Glen Waverley Uniting Church
Rain Water Harvesting Project
Part 6
Design Details

Glen Waverley Uniting Church: manses & hall extension development
Water Tanks: General arrangement
Federal Community Water Grants Project 2007/8

Fig. 1

VOLT DROP CALCULATION
For WEST TANK LEVEL SWITCH CABLE to SUBMERSABLE PUMP

			DOC7 Pump	
Assume	1.00	kW motor	0.55	kw
	7.41	Amps full load	3.7	FLC
	6.00	x FLC for starting		
Allow	5.00	% volt drop on normal current, and		
	20.00	% volt drop on start current		
2 core cable 2.5mm^2				
Route Length	50	m	80	m
reactance	0.102	ohm/km (TABLE 30 AS3008.1.1)	0.102	ohm/km
resistance	8.140	ohm/km (TABLE 35 AS3008.1.1)	8.140	ohm/km
Therefore Z=	8.141	ohm/km	8.141	ohm/km
=	0.0081	ohm/m	0.0081	ohm/m
Volt drop = 2 x Amps x L x Z			= 2 x Amps x L x Z	
=	6.03	volts	4.82	volts
=	2.51	%	2.01	%

This well less than 5% therefore OK

Volt drop on starting will be approx 6 times
= 15.08 % 12.05 %
This well less than 20% so should be OK.

GWUC, RAIN WATER HARVESTING SYSTEM

INTRODUCTION

A Project of this size needs considerable planning estimating, design drawings and other documents.
Some of the major documents are included in the Part of the Manual.

Schematic Diagram(s)

Roger, have we ended up with any accurate System schematics that we wish to include?

Costs

Roger do we want to include any estimate or overall actual costing?

Calculations

The 240V AC power initiates at the Hall Extension Switchboard, and is routed via the float level switch in the West Tank, then back to the Switchboard and finally out to the power outlet at the rear of the brick Church sign.

This is a long cable run.

If there is too much volt drop on the cable (due to the pump motor) current the pump may NOT start.

The following calculation check the volt drop over two possible cable routes of 50 and 80m and was found to be OK.

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As-Built Drawings

Roger; are these OK as hand sketches, or do we have to get them drawing up?

