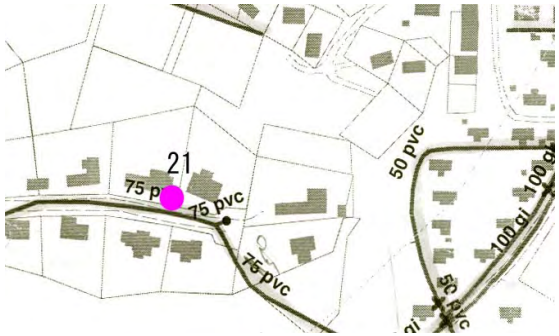
LEAKAGE RECORD SHEET

Date of Survey:	22-Jun-05		
Survey No,:	**21** Stop Cock		
System name:	(W.R.G), W.R.P, Rove, Mataniko-P, JICA-B, Kombito, Kombito-G, Panatina, Others		
Address:	Mr,Ruth Taro CBSI TAVIO		
Main Line	CIP, GP ,PVC, POL, Others( )	Position	Pipe,Connection,Valve,Others
		Condition	Hole,Crack,Brake,Pack kin,Loose,Others
Diameter	"or mm	Cause	Corrosion,Water-pressure,Deterioration Wrong Construction, Traffic load,Others
Service Line	CIP, GP ,PVC,(POL), Others( )	Position	Pipe,Connection,Valve,Others
		Condition	Hole,Crack,Brake,(Pack kin),Loose,Others
Diameter	1/2 "or 13 mm	Cause	Corrosion,Water-pressure,(Deterioration) Wrong Construction, Traffic load,Others
Depth	20 cm	Ground	Asphalt,Concrete,Gravel,(Grass),Others
Leakage Size	Large, Middium,(Small)	Leakage Quqntitiy (Measured)	1L/min or 0.06 m^3/h

Location map

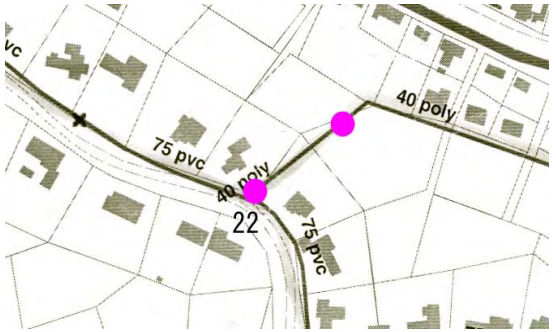


Photograph,Others

LEAKAGE RECORD SHEET

Date of Survey:	22-Jun-05		
Survey No,:	**22** Valve		
System name:	W.R.G, W.R.P, Rove, Mataniko-P, JICA-B, Kombito, Kombito-G, Panatina, Others		
Address:	Mr,Kith Joseph Ramsi Office TAVIO		
Main Line	CIP, GP ,PVC, POL, Others( )	Position	Pipe,Connection,(Valve),Others
		Condition	Hole,Crack,Brake,(Pack kin),Loose,Others
Diameter	" or 40 mm	Cause	Corrosion,Water-pressure,(Deterioration) Wrong Construction, Traffic load,Others
Service Line	CIP, GP ,PVC, POL, Others( )	Position	Pipe,Connection,Valve,Others
		Condition	Hole,Crack,Brake,Pack kin,Loose,Others
Diameter	or mm	Cause	Corrosion,Water-pressure,Deterioration Wrong Construction, Traffic load,Others
Depth	10 cm	Ground	Asphalt,Concrete,Gravel,(Grass),Others
Leakage Size	Large, Middium,(Small)	Leakage Quqntitiy (Measured)	1L/min or 0.06 m^3/h

Location map

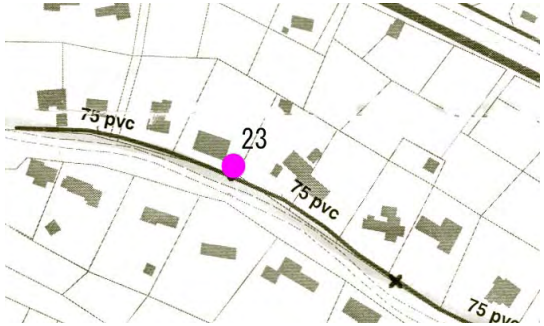


Photograph,Others

LEAKAGE RECORD SHEET

Date of Survey:	22-Jun-05		
Survey No,:	**23** Valve		
System name:	(W.R.O), W.R.P, Rove, Mataniko-P, JICA-B, Kombito, Kombito-G, Panatina, Others		
Address:	John & Berry Ramsi8,Prison Service TAVIO		
Main Line	CIP, GP (PVC), POL, Others( )	Position	Pipe,Connection,(Valve),Others
		Condition	Hole,Crack,Brake,(Pack kin),Loose,Others
Diameter	"or 100 mm	Cause	Corrosion,Water-pressure,(Deterioration) Wrong Construction, Traffic load,Others
Service Line	CIP, GP ,PVC, POL, Others( )	Position	Pipe,Connection,Valve,Others
		Condition	Hole,Crack,Brake,Pack kin,Loose,Others
Diameter	"or mm	Cause	Corrosion,Water-pressure,Deterioration Wrong Construction, Traffic load,Others
Depth	60 cm	Ground	Asphalt,Concrete,Gravel,(Grass),Others
Leakage Size	Large, (Middium), Small	Leakage Quqntitiy (Measured)	3L/min or 0.2m^3/h

Location map

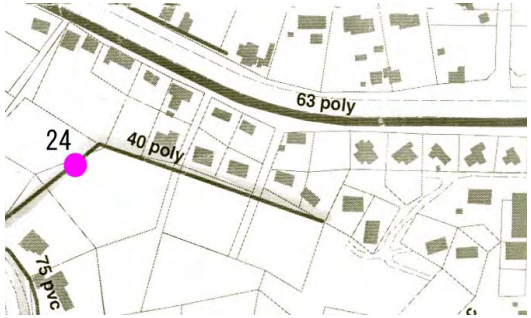


Photograph,Others

LEAKAGE RECORD SHEET

Date of Survey:	22-Jun-05		
Survey No,:	**24** Service Pipe		
System name:	(W.R.O), W.R.P, Rove, Mataniko-P, JICA-B, Kombito, Kombito-G, Panatina, Others		
Address:	Mr,Jimmy Sephas TAVIO		
Main Line	CIP, GP ,PVC, POL, Others( )	Position	Pipe,Connection,Valve,Others
		Condition	Hole,Crack,Brake,Pack kin,Loose,Others
Diameter	"or mm	Cause	Corrosion,Water-pressure, Deterioration Wrong Construction, Traffic load,Others
Service Line	CIP, GP ,PVC, (POL), Others( )	Position	Pipe,(Connection),Valve,Others
		Condition	Hole,Crack,Brake,Pack kin,(Loose),Others
Diameter	1 "or 25 mm	Cause	Corrosion,Water-pressure,Deterioration Wrong Construction, Traffic load,(Others)
Depth	20 cm	Ground	Asphalt,Concrete,Gravel,(Grass),Others
Leakage Size	Large, Middium, (Small)	Leakage Quqntitiy (Measured)	5L/min or 0.3m^3/h

Location map



Photograph,Others

LEAKAGE RECORD SHEET

Date of survey:	23-Jun-05		
Survey No,:	**V-1** Valve		
System name:	W.R.G, W.R.P, Rove, Mataniko-P, JICA-B, (Kombito), Kombito-G, Panatina, Others		
Address:	VURA-3		
Main Line	CIP, GP ,(PVC), POL, Others( )	Position	Pipe,Connection,(Valve),Others
		Condition	Hole,Crack,Brake,(Pack kin),Others
Diameter	4 "or 100 mm	Cause	Corrosion,Water-pressure,(Deterioration) Wrong Construction, Traffic load,Others
Service Line	CIP, GP ,PVC, POL, Others( )	Position	Pipe,Connection,Valve,Others
		Condition	Hole,Crack,Brake,Pack kin,Others
Diameter	"or mm	Cause	Corrosion,Water-pressure,Deterioration Wrong Construction, Traffic load,Others
Depth	30 cm	Ground	Asphalt,Concrete,Gravel,(Grass),Others
Leakage Size	Large, Middium, (Small)	Leakage Quqntitiy (Measured)	1.5L/min or 0.1 m^3/h

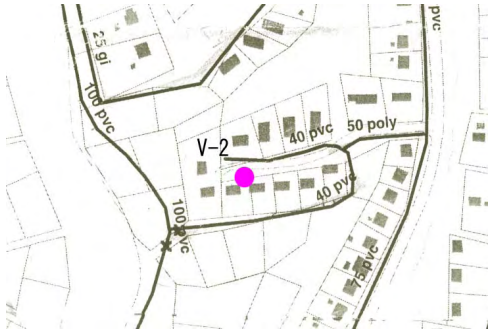
Location map

Photograph,Others

LEAKAGE RECORD SHEET

Date of survey:	23-Jun-05		
Survey No,:	**V-2** Service Pipe		
System name:	W.R.G, W.R.P, Rove, Mataniko-P, JICA-B, (Kombito), Kombito-G, Panatina, Others		
Address:	VURA-3		
Main Line	CIP, GP ,PVC, POL, Others( )	Position	Pipe,Connection,Valve,Others
		Condition	Hole,Crack,Brake,Pack kin,Others
Diameter	" or mm	Cause	Corrosion,Water-pressure,Deterioration Wrong Construction, Traffic load,Others
Service Line	CIP, (GP) ,PVC, POL, Others( )	Position	(Pipe),Connection,Valve,Others
		Condition	(Hole),Crack,Brake,Pack kin,Others
Diameter	1/2 "or 13 mm	Cause	(Corrosion),Water-pressure,Deterioration Wrong Construction, Traffic load,Others
Depth	40 cm	Ground	Asphalt,Concrete,Gravel,(Grass),Others
Leakage Size	Large, (Middium), Small	Leakage Quqntitiy (Measured)	25L/min or 1.5 m^3/h

Location map

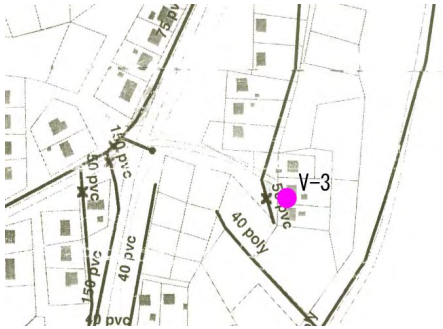


Photograph,Others

LEAKAGE RECORD SHEET

Date of survey:	23-Jun-05		
Survey No,:	**V-3** Service Pipe		
System name:	W.R.G, W.R.P, Rove, Mataniko-P, JICA-B, Kombito, Kombito-G, Panatina, Others		
Address:	Mr,Allen Rahari Police Rove H/Qtr's TINGE		
Main Line	CIP, GP ,PVC, POL, Others( )	Position	Pipe,Connection,Valve,Others
		Condition	Hole,Crack,Brake,Pack kin,Others
Diameter	"or mm	Cause	Corrosion,Water-pressure,Deterioration Wrong Construction, Traffic load,Others
Service Line	CIP, GP ,PVC, POL, Others( )	Position	Pipe,Connection,Valve,Others
		Condition	Hole,Crack,Brake,Pack kin,Others
Diameter	1/2 "or 13 mm	Cause	Corrosion,Water-pressure,Deterioration Wrong Construction, Traffic load,Others
Depth	30 cm	Ground	Asphalt,Concrete,Gravel,Grass,Others
Leakage Size	Large, Middium, Small	Leakage Quqntitiy (Measured)	25L/min or 1.5m³/h

Location map

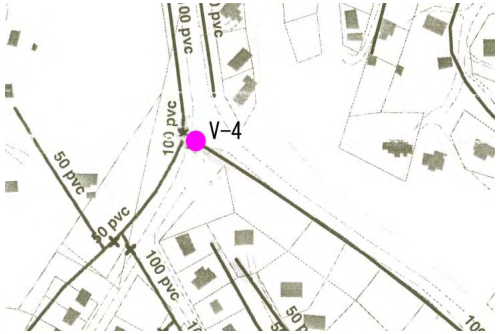


Photograph,Others

LEAKAGE RECORD SHEET

Date of survey:	22-Jun-05		
Survey No,:	**V-4** Valve		
System name:	W.R.G, W.R.P, Rove, Mataniko-P, JICA-B, Kombito, Kombito-G, Panatina, Others		
Address:	VURA-3		
Main Line	CIP, GP ,PVC, POL, Others( )	Position	Pipe,Connection,Valve,Others
		Condition	Hole,Crack,Brake,Pack kin,Others
Diameter	4 "or 100 mm	Cause	Corrosion,Water-pressure, Deterioration Wrong Construction, Traffic load,Others
Service Line	CIP, GP ,PVC, POL, Others( )	Position	Pipe,Connection,Valve,Others
		Condition	Hole,Crack,Brake,Pack kin,Others
Diameter	"or mm	Cause	Corrosion,Water-pressure,Deterioration Wrong Construction, Traffic load,Others
Depth	20 cm	Ground	Asphalt,Concrete,Gravel,Grass,Others
Leakage Size	Large, Middium, Small	Leakage Quqntitiy (Measured)	5L/min or 0.3m³/h

Location map

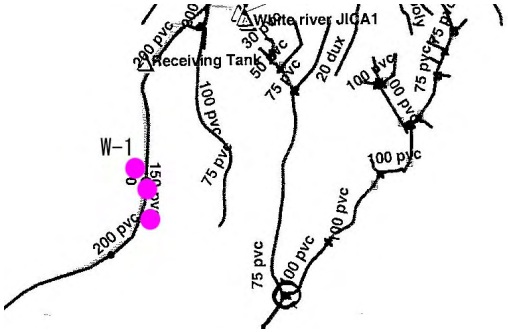


Photograph,Others

LEAKAGE RECORD SHEET

Date of survey:	22-Jun-05		
Survey No,:	**W-1** Valve		
System name:	(W.R)G, W.R.P, Rove, Mataniko-P, JICA-B, Kombito, Kombito-G, Panatina, Others		
Address:	White River		
(Main Line)	CIP, GP (PVC) POL, Others( )	Position	Pipe,Connection,(Valve),Others
		Condition	Hole,Crack,Brake,(Pack kin),Others
Diameter	4 "or 100 mm	Cause	Corrosion,Water-pressure,(Deterioration) Wrong Construction, Traffic load,Others
Service Line	CIP, GP ,PVC, POL, Others( )	Position	Pipe,Connection,Valve,Others
		Condition	Hole,Crack,Brake,Pack kin,Others
Diameter	"or mm	Cause	Corrosion,Water-pressure,Deterioration Wrong Construction, Traffic load,Others
Depth	100 cm	Ground	Asphalt,(Concrete),Gravel,Grass,Others
Leakage Size	Large,(Middium), Small	Leakage Quqntitiy (Measured)	16L/min or 1.0m³/h

