ソロモン諸島国

ソロモン諸島水道公社

ソロモン諸島国
水道公社無収水対策プロジェクト

プロジェクト事業完了報告書
（サポーティングレポート）

平成 28 年 8 月

(2016 年)

独立行政法人国際協力機構

(JICA)

八千代エンジニヤリング株式会社

横浜ウォーター株式会社

環境
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第 3 章 成果および達成度

S3.3-1. 達成度および課題、チャレンジ、提言

30th June 2016

The Project for Improvement of Non-Revenue Water Reduction Capacity for Solomon Islands Water Authority in Solomon Islands

Achievement, Issue, Challenge and Recommendation

Contents

S3.3-1-1

1. Project Outline

- Project Title: The Project for Improvement of Non-Revenue Water Reduction Capacity for Solomon Islands Water Authority in Solomon Islands
- Counterpart: Solomon Islands Water Authority (Solomon Water)
- Relevant Organization: Ministry of Mines, Energy and Rural Electrification (MMERE), The Australian Department of Foreign Affairs and Trade (DFAT)
- Project Period (R/D: 27th July 2012 and revised on 30th October 2015): November 2012 to June 2016 (3 years and 9 months)
- Relevant Cooperation: "The Project for Improvement of Water Supply System in Honiara and Auki" Grant Aid Project by Japan, "Solomon Water's Two-year Plan" assisted by DFAT

2. Project Design

See the PDM_4 and the PO_4 for details.

(1) Overall Goal: SW's service levels are improved and SW's revenue is increased.

(2) Project Purpose: SW is assisted to achieve its target of reducing the NRW ratio in Honiara to 30% by 2015.

(3) Outputs:

1) Planning process of SW for NRW reduction is systematized.
2) The procedure for NRW reduction is established through the pilot areas and LCZs.
3) NRW reduction is implemented in accordance with the procedure in pilot areas and/or LCZs in the selected DMAs, and then improved NRW ratio is monitored and maintained.
4) Water meter reading and billing process management are improved.

(4) Inputs:

1) Inputs from the Japanese side
   - Expert: 8 experts
   - Equipment: bulk flow meters, sluice valves for isolation, ultrasonic flow meters, data loggers, leakage detection equipment, GPSs, office automation equipment, customer meters, pickup trucks, an excavator and etc.
   - Training in Japan：3 times for 12 trainees in total (April and October 2013, and June 2014)
2) Inputs from the Solomon Islands side
   - Personnel: 25 members (NRW Management Team: 4, NRW Action Team: 21)
   - Project office and facilities for the project implementation, including office furniture, electricity and communication equipment
   - Pipes, fittings and other materials for NRW reduction measures such as repair and meter installation
   - Installation of flow meters and customer meters, and repair works

3. Achievement, Issue, Challenge and Recommendation

(1) Achievement of Project Purpose

Project Purpose: SW is assisted to achieve its target of reducing the NRW ratio in Honiara to 30% by 2015.

Indicator 1: The NRW ratio is reduced by 30 points in each pilot project area, the selected DMAs and/or LCZs.

Indicator 2: Regarding the pilot project areas, selected DMAs, and/or LCZs where the NRW ratio before the implementation of NRW reduction measures are less than 30%, the NRW reduction measures are implemented in accordance with features of each area and/or zone, so that effectiveness of the NRW reduction measures are validated.

Status of the Achievement:

Pilot Project Areas

After the selection of 15 pilot project areas and prioritization in March 2013, the Project commenced the pilot projects in April 2013 and completed all projects by September 2014 (see ***Table 1***).

The Project achieved the conditions stipulated by Indicator 1 in all pilot project areas except for "No.8:Mbaranamba". In "No.3:Lenggakiki" and "No.5:Tuvaruhu-1", the Project could not achieve the reduction target of 30 points initially during implementing the NRW reduction activities, therefore the Project took additional countermeasures leading to successful results.

In "No.8: Mbaranamba" where NRW ratio before the activities was less than 30%, the Project achieved conditions stipulated by Indicator 2.

Table 1 Reduction Point of NRW Ratio before/after NRW Reduction Activities in Pilot Project Areas

No	Area No	Area Name	NRW Ratio (%)		Reduction Point
			Before	After	
1	No.9	White River- Namo Ruka	86.5	32.2	54.3
2	No.10	Independence Valley	57.7	9.9	47.9
3	No.3	Lenggakiki	62.0	33.2	28.8
		After additional countermeasures		14.7	47.3
4	No.5	Mbokonavera-1	53.1	14.7	38.5
5	No.14	Tuvaruhu-1	65.4	41.4	24.0
		After additional countermeasures		11.0	54.4
6	No.15	Tuvaruhu-2	67.2	20.5	46.7
7	No.6	Vavaea Ridge	63.1	27.2	35.8
8	No.4	Mbokona	50.2	19.2	31.0
9	No.8	Mbaranamba	23.2	3.5	19.7
10	No.2	Mbua Valley	50.9	6.8	44.1
11	No.11	Bahai Kukum	58.6	16.2	42.4
12	No.7	Panatina Valley	37.9	6.7	31.2
13	No.12	Naha 2	51.7	15.6	36.1
14	No.13	Naha 3	60.9	25.8	35.1
15	No.1	FFA Kola Road	47.1	14.9	32.2

Note: Due to rounding process, value in the first decimal place of reduction point is not necessarily identical to the deference between after and before of NRW ratio.

DMAs and/or LCZs

After demarcation of 28 DMAs and the prioritization in September 2014, the Project commenced the NRW reduction activities in DMAs in December 2014. As of June 2016, the NRW reduction activities were completed and then monitoring and maintenance have been done in four DMAs, and the NRW reduction activities are ongoing in remaining DMAs (see ***Table 2***).

Table 2 Reduction Point of NRW Ratio before/after NRW Reduction Activities in DMAs

No	DMA No.	DMA Name	NRW Ratio (%)		Reduction Point
			Before	After	
1	No. 10	Lenggakiki	42.6	22.6	20.0
2	No. 6	Tasahe A&B*1	85.8	44.6	41.3
		After pressure control		32.7	53.1
3	No. 17	West Kola Ridge A*1	60.4	18.4	42.0
4	No.7	Tasahe C	38.1	7.5	30.6

Note: Due to rounding process, value in the first decimal place of reduction point is not necessarily identical to the deference between after and before of NRW ratio.

*1 DMAs in which were selected under SW-JICA commitment and NRW reduction activities were completed by the Project. In other two DMAs, NRW reduction activities were completed by SW as of March 2016.

(2) Achievement of Outputs

Output 1: Planning process of SW for NRW reduction is systematized.

Indicator 1-1: Annual budget for NRW reduction is secured in the pilot project areas and LCZs.

With the secured budget, the NRW reduction activities in 15 pilot project areas were completed. As of March 2016, the NRW reduction activities were completed and then monitoring and maintenance have been done in four DMAs, and the NRW reduction activities are ongoing in remaining DMAs.

1) Initial Cost incurred in NRW Reduction Activities

Pilot Project Areas

The actual cost incurred for the NRW reduction activities in 15 pilot project areas is shown in ***Table 3***. Total initial cost is about SBD2.23 million, which equates to cost per pilot area to be about SBD148,800, cost per household to be SBD1,525 and cost per km of pipeline to be SBD100,400.

Table 3 Initial Cost for NRW Reduction Activities in Pilot Project Areas

No	Area No	Area Name	Pipeline Length (m)	Total No. of Household	Personnel Cost (SBD)	Consumable Cost (SBD)	Material & Equipment (SBD)	Total Initial Cost (SBD)
			[1]	[2]	[3]	[4]	[5]	[6]=[3]+[4]+[5]
1	No.9	White River-Namo Ruka	1,063	83	74,710	2,306	22,673	99,689
2	No.10	Independence Valley	2,184	91	78,825	2,207	32,889	113,921
3	No.3	Lenggakiki	2,481	161	55,087	971	59,810	115,868
4	No.5	Mbokonavera-1	1,104	76	48,515	269	32,138	80,922
5	No.14	Tuvaruhu-1	1,206	48	43,084	884	32,769	76,737
6	No.15	Tuvaruhu-2	1,371	62	45,669	942	43,438	90,049
7	No.6	Vavaea Ridge	1,298	163	56,752	4,081	104,816	165,649
8	No.4	Mbokona	1,419	110	91,461	7,417	146,267	245,145
9	No.8	Mbaranamba	1,512	100	39,498	5,959	38,764	84,221
10	No.2	Mbua Valley	1,990	122	125,706	6,701	175,856	308,263
11	No.11	Bahai Kukum	1,692	182	95,068	6,349	180,944	282,361
12	No.7	Panatina Valley	885	60	82,801	6,033	41,097	129,931
13	No.12	Naha 2	786	57	92,066	6,289	32,058	130,413
14	No.13	Naha 3	960	67	100,337	6,495	24,927	131,759
15	No.1	FFA Kola Road	2,276	82	101,699	4,831	69,906	176,436
Total			**22,227**	**1,464**	**1,131,278**	**61,734**	**1,018,264**	**2,231,364**

DMAs and/or LCZs

The actual cost incurred for the NRW reduction activities in four completed DMAs is shown in ***Table 4***. Total initial cost for four DMAs is about SBD1.99 million, which equates to cost per household to be SBD2,397 and cost per km of pipeline to be SBD83,950.

Table 4 Initial Cost for NRW Reduction Activities in DMAs

No	Area No	Area Name	Pipeline Length (m)	Total No. of Household	Personnel Cost (SBD)	Consumable Cost (SBD)	Material & Equipment (SBD)	Total Initial Cost (SBD)
			[1]	[2]	[3]	[4]	[5]	[6]=[3]+[4]+[5]
1	No.10	Lenggakiki	4,035	215	177,039	11,044	264,737	452,819
2	No.6	Tasahe A&B*1	6,719	202	239,040	23,103	415,388	677,531
3	No.17	West Kola Ridge A*1	9,060	225	155,955	11,474	169,949	337,377
4	No.7	Tasahe C	3,859	187	181,672	11,890	326,041	519,603
Total			**23,673**	**829**	**753,706**	**57,511**	**1,176,115**	**1,987,330**

Note: Initial cost incurred for the NRW reduction activities in "No.10: Lenggakiki" does not include one in pilot area "Lenggakiki" which is a part of the DMA.

*1 DMAs in which were selected under SW-JICA commitment and NRW reduction activities were completed by the Project. In other two DMAs, NRW reduction activities were completed by SW as of March 2016.

2) Benefit from the NRW Reduction Activities

Revenue per billed water[1]in Honiara scheme of SBD17.61/m^3 is applied based on operational and financial data of SW in 2015.

In consideration of intermittent water supply in most of Honiara, the Project regards the benefit of NRW reduction as "increase in revenue water" only.

Pilot Project Areas

Annual increased revenue is estimated at SBD9.16 million to be generated by NRW reduction in 15 pilot project areas (see ***Table 5***).

[1] Revenue per billed water = "Annual income" / "Annual billed water" in Honiara (SBD72,946,294 / 4,142,234m^3)

Table 5 Increase in Revenue Water and Revenue by NRW Reduction Activities in Pilot Project Areas

No	Area No	Area Name	Revenue Water (m^3/day) Before	Revenue Water (m^3/day) After*1	Estimated Daily Increased Revenue Water (m^3/day)	Estimated Daily Increased Revenue. (SBD/day)
			[1]	[2]	[3]=[2]-[1]	[4]=[3]xRevenue per Billed Water
1	No.9	White River-Namo Ruka	47.0	235.2	188.3	3,316
2	No.10	Independence Valley	67.5	144.0	76.4	1,345
3	No.3	Lenggakiki	224.9	504.5	279.7	4,926
4	No.5	Mbokonavera-1	83.7	152.5	68.7	1,210
5	No.14	Tuvaruhu-1	36.6	94.2	57.6	1,014
6	No.15	Tuvaruhu-2	37.4	90.6	53.2	937
7	No.6	Vavaea Ridge	185.6	365.5	179.9	3,168
8	No.4	Mbokona	61.8	100.3	38.5	678
9	No.8	Mbaranamba	122.5	153.9	31.4	553
10	No.2	Mbua Valley	146.2	277.3	131.1	2,309
11	No.11	Bahai Kukum	135.2	273.6	138.4	2,437
12	No.7	Panatina Valley	58.0	87.1	29.2	514
13	No.12	Naha 2	46.8	81.8	35.0	616
14	No.13	Naha 3	53.6	101.9	48.2	849
15	No.1	FFA Kola Road	113.8	183.0	69.2	1,219
Total			**1,420.6**	**2,845.4**	**1,424.8**	**25,091**

*1 To make before-after conditions consistent each other, these are calculated by the formula "(System input volume before NRW measures) / (System input volume after NRW measures) × (Volume of actual revenue water after NRW measures)"

DMAs and/or LCZs

Annual increased revenue is estimated at SBD9.51 million to be generated by NRW reduction in four completed DMAs (see ***Table 6***).

Table 6 Increase in Revenue Water and Revenue by NRW Reduction Activities in DMAs

No	Area No	Area Name	Revenue Water (m^3/day) Before	Revenue Water (m^3/day) After*1	Estimated Daily Increased Revenue Water (m^3/day)	Estimated Daily Increased Revenue. (SBD/day)
			[1]	[2]	[3]=[2]-[1]	[4]=[3]xRevenue per Billed Water
1	No.10	Lenggakiki	446.9	602.9	156.0	2,747
2	No.6	Tasahe A&B*1	241.4	1,147.5	906.0	15,955
3	No.17	West Kola Ridge A*1	256.4	528.7	272.3	4,795
4	No.7	Tasahe C	294.4	439.9	145.5	2,562
Total			**1,239.1**	**2,719.0**	**1,479.8**	**26,059**

*1 To make before-after conditions consistent each other, these are calculated by the formula "(System input volume before NRW measures) / (System input volume after NRW measures) × (Volume of actual revenue water after NRW measures)"

*2 DMAs in which were selected under SW-JICA commitment and NRW reduction activities were completed by the Project. In other two DMAs, NRW reduction activities were completed by SW as of March 2016.

3) Result of Cost-Effectiveness Analysis

The Project applies the following assumptions to cost-benefit analysis:

- Possible increase of NRW following the initial NRW reduction activities is reduced by NRW

monitoring and maitenance for three years.

- Recurring cost for NRW reduction required to maintain conditions well for three years is 100% of the initial cost spent in the NRW reduction activities.

Pilot Project Areas

As a result of cost-benefit analysis based on the above assumptions, the increased revenue in 15 pilot project areas is estimated at SBD27.1 million through initial and recurrent activities of NRW reduction for three years as shown in ***Table 7***. This greatly exceeds SBD4.5 million of the initial and maintenance cost incurred, which means 6.1 times.

Therefore, NRW reduction is definitely beneficial to services and business of SW.

Table 7 Cost-Effectiveness of NRW Reduction Activities in Pilot Project Areas

No	Area No.	Area Name	Estimated Increased Revenue Water		Estimated Increased Revenue by Revenue per Billed Water		Initial Cost incurred*2	Initial and Recurring Cost for 3 years*3
			(m^3/day)	(m^3/3yrs)	(SBD/day)	(SBD/3yrs)	(SBD)	(SBD/3yrs)
1	No.9	White River - Namo Ruka	188.3	203,364	3,316	3,581,240	99,689	199,378
2	No.10	Independence Valley	76.4	82,512	1,345	1,453,036	113,921	227,842
3	No.3	Lenggakiki	279.7	302,076	4,926	5,319,558	115,868	231,736
4	No.5	Mbokonavera-1	68.7	74,196	1,210	1,306,592	80,922	161,844
5	No.14	Tuvaruhu-1	57.6	62,208	1,014	1,095,483	76,737	153,474
6	No.15	Tuvaruhu-2	53.2	57,456	937	1,011,800	90,049	180,098
7	No.6	Vavaea Ridge	179.9	194,292	3,168	3,421,482	165,649	331,298
8	No.4	Mbokona	38.5	41,580	678	732,224	245,145	490,290
9	No.8	Mbaranamba	31.4	33,912	553	597,190	84,221	168,442
10	No.2	Mbua Valley	131.1	141,588	2,309	2,493,365	308,263	616,526
11	No. 11	Bahai Kukum	138.4	149,472	2,437	2,632,202	282,361	564,722
12	No.7	Panatina Valley	29.2	31,536	514	555,349	129,931	259,862
13	No.12	Naha 2	35.0	37,800	616	665,658	130,413	260,826
14	No. 13	Naha 3	48.2	52,056	849	916,706	131,759	263,518
15	No.1	FFA Kola Road	69.2	74,736	1,219	1,316,101	176,436	352,872
		Total	**1,424.8**	**1,538,784**	**25,091**	**27,097,986**	**2,231,364**	**4,462,728**

DMAs and/or LCZs

As a result of cost-benefit analysis based on the above assumptions, the increased revenue in four completed DMAs is estimated at SBD28.1 million through initial and recurrent activities of NRW reduction for three years as shown in ***Table 8***. This greatly exceeds SBD4.0 million of the initial and maintenance cost incurred, which means 7.1 times.

Therefore, NRW reduction is definitely beneficial to services and business of SW.

Table 8 Cost-Effectiveness of NRW Reduction Activities in DMAs

No	Area No.	Area Name	Estimated Increased Revenue Water		Estimated Increased Revenue by Revenue per Billed Water		Initial Cost incurred*2	Initial and Recurring Cost for 3 years*3
			(m^3/day)	(m^3/3yrs)	(SBD/day)	(SBD/3yrs)	(SBD)	(SBD/3yrs)
1	No.10	Lenggakiki	156.0	168,480	2,747	2,966,933	452,819	905,638
2	No.6	Tasahe A&B*1	906.0	978,480	15,955	17,231,033	677,531	1,355,062
3	No.17	West Kola Ridge A*1	272.3	294,084	4,795	5,178,819	337,377	674,754
4	No.7	Tasahe C	145.5	157,140	2,562	2,767,235	519,603	1,039,206
		Total	**1,479.8**	**1,598,184**	**26,059**	**28,144,020**	**1,987,330**	**3,974,660**

*1 DMAs in which were selected under SW-JICA commitment and NRW reduction activities were completed by the Project. In other two DMAs, NRW reduction activities were completed by SW as of March 2016.

Indicator 1-2: The strategic implementation (rolling-out) plan for NRW reduction is approved and reviewed as when it is necessary by management of SW.

Based on the results of the pilot projects, the Project Team commenced preparation of the Strategic Implementation (Rolling-out) Plan at the end of Phase-3 of the Project corresponding to the first quarter of 2015, and then the Plan was approved in October 2015 and reviewed in Phase-5.

Output 2: The procedure for NRW reduction is established through the pilot areas and LCZs.

Indicator 2-1: Manuals for NRW reduction measures are prepared and revised as when it is necessary, including workflow of DMA-based monitoring and maintenance for improved NRW ratio.

Manuals for NRW reduction consist of three components: “1. NRW Reduction Measures” including workflow of DMA-based monitoring and maintenance of improved NRW ratio, “2. Leakage Detection Techniques” and “3. Database Update”. Forms for record and analysis have been used, improved and updated in consideration for user-friendliness through the Project. The manual will be prepared with the above forms in the Phase-4.

Indicator 2-2: The number of authorizations and disconnections of illegal connections is increased in the pilot project areas, the selected DMAs and/or LCZs.

Pilot Project Areas

140 illegal connections including parasite users were identified which account for 9.6% of 1,464 households in total. Out of 140, 38 connections were legalized (authorized) and 102 connections were disconnected. This means that only 27.1% became valid customers while 72.9% were disconnected (see ***Table 9***).

While the monthly number of legalizations (authorizations) of illegal connections as a result of a campaign by Solomon Water prior to the Project was about 10 in whole of Honiara as of November 2011, the monthly number of disconnections of illegal connections was about 20 according to

information gathered from Solomon Water in an interview. Assuming these figures are regarded as the baseline in the whole Honiara, the baseline figure in 15 pilot project areas is estimated at 3.5 for legalization (authorization) and 6.5 for disconnection respectively as a result of conversion by proportion to the pipeline length as well as pilot project period (2.6 month per area). Therefore, the total number of legalizations (authorizations) and disconnections of illegal connections was increased from 10 (3.5+6.5) to 140 (38+102) for 15 pilot project areas as a result of the NRW reduction activities. The baseline figure however is only reference.

Table 9 Number of Authorizations and Disconnections of Illegal Connections in Pilot Project Areas

No	Area No	Area Name	Total Household	Illegal Connection *1	Percentage of Illegal Connection in Total Household	Legalization / Authorization	Percentage of Legalization in Illegal Connection	Disconnection	Percentage of Disconnection in Illegal Connection
			[1]	[2]	[3]=[2]/[1] x100	[4]	[5]=[4]/[2] x100	[6]	[7]=[6]/[2] x100
1	No.9	White River-Namo Ruka	83	28	33.7%	6	21.4%	22	78.6%
2	No.10	Independence Valley	91	7	7.7%	1	14.3%	6	85.7%
3	No.3	Lenggakiki	161	35	21.7%	1	2.9%	34	97.1%
4	No.5	Mbokonavera-1	76	2	2.6%	0	0.0%	2	100.0%
5	No.14	Tuvaruhu-1	48	6	12.5%	3	50.0%	3	50.0%
6	No.15	Tuvaruhu-2	62	11	17.7%	3	27.3%	8	72.7%
7	No.6	Vavaea Ridge	163	0	0.0%	0	0.0%	0	0.0%
8	No.4	Mbokona	110	10	9.1%	5	50.0%	5	50.0%
9	No.8	Mbaranamba	100	2	2.0%	2	100.0%	0	0.0%
10	No.2	Mbua Valley	122	13	10.7%	7	53.8%	6	46.2%
11	No.11	Bahai Kukum	182	14	7.7%	8	57.1%	6	42.9%
12	No.7	Panatina Valley	60	0	0.0%	0	0.0%	0	0.0%
13	No.12	Naha 2	57	2	3.5%	0	0.0%	2	100.0%
14	No.13	Naha 3	67	10	14.9%	2	20.0%	8	80.0%
15	No.1	FFA Kola Road	82	0	0.0%	0	0.0%	0	0.0%
Total			**1,464**	**140**	**9.6%**	**38**	**27.1%**	**102**	**72.9%**

Note: Called “Parasite”, illegal users who obtain water from un-metered (or direct line: D/L) customers are included.

DMAs and/or LCZs

In four DMAs, 47 illegal connections including parasite users were identified which account for 5.7% of 829 households in total. Out of 47, 33 connections were legalized (authorized) and 14 connections were disconnected. This means that only 70.2% became valid customers while 29.8% were disconnected (see ***Table 10***).

Table 10 Number of Authorizations and Disconnections of Illegal Connections in DMAs

No	Area No	Area Name	Total Household	Illegal Connection *1	Percentage of Illegal Connection in Total Household	Legalization / Authorization	Percentage of Legalization in Illegal Connection	Disconnection	Percentage of Disconnection in Illegal Connection
			[1]	[2]	[3]=[2]/[1] x100	[4]	[5]=[4]/[2] x100	[6]	[7]=[6]/[2] x100
1	No.10	Lenggakiki	215	0	0.0%	0	0.0%	0	0.0%
2	No.6	Tasahe A&B*1	202	17	8.4%	5	29.4%	12	70.6%
3	No.17	West Kola Ridge A*1	225	1	0.4%	1	100.0%	0	0.0%
4	No.7	Tasahe C	187	29	15.5%	27	93.1%	2	6.9
Total			**829**	**47**	**5.7%**	**33**	**70.2%**	**14**	**29.8%**

Note: Called “Parasite”, illegal users who obtain water from un-metered (or direct line: D/L) customers are included.
*1 DMAs in which were selected under SW-JICA commitment and NRW reduction activities were completed by the Project. In other two DMAs, NRW reduction activities were completed by SW as of March 2016.

Indicator 2-3: The number of new service connections and replacement of malfunctioning customer meters is increased in the pilot project areas and LCZs.

Pilot Project Areas

There are 268 households that were found to be un-connected or in other words they do not have water connections from Solomon Water’s pipeline network (not including illegal connections), which account for 18.3% of the total number of household. As a result of the NRW reduction activities, 31 households proceeded to become connected or re-connected and account for 11.6% of the total un-connection households (see ***Table 11***). The total number of valid customers decreased before and after the NRW reduction activities (see ***Table 12***), and **Section 3. (4) 3)** describes the reason of decrease in customers.

Generally, un-connection households (not including illegal connections) rely on springs, rain water, water purchased from private water tanker and from metered customers.

Table 11 Number of New Service Connections and Re-connections in Pilot Project Areas

No	Area No	Area Name	Total Household	Un-connection*1 (before)	Percentage of Un-connection in Total Household	New/Re-Connection	Percentage of New/Re-connection in Un-connection
			[1]	[2]	[3]=[2]/[1] x100	[4]	[5]=[4]/[2] x100
1	No.9	White River-Namo Ruka	83	11	13.3%	2	18.2%
2	No.10	Independence Valley	91	16	17.6%	3	18.8%
3	No.3	Lenggakiki	161	11	6.8%	6	54.5%
4	No.5	Mbokonavera-1	76	10	13.2%	0	0.0%
5	No.14	Tuvaruhu-1	48	4	8.3%	3	75.0%
6	No.15	Tuvaruhu-2	62	10	16.1%	1	10.0%
7	No.6	Vavaea Ridge	163	69	42.3%	8	11.6%
8	No.4	Mbokona	110	12	10.9%	6	50.0%
9	No.8	Mbaranamba	100	20	20.0%	0	0.0%
10	No.2	Mbua Valley	122	16	13.1%	1	6.3%
11	No.11	Bahai Kukum	182	53	29.1%	1	1.9%
12	No.7	Panatina Valley	60	9	15.0%	0	0.0%
13	No.12	Naha 2	57	13	22.8%	0	0.0%
14	No.13	Naha 3	67	2	3.0%	0	0.0%
15	No.1	FFA Kola Road	82	12	14.6%	0	0.0%
Total			**1,464**	**268**	**18.3%**	**31**	**11.6%**

*1 Illegal connections including parasite users are not included.

Table 12 Number of Customers before/after NRW Reduction Activities in Pilot Project Areas

No	Area No	Area Name	Total Household	Customer (before)	Percentage of Customer in Household (before)	Customer (after)	Percentage of Customer in Household (after)
			[1]	[2]	[3]=[2]/[1] x100	[4]	[5]=[4]/[1] x100
1	No.9	White River-Namo Ruka	83	44	53.0%	52	62.7%
2	No.10	Independence Valley	91	68	74.7%	72	79.1%
3	No.3	Lenggakiki	161	115	71.4%	120	74.5%
4	No.5	Mbokonavera-1	76	64	84.2%	64	84.2%
5	No.14	Tuvaruhu-1	48	38	79.2%	28	58.3%
6	No.15	Tuvaruhu-2	62	41	66.1%	32	51.6%
7	No.6	Vavaea Ridge	163	94	57.7%	93	57.1%
8	No.4	Mbokona	110	88	80.0%	86	78.2%
9	No.8	Mbaranamba	100	78	78.0%	80	80.0%
10	No.2	Mbua Valley	122	93	76.2%	100	82.0%
11	No.11	Bahai Kukum	182	115	63.2%	97	53.3%
12	No.7	Panatina Valley	60	51	85.0%	50	83.3%
13	No.12	Naha 2	57	42	73.7%	42	73.7%
14	No.13	Naha 3	67	55	82.1%	56	83.6%
15	No.1	FFA Kola Road	82	70	85.4%	64	78.0%
Total			**1,464**	**1,056**	**72.1%**	**1,036**	**70.8%**

The Project also installed 378 customer meters to new or unmetered or reconnected customers. In addition, 596 meters were also replaced with new ones. This amount to 974 meters out of 1,000 meters

procured by JICA, which means the meters were effectively used (see ***Table 13***). Meanwhile, the Two-year Plan also procured about 3,000 meters. In DMAs, both the remaining 26 meters procured by JICA and the meters procured by the Two-year Plan have been installed.

The monthly number of new service connections and replacement of malfunctioning customer meters by Solomon Water before the Project was about 30 in the whole Honiara according to interview to Solomon Water. This figure also includes unmetered (direct line: D/L) connections in occasions when SW is out of its stock of meters. Assuming this figure is regarded as the baseline in the whole Honiara, the baseline in 15 pilot project areas is estimated at 10 as a result of conversion by proportion of the pipeline length as well as the pilot project period (2.6 month per area). Therefore, the number of new service connections and replacement of malfunctioning customer meters was increased from 10 to 974 in 15 pilot project areas as a result of the NRW reduction activities. The baseline figure however is only reference.

Table 13 Number of New Installation and Replacement of Customer Meter in Pilot Project Areas

No	Area No	Area Name	Total Household	Meter New Installation	Meter Replace't	Replacement & New Installation	Percentage of Replace't & New Installation in Total Household
			[1]	[2]	[3]	[4]=[2]+[3]	[5]=[4]/[1]x100
1	No.9	White River-Namo Ruka	83	37	12	49	59.0%
2	No.10	Independence Valley	91	37	35	72	79.1%
3	No.3	Lenggakiki	161	29	89	118	73.3%
4	No.5	Mbokonavera-1	76	30	32	62	81.6%
5	No.14	Tuvaruhu-1	48	16	11	27	56.3%
6	No.15	Tuvaruhu-2	62	16	16	32	51.6%
7	No.6	Vavaea Ridge	163	36	57	93	57.1%
8	No.4	Mbokona	110	45	28	73	66.4%
9	No.8	Mbaranamba	100	11	39	50	50.0%
10	No.2	Mbua Valley	122	34	58	92	75.4%
11	No.11	Bahai Kukum	182	44	53	97	53.3%
12	No.7	Panatina Valley	60	15	35	50	83.3%
13	No.12	Naha 2	57	6	36	42	73.7%
14	No.13	Naha 3	67	9	46	55	82.1%
15	No.1	FFA Kola Road	82	13	49	62	75.6%
Total			**1,464**	**378**	**596**	**974**	**66.5%**

DMAs and/or LCZs

In four DMAs, there are 57 households that were found to be un-connected or in other words they do not have water connections from Solomon Water's pipeline network (not including illegal connections), which account for 6.9% of the total number of household. As a result of the NRW reduction activities, 36 households proceeded to become connected or re-connected and account for 63.2% of the total un-connection households (see ***Table 14***). The total number of valid customers increased before and after the NRW reduction activities (see ***Table 15***).

Table 14 Number of New Service Connections and Re-connections in DMAs

No	Area No	Area Name	Total Household	Un-connection*1 (before)	Percentage of Un-connection in Total Household	New/Re-Connection	Percentage of New/Re-connection in Un-connection
			[1]	[2]	[3]=[2]/[1] x100	[4]	[5]=[4]/[2] x100
1	No.10	Lenggakiki	215	5	2.3%	0	0.0%
2	No.6	Tasahe A&B*2	202	30	14.9%	28	93.3%
3	No.17	West Kola Ridge A*2	225	13	5.8%	5	38.5%
4	No.7	Tasahe C	187	9	4.8%	3	33.3%
Total			**829**	**57**	**6.9%**	**36**	**63.2%**

*1 Illegal connections including parasite users are not included.
*2 DMAs in which were selected under SW-JICA commitment and NRW reduction activities were completed by the Project. In other two DMAs, NRW reduction activities were completed by SW as of March 2016.

Table 15 Number of Customers before/after NRW Reduction Activities in DMAs

No	Area No	Area Name	Total Household	Customer (before)	Percentage of Customer in Household (before)	Customer (after)	Percentage of Customer in Household (after)
			[1]	[2]	[3]=[2]/[1] x100	[4]	[5]=[4]/[1] x100
1	No.10	Lenggakiki	215	210	97.7%	210	97.7%
2	No.6	Tasahe A&B*1	202	155	76.7%	179	88.6%
3	No.17	West Kola Ridge A*1	225	211	93.8%	198	88.0%
4	No.7	Tasahe C	187	149	79.7%	179	95.7%
Total			**829**	**725**	**87.5%**	**766**	**92.4%**

*1 DMAs in which were selected under SW-JICA commitment and NRW reduction activities were completed by the Project. In other two DMAs, NRW reduction activities were completed by SW as of March 2016.

In four DMAs, the Project also installed 137 customer meters to new or unmetered or reconnected customers, 198 meters were also replaced with new ones. This amount to 335 meters (see ***Table 16***), and this means the remaining 26 out of 1,000 meters procured by JICA were effectively used.

Table 16 Number of New Installation and Replacement of Customer Meter in DMAs

No	Area No	Area Name	Total Household	Meter New Installation	Meter Replace't	Replacement & New Installation	Percentage of Replace't & New Installation in Total Household
			[1]	[2]	[3]	[4]=[2]+[3]	[5]=[4]/[1]x100
1	No.10	Lenggakiki	215	6	69	75	34.9%
2	No.6	Tasahe A&B*1	202	72	40	112	55.4%
3	No.17	West Kola Ridge A*1	225	36	56	92	40.9%
4	No.7	Tasahe C	187	23	33	56	29.9%
Total			**829**	**137**	**198**	**335**	**40.4%**

*1 DMAs in which were selected under SW-JICA commitment and NRW reduction activities were completed by the Project. In other two DMAs, NRW reduction activities were completed by SW as of March 2016.

Output 3: NRW reduction is implemented in accordance with the procedure in pilot areas and/or LCZs in the selected DMAs, and then improved NRW ratio is monitored and maintained.

Indicator 3-1: The number of pipe repairs is increased in the pilot project areas and LCZs.

Pilot Project Areas

There were 191 leak points detected, which were repaired as a part of the NRW reduction measures (see ***Table 17***).

Table 17 Number of Leak Point and Pipe Repair in Pilot Project Areas

No	Area No	Area Name	Pipe Length (m)	No. of Leak Point	No. of Pipe Repair	Per-km Leak Point
			[1]	[2]	[3]	[4]=[2]/[1] x1,000m
1	No.9	White River-Namo Ruka	1,063	13	13	12
2	No.10	Independence Valley	2,184	12	12	5
3	No.3	Lenggakiki	2,481	31	31	12
4	No.5	Mbokonavera-1	1,104	13	13	12
5	No.14	Tuvaruhu-1	1,206	9	9	7
6	No.15	Tuvaruhu-2	1,371	9	9	7
7	No.6	Vavaea Ridge	1,298	11	11	8
8	No.4	Mbokona	1,419	25	25	18
9	No.8	Mbaranamba	1,512	12	12	8
10	No.2	Mbua Valley	1,990	18	18	9
11	No.11	Bahai Kukum	1,692	18	18	11
12	No.7	Panatina Valley	885	3	3	3
13	No.12	Naha 2	786	2	2	3
14	No.13	Naha 3	960	10	10	10
15	No.1	FFA Kola Road	2,276	5	5	2
Total			**22,227**	**191**	**191**	**9**

Leakage ratios were reduced by repair of damaged parts of pipeline, and the average of reduction point of leakage ratio is 27.7 (see ***Table 18***).