17 Southdown, Stormwater Extension

This extension provided a new drain pit in the back yard (as recommended by the Project Plumber) and drainage of the Manse Tank enclosure.
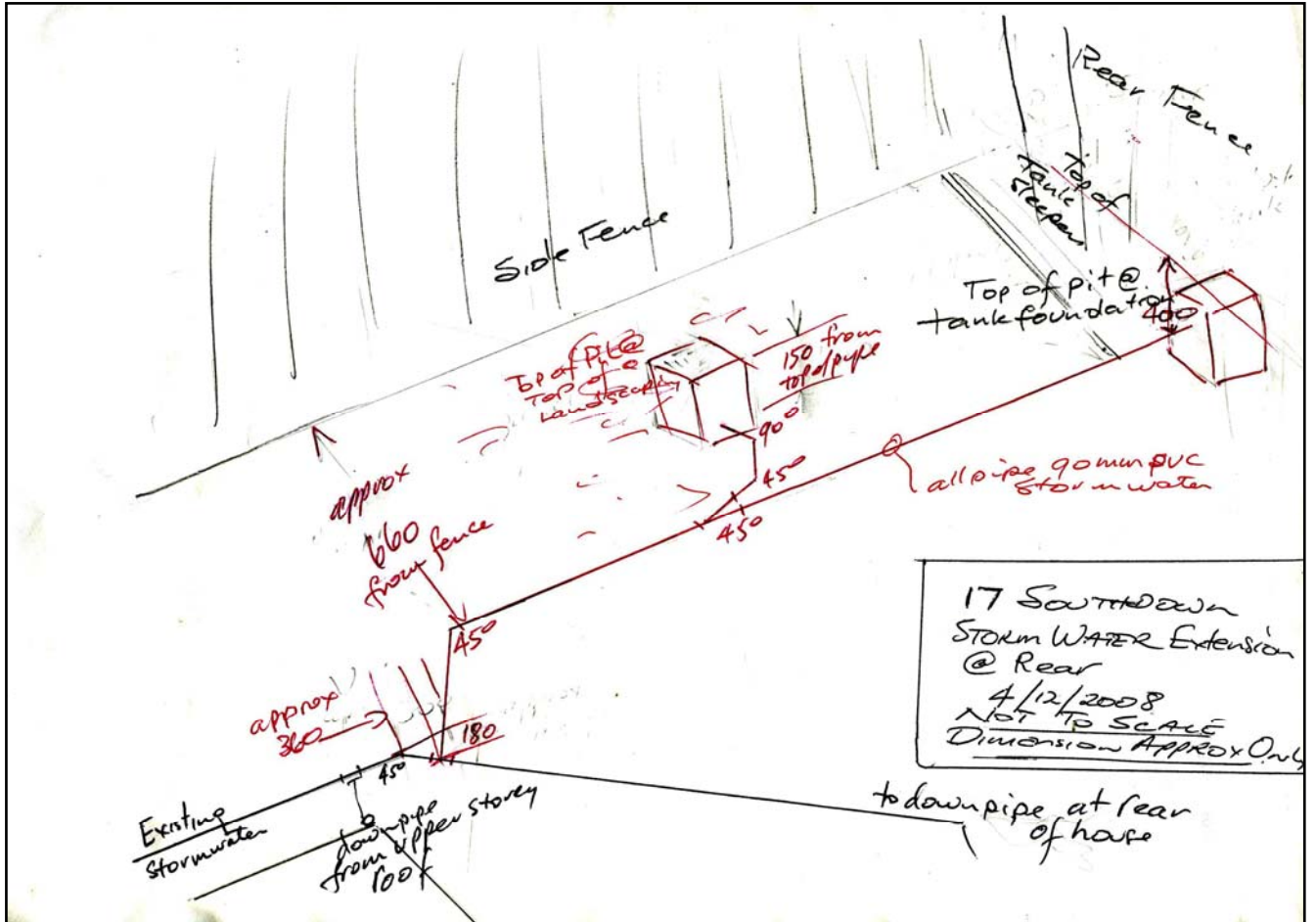

Underground Poly Pipe Line Joint Location

The pipe line from the Manse Pump to 15 Southdown Manse runs between the house and hall Extension south wall.

Initially it was planned to tee off this pipe for the water to the Hall Extension Toilet. However due to lack of coordination of the Builder and his plumber the piping was eventually installed by the Project Plumber and was routed via the east wall.