Location map

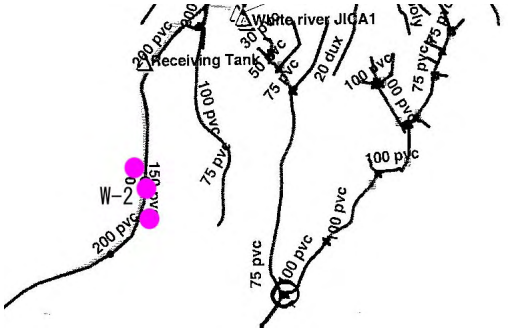


Photograph,Others

LEAKAGE RECORD SHEET

Date of survey:	22-Jun-05		
Survey No,:	**W-2** Distribution Pipe		
System name:	(W.R)G, W.R.P, Rove, Mataniko-P, JICA-B, Kombito, Kombito-G, Panatina, Others		
Address:	White River		
(Main Line)	CIP, GP (PVC, POL, Others( )	Position	(Pipe),Connection,Valve,Others
		Condition	Hole,(Crack),Brake,Pack kin,Others
Diameter	4 "or 100 mm	Cause	Corrosion,(Water-pressure,) Deterioration Wrong Construction, Traffic load,Others
Service Line	CIP, GP ,PVC, POL, Others( )	Position	Pipe,Connection,Valve,Others
		Condition	Hole,Crack,Brake,Pack kin,Others
Diameter	"or mm	Cause	Corrosion,Water-pressure,Deterioration Wrong Construction, Traffic load,Others
Depth	100 cm	Ground	Asphalt,Concrete,(Gravel),Grass,Others
Leakage Size	(Large), Middium, Small	Leakage Quqntitiy (Measured)	50L/min or 3m³/h

Location map

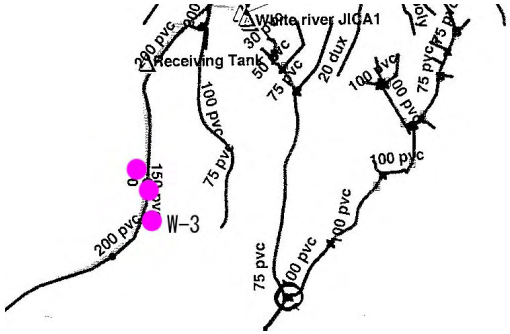


Photograph,Others

LEAKAGE RECORD SHEET

Date of survey:	22-Jun-05		
Survey No,:	**W-3** Service Pipe		
System name:	(W.R.G), W.R.P, Rove, Mataniko-P, JICA-B, Kombito, Kombito-G, Panatina, Others		
Address:	White River		
Main Line	CIP, GP ,PVC, POL, Others( )	Position	Pipe,Connection,Valve,Others
		Condition	Hole,Crack,Brake,Pack kin,Others
Diameter	"or mm	Cause	Corrosion,Water-pressure, Deterioration Wrong Construction, Traffic load,Others
Service Line	CIP, (GP) ,PVC, POL, Others( )	Position	(Pipe),Connection,Valve,Others
		Condition	(Hole),Crack,Brake,Pack kin,Others
Diameter	"or 13 mm	Cause	(Corrosion),Water-pressure,Deterioration Wrong Construction, Traffic load,Others
Depth	20 cm	Ground	Asphalt,Concrete,(Gravel),Grass,Others
Leakage Size	Large,(Middium), Small	Leakage Quqntitiy (Measured)	16L/min or 1m³/h

Location map



Photograph,Others

LEAKAGE RECORD SHEET

Date of survey:	22-Jun-05		
Survey No,:	**W-4** service Pipe		
System name:	(W.R.G), W.R.P, Rove, Mataniko-P, JICA-B, Kombito, Kombito-G, Panatina, Others		
Address:	White River		
Main Line	CIP, GP ,PVC, POL, Others( )	Position	Pipe,Connection,Valve,Others
		Condition	Hole,Crack,Brake,Pack kin,Others
Diameter	4 "or 100 mm	Cause	Corrosion,Water-pressure, Deterioration Wrong Construction, Traffic load,Others
Service Line	CIP, (GP) ,PVC, POL, Others( )	Position	(Pipe),Connection,Valve,Others
		Condition	(Hole),Crack,Brake,Pack kin,Others
Diameter	"or mm	Cause	(Corrosion),Water-pressure,Deterioration Wrong Construction, Traffic load,Others
Depth	20 cm	Ground	Asphalt,Concrete,(Gravel),Grass,Others
Leakage Size	Large,(Middium), Small	Leakage Quqntitiy (Measured)	16L/min or 1m³/h

Location map

Photograph,Others

LEAKAGE RECORD SHEET

Date of survey:	22-Jun-05		
Survey No,:	**W-5** Transmission line		
System name:	(W.R)G, W.R.P, Rove, Mataniko-P, JICA-B, Kombito, Kombito-G, Panatina, Others		
Address:	White River		
(Main Line)	CIP, GP ,(PVC) POL, Others( )	Position	(Pipe),Connection,Valve,Others
		Condition	Hole,(Crack),Brake,Pack kin,Others
Diameter	12 "or 300 mm	Cause	Corrosion,(Water-pressure), Deterioration Wrong Construction, Traffic load,Others
Service Line	CIP, GP ,PVC, POL, Others( )	Position	Pipe,Connection,Valve,Others
		Condition	Hole,Crack,Brake,Pack kin,Others
Diameter	"or mm	Cause	Corrosion,Water-pressure,Deterioration Wrong Construction, Traffic load,Others
Depth	100 cm	Ground	Asphalt,Concrete,Gravel,(Grass),Others
Leakage Size	(Large),Middium, Small	Leakage Quqntitiy (Measured)	333L/min or 20m^3/h

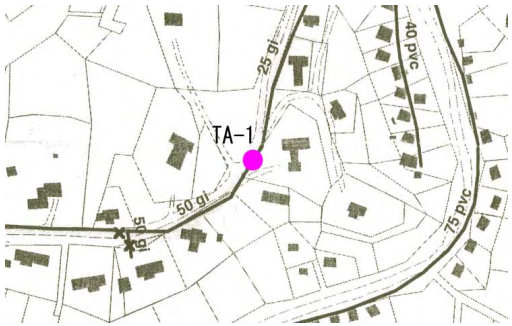
Location map

Photograph,Others

LEAKAGE RECORD SHEET

Date of survey:	22-Jun-05		
Survey No,:	**TA-1** Distribution Pipe		
System name:	(W.R)G, W.R.P, Rove, Mataniko-P, JICA-B, Kombito, Kombito-G, Panatina, Others		
Address:	TANURI		
(Main Line)	CIP, GP ,(PVC) POL, Others( )	Position	Pipe,(Connection),Valve,Others
		Condition	(Hole),Crack,Brake,Pack kin,Others
Diameter	"or 50 mm	Cause	(Corrosion),Water-pressure, Deterioration Wrong Construction, Traffic load,Others
Service Line	CIP, GP ,PVC, POL, Others( )	Position	Pipe,Connection,Valve,Others
		Condition	Hole,Crack,Brake,Pack kin,Others
Diameter	"or mm	Cause	Corrosion,Water-pressure,Deterioration Wrong Construction, Traffic load,Others
Depth	100 cm	Ground	Asphalt,Concrete,(Gravel),Grass,Others
Leakage Size	Large, Middium,(Small)	Leakage Quqntitiy (Measured)	5L/min or 0.3m^3/h

Location map

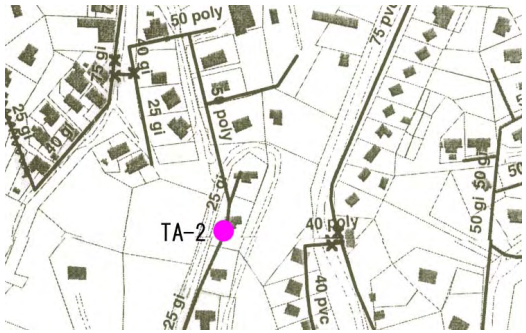


Photograph,Others

LEAKAGE RECORD SHEET

Date of survey:	22-Jun-05		
Survey No,:	**TA-2** Service Pipe		
System name:	(W.R)G, W.R.P, Rove, Mataniko-P, JICA-B, Kombito, Kombito-G, Panatina, Others		
Address:	TANURI		
Main Line	CIP, GP ,PVC, POL, Others( )	Position	Pipe,Connection,Valve,Others
		Condition	Hole,Crack,Brake,Pack kin,Others
Diameter	"or 50 mm	Cause	Corrosion,Water-pressure, Deterioration Wrong Construction, Traffic load,Others
(Service) Line	CIP, GP ,(PVC), POL, Others( )	Position	(Pipe),Connection,Valve,Others
		Condition	Hole,(Crack),Brake,Pack kin,Others
Diameter	"or mm	Cause	Corrosion,Water-pressure,Deterioration Wrong Construction, Traffic load,(Others)
Depth	100 cm	Ground	Asphalt,Concrete,(Gravel),Grass,Others
Leakage Size	Large, Middium,(Small)	Leakage Quqntitiy (Measured)	5L/min or 0.3m^3/h

Location map



Photograph,Others

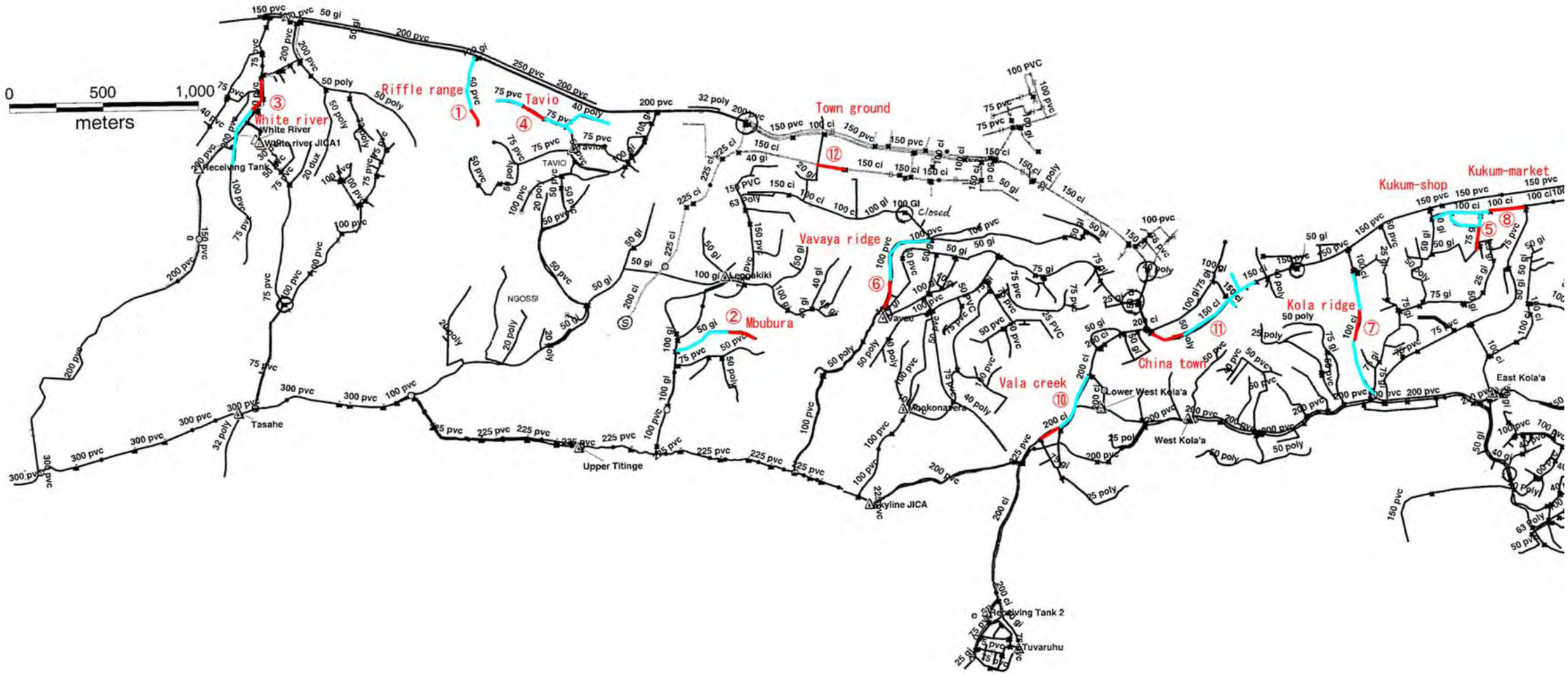
S-3-2 PILOT PROJECT IN PHASE-2

S-3-2-1 Map of Pipe Replacement

S-3-2-2 Location of Each Section

S-3-2-3 Results of Leakage Survey Before and After Pipe Replacement

S-3-2-1 Map of Pipe Replacement

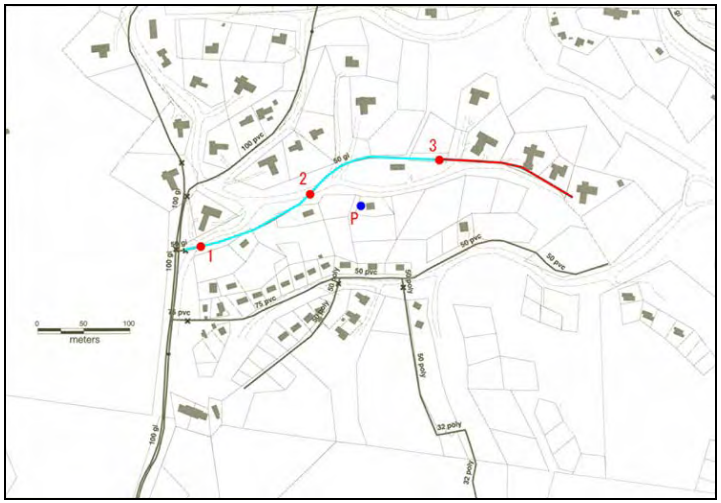


Map of Pipe Replacement (1/2)

