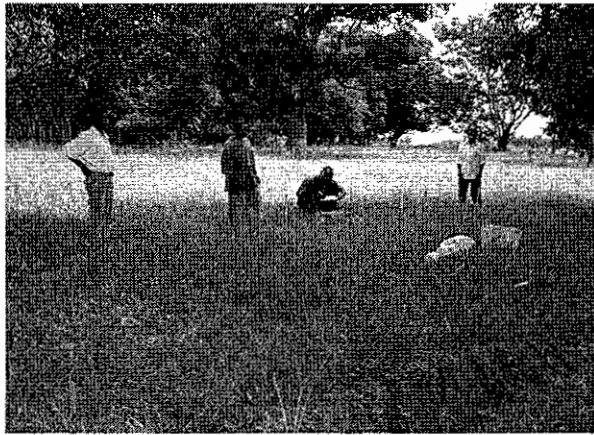
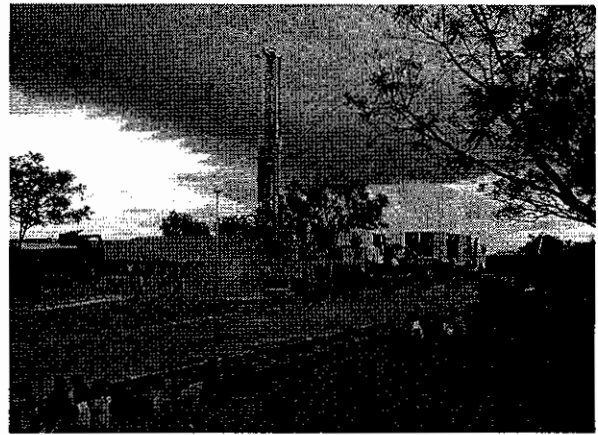


## 8-1 Electrical Investigation Plan

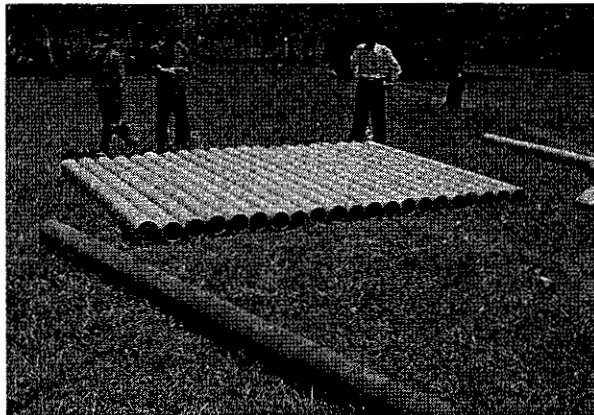
Pictures for Executin of Electrical Investigation, Trtial Borehole, Water Analysis