The planned tee-off had to be closed with a brass plug.
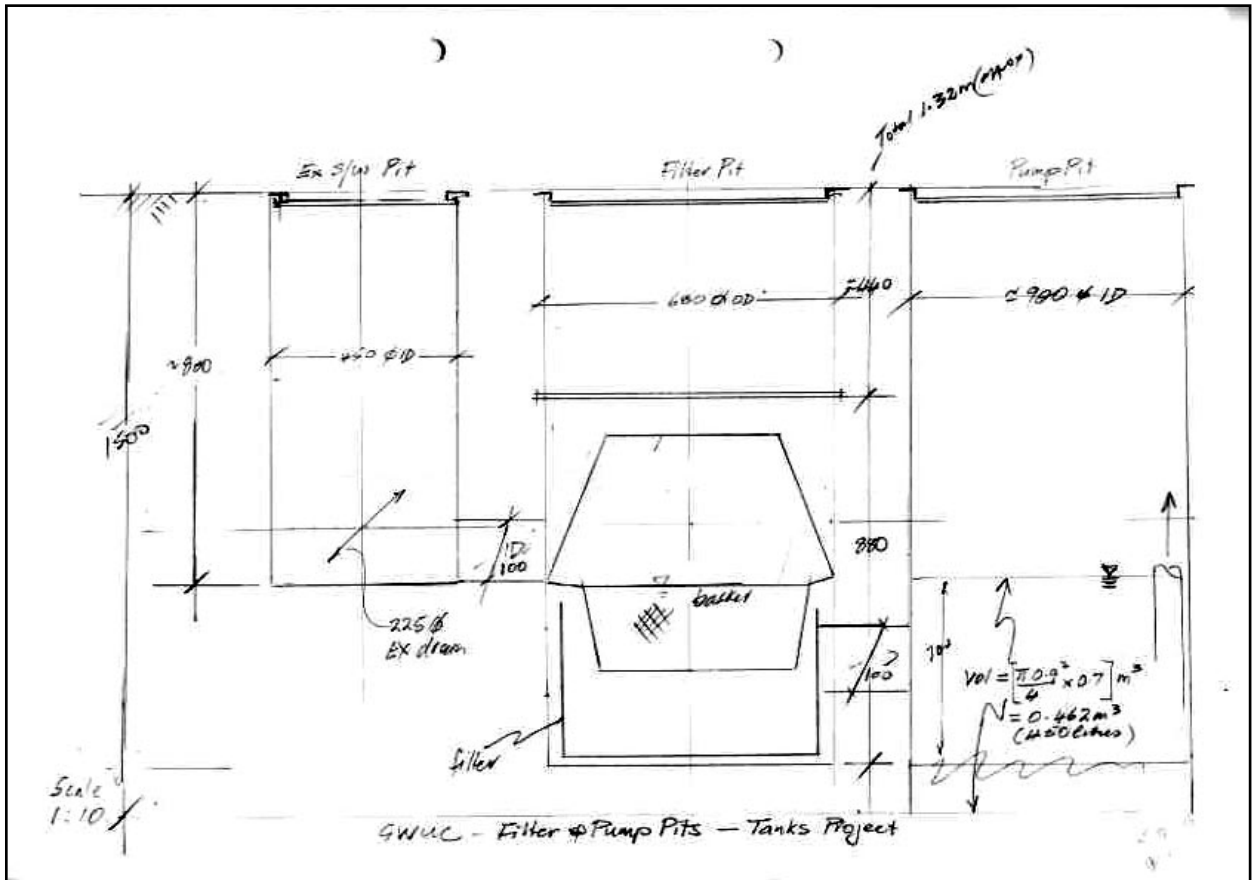
This drawing shows the location.
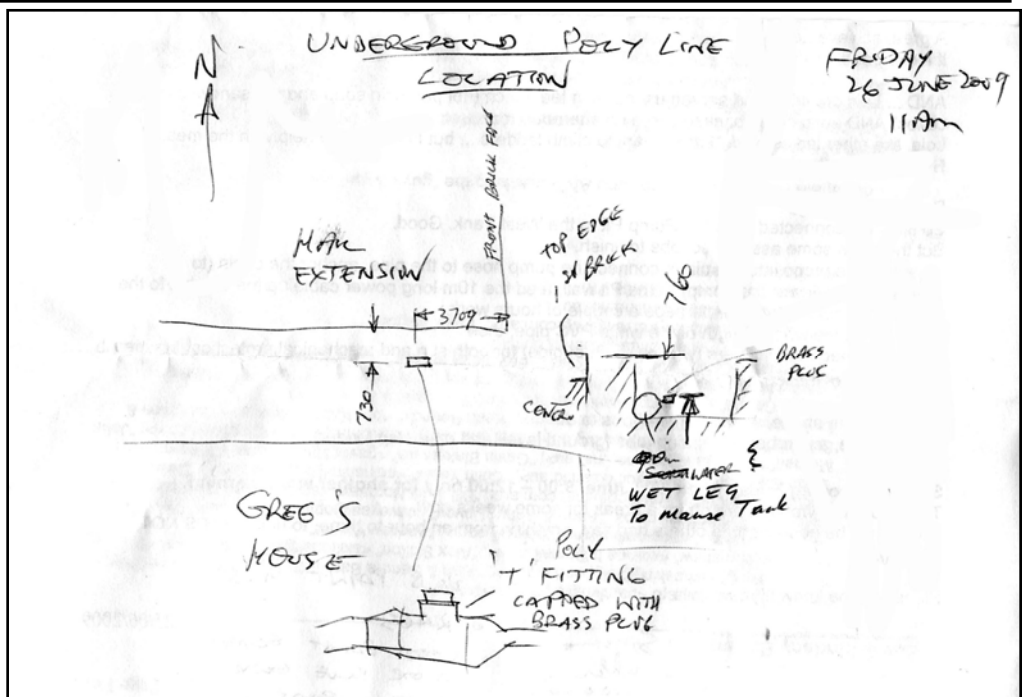
Filter Pit