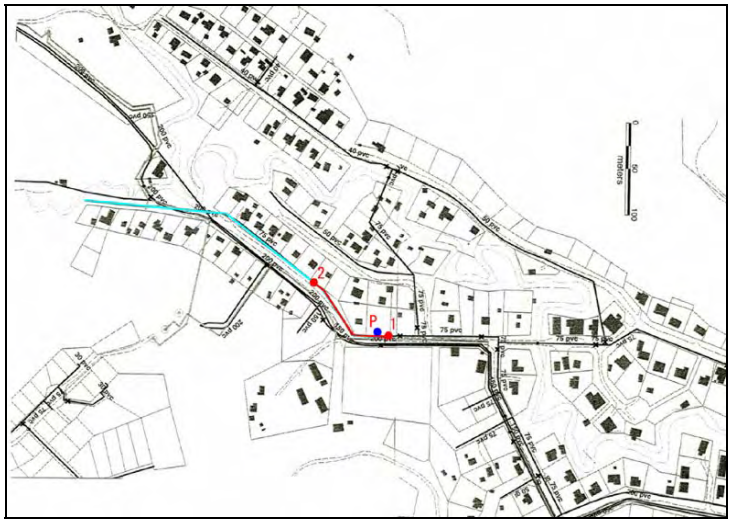
Map of Pipe Replacement (2/2)

S-3-2-2 Location of Each Section

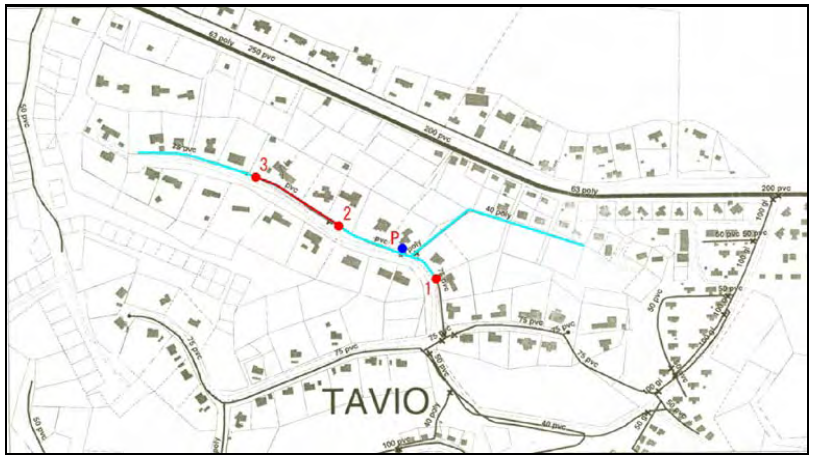
S3-2-2 (1/12)　Location of Each Section in Riffle Range ①



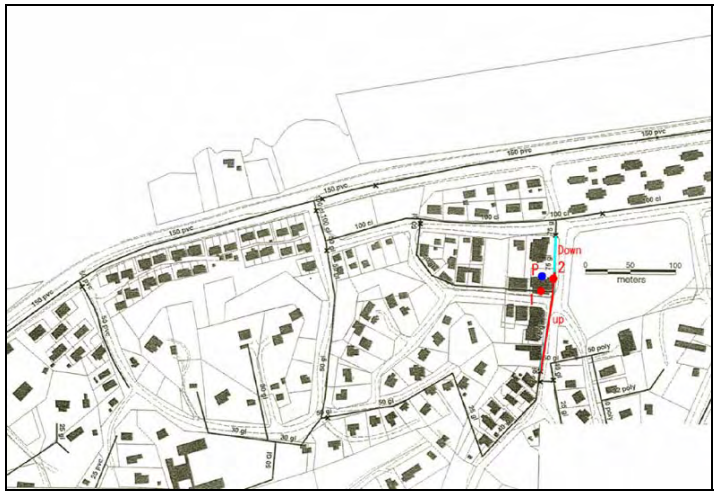
S3-2-2 (2/12)　Location of Each Section in Mbuburu ②



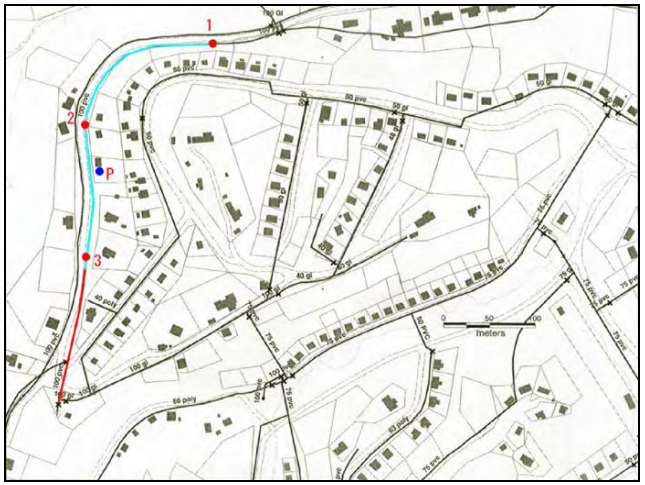
S3-2-2 (3/12)　Location of Each Section in White River ③



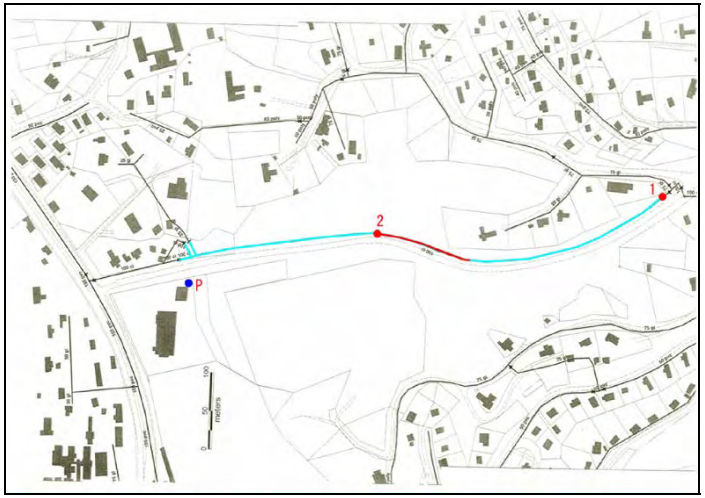
S3-2-2 (4/12)　Location of Each Section in Tavio ④



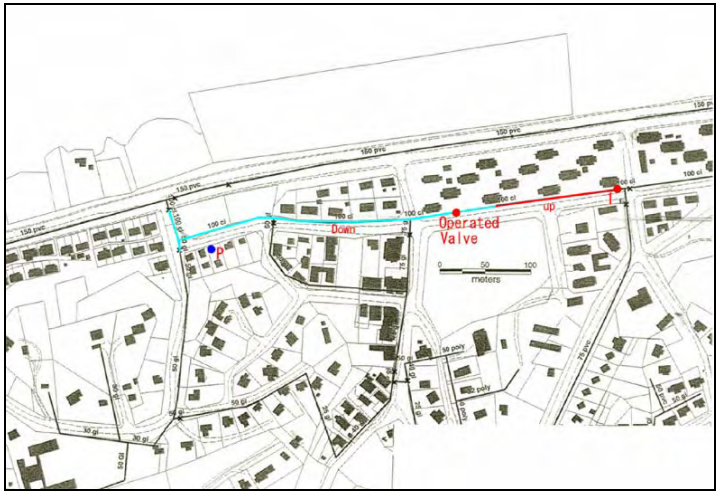
S3-2-2 (5/12)　Location of Each Section in Kukumu-1 ⑤



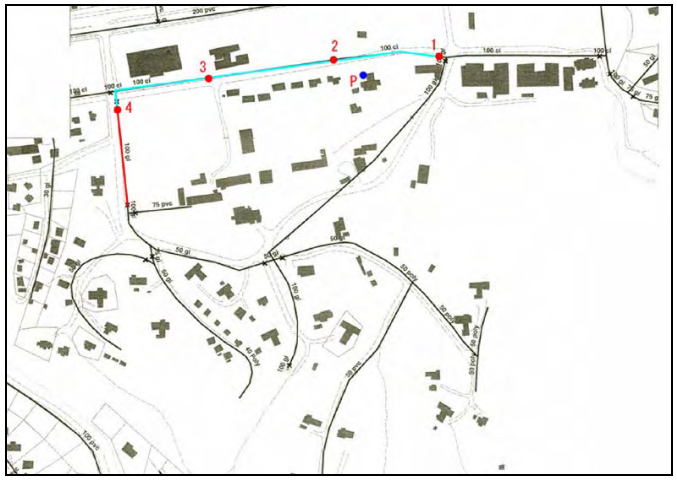
S3-2-2 (6/12)　Location of Each Section in Vavaya Ridge ⑥



S3-2-2 (7/12)　Location of Each Section in Kola Ridge ⑦

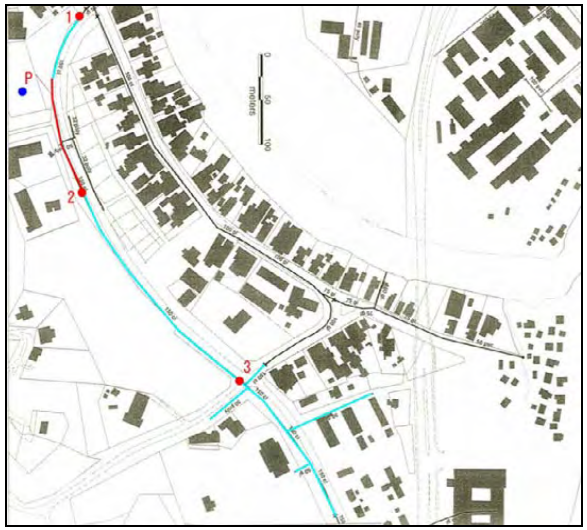


S3-2-2 (8/12)　Location of Each Section in Kukumu-2 ⑧

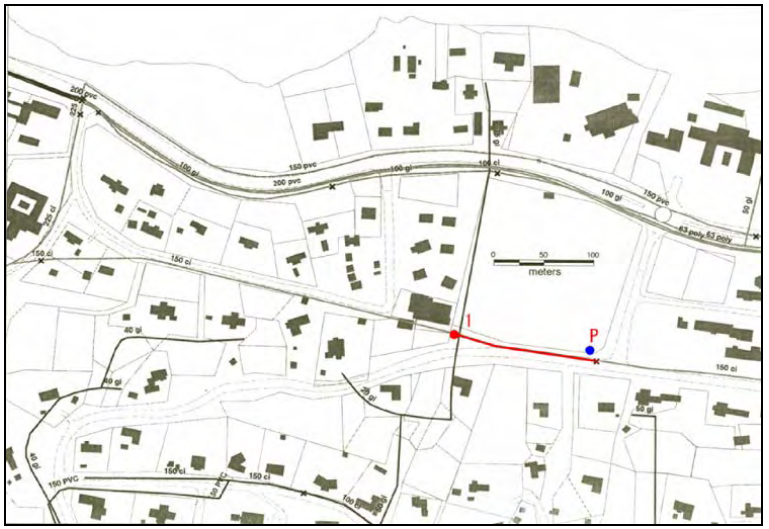


S3-2-2 (9/12)　Location of Each Section in Kukum Campus ⑨

S3-2-2 (10/12)　Location of Each Section in Vala Creek ⑩



S3-2-2 (11/12)　Location of Each Section in China Town ⑪



S3-2-2 (12/12) Location of Each Section in Town Ground ⑫

S-3-2-3 Results of Leakage Survey Before and After Pipe Replacement

Pilot Project : Establishment of Leakage Reduction Indicator

Results of Leakage Reduction before and after Pipe Replacement

Measurement period : February to March 2006

Survey No.		Location	Pipe material	Diameter (mm)	Length (m)	House hold	Flow (m^3/h)	Pressure (MPa)	Converted fow (m^3/h)	Converted flow (m^3/h/100m)	Converted flow (m^3/day/100m)
①	B	Rifflerange-3	PVC	50	100	24	5.577	0.19	5.722	5.722	137.3
	A	Rifflerange-3	PP	50	100	24	4.356	0.42	4.356	4.356	104.5
		Leakage(m^3/h)					1.221		1.366	1.366	**32.8**
②	B	Mbuburu-3	GI	50	125	5	1.506	0.36	1.506	1.205	28.9
	A	Mbuburu	PP	50	125	5	0.000	0.31	0.000	0.000	0.0
		Leakage(m^3/h)					1.506		1.506	1.205	**28.9**
③	A	White river-1	PVP	75	120	4	10.710	0.07	10.464	8.720	209.3
	B	White river (1-2)	PVC	75	120	4	0.247	0.60	0.09	0.075	1.8
		Leakage(m^3/h)					10.463		10.374	8.645	**207.5**
④	B	Tavio-2	VP	75	150	6	4.878	0.33	2.650	1.767	42.4
	A	Tavio-2	VP	75	150	6	2.992	0.42	0.474	0.316	7.6
		Leakage(m^3/h)					1.886		2.176	1.451	**34.8**
⑤	B	Kukum-2(Up)	GI	75	115	5	1.614	0.19	1.667	1.450	34.8
	A	Kukum-shop	PVC	75	115	5	1.004	0.29	1.064	0.925	22.2
		Leakage(m^3/h)					0.610		0.603	0.524	**12.6**
⑥	B	Vavaya ridge-3	VP	100	135	3	2.587	0.34	2.587	1.916	46.0
	A	Vavaya ridge	VPC	100	135	3	2.352	0.46	2.081	1.541	37.0
		Leakage(m^3/h)					0.235		4.668	0.375	**9.0**
⑦	B	Kola ridge-1	CIP	100	327	2	0.720	0.14	0.720	0.220	5.3
	A	Kola ridge	PVC	100	327	2	1.019	0.16	0.899	0.275	6.6
		Leakage(m^3/h)					(0.299)		(0.179)	(0.055)	**-1.3**
⑧	B	Kukum-2(Up)	CIP	100	185	20	2.159	0.30	2.230	1.205	28.9
	A	Kukum-2	PVC	100	185	20	2.832	0.30	2.925	1.581	37.9
		Leakage(m^3/h)					(0.673)		(0.695)	(0.376)	**-9.0**
⑨	B	kukum-campus-4	GI	100	125	1	2.403	0.140	2.609	2.087	50.1
	A	kukum-campus	PVC	100	125	1	0.000	0.165	0.000	0.000	0.0
		Leakage(m^3/h)					2.403		2.609	2.087	**50.1**
⑩	B	Varacreek-2	GI	100	250	8	0.690	0.180	0.690	0.276	6.6
	A	Varacreek	PVC	100	250	8	1.034	0.160	1.097	0.433	10.4
		Leakage(m^3/h)					(0.344)		(0.407)	(0.157)	**-3.8**
⑪	B	Chinatown-1	CIP	150	200	13	8.074	0.24	7.780	3.890	93.4
	A	Chinatown (1-2)	PVC	150	200	13	7.346	0.28	7.079	3.540	84.9
		Leakage(m^3/h)					0.728		0.701	0.351	**8.4**
⑫	B	Townground-1	CIP	150	115	2	0.636	0.15	0.636	0.553	13.3
	A	Townground	PVC	150	115	2	1.250	0.18	1.102	0.958	23.0
		Leakage(m^3/h)					(0.614)		(0.466)	(0.405)	**-9.7**