Electrical Investigation



Trtial Borehole Making



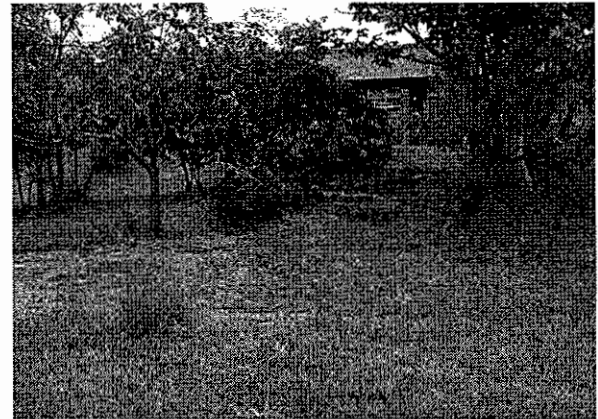
Casing & Screen for Borehole



Water Drawing Test from Borehole



Water Collection for Analysis



Exposure of Rocks in the College Campus

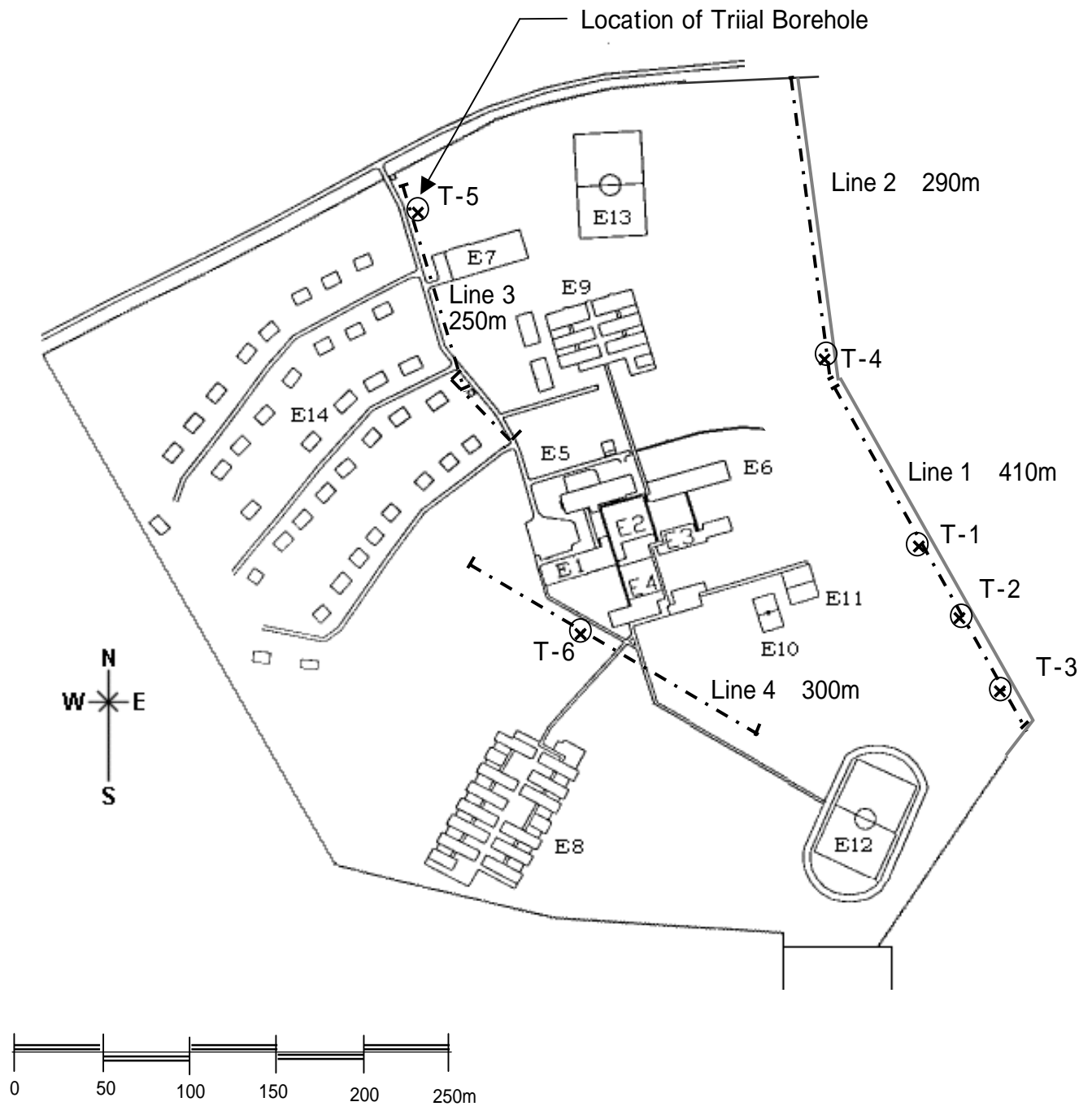
# 8-1 Electrical Investigation Plan

**Key**

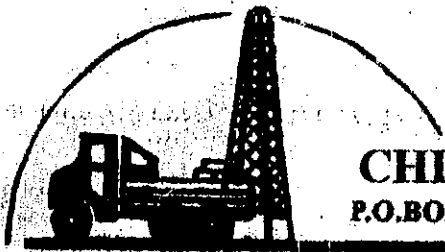
E 1	Administration
E 2	Library
E 3	Classroom
E 4	Classroom
E 5	Hall and Kitchen
E 6	Classroom and Laboratories
E 7	Demonstration Primary School
E 8	Male Hostels
E 9	Female Hostels
E 10	Basketball Court
E 11	Tennis Court
E 12	Sports Ground
E 13	Football Field
E 14	Staff Housing