Table 18 Reduction Point of Leakage Ratio before/after NRW Reduction Activities in Pilot Project Areas

No	Area No	Area Name	Leakage Ratio (%, before)	Leakage Ratio (%, after)	Reduction Point
			[1]	[2]	[3]=[1]-[2]
1	No.9	White River-Namo Ruka	49.2	30.7	18.5
2	No.10	Independence Valley	15.7	8.6	7.1
3	No.3	Lenggakiki	52.1	14.3	37.8
4	No.5	Mbokonavera-1	50.1	10.6	39.5
5	No.14	Tuvaruhu-1	59.4	11.0	48.4
6	No.15	Tuvaruhu-2	52.8	19.4	33.4
7	No.6	Vavaea Ridge	60.7	24.7	36.0
8	No.4	Mbokona	44.7	19.0	25.7
9	No.8	Mbaranamba	21.3	3.3	18.0
10	No.2	Mbua Valley	39.7	6.7	33.0
11	No.11	Bahai Kukum	42.7	16.2	26.5
12	No.7	Panatina Valley	24.8	6.1	18.7
13	No.12	Naha 2	42.5	14.9	27.6
14	No.13	Naha 3	42.1	25.8	16.3
15	No.1	FFT Kola Road	44.5	14.9	29.6
Average			**42.8**	**15.1**	**27.7**

The monthly number of pipe repairs by Solomon Water before the Project was 46 in the whole Honiara as of December 2012. Assuming this figure is regarded as the baseline in the whole Honiara, the baseline in 15 pilot project areas is estimated at 15 as a result of conversion by proportion of pipeline length as well as pilot project period (2.6 month per area). Therefore, the number of pipe repairs was increased from 15 to 191 in 15 pilot project areas as a result of the NRW reduction activities. The baseline figure however is only reference.

DMAs and/or LCZs

In four DMAs, there were 82 leak points detected, which were repaired as a part of the NRW reduction measures (see ***Table 19***).

Table 19 Number of Leak Point and Pipe Repair in DMAs

No	Area No	Area Name	Pipe Length (m)	No. of Leak Point	No. of Pipe Repair	Per-km Leak Point
			[1]	[2]	[3]	[4]=[2]/[1] x1,000m
1	No.10	Lenggakiki	4,035	10	10	2.5
2	No.6	Tasahe A&B*1	6,719	24	24	3.6
3	No.17	West Kola Ridge A*1	9,060	17	17	1.9
4	No.7	Tasahe C	3,859	31	31	8.0
Total			**23,673**	**82**	**82**	**3.5**

*1 DMAs in which were selected under SW-JICA commitment and NRW reduction activities were completed by the Project. In other two DMAs, NRW reduction activities were completed by SW as of March 2016.

In four DMAs, leakage ratios were reduced by repair of damaged parts of pipeline, and the average of reduction point of leakage ratio is 31.6 (see ***Table 20***).

Table 20 Reduction Point of Leakage Ratio before/after NRW Reduction Activities in DMAs

No	Area No	Area Name	Leakage Ratio (%, before)	Leakage Ratio (%, after)	Reduction Point
			[1]	[2]	[3]=[1]-[2]
1	No.10	Lenggakiki	35.0	22.4	12.6
2	No.6	Tasahe A&B*1	83.1	32.6	50.5
3	No.17	West Kola Ridge A*1	55.5	18.0	37.5
4	No.7	Tasahe C	31.6	5.7	25.9
Average			**51.3**	**19.7**	**31.6**

*1 DMAs in which were selected under SW-JICA commitment and NRW reduction activities were completed by the Project. In other two DMAs, NRW reduction activities were completed by SW as of March 2016.

Indicator 3-2: Data and records of DMA-based monitoring and maintenance for improved NRW ratio are accumulated to sustain NRW reduction activities in the selected DMAs.

In four DMAs including the selected two DMAs in which NRW reduction activities were completed, data and records of DMA-based monitoring and maintenance for improved NRW ratio have been accumulated to sustain NRW reduction activities.

The data and records are, for example, system input volume, revenue (billed) water volume, NRW volume and ratio. Then, they have been represented monthly in bar and line graphs for monitoring.

Output 4: Water meter reading and billing process management are improved.

Indicator 4-1: Standard operating procedures (SOP) and training materials are formulated.

Draft of SOP on customer meter reading and billing system was prepared temporarily in April 2013, and will be completed with training materials based on knowledge and issues obtained through routine works.

(3) Expected Achievement of Overall Goal

Indicator 1: NRW reduction activities are carried on by Task Force composed of relevant Departments or Units.

Since the Task Force Team comprehensively implements NRW reduction which consists of baseline activities and monitoring and maintenance activities, overall goal will be achieved.

(4) Issues and Challenges in NRW Reduction

1) Legalization of Illegal Connections

As shown in ***Table 9*** the number of legalization of illegal connections is 38 and accounts for 27.1% of the total 140 illegal connections identified in 15 pilot project areas. Behind the illegal connections is the fact that water users are not satisfied with water tariff and its frequent increase, besides they are not

adequately aware of beneficiary-pay principle. To win over customers through legalization as a solution to illegal connections, it is essential for Solomon Water to carry on awareness activities to obtain water user's understanding of water tariff and beneficiary-pay principle, with development of an appropriate water tariff structure and an attempt to improve water supply facilities and services.

2) New Service Connections and Re-connections

As shown in ***Table 11*** the number of new connection and re-connection of un-connection household (excluding illegal connections and parasite users) is 31 and accounts for 11.6% of the total 268 un-connection household found in 15 pilot project areas. To attract new customers, it is essential for Solomon Water to carry on awareness activities to obtain water user's understanding of water tariff and beneficiary-pay principle, with development of an appropriate water tariff structure and an attempt to improve water supply facilities and services.

3) Increase in Customers

In 15 pilot project areas, legalization of illegal connections, and new connection and re-connection of un-connected households contributed positively and to added 69 to the number of the valid customers. While this is happening, in the period of pilot projects, Solomon Water disconnected 28 metered customers as part of its disconnection activities, representing 4.1% of all metered customers before the pilot projects as well as 61 un-metered customers representing 16.4% of all un-metered customers before the pilot projects also in the pilot project areas. This massive disconnection is not part of the pilot projects but Solomon Water's routine works against unpaid arrears. This means 89 customers in total representing 8.4% of all customers before the pilot projects were removed from the valid customer list in spite of the 69 customers increase by the pilot projects. Consequently there are 20 customers less after the NRW reduction activities compared to before (see ***Table 12*** and ***Table 21***). One of the reasons behind the unpaid arrears is the customer's complaints against water tariff.

Although NRW reduction activities can contribute to not only reduction of NRW in quantity but also increase in customers and thus revenue, maintaining or increasing further customers is an issue. To avoid losing customers, it is essential for Solomon Water to carry on awareness activities to obtain water user's understanding of water tariff and beneficiary-pay principle, with development of an appropriate water tariff structure and an attempt to improve water supply facilities and services.

4) Effective Leakage Detection and Systematic Revelation of Illegal Connections

As shown in ***Table 18*** and ***Table 20***, a certain volume of leakage, which may include unidentified illegal water usage, still remains in some pilot project areas even after the NRW reduction activities. So it is a challenge to detect leakages effectively and find out illegal connections systematically. To maintain pipelines easily, it is essential for Solomon Water to improve the accuracy of pipeline information, develop further and update database including records of leakage repair as well as illegal connection, and also to find out irregularity in consumption by monitoring of its record.

5) Continuance of NRW Reduction in DMAs and Strengthening of DMA Management

Solomon Water completed NRW reduction in four DMAs including the selected two DMAs under commitment between SW and JICA, then has managed these DMAs, specifically monitored these DMAs and maintained the improved NRW ratio. Also, Solomon Water has implemented NRW reduction in the remaining 24 DMAs.

However, Solomon Water does not have a clear vision and concrete framework of DMA Management (Monitoring & Maintenance) in order to maintain the reduced NRW ratio after NRW reduction activities, so this fact makes sustainability of DMA Management doubtful. The reason is that the present organizational structure of Solomon Water is still not robust in terms of the following points:

- Concentration in command channel on NRW reduction activities
- Non-existence of the dedicated section for periodical monitoring in DMAs after NRW reduction
- Inadequacy of the team for illegal connections on a regular basis
- Inadequacy of the dedicated staff for hydraulic analysis

In consideration of them, some of the management of Solomon Water had dealt with organizational reform for sustainable NRW reduction and DMA Management in the future. However, this effort has been suspended and leadership for introduction of DMA Management is absent in the management of Solomon Water.

The JICA Expert Team will encourage Solomon Water to promote organizational reform so that NRW reduction and DMA Management become more sustainable.

Table 21 Change in the Number of Customers before/after NRW Reduction Activities in Pilot Project Areas

No	Area No	Area Name	Metered Customer (before)	Un-metered (D/L) Customer (before)	Total Customer (before)		Conversion from Un-metered (D/L) to Metered	Legalization	New/Re-Connection	Disconnection of Metered Customer	Disconnection of Un-metered (D/L) Customer		Metered Customer (after)	Un-metered (D/L) Customer (after)	Total Customer (after)
			[1]	[2]	[3]=[1]+[2]		[4]	[5]	[6]	[7]	[8]		[9]=[1]+[4]+[5]+[6]-[7]	[10]=[2]-[4]-[8]	[11]=[9]+[10]
1	No.9	White River- Namo Ruka	13	31	44		29	6	2	0	0		50	2	52
2	No.10	Independence Valley	35	33	68		33	1	3	0	0		72	0	72
3	No.3	Lenggakiki	93	22	115		22	1	6	2	0		120	0	120
4	No.5	Mbokonavera-1	34	30	64		30	0	0	0	0		64	0	64
5	No.14	Tuvaruhu-1	18	20	38		10	3	3	6	10		28	0	28
6	No.15	Tuvaruhu-2	19	22	41		12	3	1	3	10		32	0	32
7	No.6	Vavaea Ridge	57	37	94		28	0	8	0	9		93	0	93
8	No.4	Mbokona	45	43	88		34	5	6	4	9		86	0	86
9	No.8	Mbaranamba	69	9	78		9	2	0	0	0		80	0	80
10	No.2	Mbua Valley	67	26	93		26	7	1	1	0		100	0	100
11	No.11	Bahai Kukum	61	54	115		35	8	1	8	19		97	0	97
12	No.7	Panatina Valley	36	15	51		15	0	0	1	0		50	0	50
13	No.12	Naha 2	36	6	42		6	0	0	0	0		42	0	42
14	No.13	Naha 3	48	7	55		7	2	0	1	0		56	0	56
15	No.1	FFA Kola Road	53	17	70		13	0	0	2	4		64	0	64
Total			**684 (64.8%)**	**372 (35.2%)**	**1,056 (100%)**		**309 (83.1%)*1**	**38**	**31**	**28 (4.1%)*2**	**61 (16.4%) *3**		**1,034 (99.8%)**	**2 (0.2%)**	**1,036 (100%)**
								69		**89 (8.4%)*4**					

*1 Percentage of conversion from un-metered (D/L) to metered in un-metered (D/L) customers (before countermeasures). ([4]/[2]x100)
*2 Percentage of disconnection of metered customers in metered customers (before countermeasures) ([7]/[1]x100)
*3 Percentage of disconnection of un-metered (D/L) customers in un-metered (D/L) customers (before countermeasures) ([8]/[2]x100)
*4 Percentage of disconnection in total household (before countermeasures) (([7]+[8])/[3]x100)

Table 22 Change in the Number of Customers before/after NRW Reduction Activities in DMAs

No	Area No	Area Name	Metered Customer (before)	Un-metered (D/L) Customer (before)	Total Customer (before)		Conversion from Un-metered (D/L) to Metered	Legalization	New/Re-Connection	Disconnection of Metered Customer	Disconnection of Un-metered (D/L) Customer		Metered Customer (after)	Un-metered (D/L) Customer (after)	Total Customer (after)
			[1]	[2]	[3]=[1]+[2]		[4]	[5]	[6]	[7]	[8]		[9]=[1]+[4]+[5]+[6]-[7]	[10]=[2]-[4]-[8]	[11]=[9]+[10]
1	No.10	Lenggakiki	204	6	210		6	0	0	0	0		210	0	210
2	No.6	Tasahe A&B*5	112	43	155		39	5	28	5	4		179	0	179
3	No.17	West Kola Ridge A*5	178	33	211		28	1	5	14	5		198	0	198
4	No.7	Tasahe C	140	9	149		9	27	3	0	0		179	0	179
Total			**634 (87.4%)**	**91 (12.6%)**	**725 (100%)**		**82 (90.1%)*1**	**33**	**36**	**19 (3.0%)*2**	**9 (9.9%)*3**		**766 (100%)**	**0 (0%)**	**766 (100%)**
								69		**28 (3.9%)*4**					

*1 Percentage of conversion from un-metered (D/L) to metered in un-metered (D/L) customers (before countermeasures). ([4]/[2]x100)
*2 Percentage of disconnection of metered customers in metered customers (before countermeasures) ([7]/[1]x100)
*3 Percentage of disconnection of un-metered (D/L) customers in un-metered (D/L) customers (before countermeasures) ([8]/[2]x100)
*4 Percentage of disconnection in total household (before countermeasures) (([7]+[8])/[3]x100)
*5 DMAs in which were selected under SW-JICA commitment and NRW reduction activities were completed by the Project. In other two DMAs, NRW reduction activities were completed by SW as of March 2016

第 4 章　成果-1 の活動：「無収水削減に係る計画プロセスが体系化される。」

S4.3-1 水理計算書

30 October 2014

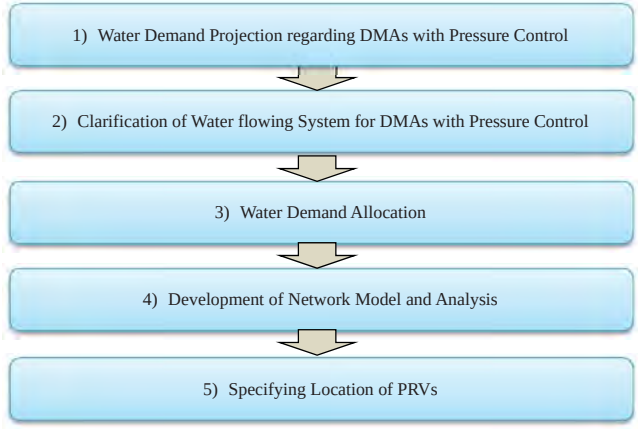
Hydraulic Analysis of DMAs in Honiara (Report)

This report is the result of hydraulic analysis of the existing network in seven DMAs and examination for PRV Specifications.

1. Hydraulic Analysis of the existing distribution and Examination for PRV Specification

(1) Examination Process

The hydraulic specialist recruited by SW recommended 10 PRVs to be installed and their specifications in June 2014. NRW Project Team reviewed the specifications of the PRVs and their locations, and advised SW on them in the following process:



(2) Water Demand Projection regarding DMAs with Pressure Control

Water demand is compiled in two categorized tables; one is the table for water demand of DMAs with pressure control and the other is that of DMAs which influence the other DMAs with pressure control. The result of estimated water demand is shown in **'I' and 'II' of Attachement-1.**

The following are the design criteria for water demand projection:

- Estimating based on the billed water consumption in the past one year.
- In addition to the above billed water consumption, considering the number of illegal connections based on experienced results of pilot project.
- Applying growth rate of 3.1% based on Master Plan (2006) for water demand for the next five years.
- Applying 30% of NRW ratio based on overall goal shown in PDM.

The Project for Improvement of Non-Revenue Water Reduction Capacity for Solomon Islands Water Authority in Solomon Islands

- Applying 0.6* and 1.4 of low and peak hourly factor respectively

* Factor of 0.6 was applied for verification of a flow range of PRVs.

(3) Clarification of Water flowing System for DMAs with Pressure Control

In order to analyze distribution network of DMAs with pressure control, conceptual diagrams of water flowing system is illustrated in **Attachment-2**.

Peak hourly factor of 1.4 is applied for hydraulic analysis of distribution network but not that of transmission lines.

(4) Water Demand Allocation

Water demand is allocated at each node experientially. Water demand per node for all is constant in a particular DMA but water demand per node depends on water consumed in each DMA (see **Attachment-2**).

(5) Development of Network Model and Analysis

The existing distribution network drawn in MapInfo is exported to Water GEM for hydraulic analysis. The following are design criteria for hydraulic analysis of the distribution network.

- Calculation Formula: Hazen-Williams
- Static head: 70m or less
- Velocity Coefficient (C) for Galvanized pipe & DI and PVC & polyethylene pipe: 100 and 110 respectively
- Minimum Residual Pressure: 0.1Mpa at each node (except particular node)

Output data of network analysis and the network model is shown in **Attachment-3** and **Attachment-4** respectively. In the light of reducing pressure with PRVs, some existing pipelines in No.8 Ngossi, No.11 Vavaea Ridge and No.19 Tanuli & Mbua Valley must be replaced with a larger size of pipes because of the encounter of negative pressure.

(6) Specifying Location of PRVs

After identifying location on the network model diagrams tentatively, NRW Action Team has the site reconnaissance to identify exact location of PRVs to be installed properly with GPS.

Location of PRVs with coordinates measured by using GPS was plotted on the diagrams (see **Attachment-4). Attachment-5** shows picture of their location.

(7) Summary of PRVs and Bulk Flow Meters to be installed in DMAs with Pressure Control

NRW Project Team suggested seven PRVs in six DMAs. Number of chamber as'Type-2' and 'Type-3' (see **'V' of Attachment-1**) is four and three respectively.

DMAs	Area	Size of PRVs	Chamber Type*	Bulk Flow Meter	To be replaced with larger size pipes in the whole network		
					Existing	to	New
No.6 Tasahe A&B	Tasahe A	40mm x 1	Type-2	-			
	Tasahe B	40mm x 1	Type-2	-			
No.8 Ngossi	All areas	80mm x 1	Type-3	80mm x 1	100mm	->	150mm L=1,051m (PVC)
No. 9 Mbokona	Eastern at upstream	40mm x 1	Type-2	-			
No.11 Vavaea Ridge	Upper area	50mm x 1	Type-2	-	100mm	->	150mm L=542m (PVC)
No.13 Mbokonavera	All areas	80mm x 1	Type-3	80mm x 1			
No.19 Tanuli & Mbua Valley	All areas	50mm x 1	Type-3	50mm x 1	25mm	->	50mm L= 161m (PVC)

Note: See the conceptual diagram shown in Attachment-2

End

No.6 Tasahe A & B (A) (Type-2)

No.6 Tasahe A & B (B) (Type-2)

No.8 Ngossi (Type-3)

No.9 Mbokona (Type-2)

No.11 Vavaea Ridge (Type-2)

No.13 Mbokonabera (Type-3)

No.19 Tanuli & Mbua Valley (Type-3)

: PRV Location

I. Calculation Statement of Water Demand in DMAs with assumed Pressure Control (NRW Ratio: 30%) **Attachment-1**

DMAs with Pressure Control	Actual Average Customer Consumption in Oct. 2013 to Sep. 2014 (m^3/month)	Daily Water Consumption Rate (LCD)	Ratio of Illegal Connection (%)	Assumed Water Consumption of the Total existing Households (m^3/month)	Predicted Water Consumption after Five Years*1	NRW Ratio for Future (%)	Predicted Water Demand (m^3/month)	**Predicted Water Demand (m^3/day)**	Range of Flow Rate (m^3/hr)		Remarks (Estimated Water Demand (m^3/day) based on Number of Customers)
									Min. (x 0.6)	Max. (x 1.4)	
	a)	-	b)	c) = a) / ((100-b)/100)	d) = c) x $(1+0.031)^5$	e)	f) = d) / (100-e))/100	**g) =f) /30**	h) = g) x 0.6/24	i) = g) x 1.4/24	
No.6 Tasahe A&B	3,991	172	20	4,989	5,812	30	8,303	**277**	6.9	16.2	212
No.8 Ngossi	13,118	193	10	14,576	16,980	30	24,257	**809**	20.2	47.2	625
No. 9 Mbokona	12,548	191	5	13,208	15,386	30	21,980	**733**	18.3	42.8	604
No.11 Vavaea Ridge	12,981	192	10	14,423	16,802	30	24,003	**800**	20.0	46.7	907
No.13 Mbokonavera	12,971	178	10	14,412	16,789	30	23,984	**799**	20.0	46.6	669
No.19 Tanuli & Mbua Valley	11,468	151	10	12,742	14,843	30	21,204	**707**	17.7	41.2	698
No.22 Kombito Boaderline, Jakson Ridge & Bura	13,001	132	20	16,251	18,931	30	27,044	**901**	22.5	52.6	907
Total	**80,078**	**173**		**90,601**	**105,543**		**150,775**	**5,026**	**126**	**293**	**4,622**

Note: *1: Suject to the constant daily water consumption rate, annual population growth rate of 3.1% was tentatively applied for future water consumption.

II. Specification of Pressure Reducing Valves

No.	Item	Description
1	Manufacturer:	Bermad Waterworks
2	Product:	Pressure Reducing Valve
3	Brand Name:	Y Pattern, Throttling Plug (V-Port), 700 Metric
4	Flow Range (m^3/hr) 40mm	10-35
	Flow Range (m^3/hr) 50mm	10-42
	Flow Range (m^3/hr) 80mm	19-95
	Flow Range (m^3/hr) 100mm	23-170
	Flow Range (m^3/hr) 150mm	78-390
	Flow Range (m^3/hr) 200mm	140-690

III. Specidication of PRVs, Bulk Flow Meter and Chamber

DMAs	Area	Proportion of Population	Range of Flow Rate (m^3/hr) [in Case of **NRW 30%**]			ID No. of PRVs	Size of PRVs	Chamber Type	Existing Pipelines		By-pass Pipelines		Tee (Cast Iron)	90 Bend (PVC)	Bulk Flow Meter	Sluice Valve		Pressure Relief Valve & Strainer	To be replaced with larger size pipes in the whole network
		1)	2)		3) =1) x 2)				Diamter A.	Material	Diamter B.	Material				On the Existing	On the By-pass	On the By-pass	Existing to New
No.6 Tasahe A&B	Tasahe A	35%	Min	6.9	2.4	PRV-H12	40mm	Type-2	80mm	PVC	40mm	PVC	80 x 40mm	40mm	-	80mm	40mm	40mm	
			Max.	16.2	5.7		x 1						x 2	x 2		x 1	x 1	x 1 (each)	
	Tasahe B	55%	Min	6.9	3.8	PRV-H01	40mm	Type-2	100mm	PVC	40mm	PVC	100 x 40mm	40mm	-	100mm	40mm	40mm	
			Max.	16.2	8.9		x 1						x 2	x 2		x 1	x 1	x 1 (each)	
No.8 Ngossi	All areas	100%	Min	20.2	20.2	PRV-H13	80mm	Type-3	100mm	PVC	80mm	PVC	100 x 80mm	80mm	80mm	100mm	80mm	80mm	100mm -> 150mm
			Max.	47.2	47.2		x 1						x 2	x 2	x 1	x 1	x 1	x 1 (each)	L=1,051m
No. 9 Mbokona	All areas	30%	Min	18.3	5.5	PRV-H02	40mm	Type-2	80mm	PVC	40mm	PVC	80 x 40mm	40mm	-	80mm	40mm	40mm	
			Max.	42.8	12.8		x 1						x 2	x 2		x 1	x 1	x 1 (each)	
No.11 Vavaea Ridge	Upper area	85%	Min	20.0	17.0	PRV-H03	50mm	Type-2	100mm	PVC	50mm	PVC	100 x 50mm	50mm	-	100mm	50mm	50mm	100mm -> 150mm
			Max.	46.7	39.7		x 1						x 2	x 2		x 1	x 1	x 1 (each)	L=542m
No.13 Mbokonavera	All areas	100%	Min	20.0	20.0	PRV-H05	80mm	Type-3	100mm*	PVC	80mm	PVC	100 x 80mm	80mm	80mm	100mm*	80mm	80mm	
			Max.	46.6	46.6		x 1						x 2	x 2	x 1	x 1	x 1	x 1 (each)	
No.19 Tanuli & Mbua Valley	Western area	100%	Min	17.7	17.7	PRV-H11	50mm	Type-3	100mm	PVC	50mm	PVC	100 x 50mm	50mm	50mm	100mm	50mm	50mm	25mm -> 50mm
			Max.	41.2	41.2		x 1						x 2	x 2	x 1	x 1	x 1	x 1 (each)	L= 161m

Note: Minor fitting such as spigot pipes are not listed in the table.

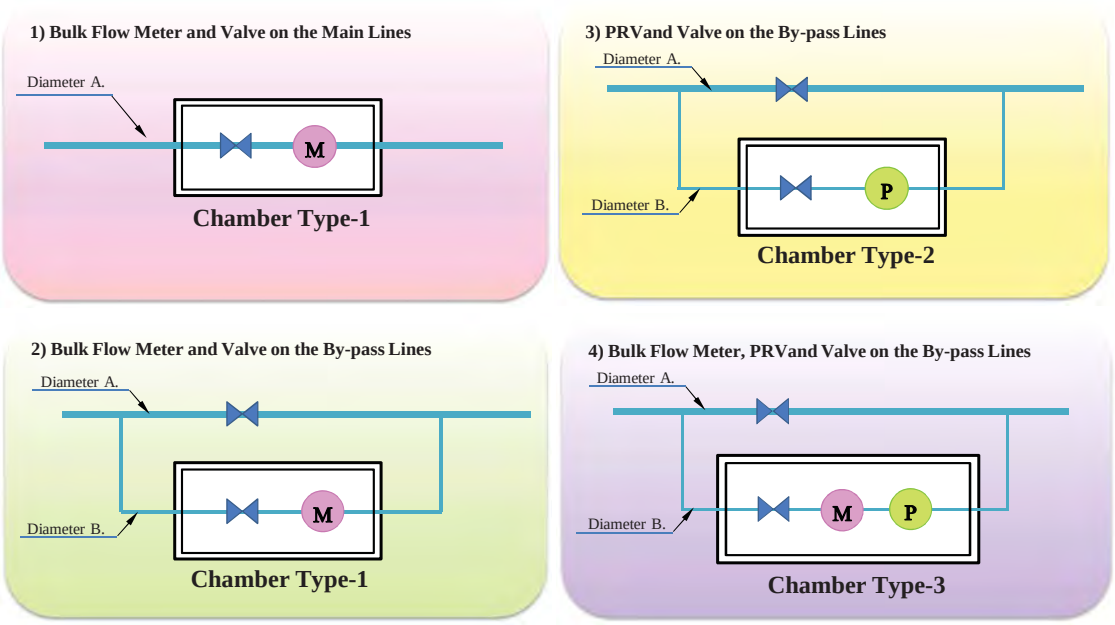
* The existing pipelines is 100mm. This pipelines will be shifted to JICA grant pipeline of 150mm in future. At this moment, bypass pipes for PRV will be equiped with the existing pipelines of 100mm. When shifted to 150mm, bypass pipes will be re-equiped with main lines of 150mm.

IV. Flow Range of Pressure Reducing Valve; 'Y

Size of PRVs	Flow Range of 'Y Pattern,
40mm	10-35
50mm	10-42
80mm	19-95
100mm	23-170

Source: Bermad Waterworks

V. Types of Chamber for Bulk Flow Meters, PRVs and Valves



Legend

: Chamber

M : Bulk Flow Meter

P : Pressure Reducing Valve

: Valve

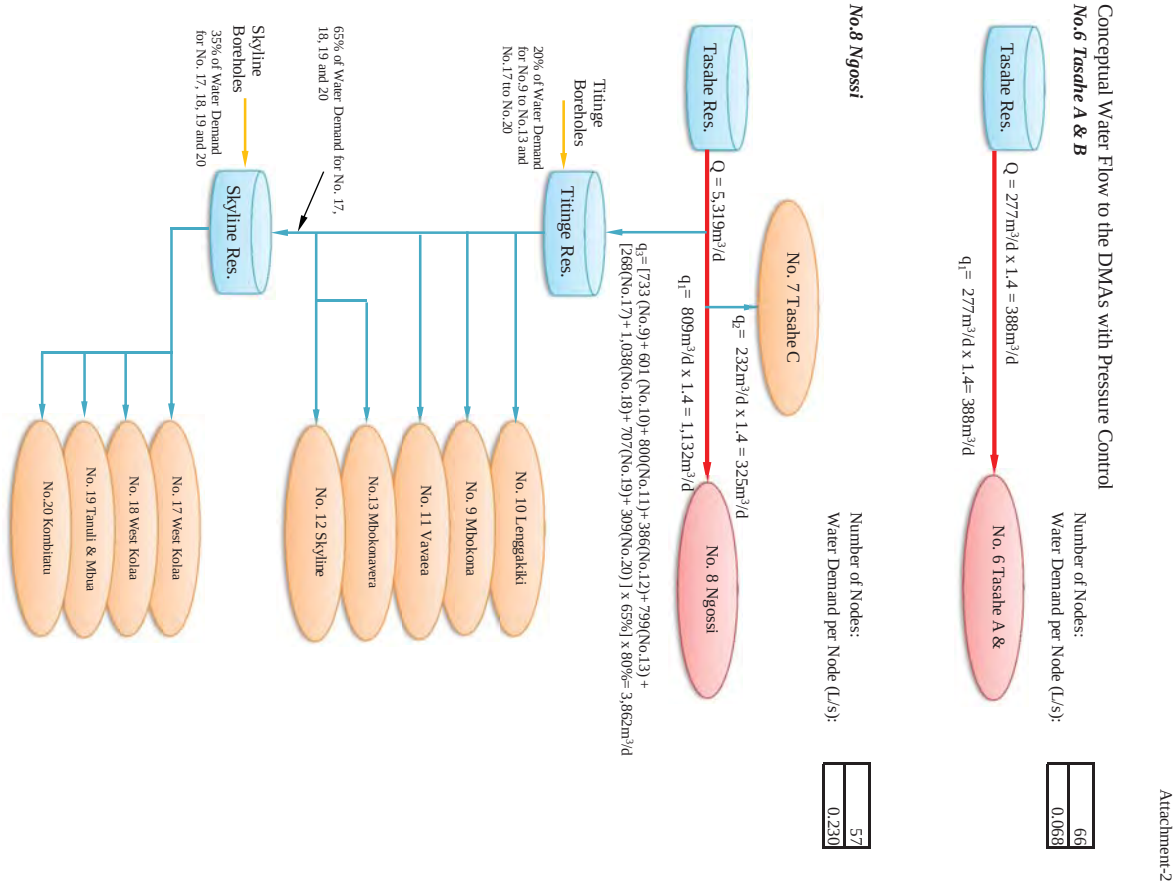
Calculation Statement of Water Demand in DMAs without Pressure Control related to DMAs with Pressure Control (NRW Ratio: 30%) **Attachment-1**

DMAs with Pressure Control	Number of Customers in DMAs with Pressure Control in Aug. 2014	Actual Average Customer Consumption in Oct. 2013 to Sep. 2014 (m^3/month)	Daily Water Consumption Rate (LCD)	Ratio of Illegal Connection (%)	Assumed Water Consumption of the Total existing Households (m^3/month)	Predicted Water Consumption after Five Years *1	NRW Ratio for Future (%)	Predicted Water Demand (m^3/month)	**Predicted Water Demand (m^3/day)**	Range of Flow Rate (m^3/hr)		Remarks (Estimated Water Demand (m^3/day) based on Number of Customers)
										Min. (x 0.6)	Max. (x 1.4)	
		a)	-	b)	c) = a) / ((100-b)/100)	d) = c) x (1+0.031)^5	e)	f) = d) / (100-e))/100	**g) =f) /30**	h) = g) x 0.6/24	i) = g) x 1.4/24	
No.7 Tasahe C	136	3,768	123	10	4,187	4,877	30	6,967	**232**	5.8	13.5	-
No.10 Lenggakiki	208	9,743	208	10	10,826	12,611	30	18,016	**601**	15.0	35.1	-
No.12 Skyline	173	5,564	143	20	6,955	8,102	30	11,574	**386**	9.7	22.5	-
No.17 West Kolaa Ridge A	153	3,872	112	20	4,840	5,638	30	8,054	**268**	6.7	15.6	-
No.18 West Kolaa Ridge B & C and Naha Height	514	14,964	129	20	18,705	21,790	30	31,129	**1,038**	26.0	60.6	-
No.20 Kombitatu	217	4,452	91	20	5,565	6,483	30	9,261	**309**	7.7	18.0	-
No.21 Trecce House, Bura Height and Naha Valley	448	11,625	115	10	12,917	15,047	30	21,496	**717**	17.9	41.8	-
Total	**1,849**	**53,988**	**132**		**63,995**	**74,548**		**106,497**	**3,551**	**89**	**207**	-

Note: *1: Suject to the constant daily water consumption rate, annual population growth rate of 3.1% was tentatively applied for future water consumption.

