

## **Weed Sensor Vehicle for Weed Control in CKC**

February 1999 saw the beginning of a new era in management of weeds in concrete kerb and channel for Brisbane City Council. A vehicle fitted with the "Weed Seeker" technology entered service as a test bed to assess the performance and reliability of the equipment and to determine the likely benefits of such equipment. This original test vehicle was rather crude but very quickly illustrated the benefits of the technology.

In February 2001 the first test vehicle was withdrawn and a new improved version entered service. This improved version not only used the "Weed Seeker" technology but was also fitted with an on board computer, a GPS unit and a small weather station.

This then allowed the automatic mapping of the passage of the vehicle against a cadastral background and within this trace, record the location at which herbicide was applied. The map generated is displayed on the computer screen and allows the operator to determine, at a glance, whether the street or a particular side of the street has been treated or not. It also allows the operator to plan ahead the route to follow to treat the area. Cycle times of the solenoids are recorded allowing for the calculation of the volume of herbicide applied at each point of discharge.

The on board weather station feeds in the atmospheric data to the computer on a 30 minute cycle. Wind speed and direction is then corrected by the computer to account for the speed and direction of travel of the vehicle.

All the collected data is down loaded and stored at the completion of each job which is based on individual electoral wards. This data forms our records in compliance with the requirements of the ACDC Act.

The present vehicle is a FWD Van that has been converted to dual control. A small infra-red camera has been mounted externally and images generated are displayed on a monitor to assist the driver to maintain the spray heads over the target zone.

The driving compartment is air conditioned and is separated and sealed off from the cargo area. The cargo area contains an electric powered diaphragm pump, which minimises noise, the solution tank, a tank of water for flushing the system at the end of each days operation, and a smaller tank of water for handwashing purposes. Also much of the electronic equipment is housed within the cargo area.

During operation, constant speed is important to ensure that targets detected are in fact hit by the herbicide discharge. To achieve this a modified cruise control has been installed. The vehicle has been calibrated to run at 10KPH. When the cruise control is engaged the speed is maintained with a variance of + or - 1KPH. The unit can also be operated at 5KPH to treat cul de sacs simply by resetting the controller and cruise control.

Night time operations have been assessed and the vehicle has been used to successfully treat kerb and channel weeds in industrial and commercial areas after dark thereby avoiding traffic congestion normally encountered in such areas during day time operation.

Demonstrated benefits of the present vehicle includes:

- A reduction in crew from 2 to 1
- A reduction in herbicide applied by 20% to 80% +
- A reduction in cost of treatment by 65%
- An increase in work output from 16K per shift to 40K per shift
- An increase in operator safety and comfort being enclosed in an air-conditioned cab
- An increase in operators performance as a result of less fatigue
- An ability to operate safely after dark
- Consistency of application when compared with traditional application – where as the day progresses, the operators become fatigued and tend not to detect and treat the smaller weeds

A more advanced unit is now in the design phase. This next model will incorporate improvements that will expand the operational capabilities of the present model. Also on the drawing board is a smaller light weight model to treat weeds on the ever expanding walkway/bikeway network within Brisbane.

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