**Legend**

	: Horizontal Investigation
Line 1 410m	
	: Vertical Investigation
T-1	



## 8-2 Trial Borehole



**CHITSIME DRILLING COMPANY**  
 P.O.BOX 764, LILONGWE, MALAWI, CENTRAL AFRICA

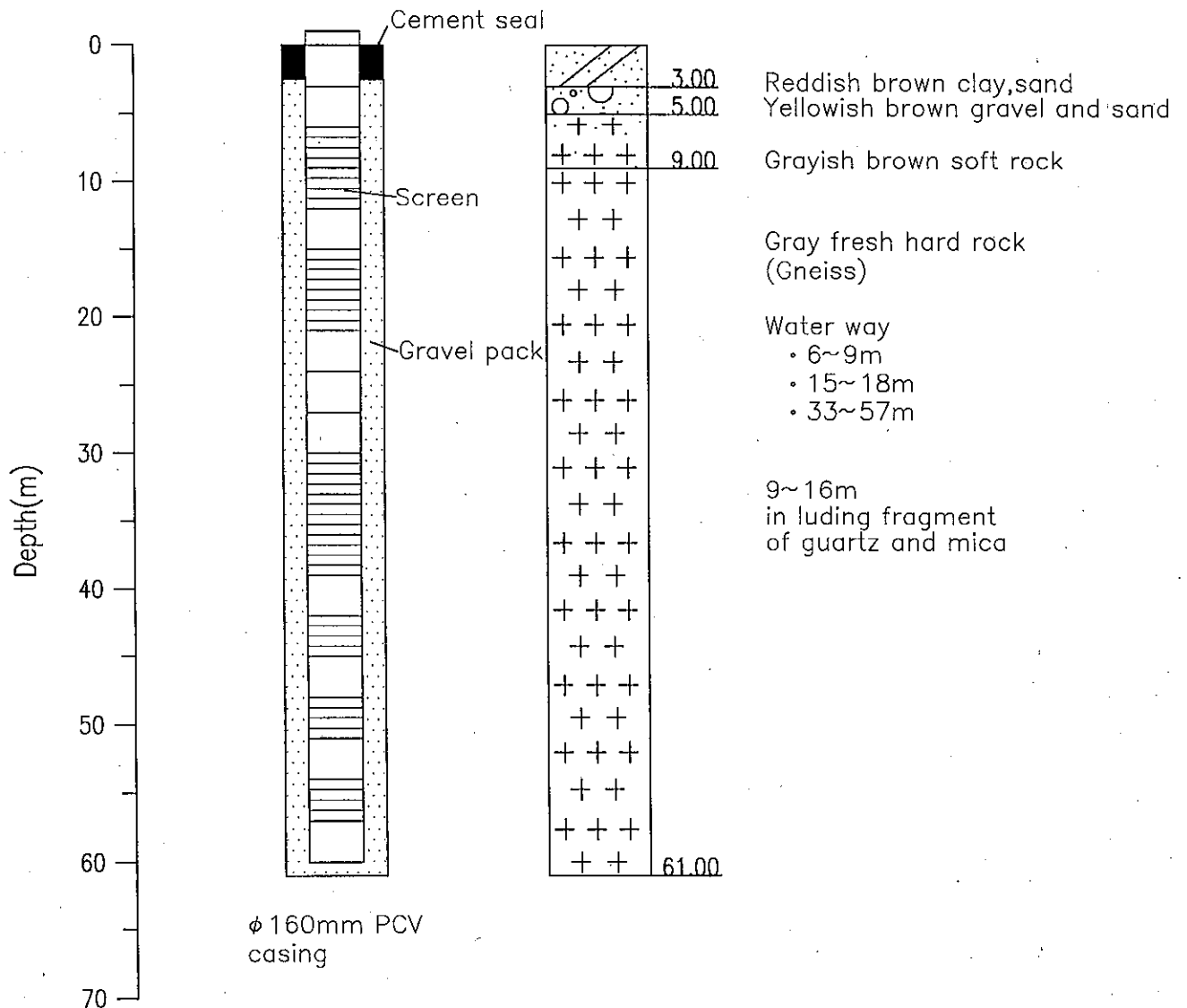


Fig GEOLOGY AND WELL STRUCTURE OF BOREHOLE

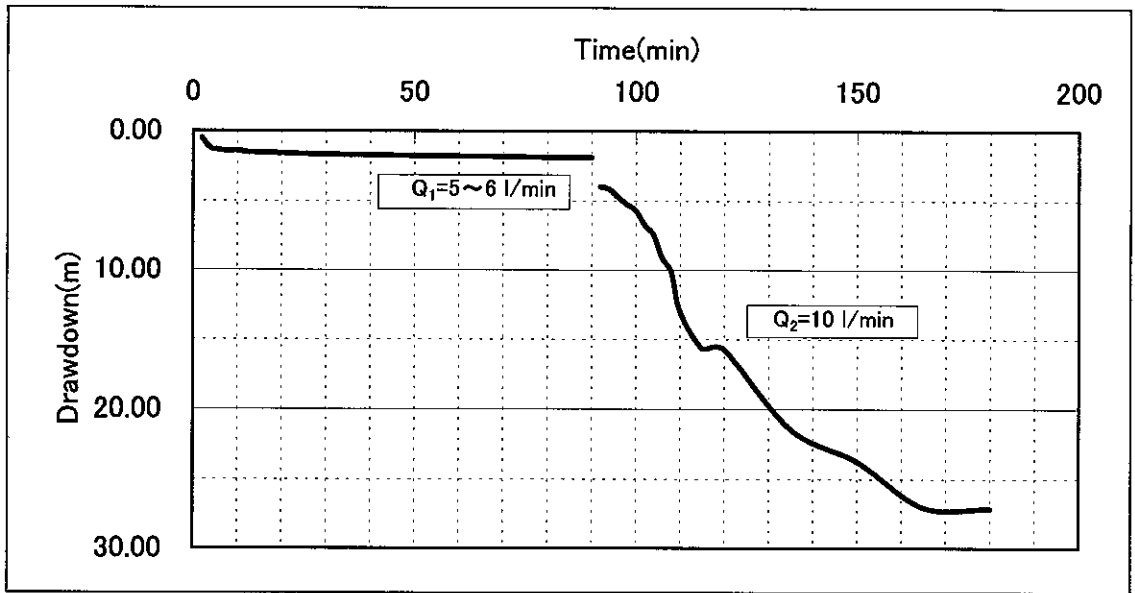


Fig. Drawdown test.