Attachment-2

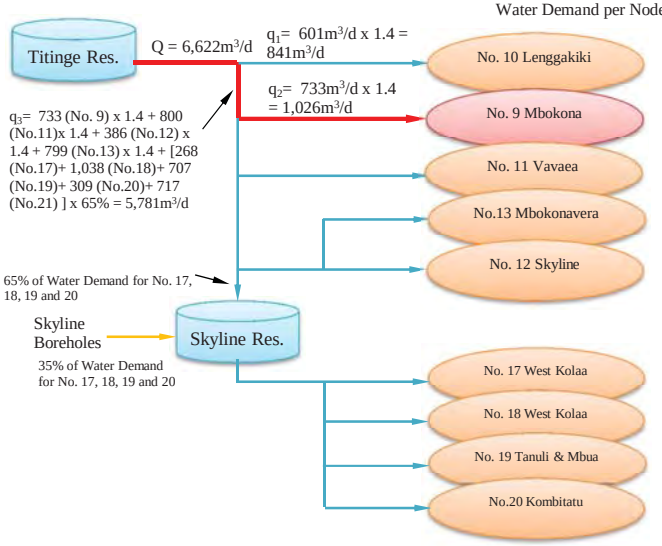
Conceptual Water Flow to the DMAs with Pressure Control



Conceptual Water Flow to the DMAs with Pressure Control

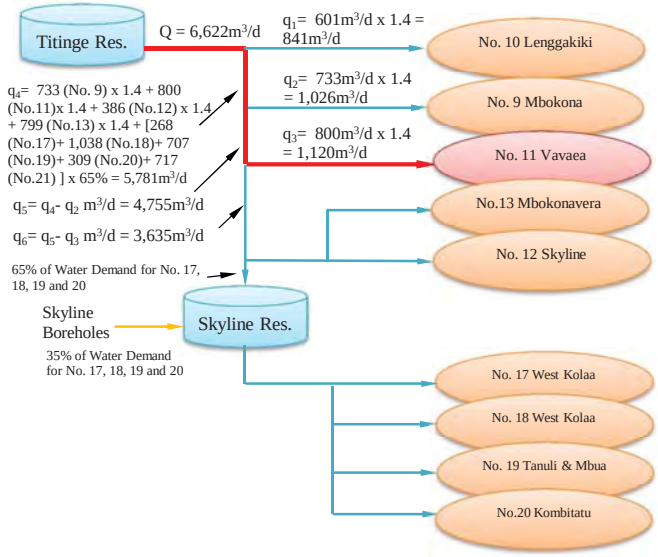
No.9 Mbokona

Number of Nodes: 60
Water Demand per Node (L/s): 0.198



No.11 Vavaea Ridge

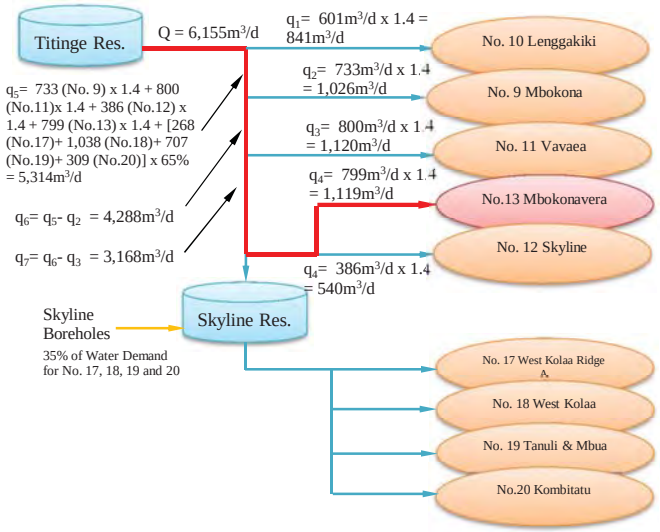
Number of Nodes: 65
Water Demand per Node (L/s): 0.199



Conceptual Water Flow to the DMAs with Pressure Control

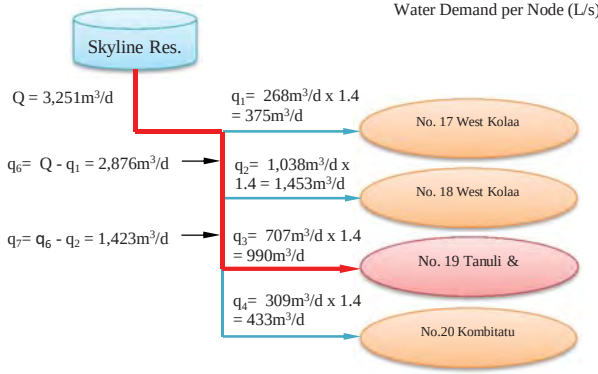
No.13 Mbokonavera

Number of Nodes: 96
Water Demand per Node (L/s): 0.135



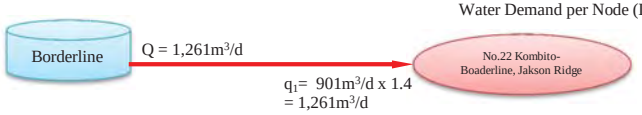
No.19 Tanuli & Mbua Valley

Number of Nodes: 82
Water Demand per Node (L/s): 0.140



No.22 Kombito Boaderline, Jakson Ridge & Bura

Number of Nodes: 121
Water Demand per Node (L/s): 1.206



Attachment-3

No. 6 Tasahe A & B

Network Table - Links

Link ID	Length	Diameter	Flow	Velocity	Unit Headloss
	m	mm	LPS	m/s	m/km
Pipe p-57	2	20	-0.27	0.87	83.15
Pipe p-38	2	30	-0.14	0.19	3.2
Pipe p-30	3	75	0.75	0.17	0.87
Pipe p-47	3	30	0.1	0.14	1.81
Pipe p-35	3	50	-0.2	0.1	0.56
Pipe p-11	3	100	1.63	0.21	0.9
Pipe p-44	3	30	-0.2	0.29	6.77
Pipe p-41	3	30	0.14	0.19	3.19
Pipe p-43	4	30	0.14	0.19	3.19
Pipe p-26	3	100	1.56	0.2	0.83
Pipe p-48	6	30	-0.14	0.19	3.2
Pipe p-16	6	75	0.2	0.05	0.08
Pipe p-6	8	100	-0.34	0.04	0.05
Pipe p-7	6	100	-0.07	0.01	0
Pipe p-25	7	75	1.49	0.34	3.11
Pipe p-5	8	100	-0.54	0.07	0.12
Pipe p-32	8	50	-0.14	0.07	0.27
Pipe p-36	8	50	-0.14	0.07	0.27
Pipe p-21	8	75	1.16	0.26	1.94
Pipe p-23	9	75	1.27	0.29	2.32
Pipe p-15	13	75	0.14	0.03	0.04
Pipe p-1	11	75	-1.02	0.23	1.54
Pipe p-53	13	30	0.07	0.1	0.89
Pipe p-10	14	100	-0.88	0.11	0.29
Pipe p-34	14	50	-0.2	0.1	0.56
Pipe p-17	15	75	0.41	0.09	0.28
Pipe p-51	23	30	0.14	0.19	3.2
Pipe p-56	22	20	-0.07	0.22	6.38
Pipe p-27	22	75	0.27	0.06	0.13
Pipe p-13	23	100	-2.72	0.35	2.32
Pipe p-24	30	75	1.42	0.32	2.85
Pipe p-59	30	20	-0.07	0.22	6.38
Pipe p-54	36	30	-0.07	0.1	0.89
Pipe p-28	34	75	0.41	0.09	0.28
Pipe p-58	35	20	-0.07	0.22	6.38
Pipe p-20	37	20	0.95	3.03	846.23
Pipe p-40	39	20	0.07	0.22	6.38
Pipe p-52	40	30	-0.07	0.1	0.89
Pipe p-55	40	20	-0.2	0.65	48.81
Pipe p-19	43	75	0.82	0.18	1.02
Pipe p-14	45	100	-3.06	0.39	2.89
Pipe p-50	63	30	0.07	0.1	0.89
Pipe p-49	53	30	-0.07	0.1	0.89
Pipe p-46	51	30	0.05	0.07	0.5
Pipe p-18	51	75	0.48	0.11	0.37
Pipe p-42	53	30	0.07	0.1	0.89
Pipe p-62	72	32	0.14	0.17	2.33
Pipe p-45	72	30	-0.14	0.19	3.2
Pipe p-33	118	50	-0.07	0.03	0.07
Pipe p-29	78	75	0.68	0.15	0.73
Pipe p-8	87	100	-2.85	0.36	2.54
Pipe p-9	101	100	-2.78	0.35	2.43
Pipe p-39	114	30	-0.07	0.1	0.89
Pipe p-22	130	75	1.22	0.28	2.16
Pipe p-4	130	100	-0.82	0.1	0.25
Pipe p-63	143	32	0.07	0.08	0.65
Pipe p-61	136	30	-0.07	0.1	0.89
Pipe p-37	167	50	-0.07	0.03	0.07

No. 6 Tasahe A & B

Network Table - Links

Link ID	Length	Diameter	Flow	Velocity	Unit Headloss
	m	mm	LPS	m/s	m/km
Pipe p-3	228	100	-3.12	0.4	3.01
Pipe p-31	249	75	-0.2	0.05	0.08
Pipe P-64	654	75	-1.09	0.25	1.74
Pipe P-65	369	75	-1.16	0.26	1.94
Pipe P-66	16	100	-0.95	0.12	0.33
Pipe P-67	9	100	1.7	0.22	0.97
Pipe P-68	236	100	-3.19	0.41	3.13
Pipe P-69	368	100	3.26	0.42	3.26
Pipe P-70	50	100	4.42	0.56	5.72
Pipe P-71	510	75	1.16	0.26	1.94
Pipe P-72	510	100	3.26	0.42	3.26

No. 6 Tasahe A & B
Network Table - Nodes

Node ID	Elevation	Base Demand	Head	Effective Pressure	Static Pressure	Effective Pressure	Static Pressure
	Result of analysis by using WaterGEM					With PRV	
	m	LPS	m	m	m	m	m
Junc J-1	55	0.068	114.4	59.28	97	42.28	60
Junc J-2	55	0.068	114.58	59.47	97	42.47	60
Junc J-3	50	0.068	114.55	64.42	102	47.42	65
Junc J-4	50	0.068	114.56	64.43	102	47.43	65
Junc J-5	72	0.068	148.86	76.70	80	27.7	28
Junc J-6	72	0.0689	148.85	76.70	80	27.7	28
Junc J-7	72	0.05	146.66	74.51	80	57.51	43
Junc J-8	72	0.05	146.65	74.50	80	57.5	43
Junc J-9	71	0.068	148.8	77.64	81	28.64	29
Junc J-10	71	0.068	148.8	77.64	81	28.64	29
Junc J-11	75	0.068	146.77	71.63	77	54.63	40
Junc J-12	75	0.068	146.77	71.62	77	54.62	40
Junc J-13	71	0.068	146.71	75.56	81	58.56	44
Junc J-14	71	0.068	146.74	75.58	81	58.58	44
Junc J-15	70	0.068	146.34	76.19	82	59.19	45
Junc J-16	70	0.068	146.33	76.18	82	59.18	45
Junc J-17	71	0.068	146.74	75.58	81	58.58	44
Junc J-18	71	0.068	146.72	75.57	81	58.57	44
Junc J-19	75	0.068	146.76	71.62	77	54.62	40
Junc J-20	75	0.068	147.28	72.14	77	55.14	40
Junc J-21	75	0.068	147.3	72.15	77	55.15	40
Junc J-22	50	0.068	114.56	64.43	102	47.43	65
Junc J-23	71	0.068	146.74	75.58	81	58.58	44
Junc J-24	75	0.068	146.74	71.60	77	54.6	40
Junc J-25	71	0.068	146.74	75.59	81	58.59	44
Junc J-26	71	0.068	146.73	75.58	81	58.58	44
Junc J-27	71	0.068	146.73	75.58	81	58.58	44
Junc J-28	71	0.068	148.79	77.64	81	28.64	29
Junc J-29	70	0.068	146.36	76.21	82	59.21	45
Junc J-30	71	0.05	146.64	75.49	81	58.49	44
Junc J-31	50	0.068	114.56	64.43	102	47.43	65
Junc J-32	73	0.068	148.87	75.72	79	75.72	79
Junc J-33	70.5	0.068	148.79	78.13	82	29.13	30
Junc J-34	70.2	0.068	148.78	78.42	82	29.42	30
Junc J-35	75	0.068	146.77	71.63	77	54.63	40
Junc J-36	75	0.068	146.77	71.63	77	54.63	40
Junc J-37	52	0.068	114.57	62.44	100	45.44	63
Junc J-38	70	0.068	148.78	78.63	82	29.63	30
Junc J-39	68	0.068	148.71	80.55	84	31.55	32
Junc J-40	55	0.068	112.3	57.18	97	40.18	60
Junc J-41	55	0.068	112.44	57.32	97	40.32	60
Junc J-42	75	0.068	146.78	71.63	77	54.63	40
Junc J-43	75	0.068	146.83	71.69	77	54.69	40
Junc J-44	55	0.068	112.25	57.13	97	40.13	60
Junc J-45	65	0.068	148.75	83.59	87	34.59	35
Junc J-46	63	0.068	114.41	51.30	89	34.3	52
Junc J-47	64	0.068	114.63	50.53	88	33.53	51
Junc J-48	70	0.068	146.09	75.93	82	58.93	45
Junc J-49	48	0.068	114.52	66.39	104	49.39	67
Junc J-50	76	0.068	147.43	71.29	76	54.29	39
Junc J-51	62	0.068	148.66	86.48	90	37.48	38
Junc J-52	75	0.068	147.23	72.09	77	55.09	40
Junc J-53	72	0.05	146.63	74.48	80	57.48	43
Junc J-54	70	0.068	146.68	76.52	82	59.52	45
Junc J-55	53	0.068	148.84	95.65	99	46.65	47
Junc J-56	51	0.068	148.67	97.47	101	48.47	49

Attachment-3

No. 6 Tasahe A & B
Network Table - Nodes

Node ID	Elevation	Base Demand	Head	Effective Pressure	Static Pressure	Effective Pressure	Static Pressure
	Result of analysis by using WaterGEM					With PRV	
	m	LPS	m	m	m	m	m
Junc J-57	60	0.068	146.48	86.31	92	69.31	55
Junc J-58	65	0.068	146.72	81.55	87	64.55	50
Junc J-59	75	0.068	147.08	71.93	77	54.93	40
Junc J-60	45	0.068	114.45	69.31	107	52.31	70
Junc J-61	30	0.068	148.58	118.34	122	69.34	70
Junc J-62	30	0.068	146.36	116.13	122	99.13	85
Junc J-63	51	0.068	148.78	97.59	101	48.59	49
Junc J-64	85	0.068	148.12	62.99	67	45.99	30
Junc J-65	80	0.068	150.01	69.87	72	69.87	72
Junc J-66	90	0	150.72	60.60	62	60.60	62
Junc J-67	80	0.068	148.85	68.68	72	68.68	72
Junc J-68	90	0	150.05	59.93	62	59.93	62
Junc J-69	145	0	151.71	6.70	7	6.70	7
Resvr R-1	152	#N/A	152	0.00	0	0.00	0

: Static Head of at least 70m
: Nodes to be covered with PRV_1 (East)
: Nodes to be covered with PRV_2 (West)

Attachment-3

No. 8 Ngossi
Network Table - Links

Link ID	Length	Diameter	Flow	Velocity	Unit Headloss
	m	mm	LPS	m/s	m/km
Pipe p-45	3	100	0.69	0.09	0.19
Pipe p-9	3	75	-1.83	0.41	4.55
Pipe p-38	3	100	7.1	0.9	13.77
Pipe p-36	3	75	-3.21	0.73	12.82
Pipe p-24	4	50	1.6	0.82	25.6
Pipe p-8	3	75	-1.6	0.36	3.55
Pipe p-7	4	75	3.43	0.78	14.57
Pipe p-11	5	75	0.92	0.21	1.26
Pipe p-27	6	40	0.23	0.18	2.07
Pipe p-12	6	75	0.23	0.05	0.1
Pipe p-35	7	75	-0.69	0.16	0.74
Pipe p-14	7	75	-0.23	0.05	0.1
Pipe p-26	9	40	-0.46	0.36	7.46
Pipe p-10	9	75	1.37	0.31	2.67
Pipe p-41	10	100	9.39	1.2	23.1
Pipe p-37	26	75	3.66	0.83	16.42
Pipe p-22	63	50	0.69	0.35	5.33
Pipe p-32	80	25	-0.46	0.93	73.61
Pipe p-30	81	25	-0.46	0.93	73.61
Pipe p-44	83	50	0.69	0.35	5.33
Pipe p-33	104	32	0.23	0.28	6.13
Pipe p-29	104	25	-0.23	0.47	20.39
Pipe p-18	106	50	-0.92	0.47	9.08
Pipe p-48	112	40	0.23	0.18	2.07
Pipe p-6	121	75	-1.37	0.31	2.67
Pipe p-47	114	50	0.23	0.12	0.7
Pipe p-19	175	50	-0.46	0.23	2.52
Pipe p-31	116	25	-0.23	0.47	20.39
Pipe p-5	119	75	-0.69	0.16	0.74
Pipe p-3	127	75	-0.46	0.1	0.35
Pipe p-43	132	50	0.46	0.23	3
Pipe p-1	148	75	0.69	0.16	0.74
Pipe p-2	146	75	-0.23	0.05	0.1
Pipe p-21	151	50	-0.23	0.12	0.7
Pipe p-15	151	75	0.23	0.05	0.1
Pipe p-51	171	32	0.23	0.28	6.13
Pipe p-23	186	50	0.69	0.35	5.33
Pipe p-46	194	100	0.46	0.06	0.09
Pipe p-25	249	40	-0.23	0.18	2.07
Pipe p-42	264	50	0.23	0.12	0.83
Pipe p-16	296	50	2.98	1.52	96.11
Pipe p-28	288	40	-0.23	0.18	2.07
Pipe p-40	317	100	9.62	1.22	24.16
Pipe p-50	425	100	-0.23	0.03	0.02
Pipe p-49	367	100	0.23	0.03	0.02
Pipe p-34	579	100	-0.46	0.06	0.09
Pipe p-20	512	50	1.37	0.7	19.24
Pipe P-52	527	100	7.33	0.93	14.6
Pipe P-53	75	50	1.14	0.58	16.38
Pipe P-54	196	50	0.69	0.35	6.36
Pipe P-55	7	100	9.16	1.17	22.07
Pipe P-56	896	100	8.24	1.05	18.16
Pipe P-57	3	75	-1.83	0.41	4.55
Pipe P-58	278	75	-2.29	0.52	6.88
Pipe P-59	110	75	-0.23	0.05	0.1
Pipe P-60	73	75	-0.69	0.16	0.74
Pipe P-61	27	152	3.43	0.19	0.56
Pipe P-62	852	300	61.5	0.87	3.56

No. 8 Ngossi
Network Table - Links

Link ID	Length	Diameter	Flow	Velocity	Unit Headloss
	m	mm	LPS	m/s	m/km
Pipe P-64	1,052	300	13.05	0.18	0.2
Pipe P-66	1,118	225	44.69	1.12	8
Pipe P-65	300	225	3.76	0.09	0.08

No. 8 Ngossi
Network Table - Nodes

Node ID	Elevation	Base Demand	Head	Effective Pressure	Static Pressure	Effective Pressure	Static Pressure
	Result of analysis by using WaterGEM					With PRV	
	m	LPS	m	m	m	m	m
Junc J-1	30	0.23	124.44	94.25	122	69.25	64
Junc J-2	30	0.23	124.44	94.25	122	69.25	64
Junc J-3	45	0.23	116.21	71.06	107	46.06	49
Junc J-4	45	0.23	116.22	71.08	107	46.08	49
Junc J-5	45	0.23	116.75	71.61	107	46.61	49
Junc J-6	45	0.23	116.71	71.57	107	46.57	49
Junc J-7	45	0.23	116.67	71.53	107	46.53	49
Junc J-8	80	0.23	120.27	40.19	72	15.19	14
Junc J-9	80	0.23	120.18	40.10	72	15.10	14
Junc J-10	45	0.23	116.20	71.05	107	46.05	49
Junc J-11	45	0.23	116.28	71.14	107	46.14	49
Junc J-12	45	0.23	116.19	71.05	107	46.05	49
Junc J-13	45	0.23	116.19	71.05	107	46.05	49
Junc J-14	45	0.23	116.34	71.19	107	46.19	49
Junc J-15	45	0.23	116.32	71.18	107	46.18	49
Junc J-16	45	0.23	116.19	71.05	107	46.05	49
Junc J-17	80	0.23	140.71	60.59	72	35.59	14
Junc J-18	80	0.23	140.72	60.60	72	35.60	14
Junc J-19	50	0.23	116.08	65.95	102	40.95	44
Junc J-20	50	0.23	116.08	65.95	102	40.95	44
Junc J-21	47	0.23	115.80	68.67	105	43.67	47
Junc J-22	47	0.23	115.87	68.73	105	43.73	47
Junc J-23	80	0.23	141.10	60.98	72	35.98	14
Junc J-24	80	0.23	140.87	60.75	72	35.75	14
Junc J-25	55	0.23	103.41	48.32	97	23.32	39
Junc J-26	65	0.23	109.33	44.24	87	19.24	29
Junc J-27	70	0.23	104.38	34.31	82	9.31	24
Junc J-28	70	0.23	110.32	40.24	82	15.24	24
Junc J-29	50	0.23	113.79	63.66	102	38.66	44
Junc J-30	46	0.23	113.34	67.21	106	42.21	48
Junc J-31	87	0.23	148.74	61.62	65	36.62	7
Junc J-32	85	0.23	148.11	62.98	67	37.98	9
Junc J-33	40	0.23	101.30	61.18	112	36.18	54
Junc J-34	50	0.23	114.75	64.62	102	39.62	44
Junc J-35	45	0.23	114.69	69.55	107	44.55	49
Junc J-36	18	0.23	114.46	96.27	134	71.27	76
Junc J-37	37	0.23	124.43	87.25	115	62.25	57
Junc J-38	37	0.23	124.35	87.17	115	62.17	57
Junc J-39	46	0.23	112.90	66.77	106	41.77	48
Junc J-40	55	0.23	102.00	46.91	97	21.91	39
Junc J-41	45	0.23	115.78	70.64	107	45.64	49
Junc J-42	43	0.23	115.74	72.59	109	47.59	51
Junc J-43	78	0.23	117.79	39.71	74	14.71	16
Junc J-44	75	0.23	117.39	42.31	77	17.31	19
Junc J-45	43	0.23	115.73	72.58	109	47.58	51
Junc J-46	42	0.23	112.80	70.66	110	45.66	52
Junc J-47	25	0.23	116.06	90.88	127	65.88	69
Junc J-48	80	0.23	119.04	38.96	72	13.96	14
Junc J-49	60	0.23	117.99	57.87	92	32.87	34
Junc J-50	48	0.23	114.68	66.55	104	41.55	46
Junc J-51	24	0.23	115.29	91.11	128	66.11	70
Junc J-52	56	0.23	117.18	61.05	96	36.05	38
Junc J-53	18	0.23	115.74	97.55	134	72.55	76
Junc J-54	90	0.00	148.76	58.64	62	33.64	4
Junc J-55	50	0.23	140.65	90.47	102	65.47	44
Junc J-56	50	0.23	140.66	90.48	102	65.48	44

Attachment-3

No. 8 Ngossi
Network Table - Nodes

Node ID	Elevation	Base Demand	Head	Effective Pressure	Static Pressure	Effective Pressure	Static Pressure
	Result of analysis by using WaterGEM					With PRV	
	m	LPS	m	m	m	m	m
Junc J-57	50	0.23	114.76	64.63	102	39.63	44
Junc J-58	73	0.23	114.75	41.67	79	16.67	21
Junc J-59	127	0	148.97	22.20	25	22.20	25
Junc J-60	130	44.69	140.02	10.00	22	10.00	22
Junc J-61	95	3.76	148.94	53.84	57	53.84	57
Resvr R-1	152	#N/A	152	0.00	0	0.00	0

: Static Head of at least 70m
: Nodes to be covered with PRV

S43-1-10

No.9 Mbokona

Network Table - Links

Link ID	Length	Diameter	Flow	Velocity	Unit Headloss
	m	mm	LPS	m/s	m/km
Pipe Mb-19	5	50	0.40	0.20	2.34
Pipe Mb-24	6	50	0.40	0.20	1.96
Pipe Mb-25	9	50	0.80	0.41	7.07
Pipe Mb-15	11	75	3.40	0.77	14.30
Pipe Mb-20	10	50	0.40	0.20	2.34
Pipe Mb-31	10	40	-1.00	0.80	37.79
Pipe Mb-11	11	100	12.00	1.53	36.38
Pipe Mb-12	13	100	0.80	0.10	0.24
Pipe Mb-7	19	100	-11.20	1.43	38.21
Pipe Mb-30	20	40	1.80	1.43	112.24
Pipe Mb-37	24	40	-0.40	0.32	6.92
Pipe Mb-54	28	15	0.20	1.13	191.05
Pipe Mb-51	31	32	0.80	0.99	62.13
Pipe Mb-33	42	32	0.40	0.50	17.21
Pipe Mb-52	46	32	0.60	0.75	43.51
Pipe Mb-44	64	32	0.20	0.25	4.77
Pipe Mb-6	81	116	-5.80	0.55	4.59
Pipe Mb-53	60	25	0.40	0.81	68.34
Pipe Mb-34	63	32	0.20	0.25	4.77
Pipe Mb-26	68	50	2.60	1.32	62.69
Pipe Mb-3	82	116	-6.80	0.64	7.36
Pipe Mb-47	95	25	0.20	0.41	15.87
Pipe Mb-29	89	40	1.00	0.80	31.68
Pipe Mb-42	108	63	0.20	0.06	0.21
Pipe Mb-27	91	50	1.60	0.81	25.51
Pipe Mb-45	93	50	0.40	0.20	1.96
Pipe Mb-35	104	32	0.20	0.25	4.77
Pipe Mb-5	122	63	-3.40	1.09	39.88
Pipe Mb-50	142	40	0.20	0.16	1.61
Pipe Mb-36	144	50	1.40	0.71	19.92
Pipe Mb-18	174	50	0.20	0.10	0.65
Pipe Mb-28	159	40	-0.40	0.32	6.92
Pipe Mb-40	154	50	0.20	0.10	0.65
Pipe Mb-23	156	50	0.20	0.10	0.54
Pipe Mb-22	163	50	0.60	0.31	4.15
Pipe Mb-8	171	100	0.60	0.08	0.14
Pipe Mb-13	178	100	0.80	0.10	0.24
Pipe Mb-16	182	75	3.20	0.72	12.78
Pipe Mb-10	210	100	0.20	0.03	0.02
Pipe Mb-1	213	100	-11.20	1.43	38.21
Pipe Mb-9	241	100	0.40	0.05	0.07
Pipe Mb-32	311	25	-0.20	0.41	18.93
Pipe Mb-21	454	50	0.20	0.10	0.65
Pipe P-1	60	50	-0.60	0.31	4.15
Pipe P-2	195	50	-1.00	0.51	10.68
Pipe P-3	16	75	5.60	1.27	42.98
Pipe P-4	29	75	4.40	1.00	27.50
Pipe P-5	20	63	4.20	1.35	58.98
Pipe P-6	69	63	0.60	0.19	1.61
Pipe P-7	78	63	3.20	1.03	35.64
Pipe P-8	44	63	2.00	0.64	14.93
Pipe P-9	6	25	0.80	1.63	206.79
Pipe P-10	41	25	0.20	0.41	15.87
Pipe P-11	8	40	1.60	1.27	75.64
Pipe P-12	6	40	0.40	0.32	5.80
Pipe P-13	606	116	6.60	0.62	6.96
Pipe P-14	91	116	6.00	0.57	5.84
Pipe P-15	182	63	1.20	0.38	4.86

Attachment-3

No.9 Mbokona

Network Table - Links

Link ID	Length	Diameter	Flow	Velocity	Unit Headloss
	m	mm	LPS	m/s	m/km
Pipe P-16	118	63	0.40	0.13	0.64
Pipe P-17	24	100	-7.00	0.89	16.00
Pipe P-18	71	100	-7.60	0.97	18.63
Pipe P-19	76	50	0.60	0.31	4.15
Pipe P-20	118	50	0.20	0.10	0.54
Pipe P-23	253	100	12.00	1.53	36.38
Pipe P-24	150	225	55.00	1.38	11.75
Pipe P-26	168	225	76.73	1.93	21.77
Pipe P-27	231	225	67.00	1.68	16.93
Pipe P-28	1,091	200	9.73	0.31	0.84

No.9 Mbokona
Network Table - Nodes

Node ID	Elevation	Base Demand	Head	Effective Pressure	Static Pressure	Effective Pressure	Static Pressure
	Result of analysis by using WaterGEM					With PRV	
	m	LPS	m	m	m	m	m
Junc J-1	70	0.20	99.45	29.39	62	29.39	62
Junc J-2	70	0.20	99.43	29.87	63	29.87	63
Junc J-3	58	0.20	103.50	45.41	74	45.41	55
Junc J-4	60	0.20	103.49	43.40	72	43.40	53
Junc J-5	53	0.20	99.27	46.17	79	46.17	60
Junc J-6	55	0.20	99.20	44.12	77	44.12	58
Junc J-7	80	0.20	105.98	25.93	52	25.93	52
Junc J-8	80	0.20	105.83	25.78	52	25.78	52
Junc J-9	80	0.20	104.65	24.60	52	24.60	52
Junc J-10	80	0.20	104.63	24.58	52	24.58	52
Junc J-11	78	0.20	87.84	9.82	54	9.82	54
Junc J-12	80	0.20	88.23	8.21	52	8.21	52
Junc J-13	90	0.00	115.23	25.18	42	25.18	42
Junc J-14	90	0.00	114.84	24.79	42	24.79	42
Junc J-16	90	0.00	114.11	24.06	42	24.06	42
Junc J-17	79	0.20	85.36	6.34	53	6.34	53
Junc J-18	77	0.20	84.72	7.70	55	7.70	55
Junc J-19	80	0.20	87.57	7.56	52	7.56	52
Junc J-20	59	0.20	95.33	36.26	73	36.26	73
Junc J-21	60	0.20	95.50	35.43	72	35.43	72
Junc J-22	72	0.20	73.96	1.95	60	1.95	60
Junc J-23	67	0.20	68.65	1.64	65	1.64	65
Junc J-24	75	0.20	81.92	6.91	57	6.91	57
Junc J-25	75	0.20	80.01	5.00	57	5.00	57
Junc J-26	71	0.20	98.53	27.47	61	27.47	42
Junc J-27	58	0.20	97.80	39.72	74	39.72	55
Junc J-28	75	0.20	78.03	3.02	57	3.02	57
Junc J-29	75	0.20	98.54	23.50	57	23.50	57
Junc J-30	75	0.20	97.04	21.99	57	21.99	57
Junc J-31	72	0.20	85.97	13.94	60	13.94	60
Junc J-32	55	0.20	92.88	37.80	77	37.80	58
Junc J-33	58	0.20	92.57	34.50	74	34.50	55
Junc J-34	70	0.20	98.92	28.86	62	28.86	62
Junc J-35	68	0.20	97.50	29.44	64	29.44	45
Junc J-36	80	0.20	103.67	23.62	52	23.62	52
Junc J-37	80	0.20	104.27	24.23	52	24.23	52
Junc J-38	55	0.20	93.82	38.74	77	38.74	77
Junc J-39	80	0.20	95.75	15.72	52	15.72	52
Junc J-40	78	0.20	84.76	6.74	54	6.74	54
Junc J-41	61	0.20	93.12	32.05	71	32.05	52
Junc J-42	73	0.20	93.09	20.05	59	20.05	40
Junc J-43	50	0.20	93.19	43.11	82	43.11	63
Junc J-44	62	0.20	92.81	30.75	70	30.75	51
Junc J-45	50	0.20	96.94	46.85	82	46.85	63
Junc J-46	77	0.20	95.56	18.53	55	18.53	55
Junc J-47	65	0.20	95.75	30.69	67	30.69	67
Junc J-48	54	0.20	95.25	41.17	78	41.17	78
Junc J-49	78	0.20	91.00	12.97	54	12.97	54
Junc J-50	78	0.20	95.86	17.82	54	17.82	54
Junc J-51	67	0.20	85.52	18.48	65	18.48	65
Junc J-52	58	0.20	85.29	27.23	74	27.23	74
Junc J-53	43	0.20	94.08	50.97	89	50.97	70
Junc J-54	64	0.20	99.32	35.25	68	35.25	68
Junc J-55	77	0.20	86.62	9.60	55	9.60	55
Junc J-56	79	0.20	95.46	16.43	53	16.43	53

Attachment-3

No.9 Mbokona
Network Table - Nodes

Node ID	Elevation	Base Demand	Head	Effective Pressure	Static Pressure	Effective Pressure	Static Pressure
	Result of analysis by using WaterGEM					With PRV	
	m	LPS	m	m	m	m	m
Junc J-57	72	0.20	103.41	31.34	60	31.34	41
Junc J-58	82	0.20	114.79	32.72	50	32.72	50
Junc J-59	79	0.20	114.77	35.69	53	35.69	53
Junc J-60	65	0.20	114.75	49.65	67	49.65	67
Junc J-61	80	0.20	114.75	34.68	52	34.68	52
Junc J-62	72	0.20	97.84	25.78	60	25.78	60
Junc J-63	56	0.20	78.84	22.79	76	22.79	76
Junc J-66	78	0.20	104.34	26.28	54	26.28	54
Junc J-67	100	0.00	124.43	24.55	32	24.55	32
Junc J-68	90	55.00	122.67	32.60	42	32.60	42
Junc J-70	90	0.00	114.83	24.78	42	24.78	42
Junc J-71	118	0.00	128.34	9.87	14	9.87	14
Junc J-72	81	9.73	127.42	46.33	51	46.33	51
Resvr R-1	132	#N/A	132.00	0.00	0	0.00	0

: Static Head of at least 70m
: Nodes to be covered with PRV

No.11 Vavaya Ridge
Network Table - Links

Link ID	Length	Diameter	Flow	Velocity	Unit Headloss
	m	mm	LPS	m/s	m/km
Pipe p-56	3	100	-3.70	0.47	2.32
Pipe p-57	2	100	7.12	0.91	13.85
Pipe p-55	3	100	3.70	0.47	2.32
Pipe p-1	2	100	2.81	0.36	2.96
Pipe p-21	2	50	-0.49	0.25	3.41
Pipe p-5	3	40	1.81	1.44	113.78
Pipe p-58	4	100	-12.20	1.55	37.52
Pipe p-13	5	100	6.60	0.84	12.03
Pipe p-14	5	100	0.40	0.05	0.07
Pipe p-16	4	75	-0.40	0.09	0.27
Pipe p-9	5	100	-4.32	0.55	5.49
Pipe p-22	6	50	-0.38	0.19	2.10
Pipe p-35	7	40	0.40	0.32	6.92
Pipe p-18	7	50	-1.60	0.81	30.44
Pipe p-34	7	40	-0.12	0.10	0.77
Pipe p-52	9	63	-3.48	1.12	34.85
Pipe p-60	8	50	-0.40	0.20	1.96
Pipe p-12	10	100	0.20	0.03	0.02
Pipe p-54	10	100	-8.12	1.03	17.66
Pipe p-53	9	100	-7.12	0.91	13.85
Pipe p-2	13	100	6.00	0.76	12.03
Pipe p-24	14	50	-0.68	0.35	6.20
Pipe p-8	11	100	-7.20	0.92	14.13
Pipe p-26	14	50	0.60	0.31	4.95
Pipe p-49	16	100	3.08	0.39	3.49
Pipe p-4	20	100	5.80	0.74	11.30
Pipe p-6	26	100	2.01	0.26	1.59
Pipe p-47	30	100	-0.20	0.03	0.02
Pipe p-19	31	50	-1.80	0.92	37.85
Pipe p-10	33	100	-6.80	0.87	12.71
Pipe p-39	34	40	-0.20	0.16	1.61
Pipe p-48	35	100	-12.00	1.53	36.39
Pipe p-63	37	32	0.40	0.50	17.21
Pipe p-36	58	40	0.20	0.16	1.92
Pipe p-65	55	50	0.20	0.10	0.54
Pipe p-37	57	40	0.28	0.22	3.52
Pipe p-17	75	75	-0.20	0.05	0.08
Pipe p-43	94	32	0.20	0.25	4.77
Pipe p-61	101	50	0.20	0.10	0.54
Pipe p-42	78	100	-0.20	0.03	0.02
Pipe p-20	115	50	-2.00	1.02	46.01
Pipe p-44	87	50	0.20	0.10	0.54
Pipe p-32	102	32	0.20	0.25	4.77
Pipe p-30	89	50	0.88	0.45	8.39
Pipe p-64	93	32	0.20	0.25	5.69
Pipe p-28	100	50	0.20	0.10	0.54
Pipe p-38	114	40	0.08	0.06	0.33
Pipe p-59	193	40	0.20	0.16	1.61
Pipe p-31	231	50	0.70	0.36	5.51
Pipe p-46	198	100	2.61	0.33	2.58
Pipe p-25	235	50	-0.20	0.10	0.54
Pipe p-45	242	50	-0.90	0.46	8.78
Pipe p-11	513	100	-7.00	0.89	13.41
Pipe p-7	543	100	-12.20	1.55	37.52
Pipe p-29	555	50	-0.80	0.41	7.07
Pipe p-51	993	100	-11.80	1.50	35.28
Pipe P-66	41	50	-0.20	0.10	0.54
Pipe P-67	195	50	-0.60	0.31	4.15

Attachment-3

No.11 Vavaya Ridge
Network Table - Links

Link ID	Length	Diameter	Flow	Velocity	Unit Headloss
	m	mm	LPS	m/s	m/km
Pipe P-68	564	100	2.60	0.33	2.14
Pipe P-69	166	100	2.20	0.28	1.57
Pipe P-70	13	100	1.30	0.17	0.71
Pipe P-71	159	50	1.09	0.55	14.88
Pipe P-72	41	50	0.49	0.25	3.37
Pipe P-73	190	50	-0.58	0.29	4.62
Pipe P-74	18	50	-0.29	0.15	1.29
Pipe P-75	265	50	-0.20	0.10	0.54
Pipe P-76	38	50	-0.60	0.31	4.15
Pipe P-77	66	100	-0.40	0.05	0.07
Pipe P-78	194	100	-0.80	0.10	0.24
Pipe P-79	54	100	2.79	0.35	2.91
Pipe P-80	38	100	2.59	0.33	2.53
Pipe P-81	61	40	-0.92	0.73	32.54
Pipe P-82	21	40	-1.61	1.28	91.64
Pipe P-84	264	100	11.88	1.51	35.69
Pipe P-85	765	300	55.07	0.78	2.90
Pipe P-86	5	300	13.00	0.18	0.20
Pipe P-87	370	225	42.07	1.06	7.15
Pipe P-27	289	300	76.68	1.08	5.35
Pipe P-88	80	300	66.94	0.95	4.16
Pipe P-89	1,091	200	9.73	0.31	0.84