This drawing show the arrangement of the "Atlantis" Filter Pit, comprising half of an empty pit -the upper part - and the lower part being the Pit complete with filter.
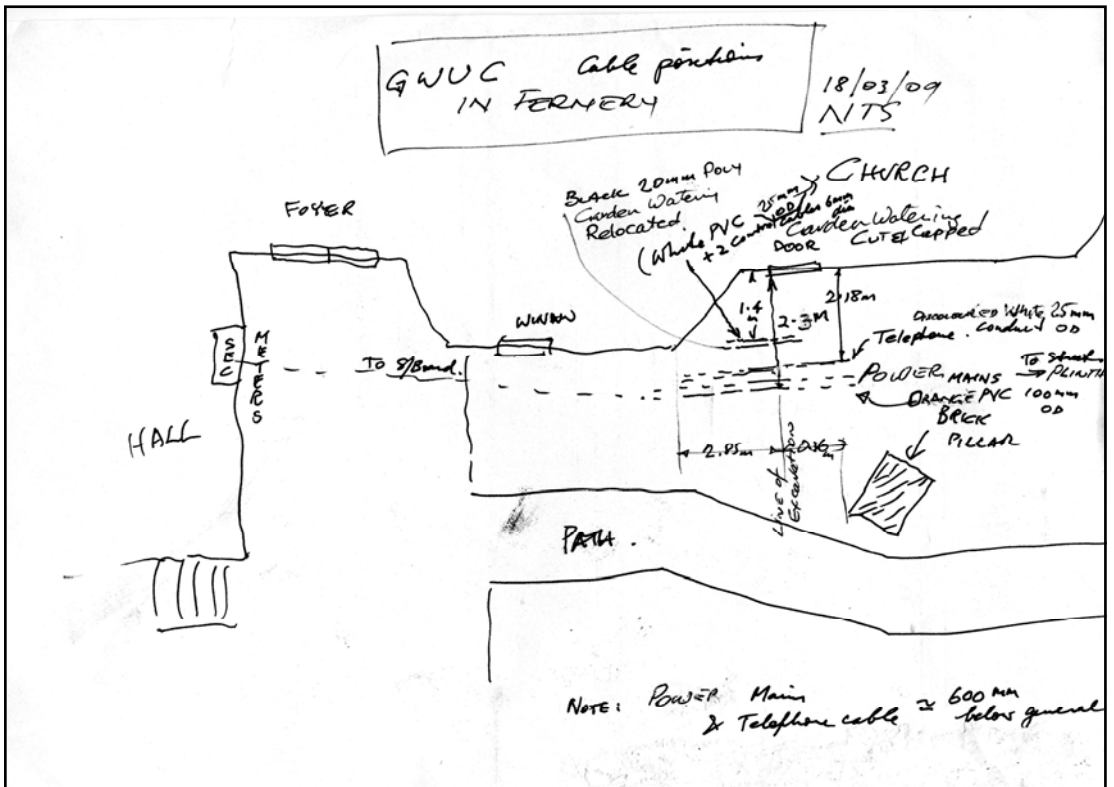
Cable

GWUC - Filter & Pump Pits — Tanks Project

Positions in Fernery

Prior to excavating for the Fernery Tank foundation, the incoming Power and Telephone cables had to be located.