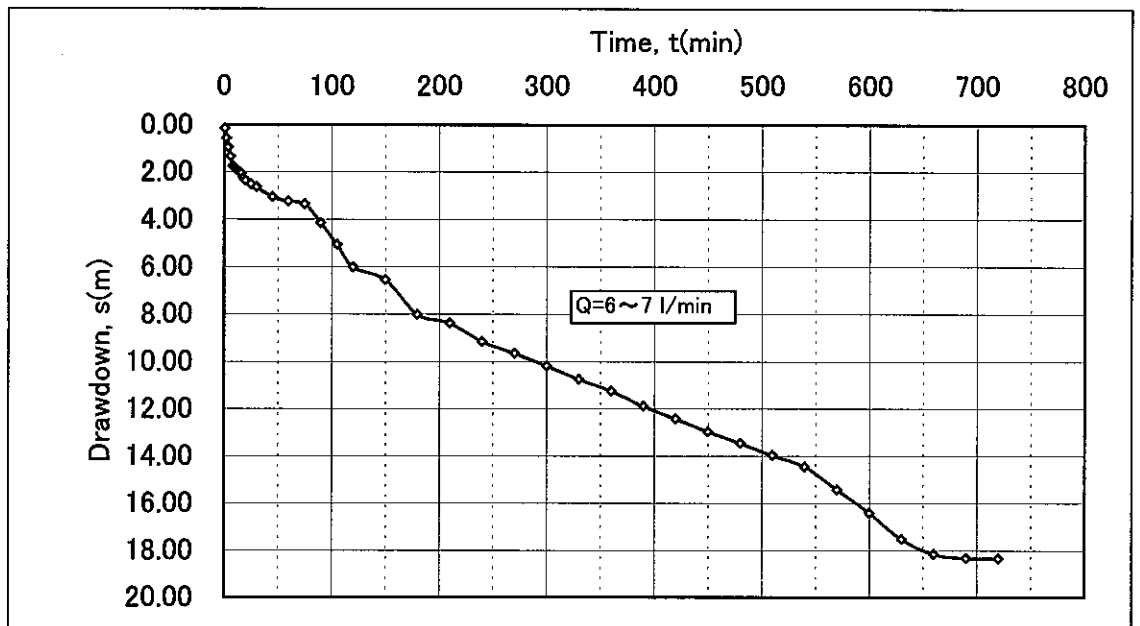


Fig. Continuous test

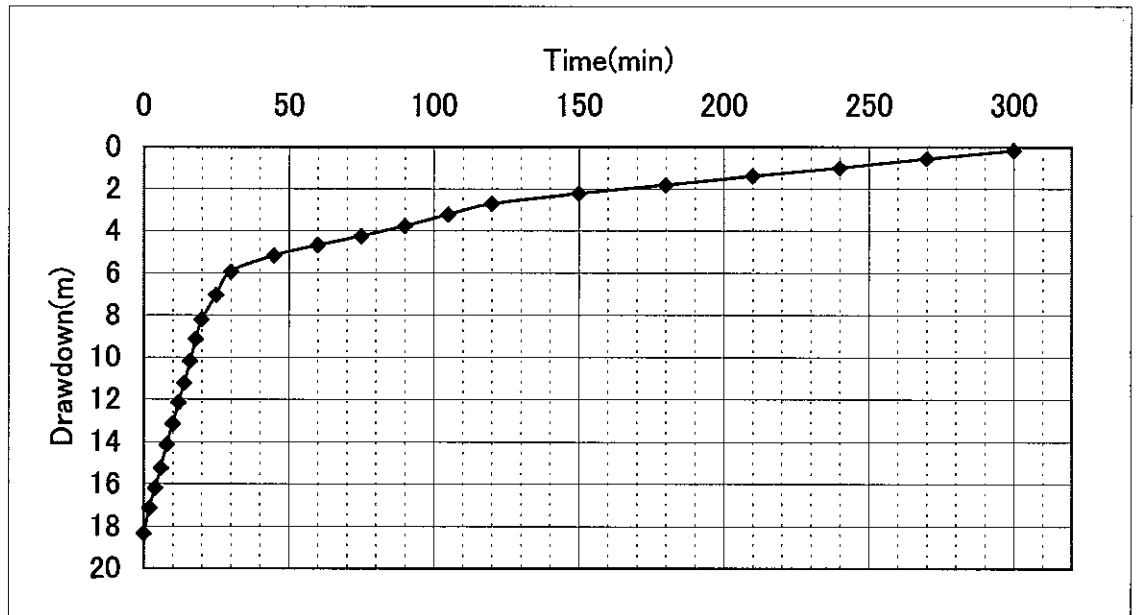


Fig. Recovery test

Well Number:No.1

Date:13/2/03

Location: DCE

Long:

Drilling Depth: 61m

Lati:

Well Depth: 60 m

S.W.L.(m):1.85

Time	t (min)	Continious time(min)	Water Level (m)	Drawdown s (m)	Discharge Q (l/min)	Remark
	2		2.36	0.51	5.0	Drawdown test(1)
	4		3.10	1.25	6.7	
	6		3.20	1.35		
	8		3.30	1.45		
	10		3.25	1.40		
	12		3.37	1.52		
	14		3.39	1.54		
	16		3.41	1.56	6.0	
	18		3.43	1.58		
	20		3.45	1.60		
	25		3.50	1.65		
	30		3.55	1.70	6.7	
	45		3.60	1.75		
	60		3.65	1.80		
	75		3.71	1.86		
	90		3.75	1.90	5.5	

Time	t (min)	Continious time(min)	Water Level (m)	Drawdown s (m)	Discharge Q (l/min)	Remark
	2	92	5.85	4.00		Drawdown test(2)
	4	94	6.00	4.15		
	6	96	6.60	4.75		
	8	98	7.12	5.27		
	10	100	7.55	5.70	7.7	
	12	102	8.60	6.75		
	14	104	9.30	7.45	10	
	16	106	10.99	9.14		
	18	108	12.00	10.15		
	20	110	14.86	13.01		
	25	115	17.50	15.65	9	
	30	120	17.60	15.75	10	
	45	135	23.30	21.45		
	60	150	25.60	23.75		
	75	165	28.89	27.04	10	