No.11 Vavaya Ridge
Network Table - Nodes

Node ID	Elevation	Base Demand	Head	Effective Pressure	Static Pressure	Effective Pressure	Static Pressure
	Result of analysis by using WaterGEM					With PRV	
	m	LPS	m	m	m	m	m
Junc J-1	45	0.20	70.69	25.64	87	25.64	37
Junc J-2	45	0.00	70.70	25.65	87	25.65	37
Junc J-3	45	0.00	70.76	25.71	87	25.71	37
Junc J-4	45	0.20	70.73	25.68	87	25.68	37
Junc J-5	63	0.20	62.80	-0.20	69	-0.20	19
Junc J-6	63	0.20	62.79	-0.21	69	-0.21	19
Junc J-7	55	0.20	60.06	5.05	77	5.05	27
Junc J-8	55	0.20	60.07	5.06	77	5.06	27
Junc J-9	55	0.20	62.24	7.22	77	7.22	27
Junc J-10	55	0.20	61.95	6.94	77	6.94	27
Junc J-11	110	0.00	127.76	17.72	22	17.72	22
Junc J-12	110	0.00	127.90	17.86	22	17.86	22
Junc J-13	63	0.20	63.24	0.24	69	0.24	19
Junc J-14	63	0.20	63.18	0.18	69	0.18	19
Junc J-15	63	0.20	63.18	0.18	69	0.18	19
Junc J-16	56	0.20	62.28	6.27	76	6.27	26
Junc J-17	56	0.20	62.28	6.27	76	6.27	26
Junc J-18	30	0.20	59.14	29.09	102	29.09	52
Junc J-19	30	0.20	59.16	29.10	102	29.10	52
Junc J-20	58	0.20	58.07	0.07	74	0.07	24
Junc J-21	58	0.20	58.02	0.02	74	0.02	24
Junc J-22	20	0.20	62.57	42.49	112	42.49	62
Junc J-23	20	0.20	62.79	42.70	112	42.70	62
Junc J-24	58	0.20	58.07	0.07	74	0.07	24
Junc J-25	45	0.20	70.76	25.71	87	25.71	37
Junc J-26	45	0.20	71.06	26.01	87	26.01	37
Junc J-27	20	0.20	62.49	42.40	112	42.40	62
Junc J-28	20	0.20	62.50	42.42	112	42.42	62
Junc J-29	63	0.20	63.18	0.18	69	0.18	19
Junc J-30	45	0.20	70.88	25.83	87	25.83	37
Junc J-31	63	0.20	63.02	0.02	69	0.02	19
Junc J-32	30	0.20	58.31	28.25	102	28.25	52
Junc J-33	30	0.20	58.40	28.34	102	28.34	52
Junc J-34	43	0.20	70.54	27.48	89	27.48	39
Junc J-35	35	0.20	70.83	35.76	97	35.76	47
Junc J-36	40	0.20	70.83	30.77	92	30.77	42
Junc J-37	40	0.20	63.98	23.93	92	23.93	42
Junc J-38	63	0.20	63.66	0.65	69	0.65	19
Junc J-39	56	0.20	62.48	6.47	76	6.47	26
Junc J-40	52	0.20	62.53	10.51	80	10.51	30
Junc J-41	80	0.20	106.11	26.05	52	26.05	52
Junc J-42	80	0.20	107.38	27.33	52	27.33	52
Junc J-43	55	0.20	60.17	5.16	77	5.16	27
Junc J-44	53	0.20	59.53	6.52	79	6.52	29
Junc J-45	48	0.20	57.91	9.89	84	9.89	34
Junc J-46	47	0.20	70.83	23.78	85	23.78	35
Junc J-47	33	0.20	70.80	37.73	99	37.73	49
Junc J-48	38	0.20	58.11	20.07	94	20.07	44
Junc J-49	30	0.20	62.27	32.21	102	32.21	52
Junc J-50	80	0.20	123.82	43.73	52	43.73	52
Junc J-51	75	0.20	123.37	48.27	57	48.27	57
Junc J-52	20	0.20	61.76	41.68	112	41.68	62
Junc J-53	5	0.20	61.71	56.59	127	56.59	77
Junc J-54	15	0.20	70.76	55.65	117	55.65	67
Junc J-55	53	0.20	69.26	16.23	79	16.23	29

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Attachment-3

No.11 Vavaya Ridge
Network Table - Nodes

Node ID	Elevation	Base Demand	Head	Effective Pressure	Static Pressure	Effective Pressure	Static Pressure
	Result of analysis by using WaterGEM					With PRV	
	m	LPS	m	m	m	m	m
Junc J-56	23	0.20	62.44	39.36	109	39.36	59
Junc J-57	55	0.20	57.59	2.58	77	2.58	27
Junc J-58	50	0.20	59.00	8.99	82	8.99	32
Junc J-59	20	0.20	62.52	42.43	112	42.43	62
Junc J-60	53	0.20	62.54	9.52	79	9.52	29
Junc J-61	55	0.20	60.04	5.03	77	5.03	27
Junc J-62	53	0.20	69.52	16.49	79	16.49	29
Junc J-63	42	0.20	69.21	27.16	90	27.16	40
Junc J-64	37	0.20	60.41	23.37	95	23.37	45
Junc J-65	20	0.20	58.18	38.10	112	38.10	62
Junc J-66	60	0.20	62.64	2.64	72	2.64	22
Junc J-67	69	0.20	123.67	54.56	63	54.56	63
Junc J-68	20	0.20	61.74	41.66	112	41.66	62
Junc J-69	80	0.20	123.97	43.89	52	43.89	52
Junc J-70	125	0.00	130.12	5.11	7	5.11	7
Junc J-71	90	11.88	120.70	30.63	42	30.63	42
Junc J-72	111	0.00	127.90	16.87	21	16.87	21
Junc J-73	100	42.07	125.25	25.20	32	25.20	32
Junc J-74	81	9.73	129.53	48.43	51	48.43	51
Junc J-75	126	0.00	130.45	4.44	6	4.44	6
Resvr R-1	132	#N/A	132.00	0.00	0	0.00	0

: Static Head of at least 70m
: Nodes to be covered with PRV

No. 13 Mbokonabera
Network Table - Links

Link ID	Length	Diameter	Flow	Velocity	Unit Headloss
	m	mm	LPS	m/s	m/km
Pipe p-29	4	75	-10.66	2.41	118.78
Pipe p-79	3	75	0.94	0.21	1.33
Pipe p-1	4	150	-0.41	0.02	0.01
Pipe p-30	4	75	-10.53	2.38	116.01
Pipe p-7	5	100	-0.27	0.03	0.03
Pipe p-31	5	75	0.41	0.09	0.28
Pipe p-35	6	50	-0.14	0.07	0.31
Pipe p-32	7	75	-9.99	2.26	105.23
Pipe p-9	7	75	2.92	0.66	12.88
Pipe p-37	7	50	-0.32	0.16	1.53
Pipe p-4	8	150	-0.14	0.01	0.00
Pipe p-73	8	50	3.46	1.76	127.10
Pipe p-90	8	25	0.54	1.10	99.86
Pipe p-17	9	75	1.22	0.28	2.54
Pipe p-88	9	50	2.34	1.19	51.71
Pipe p-2	10	150	-0.67	0.04	0.03
Pipe p-38	10	50	-0.45	0.23	2.94
Pipe p-8	11	75	0.14	0.03	0.04
Pipe p-20	11	75	5.45	1.23	34.24
Pipe p-46	12	50	-1.75	0.89	30.28
Pipe p-56	11	40	0.41	0.32	5.94
Pipe p-72	12	50	-0.14	0.07	0.31
Pipe p-67	13	75	2.16	0.49	7.36
Pipe p-19	15	75	5.58	1.26	35.82
Pipe p-86	17	32	0.14	0.17	2.30
Pipe p-51	16	50	0.27	0.14	0.95
Pipe p-25	18	75	-2.88	0.65	10.53
Pipe p-48	19	50	-0.54	0.28	3.41
Pipe p-75	19	75	-3.73	0.84	20.27
Pipe p-55	20	40	-0.27	0.21	3.34
Pipe p-13	22	75	2.84	0.64	12.18
Pipe p-21	21	75	5.31	1.20	38.99
Pipe p-57	23	40	-0.14	0.11	0.78
Pipe p-58	23	40	0.14	0.11	0.78
Pipe p-42	24	50	-0.14	0.07	0.26
Pipe p-36	28	50	-0.72	0.37	6.99
Pipe p-26	29	75	-0.14	0.03	0.04
Pipe p-40	36	50	-0.54	0.28	4.07
Pipe p-18	29	75	-4.91	1.11	28.22
Pipe p-6	36	100	-0.14	0.02	0.01
Pipe p-14	36	75	2.56	0.58	10.12
Pipe p-22	35	75	5.18	1.17	31.16
Pipe p-15	36	75	2.30	0.52	8.24
Pipe p-11	54	75	3.06	0.69	14.01
Pipe p-77	38	75	-12.56	2.84	160.68
Pipe p-84	40	50	0.14	0.07	0.26
Pipe p-70	48	50	-0.94	0.48	9.62
Pipe p-91	49	25	0.41	0.83	69.93
Pipe p-85	50	40	0.14	0.11	0.78
Pipe p-65	53	50	0.14	0.07	0.26
Pipe p-39	58	50	-0.14	0.07	0.31
Pipe p-80	58	32	0.14	0.17	2.30
Pipe p-82	58	15	0.14	0.76	110.07
Pipe p-44	58	50	-1.49	0.76	22.22
Pipe p-16	59	75	1.08	0.24	2.04
Pipe p-64	61	50	0.14	0.07	0.26
Pipe p-24	61	75	-2.75	0.62	9.64
Pipe p-81	67	75	0.14	0.03	0.04

Attachment-3

No. 13 Mbokonabera
Network Table - Links

Link ID	Length	Diameter	Flow	Velocity	Unit Headloss
	m	mm	LPS	m/s	m/km
Pipe p-71	67	50	0.81	0.41	7.23
Pipe p-3	70	150	-0.81	0.05	0.04
Pipe p-28	84	32	0.14	0.17	2.30
Pipe p-74	71	50	3.33	1.69	118.07
Pipe p-59	74	40	0.14	0.11	0.78
Pipe p-47	75	50	0.14	0.07	0.26
Pipe p-53	82	50	-0.14	0.07	0.26
Pipe p-52	85	50	0.27	0.14	0.95
Pipe p-62	100	25	0.14	0.28	9.14
Pipe p-50	101	50	-0.41	0.21	2.00
Pipe p-69	103	75	0.14	0.03	0.04
Pipe p-66	103	25	0.14	0.28	7.66
Pipe p-76	120	75	-3.87	0.88	18.14
Pipe p-61	137	25	-0.14	0.28	7.66
Pipe p-10	132	75	3.19	0.72	15.17
Pipe p-60	133	25	0.14	0.28	7.66
Pipe p-41	160	50	-1.40	0.71	23.71
Pipe p-49	144	50	0.14	0.07	0.26
Pipe p-33	152	75	-9.86	2.23	102.61
Pipe p-87	152	32	0.14	0.17	2.30
Pipe p-23	151	75	1.89	0.43	4.82
Pipe p-5	169	150	-0.14	0.01	0.00
Pipe p-34	179	75	-9.59	2.17	97.47
Pipe p-63	198	25	0.14	0.28	9.14
Pipe p-27	287	75	2.48	0.56	7.96
Pipe p-54	256	40	0.27	0.21	2.80
Pipe p-45	273	50	-1.62	0.83	26.10
Pipe p-12	296	75	3.11	0.70	14.42
Pipe p-78	461	75	0.41	0.09	0.28
Pipe P-95	77	40	0.54	0.43	10.12
Pipe P-96	47	40	0.27	0.21	2.80
Pipe P-97	8	50	-0.67	0.34	5.16
Pipe P-98	24	50	-0.94	0.48	9.62
Pipe P-99	154	50	-1.22	0.62	15.32
Pipe P-100	9	32	2.21	2.75	407.30
Pipe P-101	30	32	0.67	0.84	45.36
Pipe P-102	72	75	1.89	0.43	5.75
Pipe P-103	74	75	1.62	0.37	4.32
Pipe P-104	102	75	1.35	0.31	3.08
Pipe P-105	395	225	71.25	1.79	18.98
Pipe P-106	1,091	100	9.73	1.24	24.69
Pipe P-107	4	225	61.51	1.55	14.45
Pipe P-108	264	100	11.88	1.51	35.69
Pipe P-109	770	225	49.64	1.25	9.72
Pipe P-110	578	116	12.96	1.23	20.38
Pipe P-111	370	225	36.67	0.92	3.12
Pipe P-112	541	150	19.21	1.09	12.07
Pipe P-113	85	152	17.47	0.96	6.96
Pipe P-114	388	50	2.50	1.27	58.30
Pipe P-115	143	50	1.25	0.64	16.15
Pipe P-116	257	100	2.5	0.32	1.99
Pipe P-117	555	150	12.96	0.73	3.28

No. 13 Mbokonabera
Network Table - Nodes

Node ID	Elevation	Base Demand	Head	Effective Pressure	Static Pressure	Effective Pressure	Static Pressure
	Result of analysis by using WaterGEM					With PRV	
	m	LPS	m	m	m	m	m
Junc J-1	30	0.14	100.98	70.84	102	65.84	42
Junc J-2	30	0.14	101.41	71.27	102	66.27	42
Junc J-3	5	0.14	45.33	40.25	127	35.25	67
Junc J-4	5	0.14	45.33	40.24	127	35.24	67
Junc J-5	5	0.14	45.32	40.24	127	35.24	67
Junc J-6	5	0.14	45.32	40.24	127	35.24	67
Junc J-7	30	0.14	100.48	70.34	102	65.34	42
Junc J-8	30	0.14	100.48	70.34	102	65.34	42
Junc J-9	30	0.14	100.48	70.34	102	65.34	42
Junc J-10	10	0.14	51.85	41.77	122	36.77	62
Junc J-11	10	0.14	51.86	41.77	122	36.77	62
Junc J-12	30	0.14	99.77	69.63	102	64.63	42
Junc J-13	10	0.14	51.91	41.83	122	36.83	62
Junc J-14	10	0.14	51.82	41.73	122	36.73	62
Junc J-15	10	0.14	51.83	41.74	122	36.74	62
Junc J-16	5	0.14	45.32	40.24	127	35.24	67
Junc J-17	20	0.14	64.09	44.01	112	39.01	52
Junc J-18	20	0.14	63.05	42.96	112	37.96	52
Junc J-19	43	0.14	54.48	11.95	90	6.95	30
Junc J-20	43	0.14	53.64	11.11	90	6.11	30
Junc J-21	5	0.14	45.47	40.39	127	35.39	67
Junc J-22	5	0.14	45.45	40.37	127	35.37	67
Junc J-23	45	0.14	59.95	14.92	87	9.92	27
Junc J-24	45	0.14	59.46	14.43	87	9.43	27
Junc J-25	5	0.14	45.32	40.24	127	35.24	67
Junc J-26	23	0.14	63.85	40.77	109	35.77	49
Junc J-27	23	0.14	63.85	40.77	109	35.77	49
Junc J-28	23	0.14	66.13	43.55	110	38.55	50
Junc J-29	23	0.14	65.77	43.18	110	38.18	50
Junc J-30	30	0.14	101.06	70.92	102	65.92	42
Junc J-31	35	0.14	61.81	26.76	97	21.76	37
Junc J-32	35	0.14	61.75	26.69	97	21.69	37
Junc J-33	20	0.14	64.09	44.00	112	39.00	52
Junc J-34	5	0.14	46.62	41.53	127	36.53	67
Junc J-35	5	0.14	46.52	41.44	127	36.44	67
Junc J-36	23	0.14	66.66	44.07	110	39.07	50
Junc J-37	50	0.14	90.05	39.97	82	34.97	22
Junc J-38	50	0.14	90.01	39.93	82	34.93	22
Junc J-39	33	0.14	61.83	29.27	100	24.27	40
Junc J-40	33	0.14	61.81	28.75	99	23.75	39
Junc J-41	30	0.14	62.83	32.76	102	27.76	42
Junc J-42	25	0.14	63.02	37.94	107	32.94	47
Junc J-43	33	0.14	61.76	28.71	99	23.71	39
Junc J-44	20	0.14	64.48	44.39	112	39.39	52
Junc J-45	15	0.14	51.84	36.76	117	31.76	57
Junc J-46	15	0.14	51.90	36.83	117	31.83	57
Junc J-47	10	0.14	47.55	37.47	122	32.47	62
Junc J-48	7	0.14	47.27	40.19	125	35.19	65
Junc J-49	23	0.14	64.95	41.86	109	36.86	49
Junc J-50	34	0.14	61.73	27.67	98	22.67	38
Junc J-51	36	0.14	61.73	25.68	96	20.68	36
Junc J-52	10	0.14	47.54	37.46	122	32.46	62
Junc J-53	12	0.14	52.05	39.97	120	34.97	60
Junc J-54	47	0.14	62.23	15.20	85	10.20	25
Junc J-55	50	0.14	62.24	12.21	82	7.21	22

Attachment-3

No. 13 Mbokonabera
Network Table - Nodes

Node ID	Elevation	Base Demand	Head	Effective Pressure	Static Pressure	Effective Pressure	Static Pressure
	Result of analysis by using WaterGEM					With PRV	
	m	LPS	m	m	m	m	m
Junc J-56	30	0.14	100.48	70.34	102	65.34	42
Junc J-57	5	0.14	46.91	41.83	127	36.83	67
Junc J-58	10	0.14	52.67	42.58	122	37.58	62
Junc J-59	30	0.00	107.46	77.30	102	72.30	42
Junc J-60	50	0.14	89.10	39.02	82	34.02	22
Junc J-61	50	0.14	89.09	39.01	82	34.01	22
Junc J-62	30	0.14	62.29	32.23	102	27.23	42
Junc J-63	41	0.14	50.18	9.16	91	4.16	31
Junc J-64	50	0.14	89.23	39.15	82	34.15	22
Junc J-65	60	0.14	89.19	29.14	72	24.14	12
Junc J-66	26	0.14	84.15	58.03	106	53.03	46
Junc J-67	18	0.14	84.13	66.00	114	61.00	54
Junc J-68	28	0.14	51.88	24.34	105	19.34	45
Junc J-69	5	0.14	46.11	41.02	127	36.02	67
Junc J-70	10	0.14	45.97	35.90	122	30.90	62
Junc J-71	20	0.14	45.46	25.41	112	20.41	52
Junc J-72	43	0.14	92.63	49.53	89	44.53	29
Junc J-73	39	0.14	93.93	54.82	93	49.82	33
Junc J-74	10	0.14	46.50	36.43	122	31.43	62
Junc J-75	5	0.14	45.79	40.71	127	35.71	67
Junc J-76	5	0.14	45.79	40.70	127	35.70	67
Junc J-77	38	0.14	49.98	12.46	95	7.46	35
Junc J-78	15	0.14	54.66	39.58	117	34.58	57
Junc J-79	55	0.14	92.58	37.50	77	32.50	17
Junc J-80	38	0.14	61.56	24.01	95	19.01	35
Junc J-81	45	0.14	61.54	16.51	87	11.51	27
Junc J-82	45	0.14	61.54	16.51	87	11.51	27
Junc J-83	50	0.14	61.73	11.71	82	6.71	22
Junc J-84	15	0.14	45.99	30.93	117	25.93	57
Junc J-85	10	0.14	47.27	37.19	122	32.19	62
Junc J-86	8	0.14	60.94	53.33	125	48.33	65
Junc J-87	50	0.14	90.01	39.93	82	34.93	22
Junc J-88	40	0.14	49.13	9.11	92	4.11	32
Junc J-89	30	0.14	106.61	76.46	102	71.46	42
Junc J-90	3	0.14	105.60	102.89	130	97.89	70
Junc J-91	45	0.14	55.84	10.82	87	5.82	27
Junc J-92	43	0.14	61.77	19.24	90	14.24	30
Junc J-93	50	0.14	90.28	40.20	82	35.20	22
Junc J-94	50	0.14	89.93	39.85	82	34.85	22
Junc J-95	5	0.14	45.32	40.24	127	35.24	67
Junc J-96	5	0.14	43.51	38.44	127	33.44	67
Junc J-97	60	0.14	107.33	47.24	72	42.24	12
Junc J-108	128	0.00	124.50	-3.49	4	-3.49	4
Junc J-109	81	9.73	97.56	16.53	51	16.53	51
Junc J-110	128	0.00	124.45	-3.55	4	-3.55	4
Junc J-111	100	11.88	115.02	14.99	32	14.99	32
Junc J-112	110	0.00	116.96	6.95	22	6.95	22
Junc J-113	75	12.96	105.19	30.13	57	30.13	57
Junc J-114	102	0.00	115.81	13.78	30	13.78	30
Junc J-115	88	0.00	109.28	21.24	44	21.24	44
Junc J-116	112	17.47	115.22	3.21	20	3.21	20
Junc J-117	75	2.50	86.66	11.63	57	11.63	57
Junc J-118	80	1.25	106.97	26.92	52	26.92	52
Junc J-119	65	2.5	108.77	43.68	67	43.68	67
Resvr R-2	132	#N/A	132	0	0	0.00	0

No. 13 Mbokonabera

Network Table - Nodes

Node ID	Elevation	Base Demand	Head	Effective Pressure	Static Pressure	Effective Pressure	Static Pressure
	Result of analysis by using WaterGEM					With PRV	
	m	LPS	m	m	m	m	m

: Static Head of at least 70m

: Nodes to be covered with PRV

Attachment-3

No.19 Tanuli & Mbua Valley

Network Table - Links

Link ID	Length	Diameter	Flow	Velocity	Unit Headloss
	m	mm	LPS	m/s	m/km
Pipe TMbVpipes-23	4	75	-0.98	0.22	1.05
Pipe TMbVpipes-19	5	75	0.84	0.19	0.79
Pipe TMbVpipes-29	6	50	1.68	0.86	20.48
Pipe TMbVpipes-16	7	75	4.48	1.01	17.49
Pipe TMbVpipes-1	7	100	11.48	1.46	24.61
Pipe TMbVpipes-7	7	75	7.42	1.68	44.52
Pipe TMbVpipes-26	8	50	1.12	0.57	9.68
Pipe TMbVpipes-78	8	100	-0.28	0.04	0.03
Pipe TMbVpipes-62	9	30	0.42	0.59	18.93
Pipe TMbVpipes-27	9	50	0.28	0.14	0.74
Pipe TMbVpipes-12	10	75	1.12	0.25	1.34
Pipe TMbVpipes-10	10	75	4.76	1.08	19.57
Pipe TMbVpipes-69	10	40	-0.14	0.11	0.60
Pipe TMbVpipes-28	10	50	0.14	0.07	0.21
Pipe TMbVpipes-18	12	75	8.40	1.90	56.02
Pipe TMbVpipes-58	12	25	0.28	0.57	21.72
Pipe TMbVpipes-24	12	75	-0.84	0.19	0.79
Pipe TMbVpipes-2	12	100	11.48	1.46	24.60
Pipe TMbVpipes-71	13	40	0.00	0.00	0.00
Pipe TMbVpipes-33	13	50	0.42	0.21	1.57
Pipe TMbVpipes-77	14	40	-0.28	0.22	2.20
Pipe TMbVpipes-45	14	40	0.70	0.56	12.01
Pipe TMbVpipes-4	15	75	-0.14	0.03	0.03
Pipe TMbVpipes-41	16	40	0.56	0.45	7.94
Pipe TMbVpipes-36	16	50	0.28	0.14	0.75
Pipe TMbVpipes-53	17	25	0.14	0.29	6.02
Pipe TMbVpipes-31	20	50	0.14	0.07	0.21
Pipe TMbVpipes-52	20	25	-0.14	0.29	6.02
Pipe TMbVpipes-5	22	75	-0.56	0.13	0.37
Pipe TMbVpipes-38	23	40	-2.52	2.01	128.82
Pipe TMbVpipes-49	25	25	0.14	0.29	6.02
Pipe TMbVpipes-13	27	75	0.98	0.22	1.05
Pipe TMbVpipes-6	28	75	7.28	1.65	42.98
Pipe TMbVpipes-61	29	30	-1.54	2.18	210.18
Pipe TMbVpipes-42	32	40	0.42	0.33	4.66
Pipe TMbVpipes-35	33	50	0.14	0.07	0.21
Pipe TMbVpipes-44	36	40	0.14	0.11	0.61
Pipe TMbVpipes-63	37	50	-1.40	0.71	14.63
Pipe TMbVpipes-70	37	50	-0.28	0.14	0.74
Pipe TMbVpipes-43	38	40	-0.14	0.11	0.61
Pipe TMbVpipes-57	42	50	-2.10	1.07	31.00
Pipe TMbVpipes-9	44	75	6.86	1.55	38.50
Pipe TMbVpipes-34	46	50	0.70	0.36	4.05
Pipe TMbVpipes-76	52	40	2.94	2.34	171.30
Pipe TMbVpipes-32	66	25	-0.14	0.29	6.02
Pipe TMbVpipes-56	142	50	-2.24	1.14	34.93
Pipe TMbVpipes-72	82	32	0.14	0.17	1.81
Pipe TMbVpipes-22	78	75	-1.12	0.25	1.34
Pipe TMbVpipes-20	83	75	-2.10	0.48	4.30
Pipe TMbVpipes-54	83	25	-0.14	0.29	6.02
Pipe TMbVpipes-14	85	75	0.14	0.03	0.03
Pipe TMbVpipes-40	85	40	-0.70	0.56	12.03
Pipe TMbVpipes-8	88	75	7.14	1.62	41.46
Pipe TMbVpipes-60	115	30	0.14	0.20	2.48
Pipe TMbVpipes-59	102	20	0.14	0.45	17.84
Pipe TMbVpipes-51	99	25	0.84	1.71	166.37
Pipe TMbVpipes-15	108	75	4.62	1.05	18.51
Pipe TMbVpipes-48	110	30	-0.14	0.20	2.48

No.19 Tanuli & Mbua Valley
Network Table - Links

Link ID	Length	Diameter	Flow	Velocity	Unit Headloss
	m	mm	LPS	m/s	m/km
Pipe TMbVpipes-30	121	50	1.26	0.64	12.02
Pipe TMbVpipes-39	122	40	-2.38	1.89	115.89
Pipe TMbVpipes-47	128	40	0.14	0.11	0.61
Pipe TMbVpipes-73	152	32	0.14	0.17	1.81
Pipe TMbVpipes-55	126	20	-0.14	0.45	17.84
Pipe TMbVpipes-50	124	25	0.42	0.86	46.02
Pipe TMbVpipes-25	136	50	-0.14	0.07	0.21
Pipe TMbVpipes-64	149	50	0.98	0.50	7.56
Pipe TMbVpipes-74	150	50	0.28	0.14	0.74
Pipe TMbVpipes-65	152	40	-2.80	2.23	156.50
Pipe TMbVpipes-68	162	25	1.12	2.28	282.68
Pipe TMbVpipes-17	225	75	1.82	0.41	3.30
Pipe TMbVpipes-21	226	75	-1.96	0.44	3.78
Pipe TMbVpipes-66	332	75	-0.14	0.03	0.03
Pipe TMbVpipes-67	435	75	-0.70	0.16	0.56
Pipe TMbVpipes-3	644	100	-0.70	0.09	0.14
Pipe P-1	28	40	0.56	0.45	7.94
Pipe P-3	91	75	6.72	1.52	37.06
Pipe P-5	143	75	6.30	1.43	32.88
Pipe P-6	76	75	6.02	1.36	30.23
Pipe P-7	52	50	-0.56	0.28	2.67
Pipe P-8	74	50	-0.84	0.43	5.67
Pipe P-9	21	25	0.56	1.14	78.39
Pipe P-11	182	40	0.42	0.33	4.66
Pipe P-13	11	40	0.28	0.22	2.20
Pipe P-14	181	40	0.14	0.11	0.61
Pipe P-16	39	200	11.48	0.37	0.65
Pipe P-17	1,179	200	49.18	1.57	9.55
Pipe P-19	752	200	44.88	1.43	8.06
Pipe P-20	1,013	200	28.08	0.89	3.38
Pipe P-21	100	100	4.30	0.55	3.06
Pipe P-22	100	100	16.80	2.14	38.21
Pipe P-23	43	150	16.60	0.94	5.19
Pipe P-24	614	150	5.00	0.28	0.56
Pipe P-25	597	200	11.60	0.37	0.66
Pipe P-26	73	100	3.08	0.39	1.65

S43-1-18

Attachment-3

No.19 Tanuli & Mbua Valley
Network Table - Nodes

Node ID	Elevation	Base Demand	Head	Effective Pressure	Static Pressure	Effective Pressure	Static Pressure
	Result of analysis by using WaterGEM					With PRV	
	m	LPS	m	m	m	m	m
Junc J-1	30	0.14	54.63	24.58	80	24.58	45
Junc J-2	30	0.14	54.63	24.58	80	24.58	45
Junc J-3	60	0.14	88.11	28.05	50	28.05	15
Junc J-4	60	0.14	88.10	28.05	50	28.05	15
Junc J-5	58	0.14	67.85	9.83	52	9.83	17
Junc J-6	58	0.14	67.73	9.71	52	9.71	17
Junc J-7	60	0.14	68.71	8.69	50	8.69	15
Junc J-8	60	0.14	68.60	8.58	50	8.58	15
Junc J-9	60	0.00	88.93	28.88	50	28.88	50
Junc J-10	60	0.00	88.77	28.71	50	28.71	15
Junc J-11	60	0.14	87.79	27.74	50	27.74	15
Junc J-12	15	0.14	38.72	23.67	95	23.67	60
Junc J-13	15	0.14	38.65	23.60	95	23.60	60
Junc J-14	15	0.14	54.37	39.30	95	39.30	60
Junc J-15	15	0.14	54.37	39.30	95	39.30	60
Junc J-16	20	0.14	45.27	25.22	90	25.22	55
Junc J-17	20	0.14	45.11	25.06	90	25.06	55
Junc J-18	60	0.14	67.72	7.70	50	7.70	15
Junc J-19	50	0.14	70.89	20.85	60	20.85	25
Junc J-20	50	0.14	70.88	20.84	60	20.84	25
Junc J-21	50	0.14	70.71	20.66	60	20.66	25
Junc J-22	14	0.14	19.99	5.98	96	5.98	61
Junc J-23	15	0.14	20.00	4.99	95	4.99	60
Junc J-24	61	0.14	67.72	6.70	49	6.70	14
Junc J-25	60	0.14	77.88	17.84	50	17.84	15
Junc J-26	60	0.14	77.62	17.58	50	17.58	15
Junc J-27	30	0.14	54.62	24.57	80	24.57	45
Junc J-28	60	0.00	89.24	29.18	50	29.18	50
Junc J-29	13	0.14	19.99	6.98	97	6.98	62
Junc J-30	54	0.14	70.67	16.63	56	16.63	21
Junc J-31	50	0.14	70.65	20.60	60	20.60	25
Junc J-32	15	0.14	54.34	39.27	95	39.27	60
Junc J-33	30	0.14	54.74	24.69	80	24.69	45
Junc J-34	31	0.14	54.56	23.52	79	23.52	44
Junc J-35	10	0.14	20.01	9.99	100	9.99	65
Junc J-36	12	0.14	20.01	7.99	98	7.99	63
Junc J-37	48	0.14	55.95	7.94	62	7.94	27
Junc J-38	47	0.14	55.83	8.81	63	8.81	28
Junc J-39	19	0.14	80.68	61.56	91	61.56	56
Junc J-40	18	0.14	80.58	62.45	92	62.45	57
Junc J-41	16	0.14	20.03	4.02	94	4.02	59
Junc J-42	18	0.14	20.02	2.02	92	2.02	57
Junc J-43	18	0.14	80.56	62.44	92	62.44	57
Junc J-44	16	0.14	20.01	4.01	94	4.01	59
Junc J-45	60	0.14	65.65	5.64	50	5.64	15
Junc J-46	41	0.14	20.59	-20.37	69	-20.37	34
Junc J-47	41	0.14	20.44	-20.52	69	-20.52	34
Junc J-48	59	0.14	70.85	11.83	51	11.83	16
Junc J-49	60	0.14	86.57	26.52	50	26.52	15
Junc J-50	36	0.14	53.36	17.32	74	17.32	39
Junc J-51	19	0.14	39.26	20.22	91	20.22	56
Junc J-52	45	0.14	55.68	10.66	65	10.66	30
Junc J-53	52	0.14	70.66	18.62	58	18.62	23
Junc J-54	45	0.14	55.65	10.63	65	10.63	30
Junc J-55	45	0.14	55.65	10.63	65	10.63	30

No.19 Tanuli & Mbua Valley
Network Table - Nodes

Node ID	Elevation	Base Demand	Head	Effective Pressure	Static Pressure	Effective Pressure	Static Pressure
	Result of analysis by using WaterGEM					With PRV	
	m	LPS	m	m	m	m	m
Junc J-56	25	0.14	46.58	21.53	85	21.53	50
Junc J-57	65	0.14	82.92	17.88	45	17.88	10
Junc J-58	63	0.14	81.23	18.20	47	18.20	12
Junc J-59	60	0.14	88.65	28.59	50	28.59	15
Junc J-60	55	0.14	79.68	24.63	55	24.63	20
Junc J-61	20	0.14	19.60	-0.40	90	-0.40	55
Junc J-62	50	0.14	51.53	1.53	60	1.53	25
Junc J-63	27	0.14	20.17	-6.82	83	-6.82	48
Junc J-64	23	0.14	20.02	-2.97	87	-2.97	52
Junc J-65	68	0.00	89.04	21.00	42	21.00	42
Junc J-66	45	0.14	55.59	10.57	65	10.57	30
Junc J-67	10	0.14	70.03	59.91	100	59.91	65
Junc J-68	27	0.14	70.53	43.45	83	43.45	48
Junc J-69	60	0.14	70.85	10.83	50	10.83	15
Junc J-70	21	0.14	21.03	0.03	89	0.03	54
Junc J-71	15	0.14	44.83	29.77	95	29.77	60
Junc J-72	59	0.14	75.79	16.76	51	16.76	16
Junc J-73	15	0.14	37.52	22.48	95	22.48	60
Junc J-74	15	0.14	44.84	29.78	95	29.78	60
Junc J-75	46	0.14	66.27	20.23	64	20.23	29
Junc J-76	25	0.14	54.27	29.21	85	29.21	50
Junc J-77	53	0.14	73.19	20.15	57	20.15	22
Junc J-78	55	0.14	72.91	17.88	55	17.88	20
Junc J-79	63	0.14	80.68	17.64	47	17.64	12
Junc J-80	12	0.14	86.40	74.25	98	74.25	63
Junc J-81	10	0.14	38.69	28.63	100	28.63	65
Junc J-82	5	0.14	54.36	49.27	105	49.27	70
Junc J-83	10	0.14	88.01	77.86	100	77.86	65
Junc J-84	36	0.14	54.34	18.30	74	18.30	39
Junc J-85	46	0.14	53.49	7.48	64	7.48	29
Junc J-86	46	0.14	53.47	7.45	64	7.45	29
Junc J-87	67	0.00	89.26	21.81	43	21.81	43
Junc J-88	95	0.00	98.75	3.74	15	3.74	15
Junc J-89	80	0.00	92.69	12.44	30	12.44	30
Junc J-90	85	4.30	98.44	13.41	25	13.41	25
Junc J-91	72	16.80	88.87	16.83	38	16.83	38
Junc J-92	50	5.00	88.69	38.62	60	38.62	60
Junc J-93	48	11.60	88.65	40.57	62	40.57	62
Resvr R-1	110	#N/A	110.00	0.00	0	0.00	0

