

**PROJECT** Manukau

Upgrade of the Mangere Wastewater  
Treatment Plant  
Insect Management Plan

August 2001

Water **Care**  
*services limited*

**Copy** NO.

## 1. Introduction

Mangere Wastewater Treatment Plant (WTP) is being upgraded to improve the effluent standard and to reduce the area currently affected by odour problems. As part of the upgrade project Watercare Services are required to produce an Outline Plan of Works. The inclusion of an insect management plan was specifically requested by Manukau City Council. Watercare hereby presents the insect control strategies to be employed throughout the duration of the project.

### 1.1 Background

Flying insects of various types occur naturally in most coastal areas where they are normally controlled by natural population dynamics. However, since the current WTP was commissioned in 1960 it has become apparent that some of the wastewater treatment processes employed at the Mangere Site have encouraged and harboured some insect populations such that they have, on occasions, become a public nuisance.

This problem is not confined to the Mangere WTP but is associated with many plants throughout the world where residential properties exist in close proximity to a wastewater treatment works.

At the Mangere WTP the treatment processes that have been found to harbour insect populations include the oxidation ponds, the sludge lagoons and the sludge drying beds. All three of these processes will be will be decommissioned during the upgrade project and will not exist in the upgraded plant.

Independent expert advice has been sought. Entomologists have ti-Lied several species that breed within the confines of the existing WTP and found that even those species with poor flying abilities, were able to reach neighbouring properties by being carried on strong prevailing winds.

## 1.2 Scope

Ideally, Watercare would like to completely eradicate flying insect nuisance but this is generally impractical in an important coastal environment where a wastewater treatment plant and residential properties exist in close proximity, therefore, this management plan proposes to control populations during the upgrade project and respond promptly to any public complaints in order to prevent the insects becoming a public nuisance. This will also assist in complying with resource consent conditions and ensuring that no noxious, offensive or objectionable insect nuisance occurs.

### 1.2.1 Objectives:

The objectives of the Insect Management Plan are set out below:

- Through the use of the insect management plan, Watercare aims to monitor insect populations during the Upgrade Project.

Through the use of the insect management plan, Watercare aims to control insect populations during the Upgrade Project.

- Watercare also aims respond to public complaints and concerns in a timely and informative manner.

## 2. Control Strategy

The control strategy employed was developed with the philosophy that biological control methods are preferable to chemical control methods and that proactive is better than reactive activity.

The strategy includes four 'Key themes these are

- Monitoring
- Investigation
- Deployment of Control Mechanisms • Communication

### **2.1.1 Monitoring**

Watercare will employ a programme of regular proactive monitoring for flying insect populations. The results of the monitoring programmes will drive the choice of control method employed.

The monitoring will include:

- Species identification
- Size of insect populations
- Numbers of complaints received
- Meteorological Conditions

Trends in the above monitoring are analysed and correlated to identify appropriate trigger levels to initiate appropriate control strategies.

### **2.1.2 Investigation**

Watercare may consult independent experts to identify problem insect species, enumerate specific populations and to study the insect life-cycle. These investigations are crucial in establishing the nature and scale of an infestation and to identify the most appropriate stage in the insects' development for control mechanisms to be deployed.

### **2.1.3 Control Mechanisms**

There are four main control mechanisms which Watercare may employ. The choice of method will be determined by the nature and scale of the potential problem and the options are listed below;

#### **• Habitat Reduction**

This method aims to remove shelter and harbourage for the insects and thus reduce the numbers of individuals living and breeding on the site. The technique typically involves improved drainage of wet areas to

minimise the films of moisture where the insects tend to breed. This may include movement and placement of moist material to accelerate the rate of drying or planting vegetation to utilise available water in the affected areas.

Habitat reduction may also include removal of harbourage such as rock embankments and bunds or the management other such areas which provide shelter for the insects.

- **Natural Predators**

In keeping with the philosophy of minimal use of insecticides, predator species may be encouraged within the insect habitat to re-establish a more natural population equilibrium which prevents the dominant insect species from being numerous enough to cause off site nuisance. The introduction or encouragement of natural predators is most successful as a longer term control measure.

- **Biological Control**

Biological methods may also be employed through the spraying of biological formulations such as BTi which prevents the adult emergence of some insect species by interrupting the life cycle. These methods therefore control the number of flying individuals which may travel into neighbouring properties. It is generally a very quick and relatively safe form of insect population control where it can be effectively implemented.

- **Chemical Control**

Regular treatment of affected areas with chemical insecticide sprays such as Malathion may be adopted. The insecticide may be sprayed over the affected areas to control the adult insect population and thus reduce the numbers of individuals able to fly out of the affected area. Other insecticides may be used but only after careful evaluation of any adverse health or environmental effects and with the necessary consents.

The timing and regularity of spraying varies with the insect being targeted, its population dynamics, the insecticide being used and climatic conditions.

## 2.1.4 Communications

Watercare will regularly inform the Community of the status of insect complaints. the timing of any spraying and effectiveness of control methods through the Project Manukau Community Liaison Group.

The community can, inform Watercare if its concerns through the same Community Liaison Group, through the Neighbourhood Liaison Subgroup or through a standard Watercare Complaints Protocol.

The standard complaints protocol is summarised below:

1. Complaint Received by the Wastewater Treatment Plant and recorded on standard Insect Complaint Form.
2. Complaint Investigated. Complainant visited as soon as possible by Watercare staff. Samples of insects collected and results of investigation recorded on spread sheet and correlated with other monitoring results.
3. Resolution of Complaint. Discussion of results of investigation at regular meeting. Action Plan developed and responsibility assigned to carry it out. This is recorded in the minutes of the meeting.
4. Communication. The resolution is communicated to the complainant as soon as practical,
5. Review. The effectiveness of the action plan is monitored and minuted at regular meetings and follow up action taken as required. Liaison continued with Community through the Community Liaison Group.