	90	180	29.00	27.15		

Well Number:No.1

Date:13~14/2/03

Location: DCE

Long:

Drilling Depth: 61m

Lati:

Well Depth: 60 m

S.W.L.(m):1.85

Time	t (min)	Continuous time(min)	Water Level (m)	Drawdown s (m)	Discharge Q (l/min)	Remark
	1		2.00	0.15		Continuous test
	2		2.40	0.55		
	4		2.80	0.95		
	6		3.20	1.35		
	8		3.60	1.75	7.5	
	10		3.70	1.85		
	12		3.78	1.93		
	14		3.85	2.00	7.5	
	16		3.90	2.05		
	18		4.11	2.26		
	20		4.21	2.36		
	25		4.36	2.51		
	30		4.48	2.63	6.7	
	45		4.91	3.06		
16:00	60		5.10	3.25		
	75		5.21	3.36	7.5	
	90		6.00	4.15		
	105		6.91	5.06		
17:00	120		7.86	6.01		
	150		8.40	6.55	7.0	
18:00	180		9.86	8.01	7.0	
	210		10.23	8.38	7.2	
19:00	240		11.00	9.15		
	270		11.51	9.66		
20:00	300		12.03	10.18	6.5	
	330		12.60	10.75		
21:00	360		13.11	11.26	6.2	
	390		13.74	11.89		
22:00	420		14.27	12.42		
	450		14.81	12.96		
23:00	480		15.31	13.46	6.1	
	510		15.82	13.97		
0:00	540		16.30	14.45	6.7	
	570		17.27	15.42		
1:00	600		18.25	16.40	6.4	
	630		19.36	17.51		
2:00	660		20.00	18.15		
	690		20.18	18.33	6.6	
3:00	720		20.20	18.35		