: Static Head of at least 70m
: Nodes to be covered with PRV

S43-1-19

Attachment-3

No.22 Kombito Borderline, Jakson Ridge & Bura
Network Table - Links

Link ID	Length	Diameter	Flow	Velocity	Unit Headloss
	m	mm	LPS	m/s	m/km
Pipe p-1420	3	100	-0.54	0.07	0.12
Pipe p-1835	3	75	0.06	0.01	0.01
Pipe p-683	3	75	0.06	0.01	0.01
Pipe p-1831	3	100	0.12	0.02	0.01
Pipe p-1830	3	75	0.06	0.01	0.01
Pipe p-458	2	100	-1.29	0.16	0.59
Pipe p-1834	3	75	0.06	0.01	0.01
Pipe p-1805	3	150	13.15	0.74	5.98
Pipe p-1843	2	63	0.36	0.12	0.52
Pipe p-1743	2	150	-1.77	0.10	0.14
Pipe p-1839	2	50	1.09	0.56	12.56
Pipe p-1742	2	50	-0.10	0.05	0.14
Pipe p-1840	2	50	1.09	0.56	12.57
Pipe p-1842	2	63	0.36	0.12	0.52
Pipe p-409	2	100	-0.42	0.05	0.07
Pipe p-678	2	75	-9.00	2.04	86.74
Pipe p-1812	3	150	-10.68	0.60	4.07
Pipe p-451	2	100	-0.42	0.05	0.07
Pipe p-1832	5	75	-2.15	0.49	6.11
Pipe p-177	5	75	-9.84	2.23	102.32
Pipe p-679	4	75	-9.12	2.06	88.89
Pipe p-161	5	150	1.51	0.09	0.11
Pipe p-1007	5	50	0.36	0.18	1.61
Pipe p-1018	6	63	0.13	0.04	0.08
Pipe p-1841	8	32	-0.23	0.28	6.03
Pipe p-1036	6	50	0.48	0.24	2.74
Pipe p-457	6	100	-0.72	0.09	0.20
Pipe p-1009	6	50	-2.04	1.04	39.95
Pipe p-445	6	100	-3.03	0.39	2.84
Pipe p-1019	8	50	0.12	0.06	0.21
Pipe p-1037	8	50	0.36	0.18	1.61
Pipe p-1027	9	100	-0.45	0.06	0.08
Pipe p-1035	9	50	0.12	0.06	0.21
Pipe p-1829	10	32	0.11	0.13	1.53
Pipe p-1836	10	63	-0.48	0.15	0.89
Pipe p-449	10	100	2.55	0.32	2.06
Pipe p-455	10	100	-0.15	0.02	0.01
Pipe p-936	11	50	0.48	0.24	2.74
Pipe p-1026	11	100	-0.57	0.07	0.13
Pipe p-1034	11	50	0.24	0.12	0.76
Pipe p-1028	11	100	-1.20	0.15	0.51
Pipe p-165	13	150	-10.56	0.60	3.99
Pipe p-448	12	100	-1.53	0.20	0.81
Pipe p-1810	15	150	2.11	0.12	0.20
Pipe p-1025	13	50	0.36	0.18	1.61
Pipe p-1809	13	150	-10.68	0.60	4.07
Pipe p-1006	14	50	0.60	0.31	4.15
Pipe p-1020	13	50	-0.23	0.12	0.69
Pipe p-1833	16	63	0.49	0.16	0.94
Pipe p-1005	16	50	0.12	0.06	0.21
Pipe p-1837	19	32	-0.11	0.13	1.50
Pipe p-1045	18	100	0.36	0.05	0.06
Pipe p-450	19	100	1.23	0.16	0.53
Pipe p-680	20	75	0.12	0.03	0.03
Pipe p-1029	21	100	-0.42	0.05	0.07
Pipe p-178	24	150	-0.72	0.04	0.03
Pipe p-1186	25	40	-0.24	0.19	2.25
Pipe p-1441	54	20	0.12	0.38	18.27

No.22 Kombito Borderline, Jakson Ridge & Bura

Network Table - Links

Link ID	Length	Diameter	Flow	Velocity	Unit Headloss
	m	mm	LPS	m/s	m/km
Pipe p-1014	31	50	0.12	0.06	0.21
Pipe p-682	33	75	-2.62	0.59	8.80
Pipe p-166	33	150	-10.68	0.60	4.07
Pipe p-1440	36	40	0.12	0.10	0.62
Pipe p-442	35	100	-0.12	0.02	0.01
Pipe p-1442	36	32	0.12	0.15	1.85
Pipe p-1017	39	63	-0.96	0.31	3.21
Pipe p-453	45	100	-0.51	0.06	0.10
Pipe p-163	49	150	-10.44	0.59	3.90
Pipe p-1022	59	50	0.12	0.06	0.21
Pipe p-1827	49	20	0.12	0.38	18.27
Pipe p-454	50	100	-0.27	0.03	0.03
Pipe p-1815	53	50	0.24	0.12	0.76
Pipe p-1043	53	100	-0.12	0.02	0.01
Pipe p-1460	55	32	0.12	0.15	1.85
Pipe p-1811	54	150	1.99	0.11	0.18
Pipe p-1894	61	40	-0.24	0.19	2.25
Pipe p-444	66	100	-2.91	0.37	2.63
Pipe p-1008	67	50	-1.92	0.98	35.71
Pipe p-1669	70	100	0.45	0.06	0.08
Pipe p-1816	75	40	-0.12	0.10	0.62
Pipe p-392	74	100	0.43	0.05	0.08
Pipe p-1806	79	150	13.03	0.74	5.88
Pipe p-1004	87	50	0.48	0.24	2.74
Pipe p-1185	92	40	-0.12	0.10	0.62
Pipe p-1042	95	100	0.12	0.02	0.01
Pipe p-1296	111	25	0.12	0.24	6.16
Pipe p-1038	98	50	-0.12	0.06	0.21
Pipe p-1845	101	50	0.12	0.06	0.21
Pipe p-1994	108	150	-0.12	0.01	0.00
Pipe p-1903	135	32	0.12	0.15	1.85
Pipe p-456	109	100	-0.60	0.08	0.14
Pipe p-1023	109	50	-0.12	0.06	0.21
Pipe p-1817	137	40	0.00	0.00	0.00
Pipe p-484	111	100	-0.12	0.02	0.01
Pipe p-1828	162	20	0.48	1.53	238.07
Pipe p-1033	119	50	0.00	0.00	0.00
Pipe p-443	167	100	2.67	0.34	2.24
Pipe p-1024	127	50	-0.12	0.06	0.21
Pipe p-1826	133	20	0.24	0.76	65.95
Pipe p-1016	163	32	-0.12	0.15	1.85
Pipe p-935	139	50	0.36	0.18	1.61
Pipe p-1030	140	50	0.12	0.06	0.21
Pipe p-1469	191	100	0.19	0.02	0.02
Pipe p-1701	153	150	0.12	0.01	0.00
Pipe p-1772	164	75	-8.28	1.87	74.33
Pipe p-1844	193	50	0.12	0.06	0.21
Pipe p-1003	168	100	0.12	0.02	0.01
Pipe p-1807	175	150	12.91	0.73	5.78
Pipe p-452	190	100	-0.87	0.11	0.28
Pipe p-1459	206	40	0.24	0.19	2.25
Pipe p-1808	210	150	12.91	0.73	5.78
Pipe p-431	227	100	1.03	0.13	0.39
Pipe p-1838	231	50	-1.44	0.73	20.95
Pipe p-1814	252	150	0.00	0.00	0.00
Pipe p-162	255	150	1.63	0.09	0.13
Pipe p-1032	270	50	0.12	0.06	0.21
Pipe p-168	291	150	-9.96	0.56	3.58

S4.3-1-20

Attachment-3

No.22 Kombito Borderline, Jakson Ridge & Bura

Network Table - Links

Link ID	Length	Diameter	Flow	Velocity	Unit Headloss
	m	mm	LPS	m/s	m/km
Pipe p-160	396	50	0.12	0.06	0.21
Pipe p-1640	366	50	0.24	0.12	0.76
Pipe p-1670	457	100	-1.41	0.18	0.69
Pipe p-1993	814	150	-0.48	0.03	0.01
Pipe p-1470	651	40	0.00	0.00	0.00
Pipe p-1700	1,016	150	0.24	0.01	0.00
Pipe p-569	1,018	100	-0.31	0.04	0.04
Pipe P-76	4	200	-13.87	0.44	1.63
Pipe P-79	60	25	-0.24	0.49	22.24
Pipe P-80	32	25	-0.36	0.73	47.13
Pipe P-85	55	100	0.00	0.00	0.00
Pipe P-90	21	150	0.00	0.00	0.00
Pipe P-91	171	100	0.07	0.01	0.00
Pipe P-93	10	150	0.00	0.00	0.00
Pipe P-95	11	150	0.48	0.03	0.01
Pipe P-96	14	300	13.87	0.20	0.23
Pipe P-97	9	152.4	0.36	0.02	0.01
Pipe P-98	153	75	-5.76	1.30	37.97
Pipe P-99	33	75	-6.12	1.39	42.48
Pipe P-101	17	50	-1.08	0.55	12.32
Pipe P-102	63	50	-0.60	0.31	4.15
Pipe P-103	65	50	-0.84	0.43	7.73
Pipe P-104	31	50	-0.12	0.06	0.21
Pipe P-105	5	50	0.24	0.12	0.76
Pipe P-106	46	40	-0.12	0.10	0.62
Pipe P-107	60	40	0.00	0.00	0.00
Pipe P-108	78	150	-13.27	0.75	6.08
Pipe P-109	49	150	-13.75	0.78	6.50
Pipe P-110	139	50	0.36	0.18	1.61
Pipe P-111	42	50	0.12	0.06	0.21
Pipe P-112	4	75	8.88	2.01	84.61
Pipe P-113	161	75	8.64	1.96	80.42
Pipe P-114	118	32	0.36	0.45	14.16
Pipe P-115	14	32	0.12	0.15	1.85

No.22 Kombito Borderline, Jakson Ridge & Bura
Network Table - Nodes

Node ID	Elevation	Base Demand	Head	Effective Pressure	Static Pressure	Effective Pressure	Static Pressure
	Result of analysis by using WaterGEM					With PRV	
Node ID	m	LPS	m	m	m	m	m
Junc J-27	41	0.12	44.61	3.61	43	3.61	43
Junc J-28	41	0.12	44.62	3.61	43	3.61	43
Junc J-45	15	0.12	44.92	29.86	69	29.86	69
Junc J-46	15	0.12	44.92	29.86	69	29.86	69
Junc J-53	15	0.12	44.56	29.50	69	29.50	69
Junc J-54	15	0.12	44.56	29.50	69	29.50	69
Junc J-55	73	0.12	83.20	10.18	11	10.18	11
Junc J-56	73	0.12	83.18	10.16	11	10.16	11
Junc J-72	25	0.12	44.77	19.73	59	19.73	59
Junc J-73	25	0.12	44.77	19.73	59	19.73	59
Junc J-108	54	0.12	80.47	26.42	30	26.42	30
Junc J-109	54	0.12	80.47	26.42	30	26.42	30
Junc J-114	15	0.12	44.95	29.89	69	29.89	69
Junc J-115	15	0.00	44.92	29.86	69	29.86	69
Junc J-122	15	0.00	44.90	29.84	69	29.84	69
Junc J-152	43	0.00	44.61	1.61	41	1.61	41
Junc J-153	43	0.00	44.61	1.61	41	1.61	41
Junc J-201	30	0.12	77.87	47.78	54	47.78	54
Junc J-202	30	0.12	78.08	47.98	54	47.98	54
Junc J-203	51	0.00	80.42	29.36	33	29.36	33
Junc J-204	51	0.00	80.43	29.37	33	29.37	33
Junc J-226	43	0.00	44.61	1.61	41	1.61	41
Junc J-323	15	0.12	44.89	29.83	69	29.83	69
Junc J-333	30	0.00	78.44	48.35	54	48.35	54
Junc J-334	30	0.12	79.00	48.91	54	48.91	54
Junc J-387	56	0.12	80.44	24.39	28	24.39	28
Junc J-388	56	0.12	80.44	24.39	28	24.39	28
Junc J-389	25	0.12	49.79	24.74	59	24.74	59
Junc J-390	25	0.12	49.78	24.73	59	24.73	59
Junc J-496	15	0.12	44.90	29.84	69	29.84	69
Junc J-499	15	0.12	44.90	29.84	69	29.84	69
Junc J-502	16	0.12	44.55	28.50	68	28.50	68
Junc J-503	16	0.12	44.54	28.48	68	28.48	68
Junc J-523	15	0.12	44.56	29.50	69	29.50	69
Junc J-533	20	0.12	52.18	32.12	64	32.12	64
Junc J-534	20	0.12	52.43	32.36	64	32.36	64
Junc J-563	18	0.12	45.19	27.14	66	27.14	66
Junc J-564	18	0.12	45.21	27.16	66	27.16	66
Junc J-586	45	0.12	44.47	-0.53	39	-0.53	39
Junc J-593	15	0.12	44.89	29.83	69	29.83	69
Junc J-691	16	0.12	44.52	28.47	68	28.47	68
Junc J-715	42	0.12	44.61	2.61	42	2.61	42
Junc J-772	18	0.12	44.56	26.50	66	26.50	66
Junc J-773	20	0.12	44.55	24.50	64	24.50	64
Junc J-777	15	0.12	44.91	29.85	69	29.85	69
Junc J-802	25	0.12	44.76	19.72	59	19.72	59
Junc J-806	30	0.12	44.65	14.62	54	14.62	54
Junc J-807	35	0.12	44.63	9.61	49	9.61	49
Junc J-812	15	0.12	44.55	29.49	69	29.49	69
Junc J-850	48	0.12	80.35	32.29	36	32.29	36
Junc J-851	48	0.12	80.32	32.26	36	32.26	36
Junc J-859	20	0.12	44.56	24.51	64	24.51	64
Junc J-860	21	0.12	44.55	23.50	63	23.50	63
Junc J-863	35	0.12	44.62	9.60	49	9.60	49
Junc J-865	64	0.12	80.23	16.20	20	16.20	20

Attachment-3

No.22 Kombito Borderline, Jakson Ridge & Bura
Network Table - Nodes

Node ID	Elevation	Base Demand	Head	Effective Pressure	Static Pressure	Effective Pressure	Static Pressure
	Result of analysis by using WaterGEM					With PRV	
Node ID	m	LPS	m	m	m	m	m
Junc J-866	65	0.12	80.28	15.25	19	15.25	19
Junc J-873	15	0.12	44.88	29.82	69	29.82	69
Junc J-883	50	0.12	80.48	30.42	34	30.42	34
Junc J-884	48	0.12	80.48	32.42	36	32.42	36
Junc J-913	25	0.12	43.64	18.60	59	18.60	59
Junc J-914	25	0.12	43.62	18.58	59	18.58	59
Junc J-958	30	0.12	78.44	48.34	54	48.34	54
Junc J-959	30	0.12	78.38	48.28	54	48.28	54
Junc J-996	15	0.12	44.87	29.81	69	29.81	69
Junc J-999	38	0.12	49.50	11.48	46	11.48	46
Junc J-1000	43	0.12	49.50	6.48	41	6.48	41
Junc J-1056	14	0.12	44.54	30.48	70	30.48	70
Junc J-1057	12	0.12	44.54	32.48	72	32.48	72
Junc J-1085	30	0.12	77.55	47.46	54	47.46	54
Junc J-1086	30	0.12	77.55	47.46	54	47.46	54
Junc J-1165	31	0.12	78.09	46.99	53	46.99	53
Junc J-1166	35	0.12	78.14	43.06	49	43.06	49
Junc J-1222	32	0.12	44.41	12.39	52	12.39	52
Junc J-1223	24	0.12	43.43	19.39	60	19.39	60
Junc J-1247	18	0.12	6.29	-11.69	66	-11.69	66
Junc J-1248	20	0.12	6.28	-13.69	64	-13.69	64
Junc J-1289	50	0.12	77.61	27.55	34	27.55	34
Junc J-1290	44	0.12	77.58	33.52	40	33.52	40
Junc J-1291	25	0.12	45.02	19.98	59	19.98	59
Junc J-1292	22	0.12	45.02	22.97	62	22.97	62
Junc J-1293	20	0.12	6.29	-13.69	64	-13.69	64
Junc J-1303	30	0.12	43.90	13.88	54	13.88	54
Junc J-1304	24	0.12	43.84	19.80	60	19.80	60
Junc J-1395	48	0.12	80.04	31.98	36	31.98	36
Junc J-1404	29	0.12	43.61	14.58	55	14.58	55
Junc J-1413	30	0.12	36.01	6.00	54	6.00	54
Junc J-1414	28	0.12	35.11	7.09	56	7.09	56
Junc J-1440	25	0.12	64.58	39.51	59	39.51	59
Junc J-1441	28	0.12	64.54	36.47	56	36.47	56
Junc J-1448	10	0.12	44.54	34.47	74	34.47	74
Junc J-1459	10	0.12	79.63	69.49	74	69.49	74
Junc J-1460	5	0.12	79.53	74.38	79	74.38	79
Junc J-1511	24	0.12	50.88	26.83	60	26.83	60
Junc J-1512	20	0.12	51.02	30.95	64	30.95	64
Junc J-1585	38	0.12	64.50	26.44	46	26.44	46
Junc J-1589	50	0.12	80.35	30.28	34	30.28	34
Junc J-1646	73	0.12	82.71	9.69	11	9.69	11
Junc J-1716	30	0.12	78.03	47.93	54	47.93	54
Junc J-1740	12	0.12	44.54	32.48	72	32.48	72
Junc J-1758	52	0.12	79.82	27.76	32	27.76	32
Junc J-1759	35	0.12	79.14	44.05	49	44.05	49
Junc J-1764	23	0.12	44.50	21.46	61	21.46	61
Junc J-1770	31	0.12	44.75	13.72	53	13.72	53
Junc J-1777	80	0.12	83.99	3.98	4	3.98	4
Junc J-1778	82	0.00	83.99	1.99	2	1.99	2
Junc J-1791	82	0.12	82.00	0.00	2	0.00	2
Junc J-1792	82	0.12	81.75	-0.25	2	-0.25	2
Junc J-1803	21	0.12	43.60	22.55	63	22.55	63
Junc J-1806	82	0.12	83.67	1.67	2	1.67	2
Junc J-1807	81	0.12	81.98	0.98	3	0.98	3

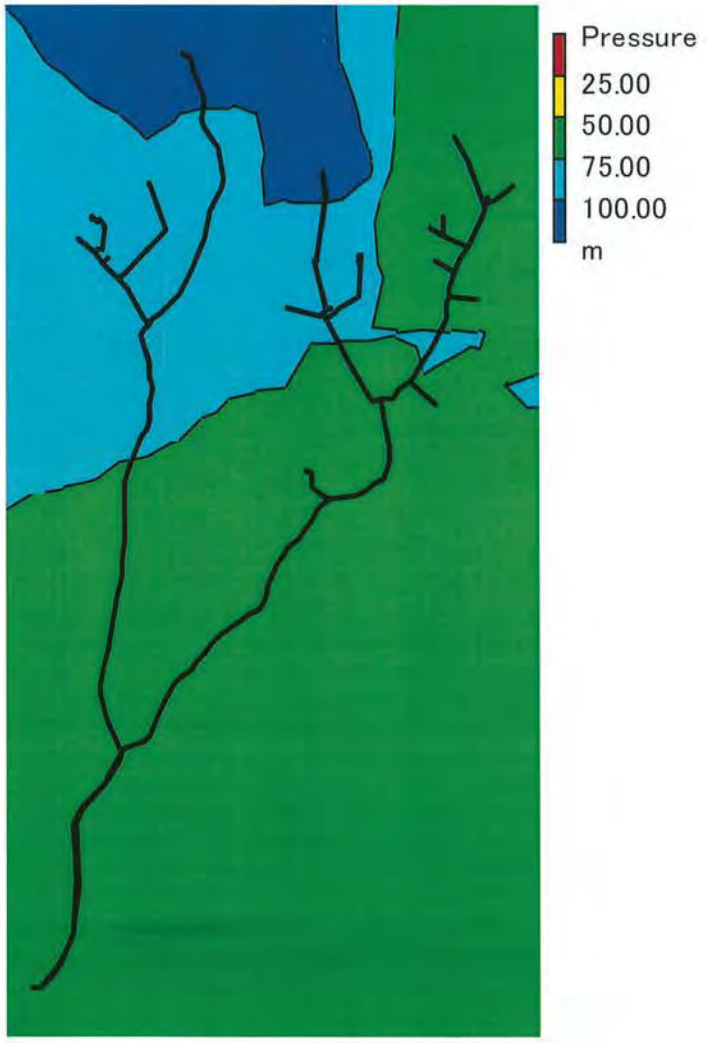
No.22 Kombito Borderline, Jakson Ridge & Bura
Network Table - Nodes

Node ID	Elevation	Base Demand	Head	Effective Pressure	Static Pressure	Effective Pressure	Static Pressure
	Result of analysis by using WaterGEM					With PRV	
Node ID	m	LPS	m	m	m	m	m
Junc J-1838	18	0.12	6.29	-11.68	66	-11.68	66
Junc J-1854	82	0.00	84.00	1.99	2	1.99	2
Junc J-1869	16	0.12	43.61	27.56	68	27.56	68
Junc J-1902	39	0.12	44.46	5.45	45	5.45	45
Junc J-1906	25	0.12	80.10	54.99	59	54.99	59
Junc J-1910	30	0.12	44.52	14.49	54	14.49	54
Junc J-1929	45	0.12	80.30	35.23	39	35.23	39
Junc J-1930	50	0.12	80.30	30.24	34	30.24	34
Junc J-1950	72	0.12	83.99	11.96	12	11.96	12
Junc J-1951	70	0.12	83.99	13.96	14	13.96	14
Junc J-1969	42	0.12	44.73	2.72	42	2.72	42
Junc J-1971	55	0.12	79.81	24.76	29	24.76	29
Junc J-1972	46	0.12	78.14	32.08	38	32.08	38
Junc J-1990	68	0.00	81.70	13.67	16	13.67	16
Junc J-1997	24	0.12	50.85	26.80	60	26.80	60
Junc J-2116	45	0.12	80.39	35.32	39	35.32	39
Junc J-2138	76	0.12	83.99	7.97	8	7.97	8
Junc J-2139	84	0.00	84.00	0.00	0	0.00	0
Junc J-2141	58	0.12	78.94	20.90	26	20.90	26
Junc J-2142	45	0.00	78.94	33.87	39	33.87	39
Junc J-2144	76	0.12	83.99	7.97	8	7.97	8
Junc J-2165	52	0.12	44.54	-7.63	32	-7.63	32
Junc J-2167	44	0.00	44.61	1.08	40	1.08	40
Junc J-2168	30	0.07	80.30	50.25	54	50.25	54
Junc J-2169	70	0.00	83.20	13.17	14	13.17	14
Junc J-2170	64	0.00	80.43	16.42	20	16.42	20
Junc J-2171	50	0.00	78.44	28.18	34	28.18	34
Junc J-2172	33	0.00	50.88	18.33	51	18.33	51
Junc J-2173	25	0.00	44.55	19.51	59	19.51	59
Junc J-2174	43	0.00	64.54	21.28	41	21.28	41
Resvr R-1	84	#N/A	84.00	0.00	0	0.00	0

: Static Head of at least 70m
: Nodes to be covered with PRV

S4.3-1-22

No. 6 Tasahe A & B



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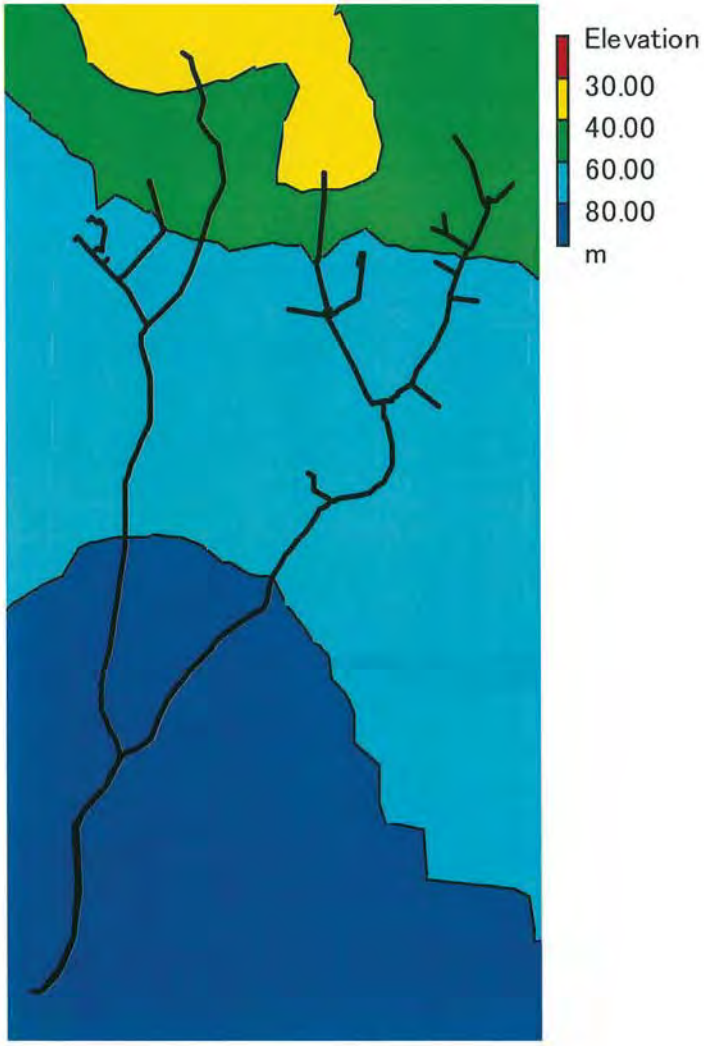
S4.3.1-23

No. 6 Tasahe A & B



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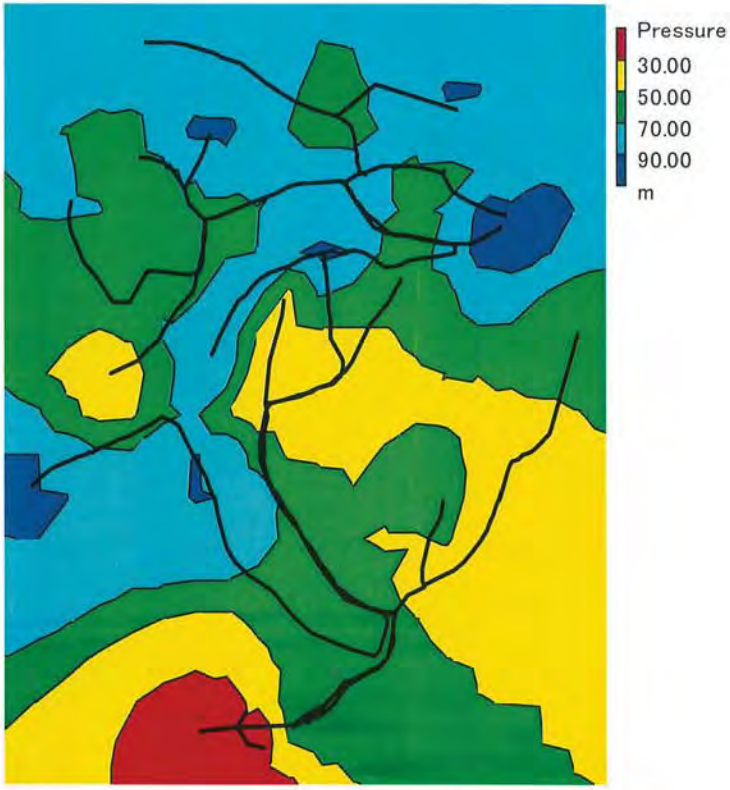
No. 8 Ngossi



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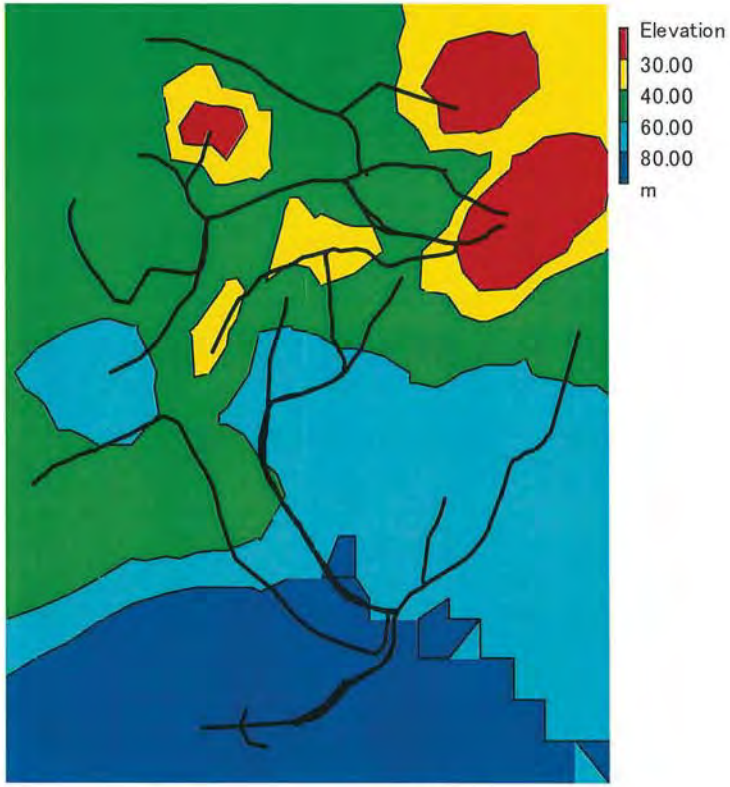

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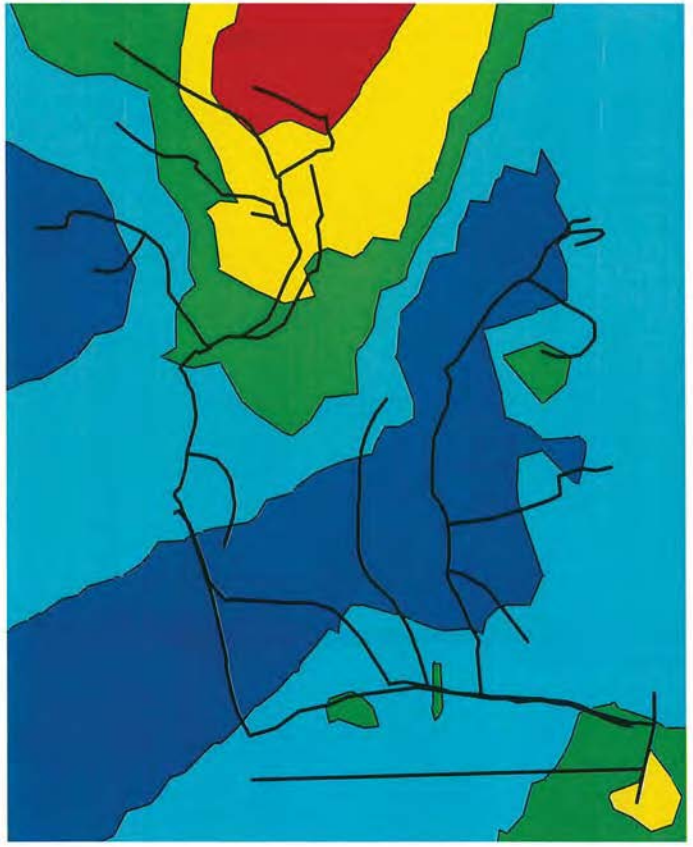
No. 9 Mbokona



Day 1, 12:00 AM

No. 9 Mbokona

Day 1, 12:00 AM

No.11 Vavaya Ridge

Day 1, 12:00 AM

No.11 Vavaya Ridge

Day 1, 12:00 AM

No.13 Mbokonabera

Day 1, 12:00 AM

No.13 Mbokonabera

Day 1, 12:00 AM

No.19 Mba Valley

Day 1, 12:00 AM

S4.3.1-28

No.19 Mba Valley

Day 1, 12:00 AM

Page 1

EPANET 2

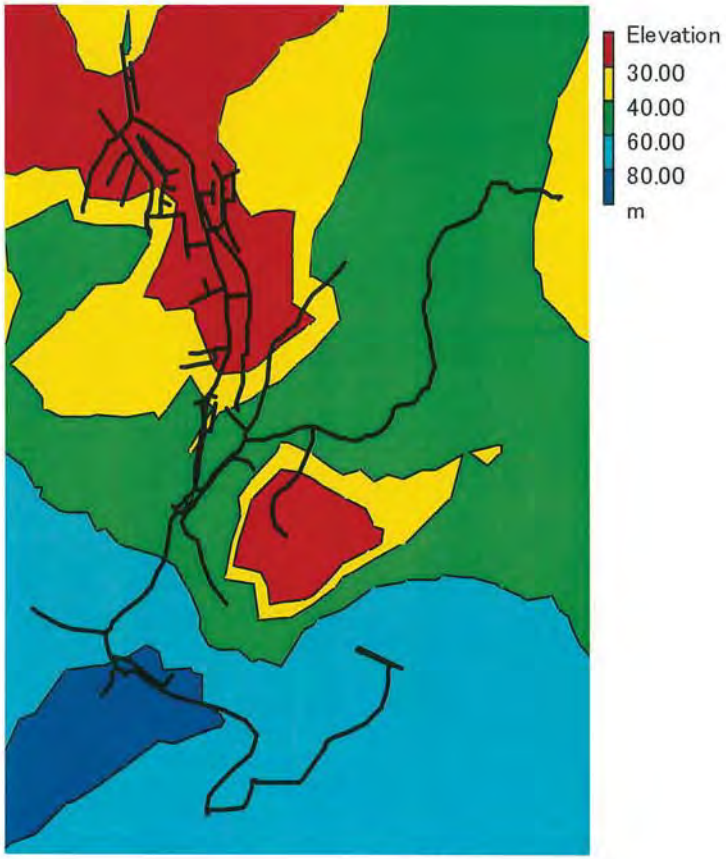
No. 22 Kombito Borderline, Jakson Ridge & Bura

