Glen Waverley Uniting Church

Rain Water Harvesting Project

Systems, Equipment, Operation & Maintenance Manual

October 2008

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INTRODUCTION

The prime purpose for the Rain Water Harvesting System is to use water wisely.

This environmental project utilises rain water to flush the Church toilets and to water the garden and in so doing save on the State's clean, reticulated water, demonstrating to the community that GWUC share the wise and responsible use of our natural resources. This is a practical project that can be readily achieved.

This Project was funded financially by a grant from the Federal Government and at minimal financial cost to the Church. It was built/installed by a team of Church people using their abilities in management, accounting, design, planning and practical work. The total estimated cost of the Project, had it been constructed commercially is over $100,000, ie a large project for a Church team to successfully achieve.

The Project was achieved well within the grant budget.

The Federal Government grant of $37,500, including GST, was awarded in February 2008 and the Project work fully completed in November 2009. This long duration was partly due to the size of the Project, the attention to detail of the design, and the installation. The building delays of both the new Manses and new Hall Extension being constructed during the period also delayed the Rain Water Harvesting Project construction.

The Project has resulted in a reduction of mains water consumption by the Church complex from around 1,500 -1,700 litres/day in February 2008 to 220 - 230 litres post September 2009 when the systems were commissioned.

This Manual is divided into six main **Parts**:

Part 1 covers overall details of the three systems and their equipment.

Part 2 gives the Equipment Schedule for the major equipment of each System, General, Spares and Tools.

Part 3 gives equipment specifications on the major items of equipment, including manufacturers manuals plus purchase information.

Part 4 covers Inspection and Maintenance.

Part 5 lists the Points of Water & Power Isolation.

Part 6 includes Design Aspects, Costs, Drawings and other Documentation

GWUC, RAIN WATER HARVESTING SYSTEM

OVERVIEW

The Project comprises three major Systems as follows:

* **West Tank System** collects rain water from;
  - the existing stormwater piping on the Bogong Avenue side of the Church complex which is filtered and pumped to the West Tank, and
  - the southwest quarter of the Hall roof and the Hall storeroom roof which is fed directly to the West Tank via a downpipe,

  The stored water is used to supply the Church toilets.
* **Manse Tank System** collects rain water from the Hall Extension roof and stores it in the Manse Tank. The stored water is used to supply the toilets in the Manses at 15 & 17 Southdown Avenue and the toilet in the Hall Extension,
* **Fernery Tank System** utilises water collected from the south side of Worship Centre and Foyer roofs and the south east quarter of the Hall roof, stores it in the Fernery Tank and uses the stored water for the Church gardens via the existing Garden Watering system.

Each system uses a pump set with pressure control to deliver the water to the "user", and a changeover system such that if the stored water system fails for any reason, mains water will automatically be supplied to the "user".

Input water is filtered before entering the tanks and output water from the tanks is filtered before each pump.

The system has been designed to be 'set and forget' and each tank/pump/valve system works automatically without any overall master controls.

The system design assumes that regular maintenance will be carried out.

The installation has included equipment and fittings to allow easy dismantling and removal of equipment for cleaning, repairs or replacement.

All tanks have bolt/screw-on covers over the water inlet filter to seal the entry from rubbish in the air, ultraviolet rays (sunshine) and vandalism.

Test taps are included in the pump circuits to allow for bleeding of air and testing operation of pumps and valves.

Each system operates independently of the other Systems.

System security has been addressed by providing:

* Manhole covers on all tank inlets,
* Locked Pump enclosures,
* Water Filtering,
* A separate power circuit for each pump,
* Enclosed power outlets, each protected by a CB/RCD (Combined Circuit Breaker Residual Current Device).