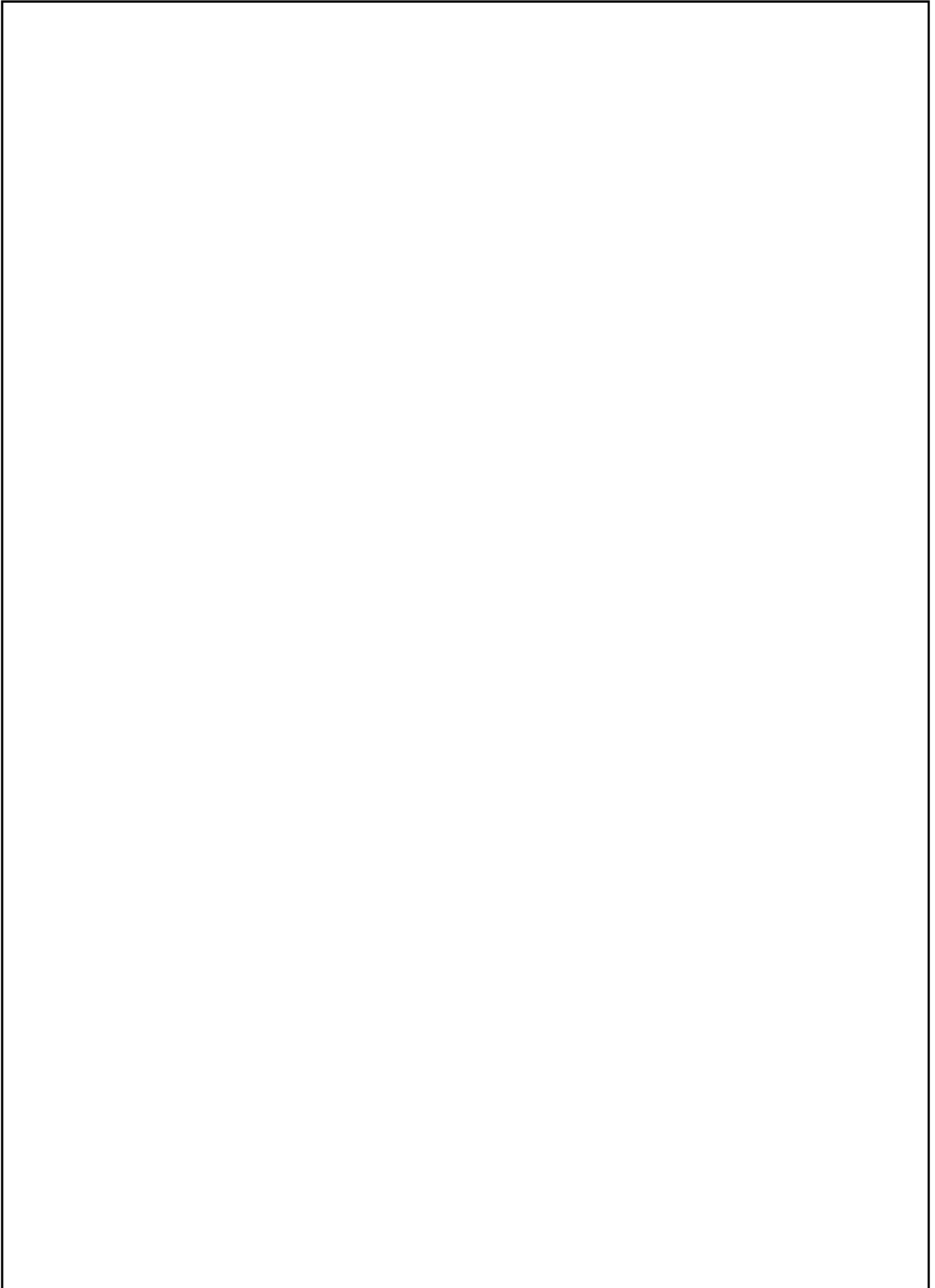This drawing shows these details.

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*Roger, apart from the **Garden Watering System Equipment Locations** drawing I don't have any other drawing to include.*

These formed part of a 4 page report which I issued to Property 03/08 but I'm inclined to include this Report in this Manual (unless I can somehow find out that it is readily available in Properity's documents).

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