Day 1, 12:00 AM

EPANET 2

Page 1

No. 22 Kombito Borderline, Jakson Ridge & Bura



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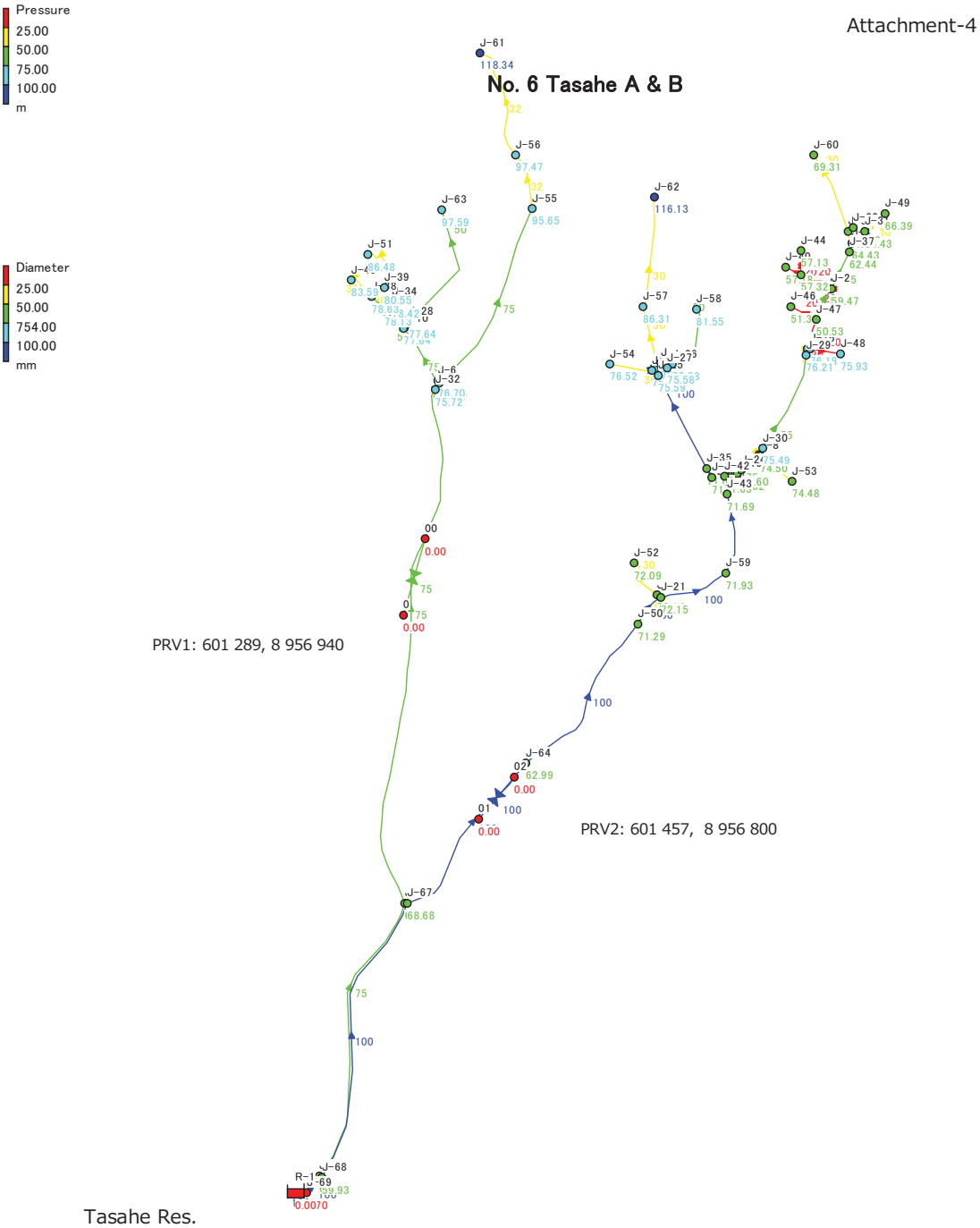
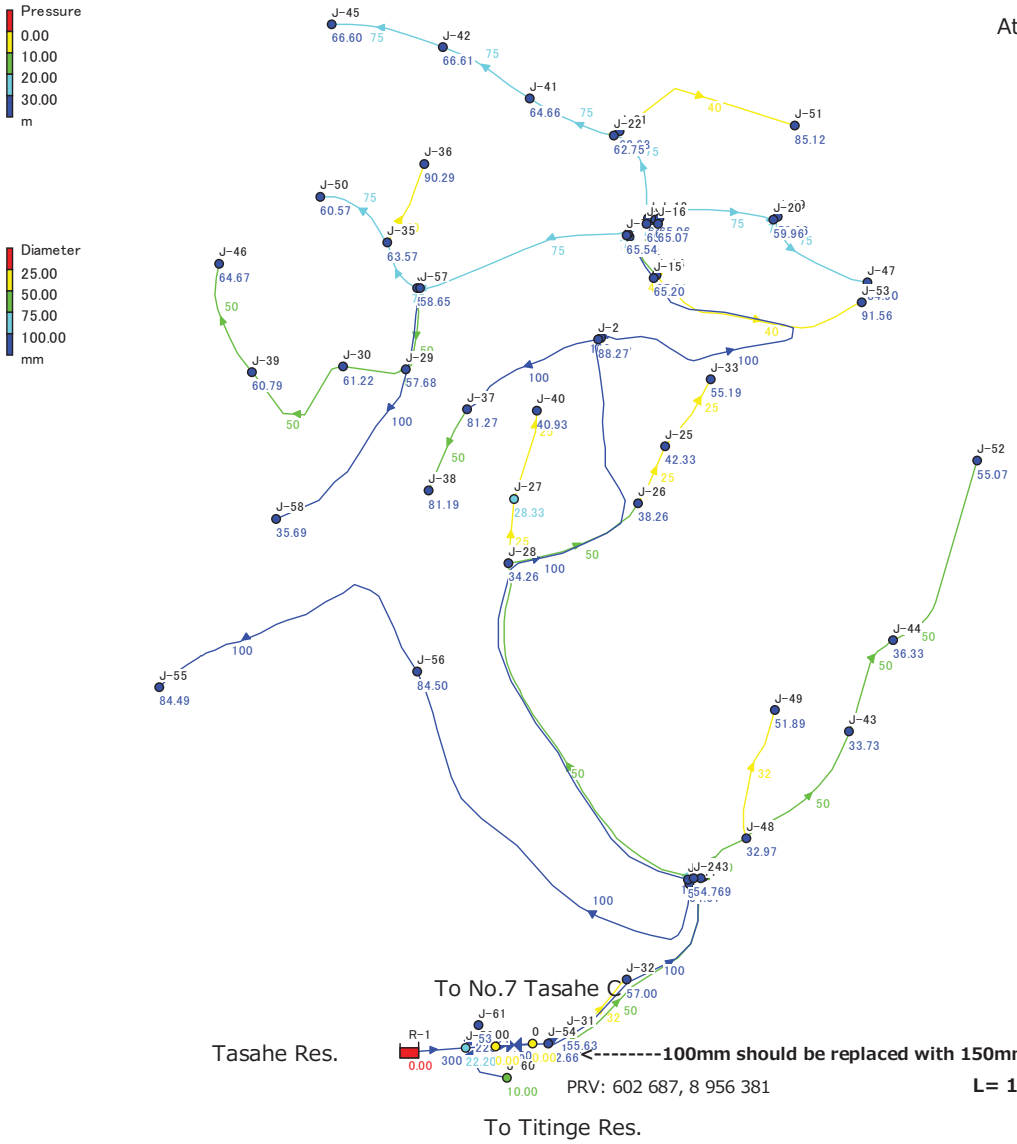
S4.3.1-29


Pressure
25.00
50.00
75.00
100.00
m
Diameter
25.00
50.00
754.00
100.00
mm
No. 6 Tasahe A & B
PRV1: 601 289, 8 956 940
PRV2: 601 457, 8 956 800
Tasahe Res.

No. 8 Ngossi

Attachment-4



To No.7 Tasahe C

Tasahe Res.

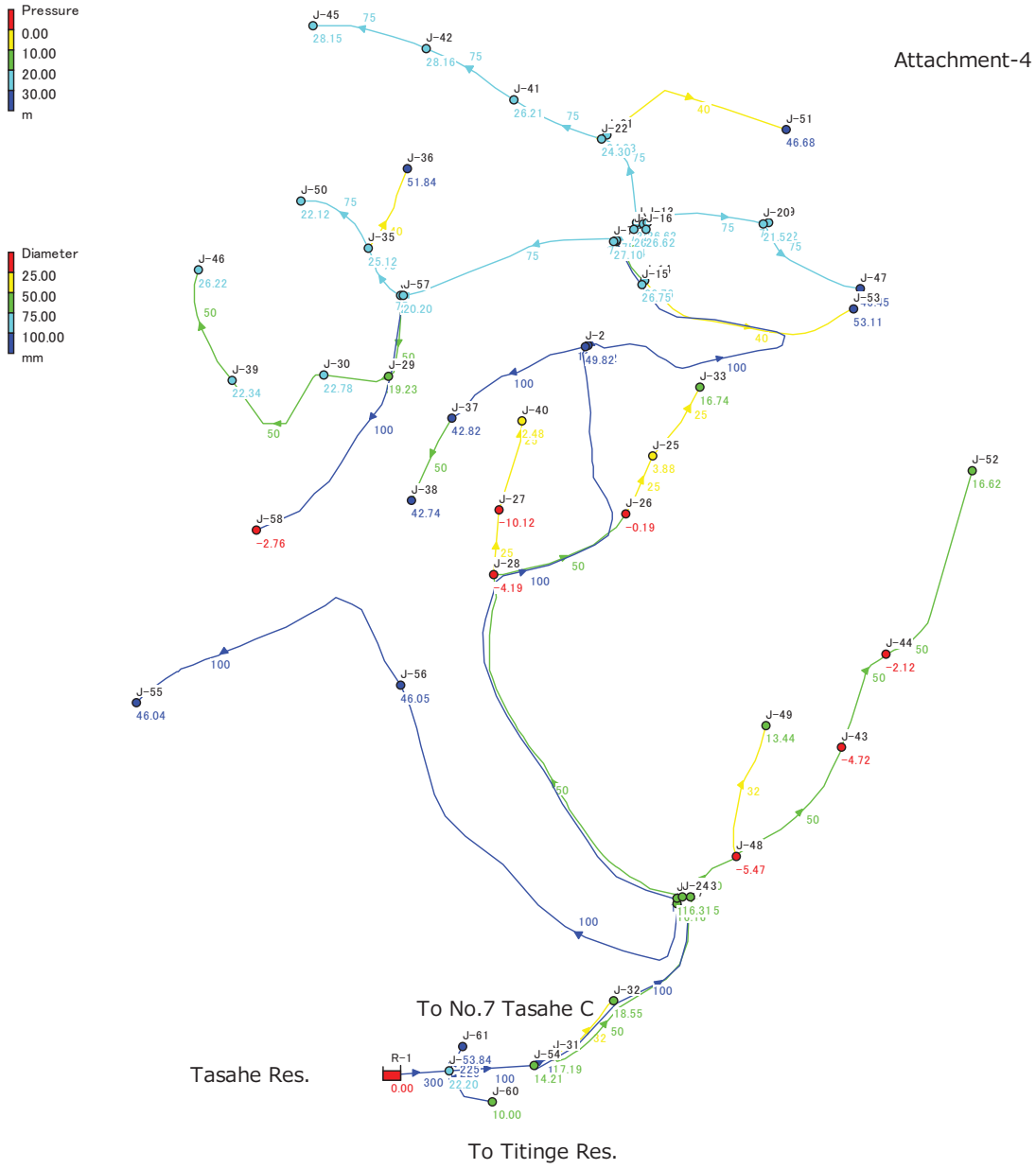
--------100mm should be replaced with 150mm

PRV: 602 687, 8 956 381

L= 1,051m

To Titinge Res.

No. 8 Ngossi


Pressure
0.00
10.00
20.00
30.00
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Diameter
25.00
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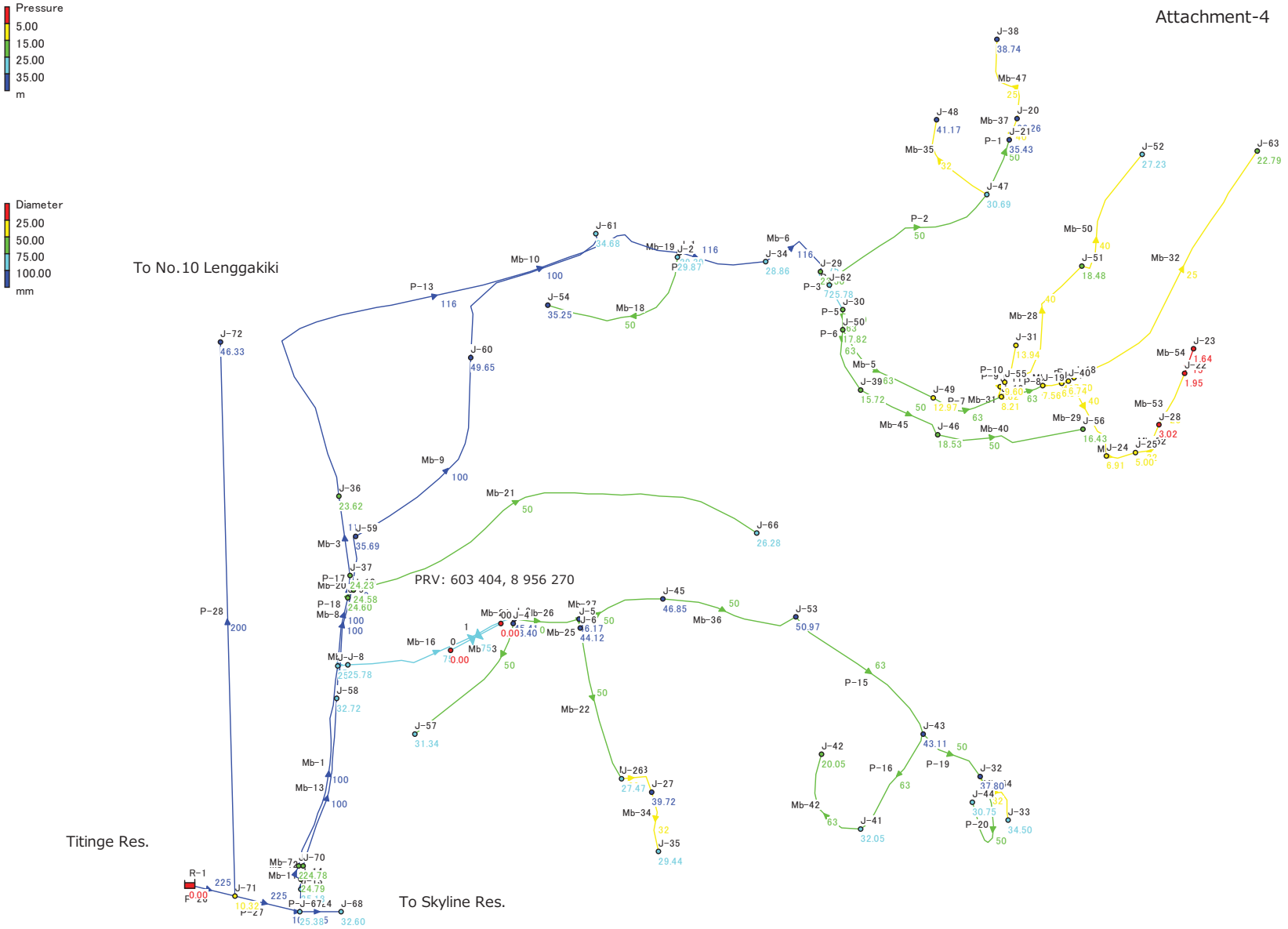
mm
Attachment-4
J-45
28.15
J-42
28.16
J-41
26.21
J-51
46.68
J-36
51.84
J-50
22.12
J-35
25.12
J-46
26.22
J-57
20.20
J-39
22.34
J-30
22.78
J-29
19.23
J-2
49.82
J-33
16.74
J-37
42.82
J-40
J-38
42.74
J-25
3.88
J-27
-10.12
J-26
-0.19
J-58
-2.76
J-28
-4.19
J-52
16.62
J-44
-2.12
J-55
46.04
J-56
46.05
J-49
13.44
J-43
-4.72
J-48
-5.47
J-32
18.55
To No.7 Tasahe C
J-61
J-31
J-54
14.21
R-1
0.00
J-60
10.00
Tasahe Res.
To Titinge Res.

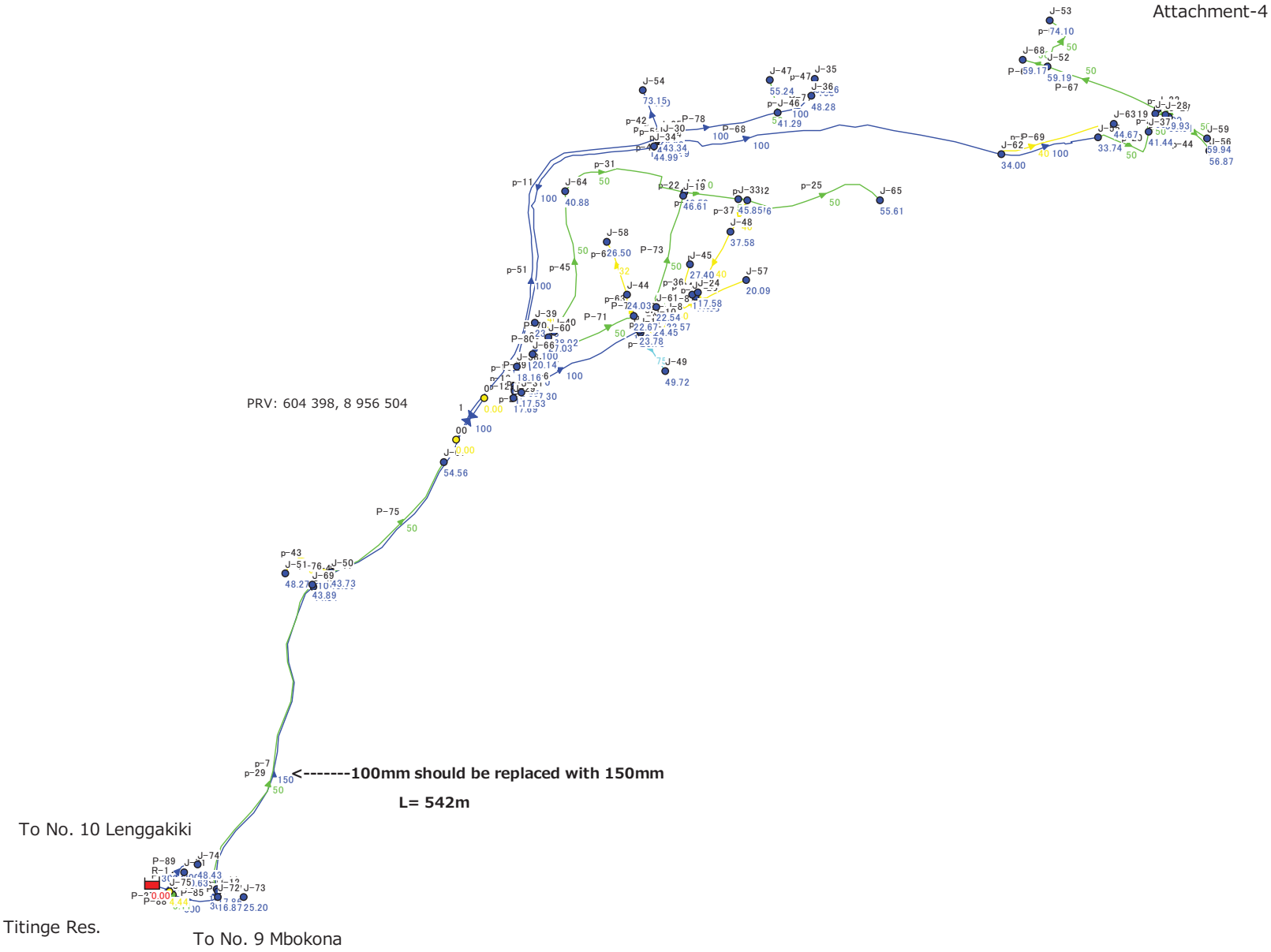
No. 9 Mbokona



S4.3-1-33

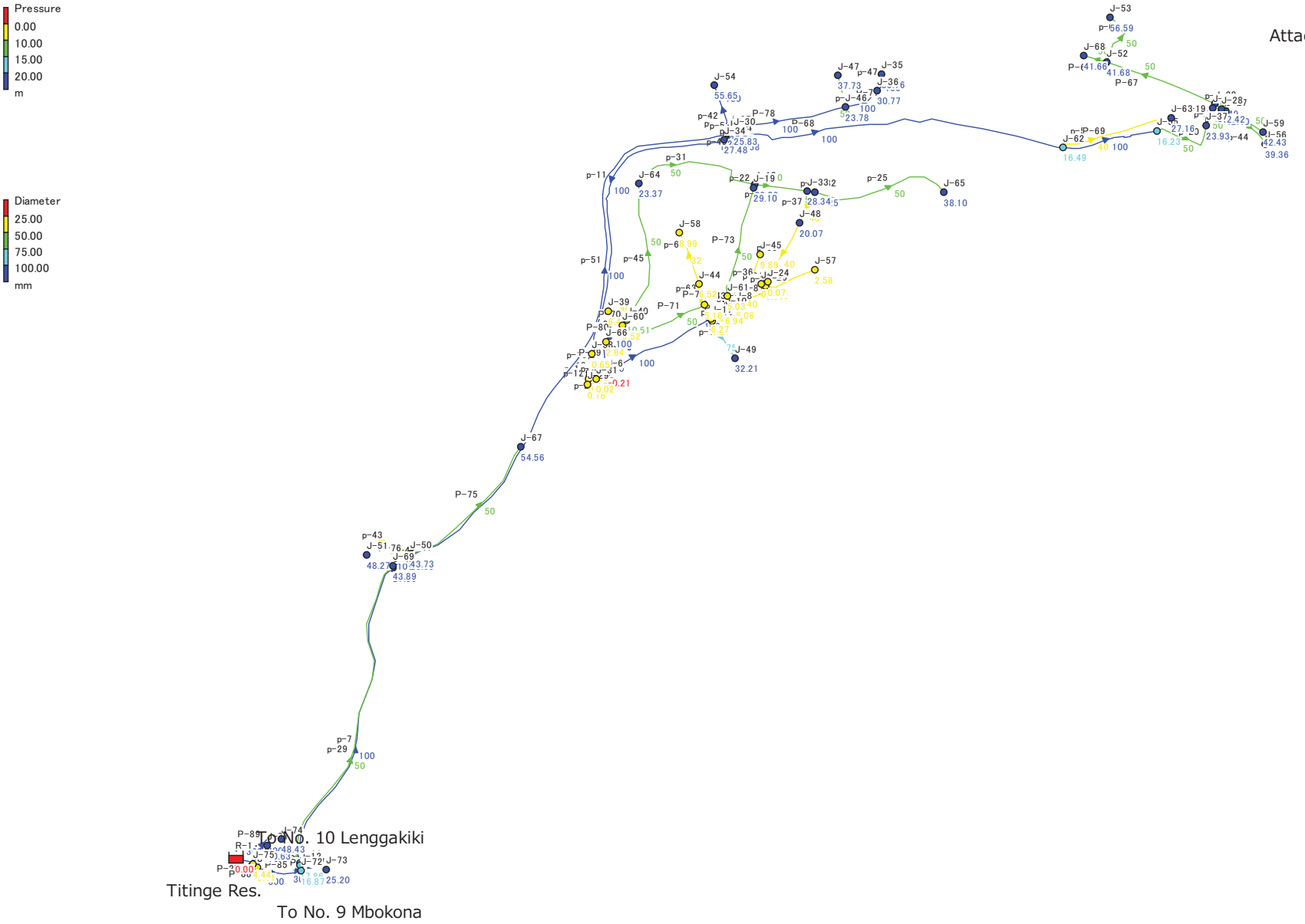
No.11 Vavaya Ridge

Attachment-4



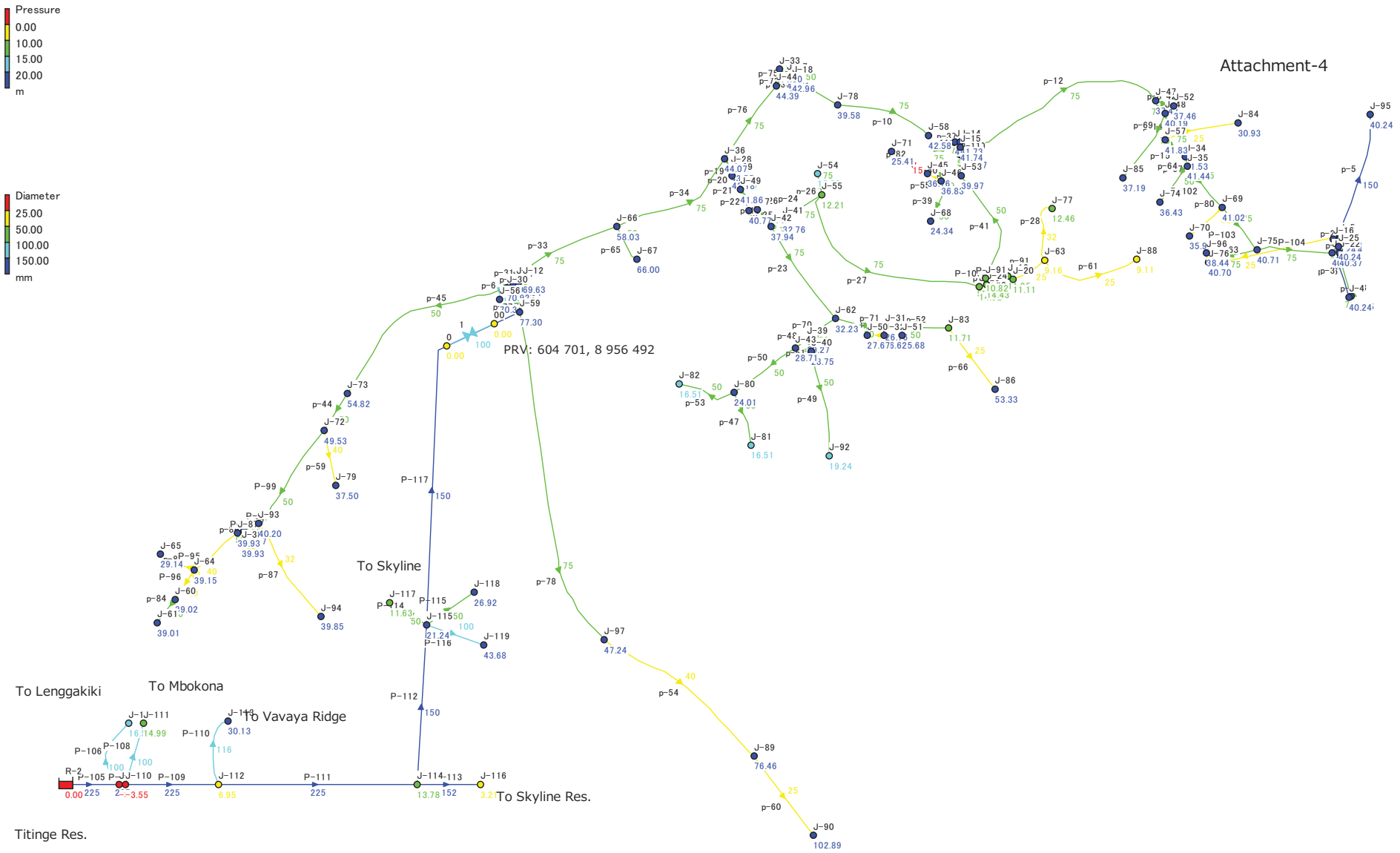
S43-1-34

No.11 Vavaya Ridge



S4.3-1-35

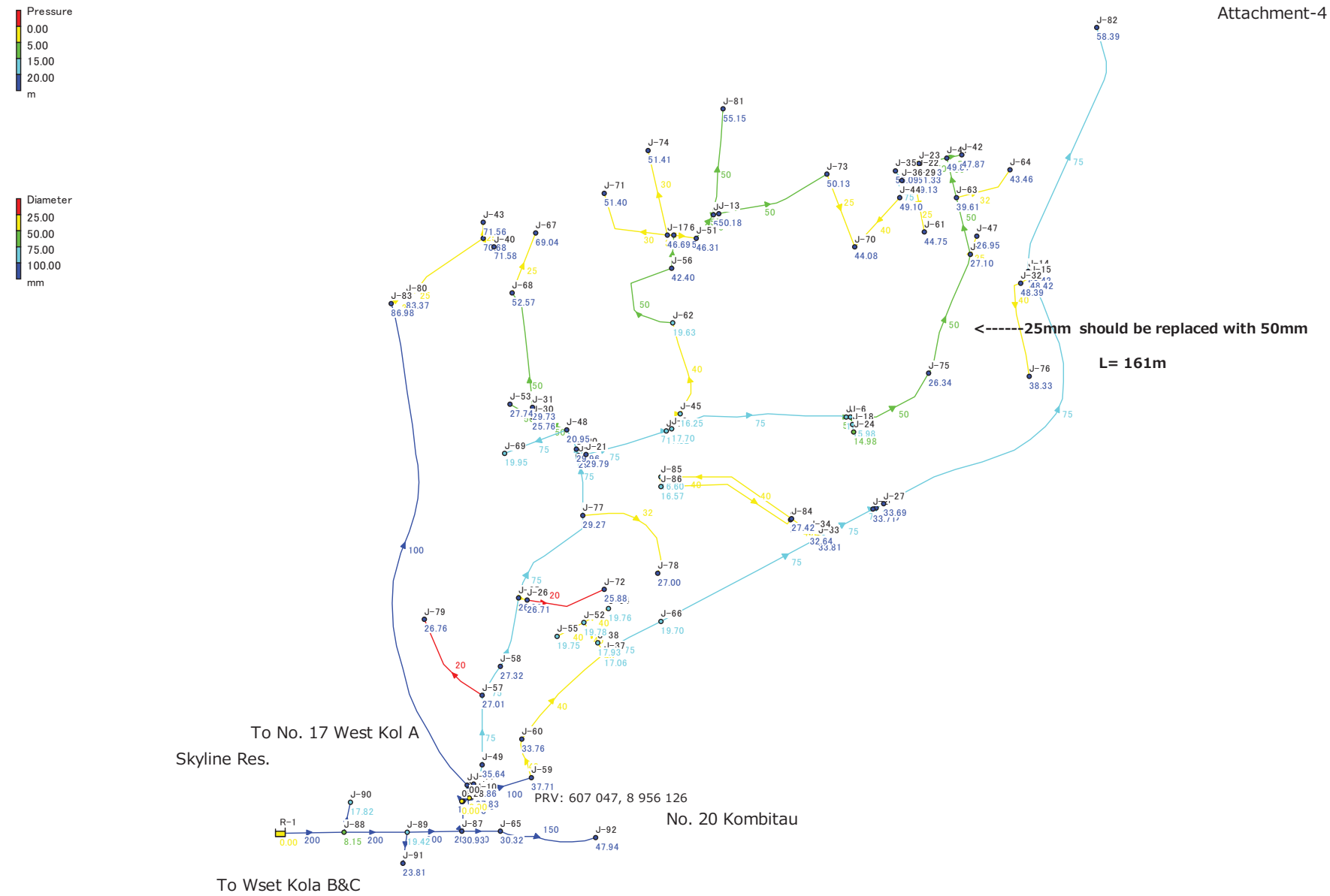
No.13 Mbokonabera



S4.3-1-36

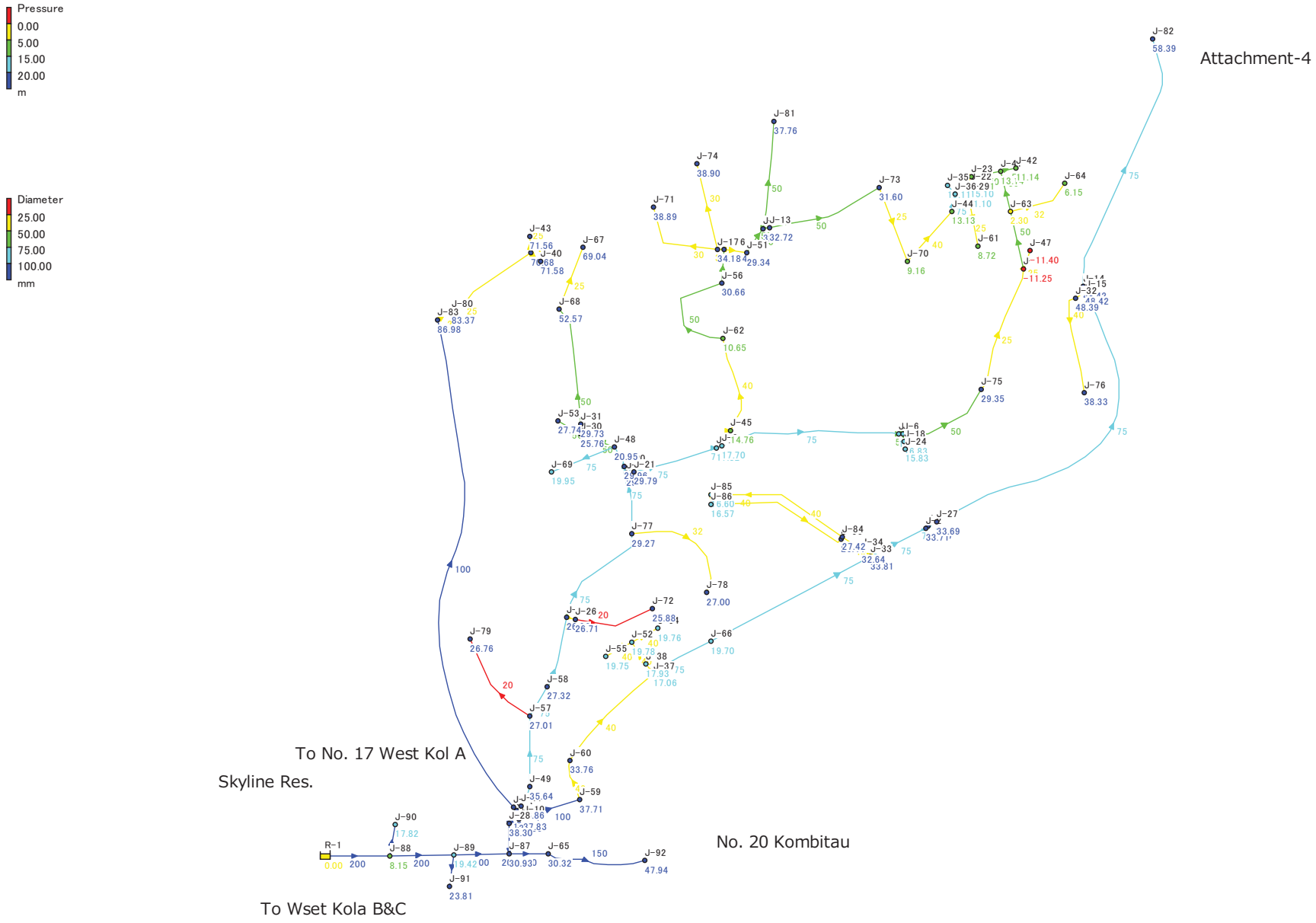
No.19 Mba Valley

Attachment-4



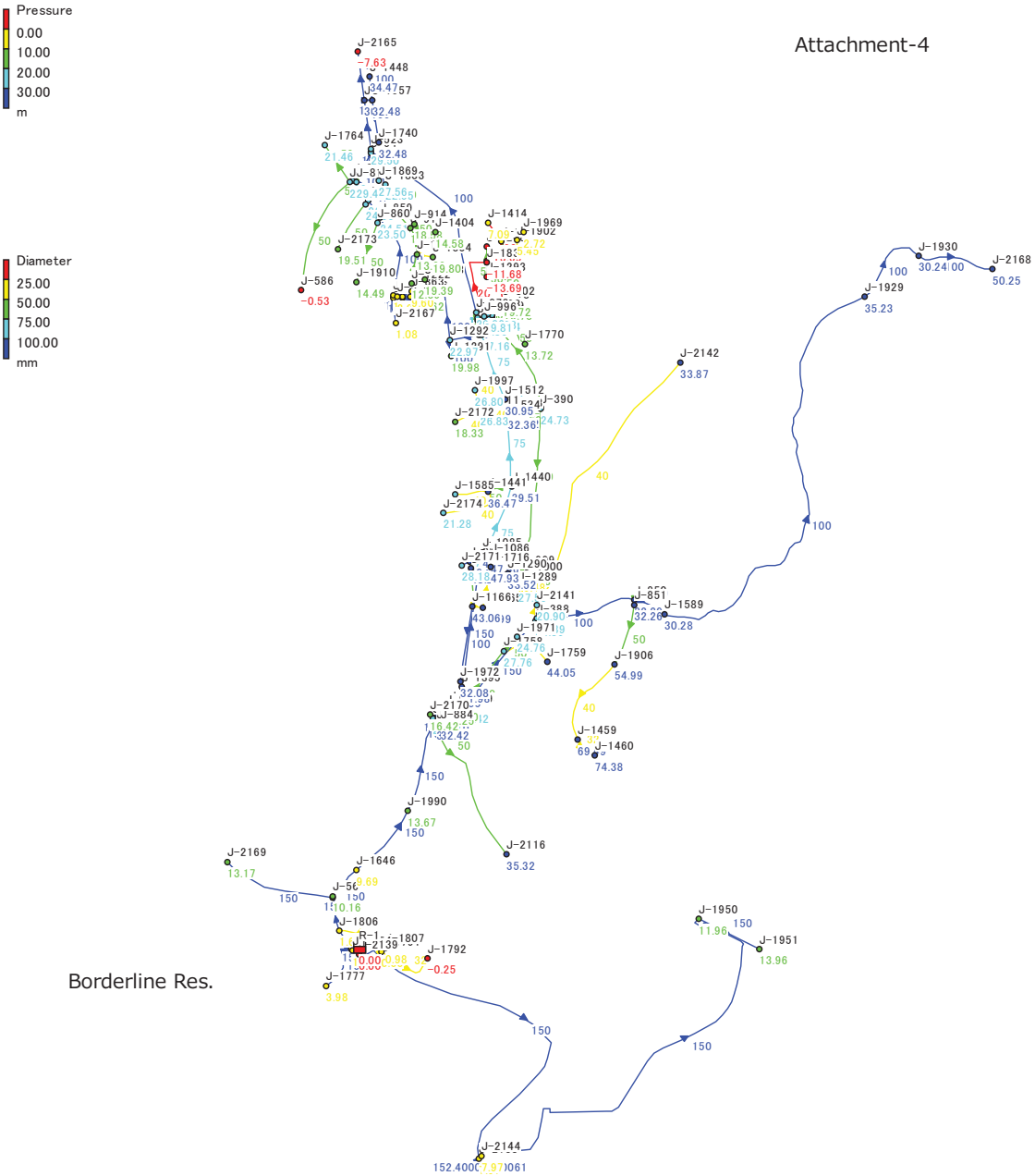
S4.3-1-37

No.19 Mba Valley



S4.3-1-38

No. 22 Kombito Borderline, Jakson Ridge & Bura



S4.5-1 年次行動計画 2013

Solomon Islands Water Authority

Japan International Cooperation Agency

The Project
for
Improvement of Non-Revenue Water Reduction Capacity
for
Solomon Islands Water Authority
in Solomon Islands

S4.5-1-1

Annual Action Plan 2013

on NRW Reduction

April, 2013

Prepared by Project Team

Table of Contents

Annex

Abbreviation

AUD	Australian Dollar
AusAID	Australian Agency for International Development
CP	Counterpart
DMA	District Metered Area
GIS	Geographical Information System
IWA	International Water Association
JICA	Japan International Cooperation Agency
LCZ	Leakage Control Zone
MNF	Minimum Night Flow
NRW	Non Revenue Water
OJT	On-the-Job Training
RAP	SIWA Short Term Recovery Strategy and Action Plan (30 May 2011)
SBD	Solomon Islands Dollar

Chapter 1 Introduction

In order to carry out Non Revenue Water (NRW) reduction activities in Honiara City under the Project for Improvement of Non Revenue Water Reduction Capacity for Solomon Islands Water Authority in Solomon Islands (hereinafter "the Project"), the Project Team has formulated the Annual Action Plan 2013 (Phase-2) on NRW Reduction through the pilot projects to be implemented from April 2013 to March 2014.

