qualities.
- Increased levels of bacteria can render water unsuitable for a variety of purposes, including recreation, food gathering, swimming, and stock drinking water.
- Increased siltation and solids build-up can impede water flow and greatly decrease the aesthetic qualities of water. Increased siltation also destroys the habitat of bottom-dwelling organisms e.g. invertebrates, which will adversely impact on the food chain. This is especially true for gravel-bed streams and their inhabitants.
- The suspended solids in the discharges can increase the turbidity (cloudiness) of the water which can affect feeding patterns of fish because they cannot see their prey. Increased turbidity also reduces light penetration which adversely affects aquatic plant growth. Elevated turbidity also increases heat absorption and therefore the temperature of the water which adversely affects aquatic life.
- Elevated nitrate levels in potable water can give rise to human health risks.

### **3.1.3 Effects on Groundwater**

Elevated groundwater nutrient levels, particularly nitrate, can be caused by excessive application rates of washwater onto the land or seepage from washwater storage systems. Elevated nitrate levels in potable groundwater can give rise to human health risks.

### **3.1.4 Effects on Air Quality**

Oxidation pond systems and other washwater storage systems typically produce large volumes of gaseous methane and trace levels of other malodorous gases, which freely escape to the atmosphere. Methane is a potent greenhouse gas, with over 20 times the global warming potential of carbon dioxide. Adverse effects of spray irrigating washwater typically include odour and spray drift nuisance. Unpleasant odours can also be a nuisance from oxidation ponds or washwater storage ponds.

The ARC intends to prepare a separate regional plan on air quality which will include rules relating to odour. As the rules on odour may be applicable to farm dairy washwater treatment and disposal systems, the regional plan on air quality when complete will need to be referred to in conjunction with this Plan.

## **3.2 Issues of Significance to Tangata Whenua Nga Take Tutura Mo Tangata Whenua**

*This section of the Plan has been written by tangata whenua who were consulted during the Plan's preparation.*

Tangata whenua claim genealogical links and blood ties to taonga of the natural world as a significant principle. Inherent within the principle is the kaitiaki role with obligations and responsibility for the well being of all natural entities. Tangata whenua have consistently advocated opposition to direct discharges of contaminants to waterways, regardless of treatment standards. Continuation of such practices seriously undermines the tribal mana and desecrates the mauri of the receiving water. Direct discharges of farm dairy washwater are therefore unacceptable.

Washwater discharges also raise concerns because of the actual or potential adverse effects on:

- both traditional and commercial uses of ancestral resources, such as fish spawning and feeding grounds and mahinga maataitai;
- degradation of mana, mauri and wairua of water, and its inability to sustain life, impacts on Treaty of Waitangi as kaitiaki;
- the exacerbation of existing Treaty grievances relating to poor water quality;
- tribal resource management initiatives, particularly regarding taiapure, rahui and whakatupu;

- pollution of enclosed water bodies;
- eutrophication;
- direct agricultural and horticultural pollution;
- the location of wastewater treatment and disposal systems can adversely affect Treaty of Waitangi values.

Tangata whenua confirm that their concerns can be met by ensuring that treatment standards are set and maintained, and a land component of disposal is incorporated for consents seeking discharge directly to water.

The importance of involving tangata whenua in the change and review of this Plan is recognised.