Well Number:No.1

Date:14/2/03

Location: DCE

Long:

Drilling Depth: 61m

Lati:

Well Depth: 60 m

S.W.L.(m):1.85

Time	t (min)	Continuous time(min)	Water Level (m)	Drawdown s (m)	Discharge Q (l/min)	Remark
	0		20.20	18.35		Recovery test
	2		19.00	17.15		
	4		18.05	16.20		
	6		17.10	15.25		
	8		16.00	14.15		
	10		15.01	13.16		
	12		14.02	12.17		
	14		13.09	11.24		
	16		12.05	10.2		
	18		11.00	9.15		
	20		10.08	8.23		
	25		8.90	7.05		
	30		7.80	5.95		
	45		7.03	5.18		
	60		6.53	4.68		
	75		6.11	4.26		
	90		5.62	3.77		
	105		5.08	3.23		
	120		4.57	2.72		
	150		4.09	2.24		
	180		3.68	1.83		
	210		3.25	1.40		
	240		2.86	1.01		
	270		2.40	0.55		
	300		2.00	0.15		

### 8-3 Result of Water Quality Test

**NON-METALS**  
**RESULTS OF ANALYSIS FOR JICA WATER SAMPLES SUBMITTED TO ICU**

Sample	BOD (mg/L)	COD (mg/L)	Bicarbonate Alkalinity (mg/L CaCO <sub>3</sub> )	Carbonate Alkalinity (mg/L CaCO <sub>3</sub> )	Total alkalinity (mg/L CaCO <sub>3</sub> )	pH	E.C. (μS/ cm)	Turbid- ity (FTU)	Chloride (mg/L)	Hard- ness (mg/L CaCO <sub>3</sub> )
New bore- hole water	3.5 ± 0.1	5.09 ± 0.06	159.3 ± 4.4	0	159.3 ± 4.4	7.70 ± 0.01	1950 ± 7	55.07 ± 0.27	0.01 ± 0.00	66.86 ± 3.50
Old Bore- hole water	2.0 ± 0.0	2.0 ± 0.0	121.8 ± 4.4	0	121.8 ± 4.4	6.85 ± 0.00	1700 ± 5	11.37 ± 0.54	0.01 ± 0.00	69.34 ± 0.00
Tap water	2.4 ± 0.5	5.09 ± 0.00	21.9 ± 4.5	0	21.9 ± 4.5	6.95 ± 0.01	2380 ± 6	2.14 ± 0.00	0.00	6.19 ± 1.75

Phosphate (ng/L):      New Bore hole water:      0.00  
                                  Old Bore hole water:      0.00  
                                  Tap water    :      0.00

E.C.= Electrical conductivity

**METALS**  
**RESULTS OF ANALYSIS FOR JICA WATER SAMPLES SUBMITTED TO ICU**

Sample	Na (mg/L)	K (mg/L)	Mg (mg/L)	Ca (mg/L)	Fe (mg/L)	Cu (mg/L)	Zn (mg/L)	Pb (mg/L)	Mn (mg/L)
New Bore-hole water	22.8 ± 0.6	4.0 ± 0.0	6.21 ± 0.01	16.35 ± 0.10	4.82 ± 0.00	<0.02	0.01 ± 0.00	<0.05	0.27 ± 0.01
Old Bore-hole water	15.9 ± 0.2	1.7 ± 0.0	7.01 ± 0.07	13.02 ± 0.04	2.34 ± 0.07	<0.02	0.01 ± 0.00	<0.05	0.07 ± 0.01
Tap water	2.3 ± 0.3	0.6 ± 0.0	0.39 ± 0.03	0.59 ± 0.03	<0.03	<0.02	0.66 ± 0.00	<0.05	0.07 ± 0.01

Na= sodium  
 Mg= magnesium  
 K= potassium  
 Ca= calcium  
 Fe= iron  
 Cu= copper  
 Zn= zinc  
 Pb= lead  
 Mn= manganese