Purpose of the Project is, "Non Revenue Water (NRW) ratio in Honiara City is reduced.".

1.1 NRW Reduction Activities

(1) Non Revenue Water in IWA Water Balance

NRW is defined as International Water Association (IWA) Water Balance as shown in Table 1-1.

Table 1-1 IWA Water Balance

Water Production	System Input Volume	Authorized Consumption	Billed Authorized Consumption	Billed metered consumption	**Revenue Water**
				Billed unmetered consumption	
			Unbilled Authorized Consumption	Unbilled metered consumption	**Non Revenue Water (NRW)**
				Unbilled unmetered consumption	
		Water Losses	Apparent Losses	Unauthorized consumption (incl. illegal connections)	
				Metering inaccuracies	
			Real Losses	Leakage on transmission and/or distribution networks	
				Leakage and overflow at utility's storage tanks	
				Leakage on service connections to customer meters	
	Treatment Losses (Backwash, etc.) and Evaporation				

(2) Sequence of NRW Reduction Activities

Sequence of NRW reduction activities in each pilot project is summarized as shown in Figure 1-1.

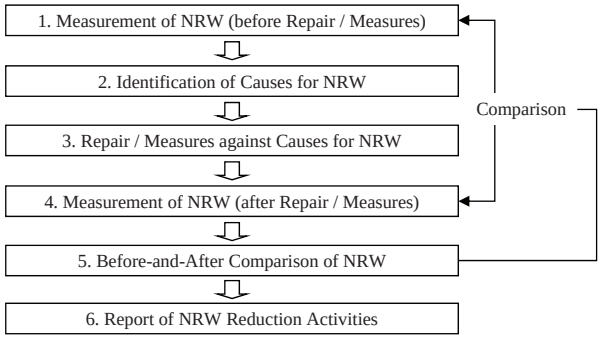


Figure 1-1 Summarized Flow of NRW Reduction Activities

1.2 Project Team

The Project Team on NRW reduction activities is composed of NRW Management Team, NRW Action Team and JICA Expert Team.

JICA Expert Team convened the explanatory meeting with members of NRW Management and Action Teams on project implementation sequence including pilot project procedures on 22 November 2012, and each Expert has trained them through preparatory actions in order to formulate the annual action plan.

(1) NRW Management Team

NRW Management Team consisting of five managers of Solomon Islands Water Authority (hereinafter "Solomon Water") is involved in implementation of the Pilot Project.

Table 1-2 Member List of NRW Management Team

Name	Position in the Project (Position in Solomon Water)
Mr. Richard AUSTIN	Project Director (General Manager)
Mr. Ray ANDRESEN	Project Manager (Operation & Technical Manager)
Mr. Ronald DAVIES	(Finance & Administration Manager)
Ms. Tima KOFANA	(Human Resources Manager)
Ms. Ellen INAHIA	(Service Delivery & Communications Manager)

(2) NRW Action Team

19 counterparts of NRW Action Team involved in implementation of the Pilot Project are listed below:

Table 1-3 Member List of NRW Action Team

Name	Position in the Project (Position in Solomon Water)
NRW Technical Sub-Team	
Mr. Benjamin BILLY	Action Team Leader 1 / Sub-Team Leader (NRW Taskforce Leader)
Mr. Austin ATA	Deputy Sub-Team Leader (Customer Connections)
Mr. Moses RAMO	(Customer Connections)
Mr. Silas TALOSUI	Deputy Sub-Team Leader (Network Maintenance & Repair)
Mr. Mathias BERA	Pipe Repair (Network Maintenance & Repair)
Mr. Layten JACOB	Deputy Sub-Team Leader (Procurement)
Mr. Frank DAUKALIA	Meter Repair/Replacement (Pipe Materials Management & Procurement)
Mr. Chris MERIKO	Deputy Sub-Team Leader (Water Resources & Treatment)
Customer Service Sub-Team	
Ms. Ellen INAHIA	Action Team Leader 2 / Sub-Team Leader (Service Delivery Com. Manager)
Ms. Beverly SAOHU	Deputy Sub-Team Leader (Customer Care)
Ms. Sophia TANGO	(Community Relations & Media Assistant)
Ms. Daisy MENAGA	Deputy Sub-Team Leader (Meter Reading)
Ms. Mary TAFOA	Deputy Sub-Team Leader (Billing)
Mr. Lawrence IROI	(Chief Accountant)
GIS Sub-Team	
Mr. Japhliet ROUHANA	Sub-Team Leader (IT Administration)
Mr. Gavin BARE	(GIS Technician)
Leakage Detection Sub-Team	
Mr. Eric UNGA	Sub-Team Leader (Leakage)
Mr. Matthew MAFE	(Plumber)

Name	Position in the Project (Position in Solomon Water)
Mr. David AKOEASI	(Plumber)

(3) JICA Expert Team

JICA Expert Team on implementation of the pilot projects consists of eight Japanese members (see Table 1-4).

Table 1-4 Member List of JICA Expert Team

Name	Expertise
Mr. Taketoshi FUJIYAMA	Leader / Water Supply Planning, Operation and Management
Mr. Akinori MIYOSHI	Deputy Leader / NRW Reduction Measures -1
Mr. Masatoshi SENO	NRW Reduction Measures -2
Mr. Akihiko OKAZAKI	Leakage Detection Technology
Mr. Masakazu ASAI	GIS
Mr. Kenji KASAMATSU	Customer Service & Public Relations
Mr. Norio ISHIJIMA	GIS Adviser
Ms. Akiko SAKAMOTO	Coordinator

1.3 Collaboration with the Two-year Plan of Solomon Water

In April 2013, AusAID is expected to approve its grant aid assistance for the implementation of Two-Year Plan (The Solomon Water Development Plan, 2013-2015). The Plan continues the improvements in water supply services implemented during the RAP.

The Two-Year Plan proposes improvements in all parts of the Solomon Water business but especially improvements in the water distribution network and NRW reduction. It will be implemented from approximately May 2013 for two years and the overall budget for the Plan is approximately AUD 11 million.

The Objectives of the Plan as they relate to improving the water network and NRW are:

- Introduction of comprehensive water pressure management
- Renovation, replacement or redesign of the small diameter network for improved hydraulic capacity
- Improved connectivity and reliability of the water transmission network
- Reduction in NRW – Goals of NRW ratio (Honiara city): 30% in 2015, 20% (held) in 2017

With regard to NRW reduction, high network pressures have been identified as a major cause of physical losses (leakage) as a result of high leakage rates at high pressures and through the damage and deterioration that high pressures are causing to the pipelines. Solomon Water expects that pressure management will help reduce leakage significantly in addition to protecting the network against damaging high pressures and providing water at more comfortable pressures to customers. Solomon Water has requested that the JICA Expert Team assist in providing technical co-operation in the 11 to 13 District Metered Areas (DMA's) that will be created as pressure management zones.

Through discussion, it has been agreed in principle that the NRW activities planned for the project pilot zones can be transferred to working in the new DMA's when they have been defined. The timing of the transfer of activity under this technical co-operation will depend on the completion of the works

to install and commission of the pressure management systems but is likely to be in approximately October 2013. Solomon Water has the required funding available to implement the pressure management strategy and will also be able to support the creation of discrete DMA's and leakage control zones (LCZ's)

Chapter 2 Preparatory Actions for Pilot Project Implementation

Prior to pilot project implementation, the Project Team selected 15 pilot project areas through preparatory actions during the period from December 2012 to February 2013.

As the Project's activity is transferred from the original project pilot zones to NRW reduction in the new DMAs, the JICA Expert team will assist Solomon Water in implementing the preparatory actions to establish the DMAs.

2.1 Selection Procedures of Pilot Project Areas

The selection procedures for the pilot project areas are shown in Figure 2-1. The selection of the DMAs will also follow a similar procedure but selection and prioritisation will also take into account the scale of the benefits for NRW reduction that can be expected in each of the DMA's and other operational benefits.

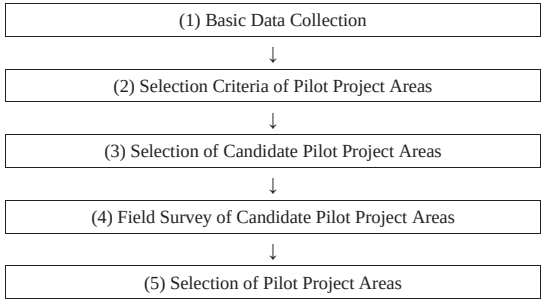


Figure 2-1 Selection Procedures of Pilot Project Areas

S4.5-1-5

(1) Basic Data Collection

Basic data such as pipe material, diameter, location, base map on water distribution networks, and number of households, etc. are collected at the beginning of selection of pilot project areas and/or DMAs.

(2) Selection Criteria of Pilot Project Areas

The pilot project areas are selected based on the following criteria:

1) Easy isolation from surrounding area with existing valves.
2) Drawings or GIS maps are available to show location of the valves.
3) Distribution flow is enough and stable.
4) Size of the areas is suitable for easy monitoring.
5) Residential areas where 100 households are located are preferable so as to count easily.
6) Dendritically-expanded distribution networks are preferable.
7) Distribution pipelines are 250 mm or less in diameter and around 1.0km in length.

Meanwhile, DMAs are selected out of 11-13 candidate DMAs which will be identified by Solomon Water in the light of at least the following criteria:

1) Easy isolation from surrounding area with existing valves.
2) Drawings or GIS maps are available to show location of the valves.
3) Distribution flow is enough and stable.

4) Size of the areas is suitable for easy monitoring.
5) Local operational knowledge of the condition of the systems is predicted to be used for NRW reduction.
6) The operational benefits in terms of reduction in water rationing if applicable.

(3) Selection of Candidate Pilot Project Areas

23 candidate pilot project areas were selected according to the above selection criteria. The candidate pilot areas are shown in Table 2-1.

Table 2-1 Candidate Pilot Project Areas

No	Name	Remarks
1	FFA Kola Road	Previously proposed before the Project
2	Mbua Valley	Previously proposed before the Project
3	Lenggakiki	Previously proposed before the Project
4	Mbokona	Proposed in the Project
5	Mbokonavera 1	Previously proposed before the Project
6	Vavaea Ridge	Previously proposed before the Project
7	Panatina Valley	Previously proposed before the Project
8	Panatina Mbaranamba	Previously proposed before the Project
9	White River Namo Ruka	Proposed in the Project
10	Independence Valley	Proposed in the Project
11	Bahai Kukum	Proposed in the Project
12	Naha 2	Proposed in the Project
13	Naha 3	Proposed in the Project
14	Tuvaruhu-1	Proposed in the Project
15	Tuvaruhu-2	Proposed in the Project
16	Mboona Valley	Previously proposed before the Project
17	Mbokonavera 2	Previously proposed before the Project
18	Panatina Ridge	Previously proposed before the Project
19	White River Windy Valley	Proposed in the Project
20	Matevale St – Point Cruz	Proposed in the Project
21	Tasahe A & B	Proposed in the Project
22	Vura 3-2	Proposed in the Project
23	Ranadi Industrial	Proposed in the Project

(4) Field Survey of Candidate Pilot Project Areas and Selection of Pilot Project Areas

The Project Team conducted field surveys to verify number of households, valves and their locations and functionality for isolation, water meters, pipeline routes and so forth in the candidate pilot project areas.

Finally, the Project Team selected 15 areas out of 23 candidate areas for pilot project implementation on NRW reduction (see Annex-A-1). The results of the field surveys are shown in Table 2-2. Each plan layout of the pilot project is shown in Annex A-2.

Table 2-2 Results of Field Survey in Candidate Pilot Project Areas

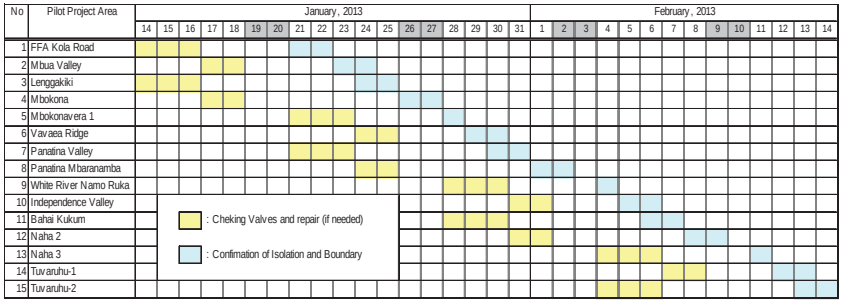
No	Name	Pipe Diameter	Pipe Length	Valves to be Procured	No. of Household
1	FFA Kola Road	D25-D75	1.6 km	25 mm x 1 set 100 mm x 1 set	83
2	Mbua Valley	D40-D75	2.0 km	50 mm x 1 set 80 mm x 1 set	137
3	Lenggakiki	D40-D75	1.8 km	150mm x 1 set	119
4	Mbokona	D30-D75	1.5 km	80 mm x 1 set	100
5	Mbokonavera 1	D25-D75	0.9 km	80 mm x 1 set	78
6	Vavaea Ridge	D50-D100	1.3 km	To be Surveyed	130

No	Name	Pipe Diameter	Pipe Length	Valves to be Procured	No. of Household
7	Panatina Valley	D40-D75	0.6 km	80 mm x 1 set	53
8	Panatina Mbaranamba	D40-D75	1.4 km	To be Surveyed	53
9	White River Namo Ruka	D40-D75	1.1 km	-	78
10	White River Windy Valley	D30-D63	1.1 km	-	110
11	Bahai Kukum	D50-D100	1.3 km	100 mm x 1 set	100
12	Naha 2	D40-D100	0.6 km	To be Surveyed	78
13	Naha 3	D25-D100	0.7 km	To be Surveyed	56
14	Tuvaruhu-1	D40-D75	1.0 km	To be Surveyed	42
15	Tuvaruhu-2	D25-D75	0.5 km	To be Surveyed	63
16	Mboona Valley	Disqualified (difficulty in demarcation to proper size)			
17	Mbokonavera 2	Disqualified (inadequate water flow and distribution time)			
18	Panatina Ridge	Disqualified (difficulty in clarification of pipeline routes)			
19	White River Windy Valley	Disqualified (inadequate water flow and distribution time)			
20	Matevale St - Point Cruz	Disqualified (not residential area)			
21	Tasahe A & B	Disqualified (inadequate water flow and distribution time)			
22	Vura 3-2	Disqualified (inadequate water flow and distribution time)			
23	Ranadi Industrial	Disqualified (not residential area)			

2.2 Implementation Period of Preparatory Actions

Period of the surveys carried out actually in the Project is shown in Table 2-3.

Table 2-3 Implementation Period of Preparatory Actions



S4.5-1-6

Chapter 3 Actions for Pilot Project Implementation on NRW Reduction

3.1 Sequence of Actions for Pilot Project Implementation on NRW Reduction

After the selection of pilot project areas, NRW Action Team proceeds to following actions for pilot project implementation on NRW reduction:

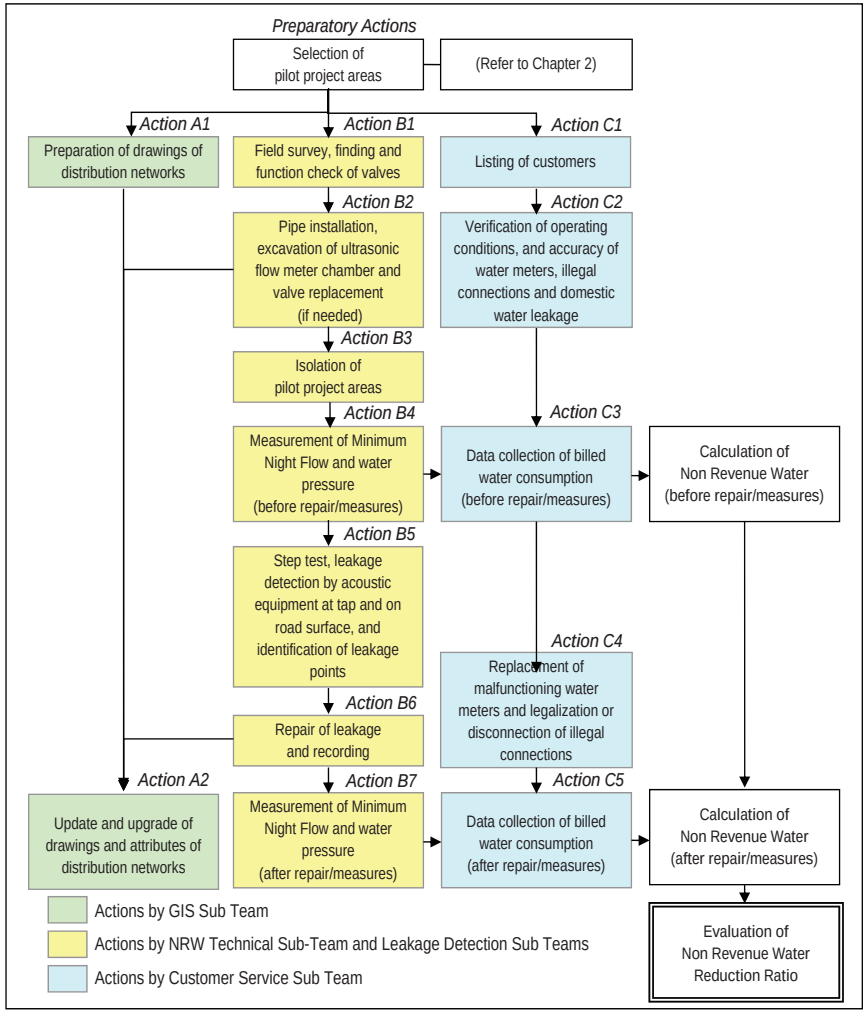


Figure 3-1 Sequence of Actions for Pilot Project Implementation on NRW Reduction

Also in the DMAs, same actions will be taken by NRW Action Team.

3.2 Description of Actions for Pilot Project Implementation on NRW Reduction

3.2.1 Action A1: Preparation of drawings of distribution networks

Before execution of field survey of Action B1, drawings of distribution networks for the pilot project areas, which is in appropriate scale, are prepared by GIS Sub-Team.

3.2.2 Action A2: Update and upgrade of drawings and attributes of distribution networks

During execution of other actions, GIS Sub-Team records the coordinates of the following items as shown in Table 3-1, and updates and upgrades the drawings of distribution networks and database. Items data of which is recorded and updated are shown in Annex A-3 for further details. 15 layers consisting of at least 200 items, shown in Annex A-3, should be updated so as to operate and maintain water supply facilities and to manage customer services efficiently. Workflow for updating data is illustrated in Annex A-4. Information of the water supply facilities will be recorded on the sheet as shown in Annex-5 in the site.

Table 3-1 Selected items to be updated

No	Layer	No	Layer
1	Water distribution pipes	9	Leakage location
2	Sluice valve (gate valve)	10	Bore holes
3	Hydrant	11	Pump station
4	Air valve	12	Service reservoir
5	Flow meters	13	Distribution area of source
6	Feeder pipes (service pipes)	14	Customer's information
7	Water meter	15	Water quality (Fixed-point observation)
8	Water pipe bridge		

S4.5-1-7

3.2.3 Action B1: Field survey, finding and function check of valves

NRW Technical Sub-Team executes field survey in the pilot project areas and verifies the existing data to check the following items:

- ☐ Exact boundary of the area
- ☐ Number of households
- ☐ Routes and material of distribution pipelines
- ☐ Locations, size and conditions of break pressure tanks and reservoirs
- ☐ Locations, diameters and conditions of valves
- ☐ Routes, diameters and material of service connection pipelines
- ☐ Locations, diameter and conditions of water meters
- ☐ Locations and conditions of fire hydrants
- ☐ Water leakages visually observed without equipment of leakage detection
- ☐ Locations and conditions of illegal connections
- ☐ Locations and conditions of domestic water leakage

Operating condition of valves can be checked with “Valve Condition Checking List” as shown in Annex A-6. The list will be useful for future maintenance of the valves and system operation.

3.2.4 Action B2: Pipe installation, excavation of ultrasonic flow meter chamber and valve replacement (if needed)

According to the results by the Action B1, in order to proceed to isolation of the pilot project areas, NRW Technical Sub-Team takes measures as follows:

- ☐ Excavation of pit for flow meter
- ☐ Replacement of malfunctioning valves by new ones, or
- ☐ Installation of new valves
- ☐ Installation of pipes (if needed)

3.2.5 Action B3: Isolation of pilot project areas

After the measures of the Action B2, NRW Technical Sub-Team closes valves required for isolation of the pilot project area, which means to make sure of inlet of water to be controlled, and then checks if water pressure decreases in the pipelines.

3.2.6 Action B4: Measurement of Minimum Night Flow and water pressure (before repair/measures)

(1) Measurement of Minimum Night Flow

NRW Technical Sub-Team measures “System Input Volume” for at least 24 hours in the isolated distribution networks of the pilot project areas, with ultrasonic flow meter to be installed temporarily in the pit through Action B2. The lowest flow rate for 24 hours is defined as Minimum Night Flow.

The ultrasonic flow meter should be installed at the inlet point to the pilot area as shown in Figure 3-2.

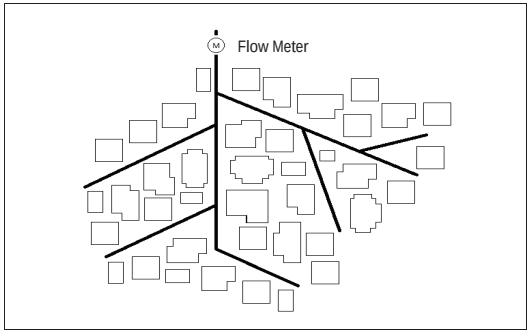


Figure 3-2 Installation Point of Flow Meter

The flow meter is ultrasonic type (see Figure 3-3), which can measure water flow in pipe by catching variation in the velocity of ultrasonic waves. An advantage of the meter is to measure water flow without interrupting water supply in the pilot project areas.

Figure 3-3 Ultrasonic Flow Meter

(2) Measurement of Water Pressure

The higher water pressure rises, the more water leakage increases. NRW Technical Sub-Team measures water pressure for at least 24 hours with automatic data logger (see Figure 3-4) to be installed at the point where ultrasonic flow meter is installed.

Figure 3-4 Data Logger

3.2.7 Action B5: Step test, leakage detection by acoustic equipment at tap and on road surface, and identification of leakage points

After measurement of water flow and pressure under the Action B4, Leakage Detection Sub-Team starts to detect water leakage in the pilot project areas as follows:

- ☐ To inspect exposed leakage visually
- ☐ To select serious water leakage sections through step tests
- ☐ To detect water leaking sound by means of electronic acoustic rod
- ☐ To detect water leaking points by means of leakage detector
- ☐ To detect water leaking points by means of correlator
- ☐ To identify the exact point of leakage by means of acoustic rod

The entire results of leakage detection should be recorded in "Leakage Record Sheet" as shown in Annex A-7 so that Solomon Water can operate and maintain water supply system efficiently, and identify the prioritized pipelines to be replaced immediately with their sheets.

(1) Step Test

NRW Technical Sub-Team finds out water leakages along branch lines in the pilot project area by measuring change in water flow and pressure with the ultrasonic flow meter and data logger to be installed at an inlet point to the distribution network, after closing the valves located at branching points (see Figure 3-5). In order to record flow rate and water pressure by branch pipeline, "Valve Operating Sheet for Step Test" as shown in Annex A-8 can be used.

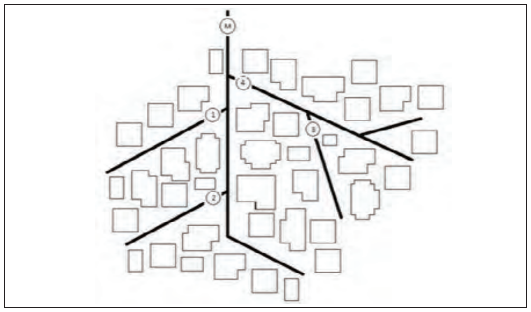


Figure 3-5 Concept of Step Test

(2) Detection of Water Leaking Sound by Electronic Acoustic Rod

When water leakage occurs, the water leaking sound spreads through pipeline. So, Leakage Detection Sub-Team detects the sound with electronic acoustic rod at the point where valves are installed. Equipment of water leaking sound detection is shown in Figure 3-6.

Figure 3-6 Method and Equipment of Water Leaking Sound Detection

(3) Detection of Water Leaking Points by means of Leakage Detector

Leakage Detection Sub-Team identifies locations of leaking points with leakage detector, as shown in Figure 3-7.

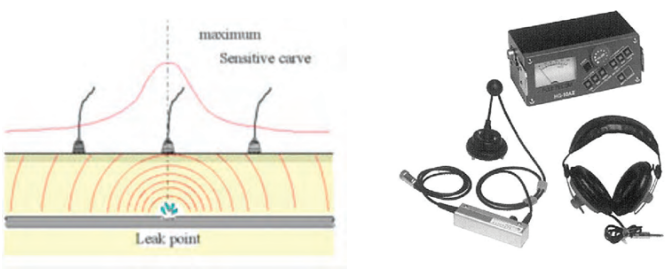


Figure 3-7 Method and Equipment of Water Leaking Point Detection

(4) Detection of Water Leaking Points by means of Correlator

Leakage Detection Sub-Team detects water leaking point with correlator, which intercepts leaking noise caught between two certain points (valves) equipped tentatively with sensor each and also measures the difference in transmission time, as shown in Figure 3-8.

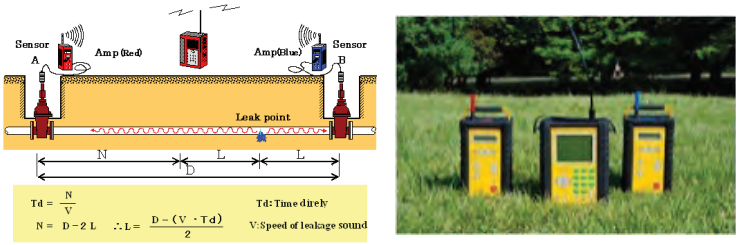


Figure 3-8 Method and Equipment of Water Leaking Sound Detection]

(5) Identification of the Exact Point of Leakage by means of Acoustic Rod

After detection of water leaking points, Leakage Detection Sub-Team drills some holes at the detected leaking points and inserts acoustic rod into each hole to identify exact point of leakage as shown in Figure 3-9.

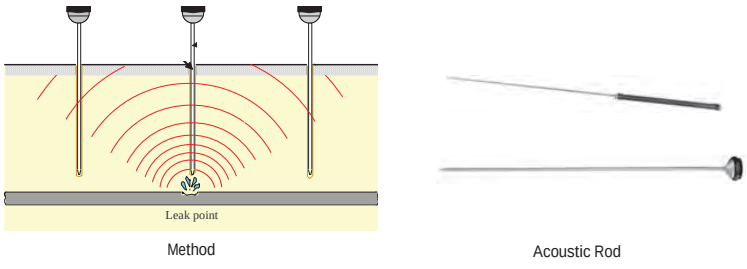


Figure 3-9 Method of Identification of Precise Water Leaking Points

(6) Pipe Locating Device

As a supporting device of locating metal materials such as pipes and valves during the above Actions, metal locator is effective, which can detect the magnetic field created by metal materials (see Figure 3-10).

S4.5-1-9

Figure 3-10 Metal Locator

3.2.8 Action B6: Repair of leakage and recording

As a result of the above Actions for water leakage detection, Leakage Detection Sub-Team makes a prioritized list of water leaking points and estimates cost of the repair. After procurement or preparation of materials, the Team repairs the water leakage points immediately.

3.2.9 Action B7: Measurement of Minimum Night Flow and water pressure (after repair/measures)

In order to verify System Input Volume after repair/measures, NRW Technical Sub-Team measures again water flow and pressure in the pilot project area in the same way as the above Action B4.

3.2.10 Action C1: Listing of customers

Customer Service Sub-Team makes a list of the customers supplied in the target pilot project area. The list should contain service situation of the customers. The Team also organizes information on the illegal users or non-supplied households if possible.

3.2.11 Action C2: Verification of installed and operating conditions, and accuracy of water meters, illegal connections and domestic water leakage

Based on the customer list prepared by Action C1, Customer Service Sub-Team verifies installed and operating conditions by visual check, and also accuracy of water meters with Test Water Meter shown in Figure 3-11.

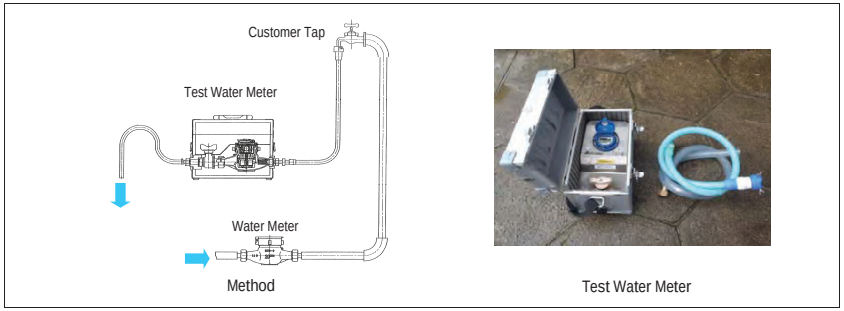


Figure 3-11 Method of Checking Accuracy of Test Water Meters

Customer Service Sub-Team identifies the illegal users and verifies domestic water leakage including water waste in their properties in order to clarify quantitative water usage

3.2.12 Action C3: Data collection of billed water consumption (before repair/measures)

In order to sum up billed water consumption in the pilot project area before repair/measures, the Customer Service Sub-Team reads and records all functioning water meters twice at intervals of 24 hours.

3.2.13 Action C4: Replacement of malfunctioning water meters and disconnection of illegal connections

As stated in the Action C2, there are various types of service connections such as legal ones with metered, flat rate (direct lines) and also illegal connections. Approach to water meter installation has been determined by the customer as shown in Annex A-9.

In order for registered customers to understand fundamental principle on water supply service, Customer Service Sub-team explains importance of the installation of water meter to the customers without a functioning meter. Water meter in 'Gallon' unit are also replaced with that in 'Cubic meter' unit so as to avoid misreading and confusion in record for billing

Meanwhile, as a social intervention and countermeasure against illegal users, NRW Technical Sub-Team and Customer Service Sub-Team explain negative effects caused by illegal connections and importance of tariff collection in water supply management to them, and also persuade of legalization through mutual communication. Finally based on informed choice, illegal connections are legalized by registration if agreed and then water meter are installed through the necessary procedures as shown in Annex A-9, or are disconnected if disagreed in principle. But, Customer Service Sub-Team should attempt to avoid disconnection through the repeated communication.

3.2.14 Action C5: Data collection of billed water consumption (after repair/measures)

In order to sum up billed water consumption in the pilot project area after repair/measures, the Customer Service Sub-Team reads and records all functioning water meters twice at intervals of 24 hours.

3.3 IWA Water Balance and Evaluation in the Pilot Projects

3.3.1 Calculation of Non Revenue Water (before repair/measures)

Billed water consumption is deducted from the System Input Volume to figure out NRW ratio before repair of water leakage or measures against malfunctioning water meters, illegal connections and so on.

3.3.2 Calculation of Non Revenue Water (after repair/measures)

Billed water consumption is deducted from the System Input Volume to figure out NRW ratio after repair of water leakage or measures against malfunctioning water meters, illegal connections and so on.

3.3.3 Evaluation of Non Revenue Water Reduction Ratio

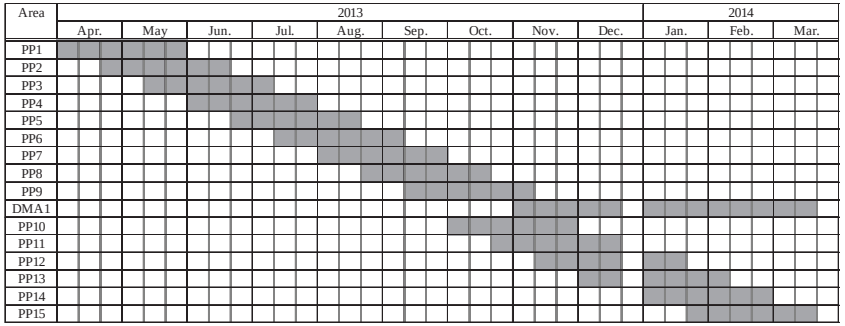
The Project Team compares the calculation results of NRW between before and after NRW reduction activities, as mentioned in the above 3.3.1 and 3.3.2, and evaluates the activities in terms of cost-effectiveness, that is, cost of the activities against improvement in income from water tariff collection. If improvement in NRW ratio does not reach the certain target as expected, the Project Team needs to clarify the reasons and repeat the actions for NRW reduction.