Leakage Reduction Indicator

	Leakage per length	
	(m^3/day/1.2km)	(m^3/day/km)
Before replacement	696.3	580.2
After replacement	336.0	280.0
Leakage Reduction	**360.3**	**300.2**

Pilot Project : Establishment of Leakage Reduction Indicator

Results of Leakage Reduction before and after Pipe Replacement

Measurement period : May to June 2006 for No.1, 6, 7, 8, 10 and 12

Survey No.		Location	Pipe material	Diameter (mm)	Length (m)	House hold	Flow (m^3/h)	Pressure (MPa)	Converted fow (m^3/h)	Converted flow (m^3/h/100m)	Converted flow (m^3/day/100m)
①	B	Rifflerange-3	PVC	50	100	24	4.356	0.42	4.356	4.356	104.5
	A	Rifflerange-3	PP	50	100	24	3.900	0.24	3.560	3.560	85.4
		Leakage(m^3/h)					0.456		0.796	0.796	**19.1**
②	B	Mbuburu-3	GI	50	125	5	1.506	0.36	1.506	1.205	28.9
	A	Mbuburu	PP	50	125	5	0.000	0.31	0.000	0.000	0.0
		Leakage(m^3/h)					1.506		1.506	1.205	**28.9**
③	A	White river-1	PVP	75	120	4	10.710	0.07	10.464	8.720	209.3
	B	White river (1-2)	PVC	75	120	4	0.247	0.60	0.090	0.075	1.8
		Leakage(m^3/h)					10.463		10.374	8.645	**207.5**
④	B	Tavio-2	VP	75	150	6	4.878	0.33	2.650	1.767	42.4
	A	Tavio-2	VP	75	150	6	2.992	0.42	0.474	0.316	7.6
		Leakage(m^3/h)					1.886		2.176	1.451	**34.8**
⑤	B	Kukum-2(Up)	GI	75	115	5	1.614	0.19	1.667	1.450	34.8
	A	Kukum-shop	PVC	75	115	5	1.004	0.29	1.064	0.925	22.2
		Leakage(m^3/h)					0.610		0.603	0.524	**12.6**
⑥	B	Vavaya ridge-3	VP	100	135	3	2.352	0.34	2.081	1.541	37.0
	A	Vavaya ridge	VPC	100	135	3	1.998	0.46	2.056	1.523	36.6
		Leakage(m^3/h)					0.354		0.025	0.018	**0.4**
⑦	B	Kola ridge-1	CIP	100	327	2	1.019	0.14	0.899	0.275	6.6
	A	Kola ridge	PVC	100	327	2	0.000	0.16	0.000	0.000	0.0
		Leakage(m^3/h)					1.019		0.899	0.275	**6.6**
⑧	B	Kukum-2(Up)	CIP	100	185	20	2.832	0.30	2.295	1.581	37.9
	A	Kukum-2	PVC	100	185	20	0.000	0.34	0.000	0.000	0.0
		Leakage(m^3/h)					2.832		2.295	1.581	**37.9**
⑨	B	kukum-campus-4	GI	100	125	1	2.403	0.14	2.609	2.087	50.1
	A	kukum-campus	PVC	100	125	1	0.000	0.16	0.000	0.000	0.0
		Leakage(m^3/h)					2.403		2.609	2.087	**50.1**
⑩	B	Varacreek-2	GI	100	250	8	1.034	0.16	1.097	0.439	10.5
	A	Varacreek	PVC	100	250	8	0.000	0.10	0.000	0.000	0.0
		Leakage(m^3/h)					1.034		1.097	0.439	**10.5**
⑪	B	Chinatown-1	CIP	150	200	13	8.074	0.24	7.780	3.890	93.4
	A	Chinatown (1-2)	PVC	150	200	13	7.346	0.28	7.079	3.540	84.9
		Leakage(m^3/h)					0.728		0.701	0.351	**8.4**
⑫	B	Townground-1	CIP	150	115	2	1.250	0.18	1.102	0.958	23.0
	A	Townground	PVC	150	115	2	0.000	0.16	0.000	0.000	0.0
		Leakage(m^3/h)					1.250		1.102	0.958	**23.0**

Leakage Reduction Indicator

	Leakage per length	
	(m^3/day/1.2km)	(m^3/day/km)
Before replacement	678.4	565.4
After replacement	238.5	198.8
Leakage Reduction	**439.9**	**366.6**

SUPPORTING REPORT S-4 WATER SOURCE SURVEY

S-4-1 Data of Discharge Measurement

S-4-2 Photo of Discharge Measurement

S-4-3 Photo of Field Water Quality Survey (Outfall)

S-4-3 Photo of Water Quality Analysis Sampling

S-4-1 Data of Discharge Measurement

S-4-1-1 White River (Refer to B1.3.2(a))

S-4-1-2 Rove Creek (Refer to B1.3.2.(b))

S-4-1-3 Mataniko River (Refer to B1.3.2.(c))

S-4-1-4 Kombito Creek (Refer to B1.3.2.(d))

S-4-1-5 Lungga River (Refer to B1.3.2.(e))

S-4-1-6 Noro (Refer to C1.1.(3).(a))

S-4-1-7 Auki (Refer to C2.1.(3).(a))

S-4-1-8 Tulagi (Refer to C3.1.(3).(a))

S-4-1-1 White River (Refer to B1.3.2(a))

stream	white river		
station	No.1 Kongulai spring	Date	1,jun,2005
Latitude:	Longitude:		

left weir

width B	167.5	
h	5	

$Q=CBH^{3/2}$

0.0337 m^3/s

right weir

width B	94	cm
h	5	cm

$Q=CBH^{3/2}$

0.0189 m^3/s

Total **0.0526 m^3/s**

stream	white river		
station	No.1 Kongulai spring	Date	10.11.2005

No overflow

stream	white river		
station	No.1 Kongulai spring	Date	29.11.2005
Latitude:	Longitude:		

left weir

width B	167.5	
h	1	

$Q=CBH^{3/2}$

0.0030 m^3/s

right weir

width B	94	cm
h	2	cm

$Q=CBH^{3/2}$

0.0048 m^3/s

Total **0.0078 m^3/s**

stream white river

station No.2 immediater downstream of Congulai spring Date 1,jun,2005

Latitude: Longitude:

Distance from initial point	Sounded Depth	Point of Obs	velocity (cm/s)			Area(m^3/s)		Discharge(m^3/s)
			at point	Mean in vert	Mean in sect			
0.0	0.0		0.0					
20.0	27.0		10.0	5.0		0.027		0.001
50.0	15.0		10.0	10.0		0.063		0.006
80.0	33.0		16.0	13.0		0.072		0.009
110.0	13.0		24.0	20.0		0.069		0.014
140.0	16.0		42.0	33.0		0.044		0.014
170.0	6.0		28.0	35.0		0.033		0.012
							Total	0.057

stream white river

station No.2 immediater downstream of Kongulai Spring Date 10.Nov.2005

Distance from initial	Sounded Depth	Point of Obs	velocity (cm/s)			Area(m^3/s)		Discharge(m^3/s)
			at point	Mean in vert	Mean in sect			
0.0	0.0		0.0					
10.0	2.0		2.1	1.1		0.001		0.00001
25.0	12.5		1.5	1.8		0.011		0.00020
40.0	11.0		0.5	1.0		0.018		0.00018
55.0	10.5		3.2	1.9		0.016		0.00030
70.0	6.0		0.7	2.0		0.012		0.00024
85.0	3.0		0.7	0.7		0.007		0.00005
100.0	3.0		1.6	1.2		0.005		0.00005
115.0	3.5		1.1	1.4		0.005		0.00007
135.0	0.0		0.0	0.6		0.004		0.00002
							Total	0.001

stream white river

station No.2 immediater downstream of Congulai spring Date 29.11.2005

Distance from initial	Sounded Depth	Point of Obs	velocity (cm/s)			Area(m^3/s)		Discharge(m^3/s)
			at point	Mean in vert	Mean in sect			
0.0	0.0		0.0					
15.0	2.0		10.7	5.4		0.002		0.00008
30.0	6.5		12.6	11.7		0.006		0.00074
45.0	10.5		11.3	12.0		0.013		0.00152
60.0	12.0		9.6	10.5		0.017		0.00176
75.0	8.0		19.6	14.6		0.015		0.00219
90.0	0.0		0.0	9.8		0.006		0.00059
							Total	0.007

stream white river
station N0.3 side of Well-1 Date 1,jun,2005

Latitude: Longitude:

Distance from initial point	Sounded Depth	Point of Obs	velocity (cm/s)			Area(m^3/s)		Discharge (m^3/s)
			at point	Mean in vert	Mean in sect			
0.0	0.0		0.0					
50.0	13.0		6.0	3.0		0.033		0.001
100.0	13.0		16.0	11.0		0.065		0.007
150.0	11.0		28.0	22.0		0.060		0.013
200.0	13.0		46.0	37.0		0.060		0.022
250.0	21.0		31.0	38.5		0.085		0.033
300.0	21.0		0.0	15.5		0.105		0.016
							Total	0.093

stream white river
station N0.3 side of Well-1 Date 10,Norbember,2005

Distance from initial	Sounded Depth	Point of Obs	velocity (cm/s)			Area(m^3/s)		Discharge (m^3/s)
			at point	Mean in vert	Mean in sect			
0.0	0.0		0.0					
25.0	4.5		0.0			0.006		0.000
50.0	4.0		1.2	0.6		0.011		0.000
75.0	3.0		5.4	3.3		0.009		0.000
100.0	4.0		4.3	4.9		0.009		0.000
125.0	4.5		2.5	3.4		0.011		0.000
150.0	8.5		2.9	2.7		0.016		0.000
175.0	21.5		3.3	3.1		0.038		0.001
200.0	27.5		2.5	2.9		0.061		0.002
225.0	37.5		3.7	3.1		0.081		0.003
250.0	23.0		3.1	3.4		0.076		0.003
270.0	0.0		0.0	1.6		0.023		0.000
							Total	0.010

stream white river
station N0.3 side of Well-1 Date 29.11.2005

Distance from initial	Sounded Depth	Point of Obs	velocity (cm/s)			Area(m^3/s)		Discharge (m^3/s)
			at point	Mean in vert	Mean in sect			
0.0	0.0		0.0					
30.0	2.5		0.0	0.0		0.004		0.000
60.0	5.0		2.8	1.4		0.011		0.000
90.0	3.0		15.0	8.9		0.012		0.001
120.0	3.0		14.1	14.6		0.009		0.001
150.0	3.3		11.9	13.0		0.009		0.001
180.0	12.0		6.5	9.2		0.023		0.002
210.0	25.0		6.4	6.5		0.056		0.004
240.0	33.5		6.0	6.2		0.088		0.005
265.0	0.0		0.0	3.0		0.042		0.001
							Total	0.016

stream white river

station No.5 residential area Date 1,jun,2005

Lattitude: Longitude:

Distance from initial	Sounded Depth	Point of Obs	velocity			Area(m^3/s)		Discharge(m^3/s)
			at point	Mean in vert	Mean in sect			
0.0	0.0							
50.0	15.0		19.0	9.5		0.038		0.004
100.0	16.0		58.0	38.5		0.078		0.030
150.0	18.0		44.0	51.0		0.085		0.043
200.0	20.0		19.0	31.5		0.095		0.030
250.0	19.0		15.0	14.0		0.098		0.014
280.0	18.0		0.0	7.5		0.056		0.004
					Total	0.448		0.124

stream white river

station No.5 residential area Date 10.November.2005

Distance from initial	Sounded Depth	Point of Obs	velocity			Area(m^3/s)		Discharge(m^3/s)
			at point	Mean in vert	Mean in sect			
0.0	0.0		0.0					
30.0	6.3		0.0	0.0		0.009		0.000
60.0	8.5		17.3	8.7		0.022		0.002
90.0	6.0		21.0	19.2		0.022		0.004
120.0	9.5		17.4	19.2		0.023		0.004
150.0	6.5		21.4	19.4		0.024		0.005
180.0	7.3		14.8	18.1		0.021		0.004
210.0	7.0		5.2	10.0		0.021		0.002
240.0	4.4		2.5	3.9		0.017		0.001
270.0	0.0		0.0	1.3		0.007		0.000
							Total	0.022

stream white river

station No.5 residential area Date 29.11.2005

Distance from initial	Sounded Depth	Point of Obs	velocity			Area(m^3/s)		Discharge(m^3/s)
			at point	Mean in vert	Mean in sect			
0.0	0.0		0.0					
50.0	7.0		14.8	7.4		0.018		0.001
100.0	10.0		23.6	19.2		0.043		0.008
150.0	9.0		19.6	21.6		0.048		0.010
200.0	6.5		13.5	16.6		0.039		0.006
250.0	0.0		0.0	6.8		0.016		0.001
							Total	0.027

stream white river

station No.6 Bridge Date 1,jun,2005

Latitude: Longitude:

Distance from initial	Sounded Depth	Point of Obs	velocity			Area(m^3/s)		Discharge(m^3/s)
			at point	Mean in vert	Mean in sect			
0.0	0.0		0.0					
50.0	10.0		4.0	2.0		0.025		0.001
100.0	15.0		15.0	9.5		0.063		0.006
150.0	20.0		14.0	14.5		0.088		0.013
200.0	24.0		13.0	13.5		0.110		0.015
250.0	23.0		24.0	18.5		0.118		0.022
300.0	20.0		21.0	22.5		0.108		0.024
350.0	15.0		9.0	15.0		0.088		0.013
					Total	0.598		0.093

stream white river

station No.6 Bridge Date 11.November.2005

Distance from initial	Sounded Depth	Point of Obs	velocity			Area(m^3/s)		Discharge(m^3/s)
			at point	Mean in vert	Mean in sect			
0.0	0.0		0.0					
30.0	7.2		2.5	1.3		0.011		0.000
60.0	7.0		6.7	4.6		0.021		0.001
90.0	8.0		8.5	7.6		0.023		0.002
120.0	11.0		8.9	8.7		0.029		0.002
150.0	12.5		5.6	7.3		0.035		0.003
180.0	12.0		7.1	6.4		0.037		0.002
210.0	13.5		12.0	9.6		0.038		0.004
240.0	13.0		7.2	9.6		0.040		0.004
270.0	10.5		1.0	4.1		0.035		0.001
280.0	0.0		0.0	0.5		0.005		0.000
							Total	0.019

stream white river

station No.6 Bridge Date 29.11.2005

Distance from initial	Sounded Depth	Point of Obs	velocity			Area(m^3/s)		Discharge(m^3/s)
			at point	Mean in vert	Mean in sect			
0.0	0.0		0.0					
50.0	2.0		11.6	5.8		0.005		0.000
100.0	5.0		22.1	16.9		0.018		0.003
150.0	8.0		30.3	26.2		0.033		0.009
200.0	10.0		47.5	38.9		0.045		0.018
240.0	0.0		0.0	23.8		0.020		0.005
							Total	0.034

stream white river
station No.4 Road crossing Date 1,jun,2005
Latitude: Longitude:

Distance from initial point	Sounded Depth	Point of Obs	velocity (cm/s)			Area(m^3/s)		Discharge(m^3/s)
			at point	Mean in vert	Mean in sect			
0.0	1.0		1.0					
50.0	10.0		11.0	6.0		0.028		0.002
80.0	13.0		24.0	17.5		0.035		0.006
110.0	20.0		26.0	25.0		0.050		0.012
140.0	21.0		30.0	28.0		0.062		0.017
170.0	26.0		38.0	34.0		0.071		0.024
200.0	33.0		45.0	41.5		0.089		0.037
230.0	29.0		28.0	36.5		0.093		0.034
260.0	26.0		19.0	23.5		0.083		0.019
310.0	10.0		0.0	9.5		0.090		0.009
							Total	0.160

stream white river
station No.4 Road crossing Date 10.November.2005

Distance from initial	Sounded Depth	Point of Obs	velocity (cm/s)			Area(m^3/s)		Discharge(m^3/s)
			at point	Mean in vert	Mean in sect			
0.0	0.0		0.0					
25.0	4.0		0.0					
50.0	6.4		0.0	0.0		0.013		0.000
75.0	8.5		6.4	3.2		0.019		0.001
100.0	15.0		8.7	7.6		0.029		0.002
125.0	20.5		11.0	9.9		0.044		0.004
150.0	19.5		6.7	8.9		0.050		0.004
175.0	17.5		7.0	6.9		0.046		0.003
200.0	18.0		3.0	5.0		0.044		0.002
225.0	13.0		0.4	1.7		0.039		0.001
250.0	0.0							
							Total	0.018

stream white river
station No.4 Road crossing Date 29.11.2005

Distance from initial	Sounded Depth	Point of Obs	velocity (cm/s)			Area(m^3/s)		Discharge(m^3/s)
			at point	Mean in vert	Mean in sect			
0.0	0.0		0.0					
30.0	7.0		4.0	2.0		0.011		0.000
60.0	12.0		8.3	6.2		0.029		0.002
90.0	8.5		10.9	9.6		0.031		0.003
120.0	22.5		10.3	10.6		0.047		0.005
150.0	21.6		13.9	12.1		0.066		0.008
180.0	22.0		4.9	9.4		0.065		0.006
210.0	15.0		1.2	3.1		0.056		0.002
240.0	0.0		0.0	0.6		0.023		0.000
							Total	0.026

S-4-1-2 Rove Creek (Refer to B1.3.2.(b))

stream Rove Creek
station No.1 Spring st upmost stream Date 1,jun,2005
Latitude:
Longitude:

w=60cm
mean depth =7cm
V=0.353m/s

Q= 0.0148 m^3/s

stream Rove Creek
station No.1 Spring st upmost stream Date 11.11.2005
Latitude:
Longitude:

w=80cm
mean depth =4cm
V=0.081m/s

Q= 0.0026 m^3/s

stream Rove Creek
station No.1 Spring at upmost stream Date 29.11.2005

Distance from initial	Sounded Depth	Point of Obs	velocity			Area(m^3/s)		Discharge (m^3/s)
			at point	Mean in vert	Mean in sect			
0.0	0.0		0.0					
15.0	2.5		4.3	2.2		0.002		0.0000
30.0	3.5		2.6	3.5		0.005		0.0002
45.0	2.3		8.0	5.3		0.004		0.0002
60.0	0.0		0.0	4.0		0.002		0.0001
								0.0005

stream Rove Creek

station No.2 immediate downstream of spring Date 1,jun,2005

Latitude: Longitude:

Distance from initial point	Sounded Depth	Point of Obs	velocity			Area(m^3/s)		Discharge(m^3/s)
			at point	Mean in vert	Mean in sect			
0.0	7.0							
70.0	19.0		7.0	3.5		0.091		0.003
90.0	22.0		19.0	13.0		0.041		0.005
110.0	23.0		30.0	24.5		0.045		0.011
130.0	17.0		15.0	22.5		0.040		0.009
150.0	14.0		14.0	14.5		0.031		0.004
180.0	13.0			7.0		0.041		0.003
					Total	0.289		0.036

stream Rove Creek

station No.2 immediate downstream of spring Date 11.November.2005

Distance from initial	Sounded Depth	Point of Obs	velocity			Area(m^3/s)		Discharge(m^3/s)
			at point	Mean in vert	Mean in sect			
0.0	0.0		0.0					
30.0	4.5		1.0	0.5		0.007		0.000
60.0	8.5		4.6	2.8		0.020		0.001
90.0	14.5		4.5	4.6		0.035		0.002
120.0	14.0		3.2	3.9		0.043		0.002
150.0	10.0		2.0	2.6		0.036		0.001
180.0	5.0		0.0	1.0		0.023		0.000
190.0	0.0		0.0	0.0		0.003		0.000
								0.005

stream Rove Creek

station No.2 immediate downstream of spring Date 30.11.2005

Distance from initial	Sounded Depth	Point of Obs	velocity			Area(m^3/s)		Discharge(m^3/s)
			at point	Mean in vert	Mean in sect			
0.0	0.0		0.0					
30.0	2.0		0.0	0.0		0.003		0.000
60.0	4.3		2.5	1.3		0.009		0.000
90.0	8.2		6.5	4.5		0.019		0.001
120.0	11.0		5.1	5.8		0.029		0.002
150.0	7.5		3.7	4.4		0.028		0.001
180.0	0.0		0.0	1.9		0.011		0.000
								0.004

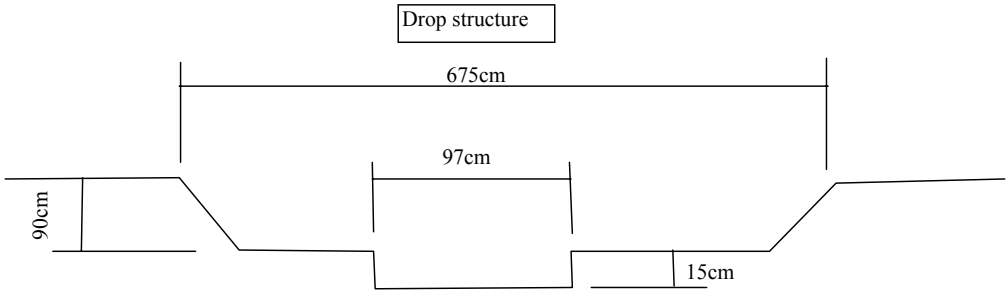
stream Rove Creek
station No.3 Drop structure Date 1,jun,2005

River

L	97	cm
B	110	cm
h	7	cm

$Q=CLH^{3/2}$

0.0359 m^3/s



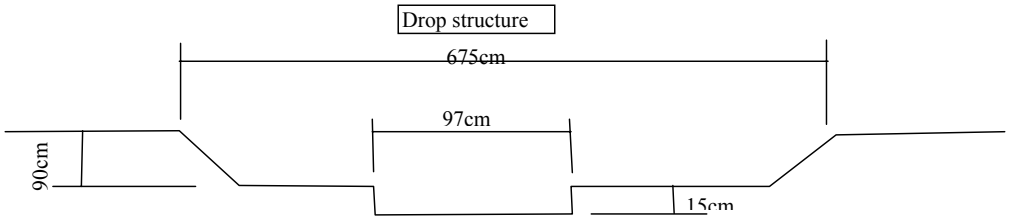
stream Rove Creek
station No.3 Drop structure Date 11.11.2005

River

L	97	cm
B	110	cm
h	3	cm

$Q=CLH^{3/2}$

0.0091 m^3/s



stream Rove Creek
station No.5 Botanic Garden Date 1,jun,2005

Latitude: Longitude:

Distance from initial	Sounded Depth	Point of Obs	velocity			Area(m^3/s)		Discharge(m^3/s)
			at point	Mean in vert	Mean in sect			
0.0	0.0							
30.0	14.0		24.0	12.0		0.021		0.003
60.0	24.0		29.0	26.5		0.057		0.015
90.0	27.0		27.0	28.0		0.077		0.021
120.0	24.0		27.0	27.0		0.077		0.021
150.0	19.0		4.0	15.5		0.065		0.010
160.0	0.0		0.0	2.0		0.296		0.006
					Total	0.591		0.076

stream Rove Creek
station No.5 Botanic Garden Date 11.November.2005

Distance from initial	Sounded Depth	Point of Obs	velocity			Area(m^3/s)		Discharge(m^3/s)
			at point	Mean in vert	Mean in sect			
0.0	0.0		0.0					
30.0	13.4		1.2	0.6		0.020		0.000
60.0	14.5		4.4	2.8		0.042		0.001
90.0	23.4		6.5	5.5		0.057		0.003
120.0	28.0		8.0	7.3		0.077		0.006
150.0	30.0		7.1	7.6		0.087		0.007
180.0	26.0		1.7	4.4		0.084		0.004
210.0	2.0		0.0	0.9		0.042		0.000
								0.021

stream Rove Creek
station No.5 Botanic Garden Date 30.11.2005

Distance from initial	Sounded Depth	Point of Obs	velocity			Area(m^3/s)		Discharge(m^3/s)
			at point	Mean in vert	Mean in sect			
0.0	0.0		0.0					
30.0	12.5		2.5	1.3		0.019		0.000
60.0	17.5		6.2	4.4		0.045		0.002
90.0	25.0		6.8	6.5		0.064		0.004
120.0	21.0		4.9	5.9		0.069		0.004
150.0	26.0		4.8	4.9		0.071		0.003
180.0	20.0		1.1	3.0		0.069		0.002
200.0	0.0		0.0	0.6		0.020		0.000
								0.016

S-4-1-3 Mataniko River (Refer to B1.3.2.(c))

stream Mataniko River
station No.1 Main stream Date 2.jun.2005

Latitude: Longitude:

Distance from initial point	Sounded Depth	Point of Obs	velocity			Area(m3/s)	Discharge(m3/s)
			at point	Mean in vert	Mean in sect		
0.0	0.0		0.0				
100.0	16.0		7.0	3.5		0.080	0.003
200.0	27.0		8.0	7.5		0.215	0.016
300.0	28.0		14.0	11.0		0.275	0.030
400.0	41.0		18.0	16.0		0.345	0.055
500.0	46.0		18.0	18.0		0.435	0.078
600.0	54.0		22.0	20.0		0.500	0.100
700.0	62.0		20.0	21.0		0.580	0.122
800.0	66.0		22.0	21.0		0.640	0.134
900.0	68.0		32.0	27.0		0.670	0.181
1000.0	66.0		31.0	31.5		0.670	0.211
1100.0	55.0		31.0	31.0		0.605	0.188
1200.0	47.0		17.0	24.0		0.510	0.122
1300.0	17.0		2.0	9.5		0.320	0.030
1360.0	0.0		0.0	1.0		0.051	0.001
	593.0					5.896	1.272
	42.4						

stream Mataniko River
station No.1 Main stream Date 14.November.2005

Distance from initial	Sounded Depth	Point of Obs	velocity			Area(m3/s)	Discharge(m3/s)
			at point	Mean in vert	Mean in sect		
0.0	0.0		0.0				
100.0	13.0		3.7	1.9		0.065	0.0012
200.0	18.0		11.0	7.4		0.155	0.011
300.0	19.5		2.5	9.2		0.188	0.017
400.0	21.5		17.9	10.2		0.205	0.021
500.0	31.5		12.4	15.2		0.265	0.040
600.0	30.0		17.0	14.7		0.308	0.045
700.0	37.0		18.0	17.5		0.335	0.059
800.0	40.0		20.6	19.3		0.385	0.074
900.0	52.0		21.6	21.1		0.460	0.097
1000.0	65.0		21.4	21.5		0.585	0.126
1100.0	69.0		24.2	22.8		0.670	0.153
1200.0	75.5		21.4	21.5		0.723	0.155
1300.0	60.0		20.0	20.7		0.678	0.140
1400.0	52.0		17.5	18.8		0.560	0.105
1450.0	23.0		0.0	8.8		0.188	0.016
1470.0	0.0		0.0			0.023	0.000
							1.062

stream Mataniko River
station No.1 Main stream Date 05.12.2005

Distance from initial	Sounded Depth	Point of Obs	velocity			Area(m3/s)	Discharge(m3/s)
			at point	Mean in vert	Mean in sect		
0.0	0.0	0.0	0				
150.0	18.0	10.1	8.6	4.3		0.135	0.006
300.0	15.0	21.3	18.1	13.4		0.248	0.033
450.0	26.5	21.3	18.1	18.1		0.311	0.056
600.0	25.0	42.9	36.5	27.3		0.386	0.105
750.0	44.5	42.9	36.5	36.5		0.521	0.190
900.0	56.0	42.9	36.5	36.5		0.754	0.275
1050.0	73.0	42.9	36.5	36.5		0.968	0.353
1200.0	82.0	41.6	35.4	36.0		1.163	0.418
1350.0	74.5	21.3	18.1	26.8		1.174	0.314
1500.0	0.0	21	17.9	18.0		0.559	0.101
							1.852

stream Mataniko River

station No.2 Left side tributar Date 2.jun.2005

Latitude: Longitude:

Distance from initial point	Sounded Depth	Point of Obs	velocity			Area(m3/s)		Discharge(m3/s)
			at point	Mean in vert	Mean in sect			
0.0	6.0		0.0					
30.0	6.0		13.0	6.5		0.018		0.001
60.0	10.0		18.0	15.5		0.024		0.004
90.0	10.0		18.0	18.0		0.030		0.005
120.0	18.0		19.0	18.5		0.042		0.008
150.0	16.0		9.0	14.0		0.051		0.007
180.0	14.0		9.0	9.0		0.045		0.004
210.0	13.0		13.0	11.0		0.041		0.004
240.0	13.0		0.0	6.5		0.039		0.003
					Total	0.251		0.034

station No.2 Left side tributar Date 15.Nov.2005

Latitude: Longitude:

Distance from initial	Sounded Depth	Point of Obs	velocity			Area(m3/s)		Discharge(m3/s)
			at point	Mean in vert	Mean in sect			
0.0	0.0		0.0	0.0				
25.0	4.0		0.0	0.0		0.005		0.000
50.0	2.5		0.0	0.0		0.008		0.000
75.0	12.0		2.5	1.3		0.018		0.00023
100.0	11.0		22.8	12.7		0.029		0.004
125.0	9.5		29.0	25.9		0.026		0.007
150.0	9.6		27.1	28.1		0.024		0.007
175.0	3.6		24.1	25.6		0.017		0.004
200.0	0.0		0.0	12.1		0.005		0.001
								0.022

station No.2 Left side tributar Date 05.Dec.2005

Latitude: Longitude:

Distance from initial	Sounded Depth	Point of Obs	velocity			Area(m3/s)		Discharge(m3/s)
			at point	Mean in vert	Mean in sect			
0.0	0.0	0.0	0.00					
30.0	0.5	0.0	0.00	0.00		0.001		0.000
60.0	7.0	12.5	10.63	5.31		0.011		0.001
90.0	8.5	50.0	42.50	26.56		0.023		0.006
120.0	6.5	50.0	42.50	42.50		0.023		0.010
150.0	7.5	50.0	42.50	42.50		0.021		0.009
180.0	0.5	30.0	25.50	34.00		0.012		0.004
190.0	0.0	0.0	0.00	12.75		0.000		0.000
								0.029

stream Mataniko River

station No.3 Right river tributary Date 2.jun.2005

Latitude: Longitude:

Distance from initial point	Sounded Depth	Point of Obs	velocity			Area(m3/s)		Discharge(m3/s)
			at point	Mean in vert	Mean in sect			
0.0	20.0		0.0					
30.0	24.0		16.0	8.0		0.066		0.005
60.0	22.0		23.0	19.5		0.069		0.013
90.0	23.0		18.0	20.5		0.068		0.014
120.0	25.0		8.0	13.0		0.072		0.009
150.0	24.0		3.0	5.5		0.074		0.004
180.0	21.0		2.0	2.5		0.068		0.002
210.0	17.0		7.0	4.5		0.057		0.003
240.0	17.0		8.0	7.5		0.051		0.004
250.0	16.0		0.0	4.0		0.017		0.001
						0.540		0.055

station No.3 Right river tributary Date 14.November.2005

Latitude: Longitude:

Distance from initial	Sounded Depth	Point of Obs	velocity			Area(m3/s)		Discharge(m3/s)
			at point	Mean in vert	Mean in sect			
0.0	0.0		0.0					
30.0	7.5		0.0	0.0		0.011		0.00000
60.0	6.0		5.3	2.7		0.020		0.00054
90.0	20.0		1.3	3.3		0.039		0.00129
120.0	18.5		3.6	2.5		0.058		0.00141
150.0	30.0		10.8	7.2		0.073		0.00524
180.0	29.0		15.4	13.1		0.089		0.01159
210.0	23.0		2.4	8.9		0.078		0.00696
240.0	9.0		0.0	1.2		0.048		0.00059
270.0	0.0		0.0	0.0		0.014		0.00000
								0.028

station No.3 Right river tributary Date 05.12.2005

Latitude: Longitude:

Distance from initial	Sounded Depth	Point of Obs	velocity			Area(m3/s)		Discharge(m3/s)
			at point	Mean in vert	Mean in sect			
0.0	0.0	0.0	0.0					
30.0	12.0	6.6	5.6	2.8		0.018		0.00050
60.0	11.5	6.6	5.6	5.6		0.035		0.00198
90.0	19.0	0.0	0.0	2.8		0.046		0.00128
120.0	20.5	0.0	0.0	0.0		0.059		0.00000
150.0	22.0	14.2	12.1	6.0		0.064		0.00385
180.0	23.0	12.5	10.6	11.3		0.068		0.00766
210.0	27.0	14.2	12.1	11.3		0.075		0.00851
240.0	0.0	0.0	0.0	6.0		0.041		0.00244
								0.026

S-4-1-4 Kombito Creek (Refer to B1.3.2.(d))

stream Kombito Creek

station No.1 SIWA water resource(Spring water) Date 2.jun.2005

latitude: Longitude:

Distance from initial	Sounded Depth	Point of Obs	velocity			Area(m3/s)		Discharge (m3/s)
			at point	Mean in vert	Mean in sect			
0.0	10.0		0.0					
10.0	12.0		15.0	7.5		0.011		0.001
20.0	13.0		25.0	20.0		0.013		0.003
30.0	11.0		31.0	28.0		0.012		0.003
40.0	11.0		42.0	36.5		0.011		0.004
50.0	10.0		43.0	42.5		0.011		0.004
60.0	10.0		22.0	32.5		0.010		0.003
70.0	11.0		26.0	24.0		0.011		0.003
80.0	7.0		3.0	14.5		0.009		0.001
90.0	4.0		0.0	1.5		0.006		0.000
						0.092		0.022

stream Kombito Creek

station No.1 SIWA water resource(Spring water) Date 16.November.2005

Distance from initial	Sounded Depth	Point of Obs	velocity			Area(m3/s)		Discharge (m3/s)
			at point	Mean in vert	Mean in sect			
0.0	0.0		0.0					
10.0	4.5		15.1	7.6		0.002		0.000
20.0	4.0		36.4	25.8		0.004		0.001
30.0	5.4		35.2	35.8		0.005		0.002
40.0	5.6		32.5	33.9		0.006		0.002
50.0	3.5		18.2	25.4		0.005		0.001
60.0	1.5		0.0	9.1		0.003		0.000
70.0	0.0		0.0	0.0		0.001		0.000
								0.006

stream Kombito Creek

station No.1 SIWA water resource(Spring water) Date

Distance from initial	Sounded Depth	Point of Obs	velocity			Area(m3/s)		Discharge (m3/s)
			at point	Mean in vert	Mean in sect			
0.0	0.0							
40.0	2.5	20.0	17.0	17.0		0.005		0.0009

stream Kombito Creek
station No.2 Swimming pool(Spring water) Date 2.jun.2005
Latitude: Longitude:

Distance from initial point	Sounded Depth	Point of Obs	velocity			Area(m3/s)		Discharge(m3/s)
			at point	Mean in vert	Mean in sect			
0.0	13.0		0.0					
20.0	13.0		14.0	7.0		0.026		0.002
40.0	13.0		47.0	30.5		0.026		0.008
60.0	15.0		22.0	34.5		0.028		0.010
80.0	14.0		17.0	19.5		0.029		0.006
94.0	9.0		0.0	8.5		0.016		0.001
					Total	0.125		0.026

stream Kombito Creek
station No.2 Swimming pool(Spring water) Date 16.November.2005

Distance from initial	Sounded Depth	Point of Obs	velocity			Area(m3/s)		Discharge(m3/s)
			at point	Mean in vert	Mean in sect			
0.0	0.0		0.0					
20.0	7.0		6.3	3.2		0.007		0.000
40.0	9.6		11.3	8.8		0.017		0.001
60.0	11.3		16.9	14.1		0.021		0.003
80.0	11.5		17.5	17.2		0.023		0.004
100.0	10.4		19.7	18.6		0.022		0.004
120.0	6.5		12.9	16.3		0.017		0.003
140.0	0.0		0.0	6.5		0.007		0.000
								0.016

stream Kombito Creek
station No.2 Swimming pool(Spring water) Date

Distance from initial	Sounded Depth	Point of Obs	velocity			Area(m3/s)		Discharge(m3/s)
			at point	Mean in vert	Mean in sect			
0.0	0.0	0.0	0.0					
30.0	7.5	22.0	18.7	9.4		0.011		0.001
60.0	9.0	28.0	23.8	21.3		0.025		0.005
90.0	8.9	28.0	23.8	23.8		0.027		0.006
120.0	0.0	0.0	0.0	11.9		0.013		0.002
								0.014

stream Kombito Creek

station No.3 River (Log clossing) Date 2.jun.2005

Latitude: Longitude:

Distance from initial	Sounded Depth	Point of Obs	velocity			Area(m3/s)		Discharge(m3/s)
			at point	Mean in vert	Mean in sect			
0.0	11.0		0.0					
30.0	23.0		28.0	14.0		0.051		0.007
60.0	23.0		29.0	28.5		0.069		0.020
90.0	18.0		19.0	24.0		0.062		0.015
120.0	13.0		5.0	12.0		0.047		0.006
150.0	9.0		0.0	2.5		0.033		0.001
					Total	0.261		0.048

stream Kombito Creek

station No.3 River (Log clossing) Date 16.November.2005

Distance from initial	Sounded Depth	Point of Obs	velocity			Area(m3/s)		Discharge(m3/s)
			at point	Mean in vert	Mean in sect			
0.0	0.0		0.0					
20.0	21.0		10.4	5.2		0.021		0.001
40.0	20.0		20.1	15.3		0.041		0.006
60.0	13.5		20.4	20.3		0.034		0.007
80.0	19.0		17.0	18.7		0.033		0.006
100.0	13.0		17.8	17.4		0.032		0.006
120.0	0.0		0.0	8.9		0.013		0.001
								0.027

stream Kombito Creek

station No.3 River (Log clossing) Date 06.Dec.2005

Distance from initial	Sounded Depth	Point of Obs	velocity			Area(m3/s)		Discharge(m3/s)
			at point	Mean in vert	Mean in sect			
0.0	0.0		0.0					
20.0	20.0		10.0	5.0		0.020		0.001
40.0	20.0		19.9	15.0		0.040		0.006
60.0	24.0		19.8	19.9		0.044		0.009
80.0	20.0		14.0	16.9		0.044		0.007
100.0	11.0		12.0	13.0		0.031		0.004
120.0	0.0		0.0	6.0		0.011		0.001
								0.028

stream Kombito Creek

station No.4 River (Down stream) Date 2.jun.2005

Latitude: Longitude:

Distance from initial point	Sounded Depth	Point of Obs	velocity			Area(m3/s)		Discharge(m3/s)
			at point	Mean in vert	Mean in sect			
0.0	4.0		0.0					
30.0	8.0		7.0	3.5		0.018		0.001
60.0	12.0		15.0	11.0		0.030		0.003
90.0	20.0		24.0	19.5		0.048		0.009
120.0	21.0		29.0	26.5		0.062		0.016
150.0	31.0		11.0	20.0		0.078		0.016
180.0	30.0		5.0	8.0		0.092		0.007
210.0	28.0		0.0	2.5		0.087		0.002
					Total	0.414		0.055

stream Kombito Creek

station No.4 River (Down stream) Date 16.November.2005

Distance from initial	Sounded Depth	Point of Obs	velocity			Area(m3/s)		Discharge(m3/s)
			at point	Mean in vert	Mean in sect			
0.0	0.0							
30.0	10.0		0.0	0.0		0.015		0.000
60.0	18.0		12.2	6.1		0.042		0.003
90.0	14.0		21.0	16.6		0.048		0.008
120.0	9.0		28.0	24.5		0.035		0.008
150.0	5.5		18.6	23.3		0.022		0.005
180.0	1.0		7.0	12.8		0.010		0.001
190.0	0.0		0.0	3.5		0.001		0.000
								0.025

stream Kombito Creek

station No.4 River (Down stream) Date

Distance from initial	Sounded Depth	Point of Obs	velocity			Area(m3/s)		Discharge(m3/s)
			at point	Mean in vert	Mean in sect			
0.0	0.0	0.0	0.0					
30.0	3.0	0.0	0.0	0.0		0.005		0.000
60.0	8.0	9.0	7.7	3.8		0.017		0.001
90.0	15.5	16.6	14.1	10.9		0.035		0.004
120.0	14.0	14.2	12.1	13.1		0.044		0.006
150.0	12.5	12.5	10.6	11.3		0.040		0.005
180.0	7.0	5.2	4.4	7.5		0.029		0.002
190.0	0.0	0.0	0.0	2.2		0.004		0.000
								0.017

stream Kombito Creek

station No.5 Spring water Date 2.jun.2005

Latitude: Lomgitude

Distance from initial	Sounded Depth	Point of Obs	velocity			Area(m3/s)		Discharge(m3/s)
			at point	Mean in vert	Mean in sect			
0.0	4.0		0.0					
20.0	15.0		10.0	5.0		0.019		0.001
40.0	21.0		11.0	10.5		0.036		0.004
60.0	20.0		12.0	11.5		0.041		0.005
80.0	16.0		12.0	12.0		0.036		0.004
93.0	13.0		0.0	6.0		0.019		0.001
					Total	0.151		0.015

stream Kombito Creek

station No.5 Spring water Date 16.November.2005

Distance from initial	Sounded Depth	Point of Obs	velocity			Area(m3/s)		Discharge(m3/s)
			at point	Mean in vert	Mean in sect			
0.0	0.0		0.0					
20.0	7.0		17.6	8.8		0.007		0.001
40.0	15.0		21.3	19.5		0.022		0.004
60.0	12.5		14.5	17.9		0.028		0.005
80.0	7.0		11.7	13.1		0.020		0.003
100.0	5.0		7.9	9.8		0.012		0.001
110.0	0.0		0.0	4.0		0.003		0.000
								0.014

stream Kombito Creek

station No.5 Spring water Date

Distance from initial	Sounded Depth	Point of Obs	velocity			Area(m3/s)		Discharge(m3/s)
			at point	Mean in vert	Mean in sect			
0.0	0.0	0.0	0.0					
25.0	11.0	8.3	7.1	3.5		0.014		0.000
50.0	15.5	20.0	17.0	12.0		0.033		0.004
75.0	15.0	20.0	17.0	17.0		0.038		0.006
100.0	0.0	0.0	0.0	8.5		0.019		0.002
								0.013

stream Kombito Creek

station No.7 Mamulele Spring water Date 2.jun.2005

Latitude: Longitude:

Distance from initial	Sounded Depth	Point of Obs	velocity			Area(m3/s)		Discharge(m3/s)
			at point	Mean in vert	Mean in sect			
0.0	0.0		0.0					
20.0	3.5		0.0	0.0		0.004		0.000
40.0	8.0		3.0	1.5		0.012		0.000
60.0	16.0		10.3	6.6		0.024		0.002
80.0	17.5		17.2	13.7		0.034		0.005
100.0	15.5		17.4	17.3		0.033		0.006
120.0	1.0		0.0					
130.0	0.0				Total	0.106		0.012

stream Kombito Creek

station No.7 Mamulele Spring water Date 18.November.2005

Distance from initial	Sounded Depth	Point of Obs	velocity			Area(m3/s)		Discharge(m3/s)
			at point	Mean in vert	Mean in sect			
0.0	1.0		3.3					
10.0	3.0		17.6	10.5		0.002		0.000
20.0	3.5		22.3	20.0		0.003		0.001
30.0	4.5		27.5	24.9		0.004		0.001
40.0	5.0		23.3	25.4		0.005		0.001
50.0	3.0		14.1	18.7		0.004		0.001
60.0	1.0		0.0	7.1		0.002		0.000
								0.004

stream Kombito Creek

station No.7 Mamulele Spring water Date

Distance from initial	Sounded Depth	Point of Obs	velocity			Area(m3/s)		Discharge(m3/s)
			at point	Mean in vert	Mean in sect			
0.0	0.0	0.0	0.0					
20.0	4.5	22.0	18.7	9.4		0.005		0.000
40.0	4.0	22.0	18.7	18.7		0.009		0.002
60.0	2.5	22.0	18.7	18.7		0.007		0.001
70.0	0.0	0.0	0.0	9.4		0.001		0.000
								0.003

stream Kombito Creek
station No.8 Mt.Austen new spring source(wide cree Date 15.jun.2005

Distance from initial	Sounded Depth	Point of Obs	velocity			Area(m3/s)		Discharge(m3/s)
			at point	Mean in vert	Mean in sect			
0.0	12.0		0.0					
30.0	20.0		1.9	1.0		0.048		0.000
50.0	24.0		4.5	3.2		0.044		0.001
100.0	24.5		8.1	6.3		0.121		0.008
150.0	21.0		10.4	9.2		0.114		0.010
200.0	17.0		6.3	8.3		0.095		0.008
220.0	12.5		3.2	4.7		0.030		0.001
250.0	15.5		0.0	1.6		0.042		0.001
300.0	9.0		0.0	0.0		0.061		0.000
330.0	0.0		0.0	0.0		0.014		0.000
						0.568		0.030

stream Kombito Creek
station No.8 Mt.Austen new spring source(wide cree Date 19.November.2005

Distance from initial	Sounded Depth	Point of Obs	velocity			Area(m3/s)		Discharge(m3/s)
			at point	Mean in vert	Mean in sect			
0.0	0.0		0.0					
30.0	15.5		11.5	5.8		0.023		0.001
60.0	14.0		11.9	11.7		0.044		0.005
90.0	14.5		15.0	13.5		0.043		0.006
120.0	17.5		13.9	14.5		0.048		0.007
150.0	21.6		11.8	12.9		0.059		0.008
180.0	15.0		3.7	7.8		0.055		0.004
210.0	12.0		0.0	1.9		0.041		0.001
240.0	9.0		0.0	0.0		0.032		0.000
270.0	1.8		0.0	0.0		0.016		0.000
280.0	0.0		0.0	0.0		0.001		0.000
								0.032

stream Kombito Creek
station No.8 Mt.Austen new spring source(wide cree Date

Distance from initial	Sounded Depth	Point of Obs	velocity			Area(m3/s)		Discharge(m3/s)
			at point	Mean in vert	Mean in sect			

stream Kombito Creek

station No.8 Mt.Austen new spring source(narrow creek) Date 20.jun.2005

Latitude: Longitude:

Distance from initial point	Sounded Depth	Point of Obs	velocity			Area(m3/s)		Discharge(m3/s)
			at point	Mean in vert	Mean in sect			
0.0	7.0	0.0	0.0					
10.0	6.0	3.7	1.9	1.0		0.007		0.000
20.0	8.0	5.0	4.5	3.2		0.007		0.000
30.0	7.5	9.4	8.1	6.3		0.008		0.000
40.0	6.5	20.0	10.4	9.2		0.007		0.001
50.0	5.5	4.0	6.3	8.3		0.006		0.000
60.0	6.0	2.5	3.2	4.7		0.006		0.000
70.0	7.0	7.2	0.0	1.6		0.007		0.000
80.0	5.5	0.0	0.0	0.0		0.006		0.000
			0.0	0.0		-0.022		0.000
						0.031		0.002

stream Kombito Creek

station No.8 Mt.Austen new spring source(narrow creek) Date 19.November.2005

Distance from initial	Sounded Depth	Point of Obs	velocity			Area(m3/s)		Discharge(m3/s)
			at point	Mean in vert	Mean in sect			
0.0	0.0		0.0					
15.0	7.0		12.8	6.4		0.005		0.000
30.0	4.5		18.6	15.7		0.009		0.001
45.0	7.0		2.8	10.7		0.009		0.001
60.0	7.0		20.6	11.7		0.011		0.001
75.0	6.0		17.3	19.0		0.010		0.002
90.0	8.0		3.1	10.2		0.011		0.001
								0.007

stream Kombito Creek

station No.8 Mt.Austen new spring source(narrow creek)

Distance from initial	Sounded Depth	Point of Obs	velocity			Area(m3/s)		Discharge(m3/s)
			at point	Mean in vert	Mean in sect			

S-4-1-5 Lungga River (Refer to B1.3.2.(e))

stream Lungga river

station No.1 Planned Dame site Date 4,jun,2005

Latitude: Longitude:

Distance from initial	Sounded Depth	Point of Obs	velocity			Area(m^3/s)		Discharge (m^3/s)
			at point	Mean in vert	Mean in sect			
0.0	0.0							
500.0	53.0			93.0		1.325		1.232
1000.0	62.0			120.0		2.875		3.450
1500.0	82.0			129.0		3.600		4.644
2000.0	41.0			153.0		3.075		4.705
2500.0	35.0			99.0		1.900		1.881
3000.0	25.0			45.0		1.500		0.675
3500.0	15.0			0.0		1.000		0.000
					Total	15.275		16.587

stream Lungga river

station No.1 Planned Dame site Date

Distance from initial	Sounded Depth	Point of Obs	velocity			Area(m^3/s)		Discharge (m^3/s)
			at point	Mean in vert	Mean in sect			
0.0	0.0		0.0					
500.0	50.0		53.0	26.5		1.250		0.331
1000.0	60.0		53.0	53.0		2.750		1.458
1500.0	75.0		110.0	81.5		3.375		2.751
2000.0	92.0		110.0	110.0		4.175		4.593
2500.0	63.0		110.0	110.0		3.875		4.263
3000.0	48.0		110.0	110.0		2.775		3.053
3500.0	52.0		110.0	110.0		2.500		2.750
4000.0	42.0		110.0	110.0		2.350		2.585
4500.0	21.0		53.0	81.5		1.575		1.284
5000.0	13.0		53.0	53.0		0.850		0.451
5300.0	0.0		0.0	26.5		0.195		0.052
								23.568

station No.1 Planned Dame site Date

Distance from initial	Sounded Depth	Point of Obs	velocity			Area(m^3/s)		Discharge (m^3/s)
			at point	Mean in vert	Mean in sect			

stream Lungga river

station No.2 Upstream of sand mining area Date 4,jun,2005

Latitude: Longitude:

Distance from initial point	Sounded Depth	Point of Obs	velocity (m/s)			Area(m^3/s)		Discharge(m^3/s)
			at point	Mean in vert	Mean in sect			
0.0	0.0							
500.0	24.0			83.0		0.600		0.498
1000.0	33.0			92.0		1.425		1.311
1500.0	42.0			107.0		1.875		2.006
2000.0	49.0			123.0		2.275		2.798
2500.0	51.0			115.0		2.500		2.875
3000.0	52.0			115.0		2.575		2.961
3500.0	73.0			116.0		3.125		3.625
3750.0	0.0			67.0		0.913		0.611
						15.288		16.686

stream Lungga river

station No.2 Upstream of sand mining area Date 02.12.2005

Distance from initial	Sounded Depth	Point of Obs	velocity (m/s)			Area(m^3/s)		Discharge(m^3/s)
			at point	Mean in vert	Mean in sect			
0.0	0.0		0.0					
500.0	72.0		80.4	40.2		1.800		0.724
1000.0	80.0		91.0	85.7		3.800		3.257
1500.0	82.0		108.0	99.5		4.050		4.030
2000.0	75.0		94.4	101.2		3.925		3.972
2500.0	70.0		95.6	95.0		3.625		3.444
3000.0	86.0		95.2	95.4		3.900		3.721
3500.0	81.0		92.9	94.1		4.175		3.927
4000.0	71.0		93.4	93.2		3.800		3.540
4500.0	52.0		70.4	81.9		3.075		2.518
5000.0	0.0		0.0	35.2		1.300		0.458
								29.589

stream Lungga river

station No.2 Upstream of sand mining area Date

Distance from initial	Sounded Depth	Point of Obs	velocity (m/s)			Area(m^3/s)		Discharge(m^3/s)
			at point	Mean in vert	Mean in sect			

S-4-1-6 Noro (Refer to C1.1.(3).(a))

stream Noro Zaita river
station No.1 upstream of intake Date 9,jun,2005

Latitude: Longitude:

Distance from initial	Sounded Depth	Point of Obs	velocity			Area(m^3/s)		Discharge(m^3/s)
			at point	Mean in vert	Mean in sect			
0.0	0.0							
25.0	23.0		10.0	5.0		0.029		0.001
75.0	15.0		28.3	19.2		0.095		0.018
125.0	12.0		46.0	37.2		0.068		0.025
175.0	13.0		53.9	50.0		0.063		0.031
225.0	17.0		38.7	46.3		0.075		0.035
275.0	13.5		2.5	20.6		0.076		0.016
325.0	8.0		0.0	1.3		0.054		0.001
340.0	0.0		0.0			0.006		0.000
						0.465		0.127

stream Noro Zaita river
station No.1 upstream of intake Date 01.12.2005

Distance from initial	Sounded Depth	Point of Obs	velocity			Area(m^3/s)		Discharge(m^3/s)
			at point	Mean in vert	Mean in sect			
0.0	0.0		0.0					
80.0	40.0		7.4	3.7		0.160		0.006
160.0	30.0		12.2	9.8		0.280		0.027
240.0	34.0		13.5	12.9		0.256		0.033
320.0	34.0		11.2	12.4		0.272		0.034
400.0	0.0		0.0	5.6		0.136		0.008
								0.107

stream Noro Zaita river
station No.1 upstream of intake Date

Distance from initial	Sounded Depth	Point of Obs	velocity			Area(m^3/s)		Discharge(m^3/s)
			at point	Mean in vert	Mean in sect			

stream ZIATA RIVER
station No.2 Date 9,jun,2005

Latitude: Longitude:

Distance from initial	Sounded Depth	Point of Obs	velocity			Area(m^3/s)		Discharge(m^3/s)
			at point	Mean in vert	Mean in sect			
0.0	0.0							
30.0	15.0		19.0	9.5		0.023		0.002
80.0	15.0		22.0	20.5		0.075		0.015
130.0	13.0		26.0	24.0		0.070		0.017
180.0	13.0		27.0	26.5		0.065		0.017
230.0	14.0		27.0	27.0		0.068		0.018
280.0	16.0		22.0	24.5		0.075		0.018
330.0	12.0		17.0	19.5		0.070		0.014
350.0	9.0		15.0	16.0		0.021		0.003
						0.466		0.105

stream ZIATA RIVER
station No.2 Date 01.12.2005

Distance from initial	Sounded Depth	Point of Obs	velocity			Area(m^3/s)		Discharge(m^3/s)
			at point	Mean in vert	Mean in sect			
0.0	0.0		0.0					
70.0	39.0		9.2	4.6		0.137		0.006
140.0	39.0		9.9	9.6		0.273		0.026
210.0	41.0		8.5	9.2		0.280		0.026
280.0	37.0		5.7	7.1		0.273		0.019
350.0	33.0		3.1	4.4		0.245		0.011
420.0	0.0		0.0	1.6		0.116		
								0.088

stream ZIATA RIVER
station No.2 Date

Distance from initial	Sounded Depth	Point of Obs	velocity			Area(m^3/s)		Discharge(m^3/s)
			at point	Mean in vert	Mean in sect			

S-4-1-7 Auki (Refer to C2.1.(3).(a))

stream Auki Lebagnali river

atation No.1 Lebagnalo sprin Date 6,jun,2005

Latitude:

Longitude:

outlet of sp	No	h in box	time	V	Q
		mm	sec	m^3	m^3/s
Big pipe	1	65.5	2.18	0.00848	0.00389
	2	67	2.28	0.00756	0.00378
	3	59	2	0.00752	0.00376
	average				0.00381
samll pipe	1	25	8.79	0.003099	0.00035
	2	25	8.5	0.003099	0.00036
	3	27	8.79	0.003349	0.00038
	average				0.00036
	Total				0.00417

stream Auki Lebagnali river

atation No.1 Lebagnalo spring Date 21.November.2005

Latitude:

Longitude:

outlet of sp	No	h in box	time	V	Q
		mm	sec	m^3	m^3/s
Big pipe	1				9
	2				8
	3				8.5
	average				8.5
samll pipe	1				0
	2				0
	3				0
	average				
	Total				8.5

stream Auki Lebagnali river

atation No.1 Lebagnalo spri Date 6,jun,2005

Latitude:

Longitude:

outlet of spr	No	h in box	time	V	Q
		mm	sec	m^3	m^3/s
Big pipe	1	65.5	2.18	0.00848	0.00389
	2	67	2.28	0.00756	0.00378
	3	59	2	0.00752	0.00376
	average				0.00381
samll pipe	1	25	8.79	0.003099	0.00035
	2	25	8.5	0.003099	0.00036
	3	27	8.79	0.003349	0.00038
	average				0.00036
	Total				0.00417

stream Auki Lebagnali river

atation No.1 Lebagnalo spring Date 21.November.2005

Latitude:

Longitude:

outlet of spr	No	h in box	time	V	Q
		mm	sec	m^3	m^3/s
Big pipe	1				0.009
	2				0.008
	3				0.0085
	average				0.0085
samll pipe	1				0
	2				0
	3				0
	average				
	Total				0.0085

stream Auki Lebagnali river
atation Mno.2 outlet of Leba Date 6,jun,2005

Latitude: Longitude:

Distance from initial point	Sounded Depth	Point of Obs	velocity			Area(m^3/s)		Discharge(m^3/s)
			at point	Mean in vert	Mean in sect			
0.0	0.0		0.0					
30.0	14.0		2.0	1.0		0.021		0.000
60.0	24.0		6.0	4.0		0.057		0.002
90.0	30.0		7.0	6.5		0.081		0.005
120.0	31.0		9.0	8.0		0.092		0.007
150.0	32.0		11.0	10.0		0.095		0.009
180.0	24.0		12.0	11.5		0.084		0.010
210.0	16.0		2.0	7.0		0.060		0.004
240.0	14.0		0.0	1.0		0.045		0.000
						0.534		0.039

stream Auki Lebagnali river
atation Mno.2 outlet of Leba Date 21.November.2005

Distance from initial	Sounded Depth	Point of Obs	velocity			Area(m^3/s)		Discharge(m^3/s)
			at point	Mean in vert	Mean in sect			
0.0	0.0		0.0					
40.0	10.0		1.8	0.9		0.020		0.000
80.0	23.5		7.6	4.7		0.067		0.003
120.0	29.1		10.3	9.0		0.105		0.009
160.0	31.2		14.3	12.3		0.121		0.015
200.0	25.8		17.2	15.8		0.114		0.018
240.0	16.1		1.7	9.5		0.084		0.008
280.0	5.4		0.0	0.9		0.043		0.000
300.0	0.0		0.0	0.0		0.005		0.000
340.0	0.0		0.0	0.0		0.000		0.000
								0.054

stream Auki Lebagnali river
atation Mno.2 outlet of Leba Date

Distance from initial	Sounded Depth	Point of Obs	velocity			Area(m^3/s)		Discharge(m^3/s)
			at point	Mean in vert	Mean in sect			

stream Auki Kawibala river

station No.3 upstream of the confluence of Lebagnali river Date 6,jun,2005

Latitude: Longitude:

Distance from initial point	Sounded Depth	Point of Obs	velocity			Area(m^3/s)		Discharge(m^3/s)
			at point	Mean in vert	Mean in sect			
0.0	0.0		0.0					
50.0	25.0		60.0	30.0		0.063		0.019
100.0	13.0		64.0	62.0		0.095		0.059
150.0	15.0		52.0	58.0		0.070		0.041
200.0	16.0		30.0	41.0		0.078		0.032
210.0	0.0		0.0	15.0		0.008		0.001
					Total	0.313		0.151

stream Auki Kawibala river

station No.3 upstream of the confluence of Lebagnali river Date 21.November.2005

Distance from initial point	Sounded Depth	Point of Obs	velocity			Area(m^3/s)		Discharge(m^3/s)
			at point	Mean in vert	Mean in sect			
0.0	0.0		0.0					
100.0	18.4		1.1	0.6		0.092		0.001
200.0	29.5		6.8	4.0		0.240		0.009
300.0	39.1		7.8	7.3		0.343		0.025
400.0	64.1		11.3	9.6		0.516		0.049
500.0	59.2		12.8	12.1		0.617		0.074
600.0	46.9		12.3	12.6		0.531		0.067
700.0	38.8		10.2	11.3		0.429		0.048
800.0	20.0		3.3	6.8		0.294		0.020
900.0	0.0		0.0	5.1		0.388		0.020
						3.448		0.313

stream Auki Kawibala river

station No.3 upstream of the confluence of Lebagnali river Date

Distance from initial point	Sounded Depth	Point of Obs	velocity			Area(m^3/s)		Discharge(m^3/s)
			at point	Mean in vert	Mean in sect			

stream Auki middle reach of Kwaibala river

station No.4 Middle reach of Kwaibala river Date 6,jun,2005

Latitude: Longitude:

Distance from initial	Sounded Depth	Point of Obs	velocity			Area(m^3/s)		Discharge(m^3/s)
			at point	Mean in vert	Mean in sect			
0.0	0.0		42.0					
10.0	40.0		42.0	42.0		0.020		0.008
20.0	40.0		42.0	42.0		0.040		0.017
30.0	41.0		42.0	42.0		0.041		0.017
40.0	44.0		42.0	42.0		0.043		0.018
50.0	31.0		42.0	42.0		0.038		0.016
60.0	29.0		42.0	42.0		0.030		0.013
80.0	0.0		42.0	42.0		0.029		0.012
					Total	0.240		0.101

stream Auki middle reach of Kwaibala river

station No.4 Middle reach of Kwaibala river Date 21.November.2005

Distance from initial	Sounded Depth	Point of Obs	velocity			Area(m^3/s)		Discharge(m^3/s)
			at point	Mean in vert	Mean in sect			
0.0	0.0		0.0					
60.0	34.0		44.4	22.2		0.102		0.023
120.0	33.0		50.1	47.3		0.201		0.095
180.0	24.0		32.9	41.5		0.171		0.071
240.0	30.0		38.1	35.5		0.162		0.058
300.0	45.0		26.4	32.3		0.225		0.073
360.0	35.0		35.5	31.0		0.240		0.074
420.0	18.0		18.0	26.8		0.159		0.043
460.0	0.0		0.0	9.0		0.036		0.003
								0.439

stream Auki middle reach of Kwaibala river

station No.4 Middle reach of Kwaibala river Date

Distance from initial	Sounded Depth	Point of Obs	velocity			Area(m^3/s)		Discharge(m^3/s)
			at point	Mean in vert	Mean in sect			

stream Auki Kwaibala river
station No.5 road crossing on kawaibala river Date 6,jun,2005

Latitude: Longitude:

Distance from initial	Sounded Depth	Point of Obs	velocity			Area(m^3/s)		Discharge(m^3/s)
			at point	Mean in vert	Mean in sect			
0.0	0.0		0.0					
100.0	4.0		27.0	13.5		0.020		0.003
200.0	4.0		54.0	40.5		0.040		0.016
300.0	7.0		61.0	57.5		0.055		0.032
400.0	8.0		61.0	61.0		0.075		0.046
500.0	8.0		73.0	67.0		0.080		0.054
600.0	6.0		62.0	67.5		0.070		0.047
700.0	6.0		28.0	45.0		0.060		0.027
800.0	4.0		26.0	27.0		0.050		0.014
900.0	3.0		16.0	21.0		0.035		0.007
1000.0	1.0		0.0	8.0		0.020		0.002
					Total	0.505		0.247

stream Auki Kwaibala river
station No.5 road crossing on kawaibala river Date 22.November.2005

Distance from initial	Sounded Depth	Point of Obs	velocity			Area(m^3/s)		Discharge(m^3/s)
			at point	Mean in vert	Mean in sect			
0.0	0.0		0.0					
150.0	12.0		1.7	0.9		0.090		0.001
300.0	17.0		8.4	5.1		0.218		0.011
450.0	19.0		15.7	12.1		0.270		0.033
600.0	28.0		15.7	15.7		0.353		0.055
750.0	34.0		15.7	15.7		0.465		0.073
900.0	39.0		17.0	16.4		0.548		0.090
1050.0	50.0		17.9	17.5		0.668		0.116
1200.0	43.0		16.5	17.2		0.698		0.120
1260.0	0.0		0.0	8.3		0.129		0.011
								0.509

stream Auki Kwaibala river
station No.5 road crossing on kawaibala river Date

Distance from initial	Sounded Depth	Point of Obs	velocity			Area(m^3/s)		Discharge(m^3/s)
			at point	Mean in vert	Mean in sect			

stream Auki Kawaibala river
station Kwaibala spring Date 6,jun,2005

Latitude:
Longitude:

w=42cm 42 cm
h=5cm 5 cm
v=0.620m/ 0.31 m/s

Q= 0.0065 m^3/s

stream Auki Kawaibala river
station Kwaibala spring Date 22.11.2005

Latitude:
Longitude:

Distance from initial	Sounded Depth	Point of Obs	velocity			Area(m^3/s)		Discharge (m^3/s)
			at point	Mean in vert	Mean in sect			
0.0	0.0		0.0					
10.0	5.3		0.0	0.0		0.003		0.000
20.0	5.5		39.5	19.8		0.005		0.001
30.0	5.5		39.5	39.5		0.006		0.002
40.0	5.0		39.5	39.5		0.005		0.002
50.0	0.0		0.0	19.8		0.003		0.000
								0.006

stream Auki middle reach of Kwaibala river

station Bitakaula spring Date 21.November.2005

Latitude: S08° 45'38.1" Longitude: E160° 43'24.7"

Distance from initial	Sounded Depth	Point of Obs	velocity			Area(m^3/s)		Discharge(m^3/s)
			at point	Mean in vert	Mean in sect			
Big pipe								
								0.030
						total		0.065

stream Auki middle reach of Kwaibala river

station Bitakaula spring Date 21.November.2005

Distance from initial	Sounded Depth	Point of Obs	velocity			Area(m^3/s)		Discharge(m^3/s)
			at point	Mean in vert	Mean in sect			
0.0	0.0		0.0					
10.0	5.5		20.0	10.0		0.003		0.000
20.0	10.1		20.0	20.0		0.008		0.002
30.0	12.5		20.0	20.0		0.011		0.002
40.0	14.0		20.0	20.0		0.013		0.003
50.0	14.5		20.0	20.0		0.014		0.003
60.0	15.0		25.0	22.5		0.015		0.003
70.0	19.5		25.0	25.0		0.017		0.004
80.0	20.0		25.0	25.0		0.020		0.005
90.0	20.0		25.0	25.0		0.020		0.005
100.0	19.5		25.0	25.0		0.020		0.005
110.0	19.0		0.0	12.5		0.039		0.005
								0.037

stream Auki middle reach of Kwaibala river

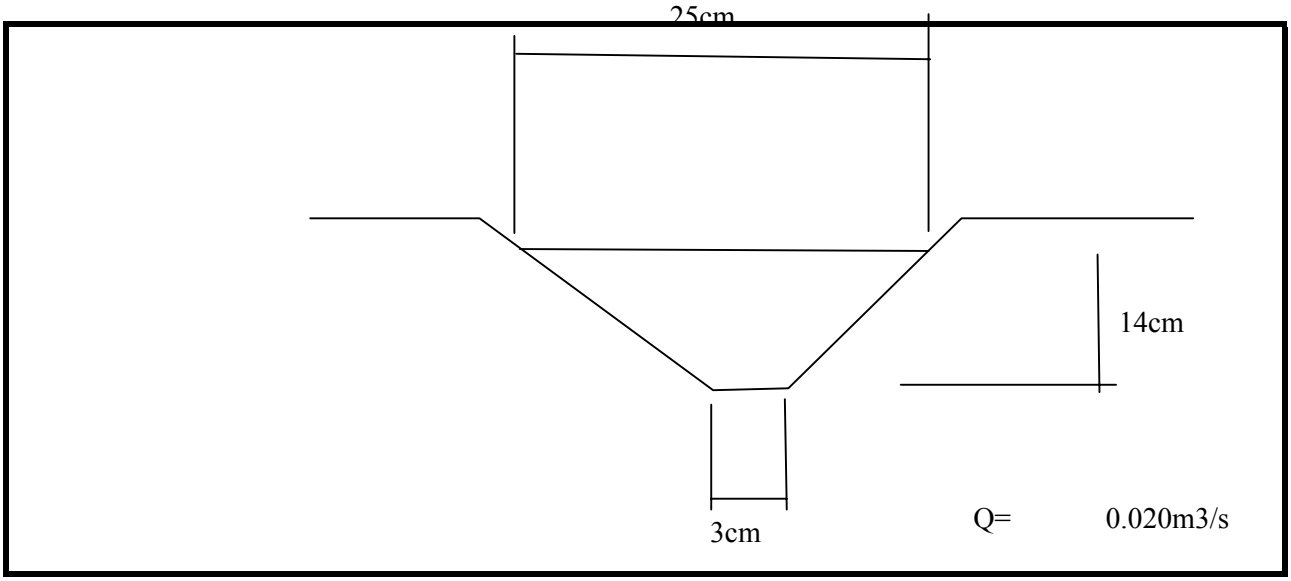
station No.4 Middle reach of Kwaibala river Date

Distance from initial	Sounded Depth	Point of Obs	velocity			Area(m^3/s)		Discharge(m^3/s)
			at point	Mean in vert	Mean in sect			

S-4-1-8 Tulagi (Refer to C3.1.(3).(a))

stream tulagi

station No.1 upsream of existing source Date 06.12.2005



stream tulagi

station No.1 upsream of existing source Date 06.12.2005

Latitude: Longitude:

Distance from initial	Sounded Depth	Point of Obs	velocity			Area(m^3/s)		Discharge(m^3/s)
			at point	Mean in vert	Mean in sect			
0.0	0.0	0.0	0.0					
30.0	4.0	9.0	7.7	3.8		0.006		0.000
60.0	7.5	11.0	9.4	8.5		0.017		0.001
90.0	5.0	12.0	10.2	9.8		0.019		0.002
120.0	21.0	25.0	21.3	15.7		0.039		0.006
150.0	27.0	25.0	21.3	21.3		0.072		0.015
180.0	30.0	25.0	21.3	21.3		0.086		0.018
210.0	29.0	25.0	21.3	21.3		0.089		0.019
240.0	30.0	12.0	10.2	15.7		0.089		0.014
270.0	37.0	11.0	9.4	9.8		0.101		0.010
300.0	42.0	11.0	9.4	9.4		0.119		0.011
330.0	25.0	9.0	7.7	8.5		0.101		0.009
360.0	0.0	0.0	0.0	3.8		0.038		0.001
								0.107

stream tulagi

station No.2 downssream of river Date 8,jun,2005

Latitude: Longitude:

Distance from initial	Sounded Depth	Point of Obs	velocity			Area(m^3/s)		Discharge(m^3/s)
			at point	Mean in vert	Mean in sect			
0.0	0.0		0.0					
15.0	5.0		25.0	12.5		0.004		0.000
30.0	6.0		26.0	25.5		0.008		0.002
45.0	5.0		22.0	24.0		0.008		0.002
60.0	0.0		0.0	11.0		0.004		0.0004
						0.024		0.005

stream tulagi

station No.2 downssream of river Date 06.12.2005

Distance from initial	Sounded Depth	Point of Obs	velocity			Area(m^3/s)		Discharge(m^3/s)
			at point	Mean in vert	Mean in sect			
0.0	0.0	0.00	0.00					
30.0	9.0	12.00	10.20	5.10		0.014		0.0007
60.0	12.0	20.00	17.00	13.60		0.032		0.0043
90.0	16.0	20.00	17.00	17.00		0.042		0.0071
120.0	18.5	25.00	21.25	19.13		0.052		0.0099
150.0	18.0	25.00	21.25	21.25		0.055		0.0116
180.0	18.0	25.00	21.25	21.25		0.054		0.0115
210.0	14.0	25.00	21.25	21.25		0.048		0.0102
240.0	11.0	12.00	10.20	15.73		0.038		0.0059
260.0	10.0	0.00	0.00	5.10		0.021		0.0011
								0.062

stream tulagi

station No.2 downssream of river Date

Distance from initial	Sounded Depth	Point of Obs	velocity			Area(m^3/s)		Discharge(m^3/s)
			at point	Mean in vert	Mean in sect			