## RESULT OF WATER QUALITY ANALYSIS FOR COLI FORMS AND E. COLI

METHOD : Standard Plate Count MEDIUM : M'Conkey Agar

Incubation : 24 hrs @37 and 44

### RESULTS :

Growth @37 for Coli Forms					Growth @44 for E. Coli				
Sample	Dilution	Rep.#	Colony Count	Actual Count / 1ml	Sample	Dilution	Rep.#	Colony Count	Actual Count / 1ml
Old Borehole	10 <sup>0</sup>	1	9	9	Old Borehole	10 <sup>0</sup>	1	8	8
		2	8	8			2	20	20
		3	8	8			3	16	16
	10 <sup>-1</sup>	1	1	10		10 <sup>-1</sup>	1	1	10
		2	2	20			2	2	20
		3	1	10			3	1	10
	10 <sup>-2</sup>	1	0	0		10 <sup>-2</sup>	1	0	0
		2	0	0			2	0	0
		3	0	0			3	0	0
New Borehole	10 <sup>0</sup>	1	25	25	New Borehole	10 <sup>0</sup>	1	65	65
		2	378	378			2	260	260
		3	84	84			3	75	75
	10 <sup>-1</sup>	1	21	210		10 <sup>-1</sup>	1	19	190
		2	36	360			2	46	460
		3	12	120			3	7	70
	10 <sup>-2</sup>	1	1	100		10 <sup>-2</sup>	1	1	100
		2	3	300			2	2	200
		3	0	0			3	1	100
Tap	10 <sup>0</sup>	1	3	3	Tap	10 <sup>0</sup>	1	0	0
		2	0	0			2	1	1
		3	9	9			3	3	3
	10 <sup>-1</sup>	1	0	0		10 <sup>-1</sup>	1	0	0
		2	0	0			2	0	0
		3	1	10			3	0	0
	10 <sup>-2</sup>	1	0	0		10 <sup>-2</sup>	1	0	0
		2	0	0			2	0	0
		3	0	0			3	0	0

Done on : 25/02/2003

## 9. References

The Project for Secondary School Teacher Training Facility Improvement at Domasi College of Education  
List of Related Information

GOVERNMENT

No.	Publisher	title	year	pages
G- 01	MoF	Approved Estimates of Expenditure on Recurrent and Capital Accounts for the Financial Year 2002/03:	2002	49p. Original
G- 02	MoF	Approved Estimates of Expenditure on Recurrent and Capital Accounts for the Financial Year 1998/99, 1999/00, 2001/02, 2002/03: Education	varies	16p. Copy
G- 03	MoF/NEC	ECONOMIC REPORT 2002	2002	122p. Original

EDUCATION

No.	Publisher	title	year	pages
E- 01	Chancellor College	A Junior Certificate Physical Science, 2nd Edition	1999	170 original
E- 02	Chancellor College	Physical Science For Malawi, 2nd Edition M.S.C.E. Book 1	1995	223 original
E- 03	Chancellor College	Physical Science For Malawi, 2nd Edition M.S.C.E. Book 2	1995	180 original
E- 04	DCE/MoEST	Progress Report for the Establishment of SMASSE INSET MALAWI PILOT PROGRAMME - Needs Assessment Survey & the 1st and 2nd Stakeholders'	2003	188 copy
E- 05	DCE/MoEST/CIDA	Domasi College of Education Master Plan (2003 - 2013) , Towards a Master Plan: Specialist Recommendations	2003	80 copy
E- 06	DCE	Building Blocks of Domasi College of Education Master Plan 2003-2013, Revised Nov.06,2002, powerpoint	2002	24 copy
E- 07	DCE	Japanese Grant Aid Request, Feb 2003	2003	21 copy
E- 08	DCE	Domasi College of Education: Prospectus	2000	35 original
E- 09	Scientific Teaching Aids	Educational Catalogue 2002 - 2003	2002	88 original
E- 10	EDMU/MoEST	Secondary School Equipment List	-	19 copy
E- 11	MIE/MoE	Junior Secondary School Teaching Syllabus: BIOLOGY	1998	53 original
E- 12	MIE/MoE	Junior Secondary School Teaching Syllabus: PHYSICAL SCIENCE	1998	30 original
E- 13	MIE/MoE	Junior Secondary School Teaching Syllabus: INTEGRATED SCIENCE	1998	53 original
E- 14	MIE/MoE	Junior Secondary School Teaching Syllabus: HOME ECONOMICS	1998	53 original
E- 15	MIE/MoEST	Senior Secondary Teaching Syllabus: BIOLOGY	2001	57 copy
E- 16	MIE/MoEST	Senior Secondary Teaching Syllabus: SCIENCE AND TECHNOLOGY	2001	64 copy
E- 17	MIE/MoEST	Senior Secondary Teaching Syllabus: PHYSICAL	2001	57 copy
E- 18	MIE/MoEST	Senior Secondary Teaching Syllabus: HOME	2001	66 copy
E- 17	MIE/MoEST	Senior Secondary Teaching Syllabus: CRAFT,DESIGN AND TECHNOLOGY	2001	16 copy
E- 18	MIE/MoEST	Senior Secondary Teaching Syllabus: PHYSICAL EDUCATION	2001	50 copy
E- 17	MIE/MoEST	Senior Secondary Teaching Syllabus: COMPUTER STUDIES SYLLABUS	2001	29 copy
E- 18	MIE/MoEST	Senior Secondary Teaching Syllabus: BIOLOGY	2001	57 copy

DONORS

No.	Publisher	title	year	pages
D- 01	World Bank	Malawi Social Action Fund(MASAF) Project, presentation	2002	10 copy
D- 02	DfID/M.D.Initiatives	Design and Construction Technologies used in construction of Primary Schools, TDC and PEA Houses throughout Malawi	2003	31 copy
D- 03	MoEST	Joint Sector Review 2002, Theme: Funding the Sector	2002	approx.20 copy

MAPS

No.	Publisher	title	year	pages
M- 01	Surveys Dept	Zomba 1:50,000 (SHEET 1535A4)	1997	1 original
M- 02	Surveys Dept	Blantyre 1:250,000 (SHEET9 Blantyre)	2000	1 original
M- 03	Surveys Dept	Liwonde 1:250,000 (SHEET8 Liwonde)	2000	1 original
M- 04	Surveys Dept	CITY OF BLANTYRE 1:16,000	1990	1 original
M- 05	MapStudio	Southern & East Africa 1:1,500,000	2002	160 original
M- 06	World Bank	Secondary Education Project: Location Map		1 copy

DRAWINGS

No.	Publisher	title	year	size
DWG 01	MOE/EDMU	480 Administration Plan, 1:150, ADM/480/WD01	1998	A1 bleu print
02	MOE/EDMU	Classroom Plan, 1:50, CLS/WD/01	1998	A1 bleu print
03	MOE/EDMU	320 Library Plan, 1:50, LIB/320/WD 01	1999	A1 bleu print
04	MOE/EDMU	480 Library Plan, 1:50, LIB/320/WD 01	1998	A1 bleu print
05	MOE/EDMU	320 Laboratory Plan, 1:50, LAB/320/WD 01	1998	A1 bleu print
06	MOE/EDMU	480 Laboratory Plan, 1:50, LAB/480/WD 01	1998	A1 bleu print
07	MOE/EDMU	480 Hall PLAN 1:50 HAL480/WD 01	1999	A1 bleu print
08	MOE/EDMU	480 Hall REAR ELEVATION 1:100 HAL/480/WD 04	1998	A1 bleu print
09	MOE/EDMU	480 Hall Section H2b-H2b 1:50 HAL/480/ST/4E	1999	A1 bleu print
10	MOE/EDMU	480 Hall Front Elevation 1:100,	1999	A1 bleu print
11	MOE/EDMU	320 Hall Section H6-H6 1:25, HAL/320/ST/3E	1999	A1 bleu print
12	MOE/EDMU	Sectional Detail - Hall, 480 & 320 Sections	1999	A1 bleu print
13	MOE/EDMU	Headmaster's House 102sqm, 1:50 HSE/WD/01	1998	A1 bleu print
14	MOE/EDMU	Semi-detached Teachers' House 78.8sqm, 1:100 HSE2/WD/01	1998	A1 bleu print
15	MOE/EDMU	Ablution Blocks 1:50 ABL/WD 01	1998	A1 bleu print
16	MOE/EDMU	Ablution Blocks 1:50 ABL/WD 01	1998	A1 bleu print
17	MOTW/BD	Ground Beams, Columns & Foundations Reinforcement	1990	A1 bleu print
18	MOTW/BD	1st Floor Slabs & Beams Reinforcement Details	1990	A1 bleu print
19	MOTW/BD	Standard Septic Tank Plan and Section	1992	A2 bleu print