Chapter 4 Implementation Schedule of NRW Reduction Activities

The Project Team proposes implementation schedule for 15 pilot projects from April 2013 to March 2014, as shown in Table 4-1.

However, the pilot zones can be transferred to working in the DMA from November 2013. The timing of the transfer of activities will depend on the completion of the works to install and that of the definition of the pressure management system.

Table 4-1 Implementation Schedule of NRW Reduction Activities



Annex A-10 and Annex-11 show detailed implementation schedule with man-day of each action for per- pilot project areas and that for per-DMA respectively.

Chapter 5 Cost Estimate

Based on Annex A-10 and Annex A-11, the Project Team estimates cost of implementation of per-pilot project and per-DMA, as shown in Table 5-1 and Table 5-2 respectively.

Table 5-1 Cost Estimate per Pilot Project

No	Action	Unit Cost (SBD)	Cost (SBD)	Man-Day
GIS Sub Team				
A1	Preparation of drawings of distribution networks	975	975	1.0
A2	Update and upgrade of drawings and attributes of distribution networks	624	3,744	6.0
	Sub Total		**4,719**	**7.0**
Technical Sub Team and Leakage Detection Sub Team				
B1	Field survey, finding and function check of valves	936	2,808	3.0
B2	Pipe installation, excavation of flow meter chamber and valve replacement (if needed)	8,085	16,170	2.0
B3	Isolation of pilot project areas	936	1,872	2.0
B4	Measurement of Minimum Night Flow and water pressure (before repair/measures)	1,613	2,420	1.5
B5	Step test, leakage detection by acoustic equipment at tap and on road surface, and identification of leakage points			
	Step test	1,603	3,206	2.0
	Leakage Detection	1,405	4,215	3.0
B6	Repair of leakage and recording	25,653	76,959	3.0
B7	Measurement of Minimum Night Flow and water pressure (after repair/measures)	1,613	2,420	1.5
	Sub Total		**110,069**	**18.0**
Customer Services Sub Team				
C1	Listing of customers	961	1,922	2.0
C2	Installed and operating conditions, and accuracy of water meters, illegal connections and domestic water leakage			
	Illegal connections	506	1,012	2.0
	Malfunctioning water meters	361	722	2.0
	Water Meter Accuracy	361	722	2.0
C3	Data collection of billed water consumption (before repair/measures)	1,010	2,020	2.0
C4	Replacement of malfunctioning water meters and legalization or disconnection of illegal connections			
	Explanatory meeting and follow-up (soft component)	1,746	10,476	6.0
	Replacement of malfunctioning water meters	6,239	12,478	2.0
	Installation of water meters	6,239	12,478	2.0
	Disconnection of illegal connections	5,495	10,990	2.0
C5	Data collection of billed water consumption (after repair/measures)	1,010	2,020	2.0
	Sub Total		**54,840**	**24.0**
IWA Water Balance				
-	Calculation of Non Revenue Water (before repair/measures)	777	1,554	2.0
-	Calculation of Non Revenue Water (after repair/measures)	777	1,554	2.0
-	Evaluation of Non Revenue Water Reduction Ratio	777	777	1.0
	Sub Total		**3,885**	**5.0**
	Total		**173,513**	**54.0**

Therefore, grand total of the implementation cost of 9 pilot projects from April to October 2013 is as follows:

SBD 173,513 / pilot project x 9 projects = <u>SBD 1,561,617</u>

S4.5-1-11

Table 5-2 Cost Estimate per-DMA

No	Action	Unit Cost (SBD)	Cost (SBD)	Man-Day
GIS Sub Team				
A1	Preparation of drawings of distribution networks	975	2,925	3
A2	Update and upgrade of drawings and attributes of distribution networks	624	9,984	16
	Sub Total		**12,909**	**19**
Technical Sub Team and Leakage Detection Sub Team				
B1	Field survey, finding and function check of valves	936	12,168	13
B2	Pipe installation, excavation of flow meter chamber and valve replacement (if needed)	8,085	40,425	5
B3	Isolation of DMA area	936	5,616	6
B4	Measurement of Minimum Night Flow and water pressure (before repair/measures)	1,613	3,226	2
B5	Step test, leakage detection by acoustic equipment at tap and on road surface, and identification of leakage points			
	Step test	1,603	9,618	6
	Leakage Detection	1,405	18,265	13
B6	Repair of leakage and recording	25,653	333,489	13
B7	Measurement of Minimum Night Flow and water pressure (after repair/measures)	1,613	3,226	2
	Sub Total		**426,033**	**60**
Customer Services Sub Team				
C1	Listing of customers	961	5,766	6
C2	Installed and operating conditions, and accuracy of water meters, illegal connections and domestic water leakage			
	Illegal connections	506	3,036	6
	Malfunctioning water meters	361	2,166	6
	Water Meter Accuracy	361	2,166	6
C3	Data collection of billed water consumption (before repair/measures)	1,010	4,040	4
C4	Replacement of malfunctioning water meters and legalization or disconnection of illegal connections			
	Explanatory meeting and follow-up (soft component)	1,746	26,190	15
	Replacement of malfunctioning water meters	6,239	43,673	7
	Installation of water meters	6,239	49,912	8
	Disconnection of illegal connections	5,495	27,475	5
C5	Data collection of billed water consumption (after repair/measures)	1,010	4,040	4
	Sub Total		**168,464**	**67**
Water Audit				
-	Calculation of Non Revenue Water (before repair/measures)	777	3,108	4
-	Calculation of Non Revenue Water (after repair/measures)	777	3,108	4
-	Evaluation of Non Revenue Water Reduction Ratio	777	2,331	3
	Sub Total		**8,547**	**11**
	Total		**615,953**	**157**

Implementation cost per DMA from November 2013 is as follows:

<u>SBD 615,953</u> per DMA

Chapter 6 Pilot Project Report and Workshop

The Project Team proposes contents of each pilot project report as shown in Table 6-1, and convenes workshops so as to share the activities and the results in the entire Solomon Water.

Table 6-1 Content of Pilot Project Report

Team	In charge	Contents
NRW Management Team	Team Members	1) Annual action plan on NRW reduction
NRW Action Team	Action Team Leaders	1) Numbers of population and households in project area 2) Both planned and actual work schedules 3) Input manpower by work item 4) NRW ratio before and after measures 5) Total cost on NRW reduction measurement, including personnel, fuel and pipe material costs 6) Issues and problems arising from measurement 7) Suggestions for future improvement
	GIS Sub-Team	1) Location of pilot project area 2) Information on distribution network
	Leakage Detection Sub-Team	1) Result of minimum night flow survey 2) Result of water meter survey 3) Result of illegal connection survey
	NRW Technical Sub-Team (Pipe Maintenance & Repair)	1) Pipe repairing (location, number of cases)
	NRW Technical Sub-Team (Service Pipe Connection)	1) Number of newly-registered connection
	NRW Technical Sub-Team (Service Pipe Disconnection)	1) Number of disconnection
	Customer Service Sub-Team (Water Meter Reading, Billing and Tariff Collection)	1) Result of illegal connection survey 2) Result of water meter survey 3) Income from collection (before and after measures)
	NRW Technical Sub-Team (Pipe Materials Management and Procurement)	1) Procured materials and number, etc

Chapter 7 Record Form and Log Sheet

During the pilot implementation, the Project Team records results of actions and keeps a log of various data observed in the field.

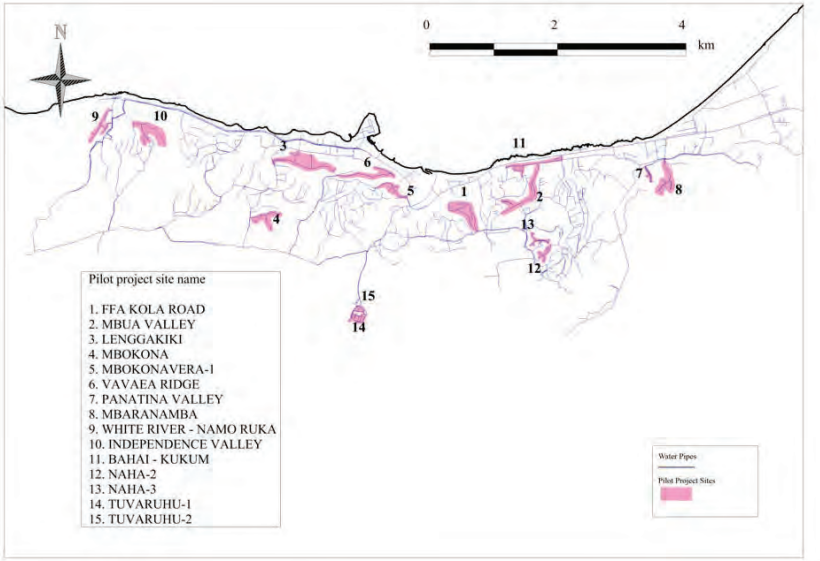
Table 7-1 Items to be recorded and Log to be kept

No	Items / Log	In charge	Remarks
1	GIS Information Sheet	GIS Sub-Team	Annex A-5
2	Valve conditions checking list	NRW Technical Sub-Team	Annex A-6
3	Leakage record sheet	Leakage Detection Sub-Team	Annex A-7
4	Valve operation sheet for Step Test	NRW Technical Sub-Team	Annex A-8

Annex

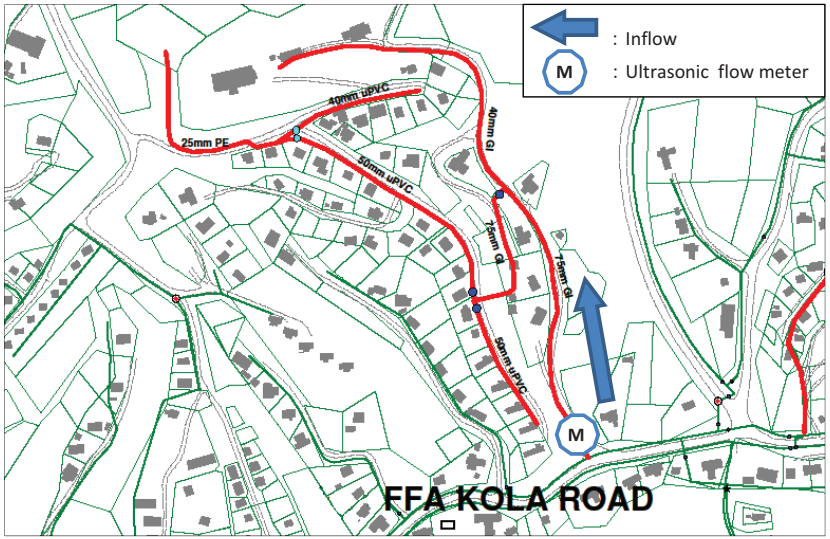
S4.5-1-13

Annex A-1

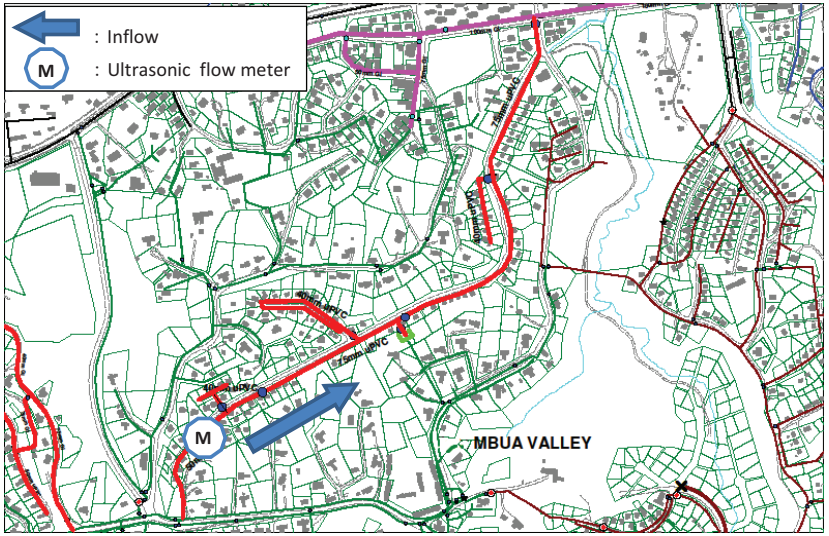


Location Map of the Pilot Project Areas

Annex A-2

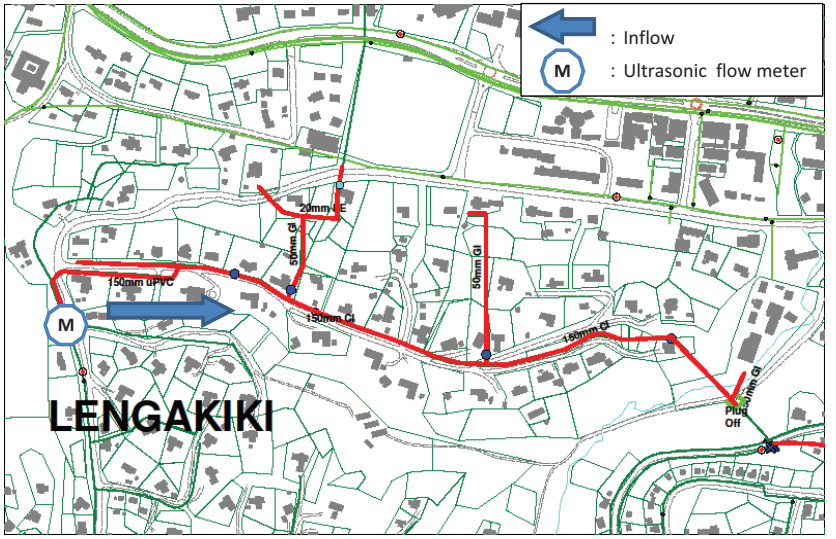


No.1: FFA Kola Road

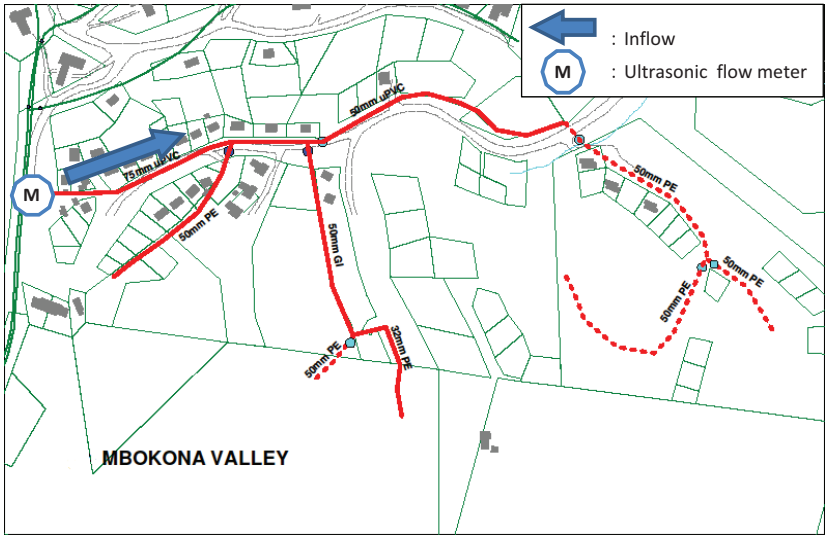


No.2: Mbua Valley

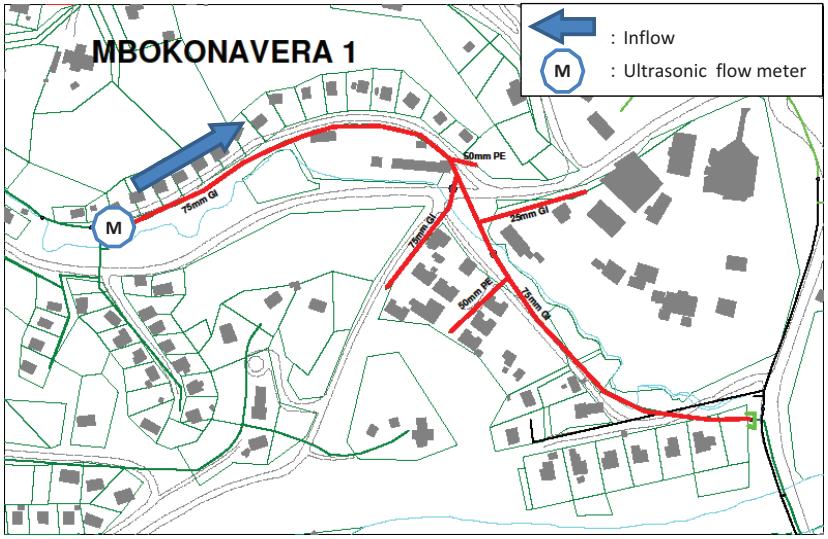
S45-1-114



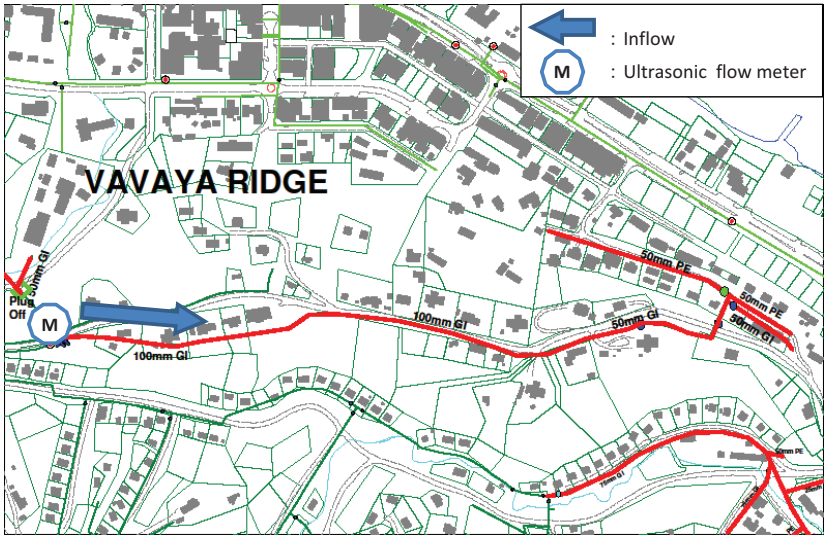
No.3: Lenggakiki



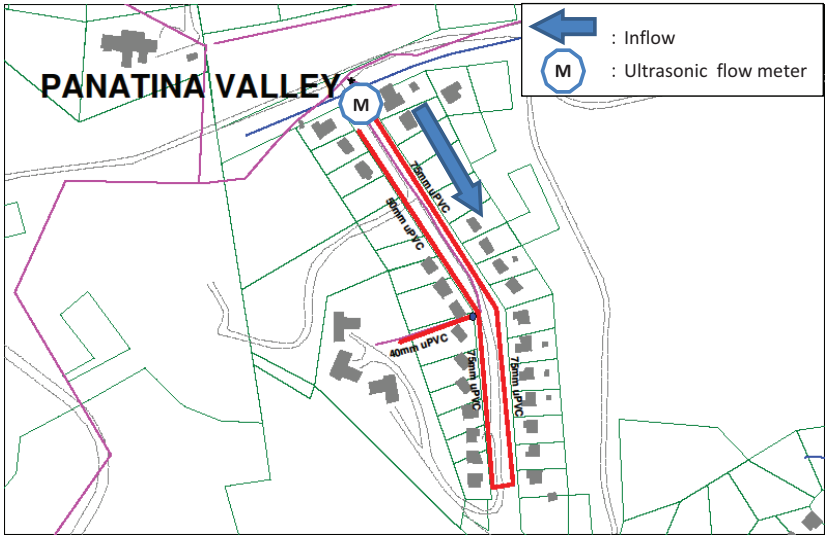
No.4: Mbokona



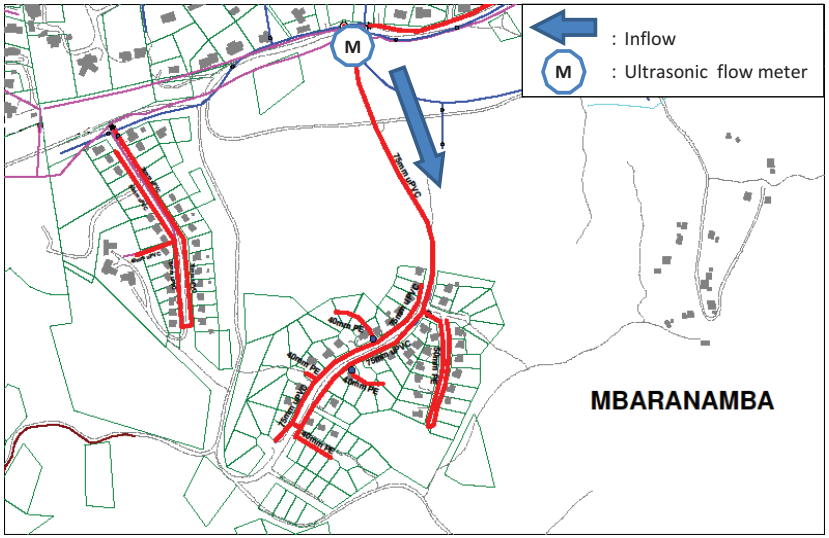
No.5: Mbokonavera 1



No.6: Vavaea Ridge

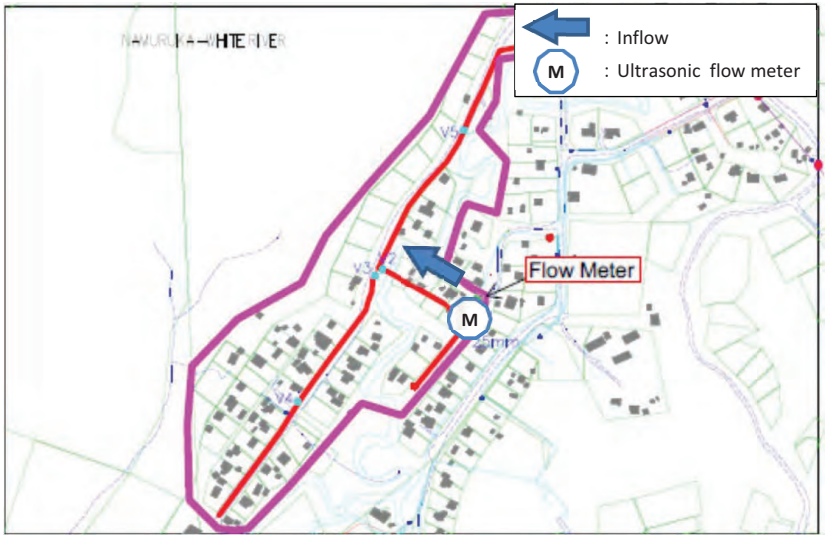


No.7: Panatina Valley

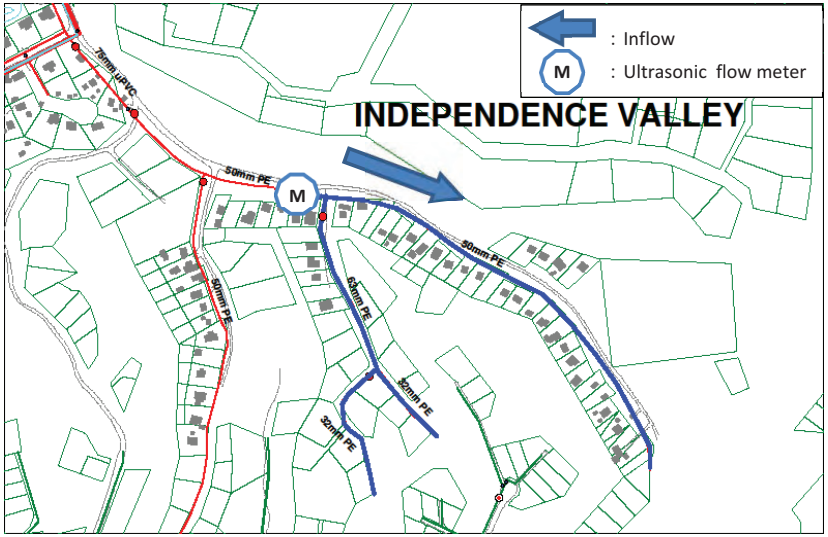


No.8: Panatina Mbaranamba

S45-1-15

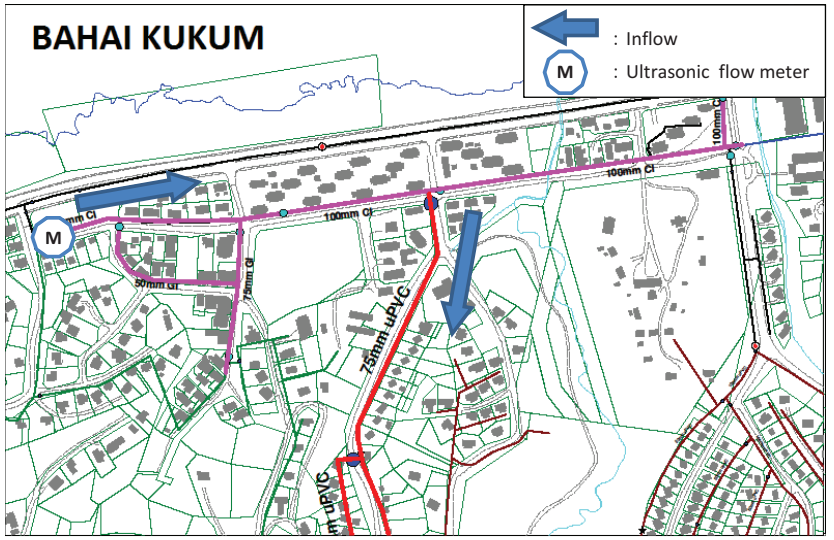


No.9: White River Namo Ruka

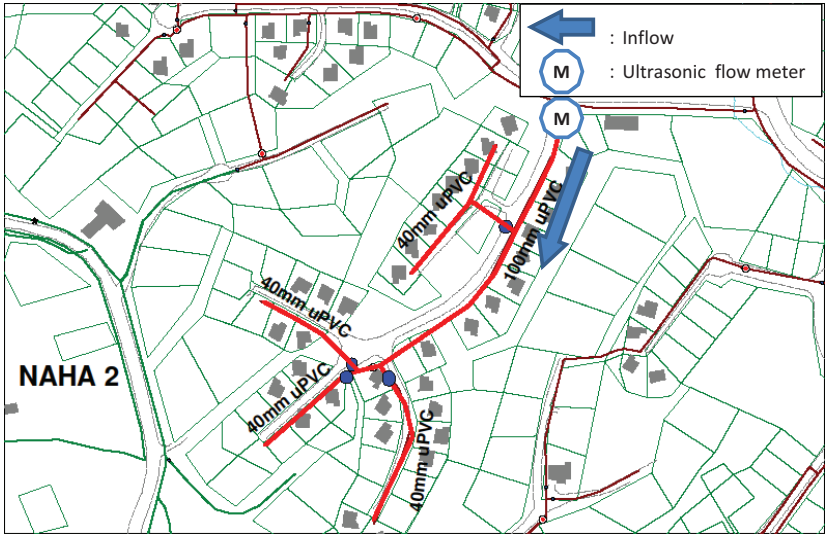


No.10: Independence Valley

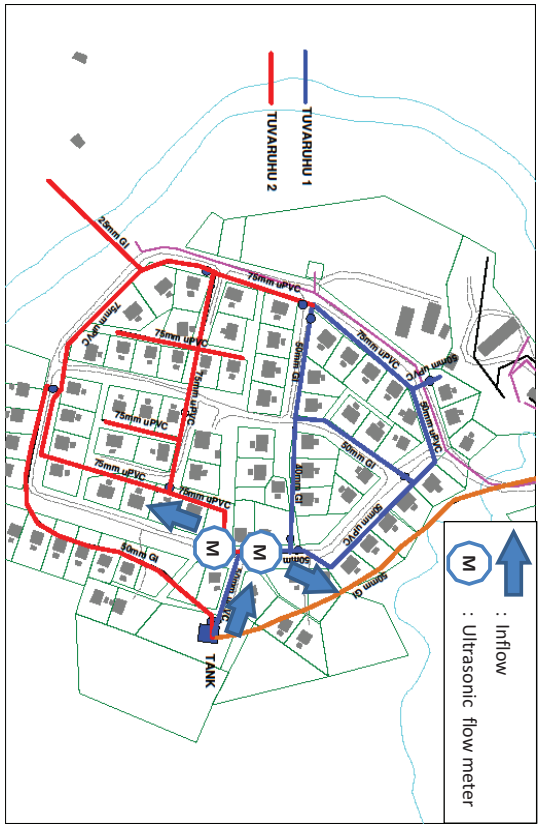
S45-1-16



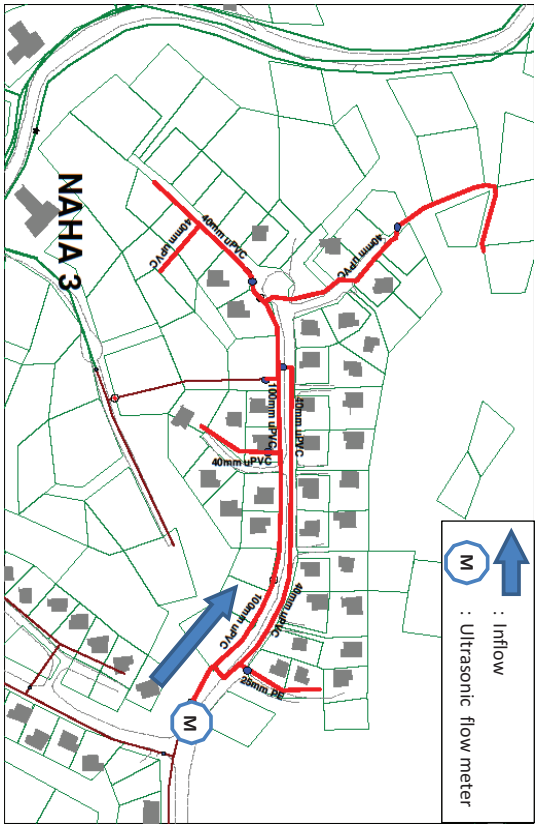
No.11: Bahai Kukum



No.12: Naha 2



No.14: Tuvaruhu-1 & No. 15: Tuvaruhu-2



No.13: Naha 3

Annual Action Plan 2013

Annex A-3

Items to be updated for GIS Database

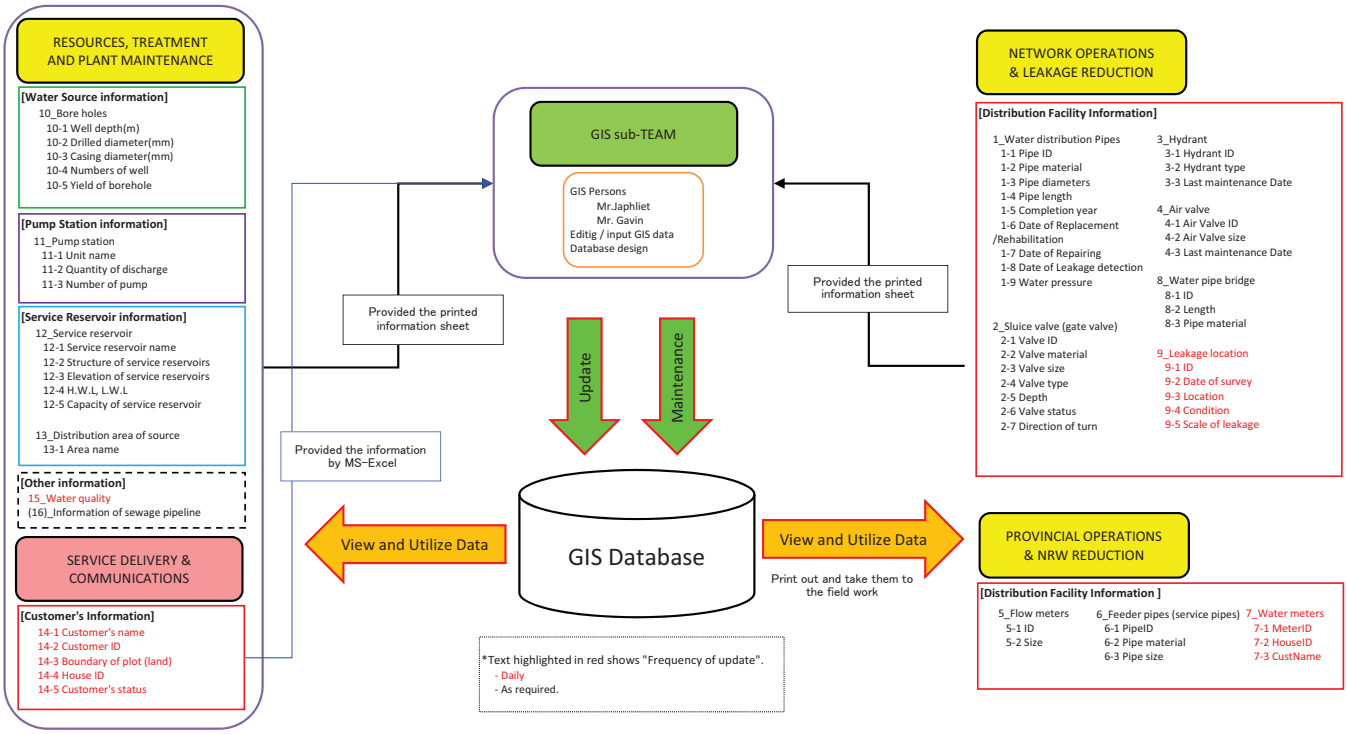
No.		GIS subject	progress of database			Priority of updating and/or newly input*	Frequency of update	Remarks	Original data source
			covered	partly	not at all				
		1. Distribution Facility information							
1	Graphic	**Water distribution pipes**	●			1	required		SIWA (NO & LR)
	1-1	Pipe ID			●	3	required		SIWA (NO & LR)
	1-2	Pipe material	●			1	required		SIWA (NO & LR)
	1-3	Pipe diameters	●			1	required		SIWA (NO & LR)
	1-4	Pipe length	●			1	required		SIWA (NO & LR)
	1-5	Completion year		●		1	required		SIWA (NO & LR)
	1-6	Date of Replacement / Rehabilitation			●	1	required		SIWA (NO & LR)
	1-7	Date of Repairing			●	1	required		SIWA (NO & LR)
	1-8	Date of Leakage detection			●	2	required		SIWA (NO & LR)
	1-9	Water pressure			●	2	required		SIWA (NO & LR)
2	Graphic	**Sluice valve (gate valve)**	●			1	required		SIWA (NO & LR)
	2-1	Valve ID			●	1	required		SIWA (NO & LR)
	2-2	Valve material		●		1	required		SIWA (NO & LR)
	2-3	Valve size		●		1	required		SIWA (NO & LR)
	2-4	Valve type		●		1	required		SIWA (NO & LR)
	2-5	Depth			●	1	required		SIWA (NO & LR)
	2-6	Valve status		●		1	required		SIWA (NO & LR)
	2-7	Direction of turn		●		1	required		SIWA (NO & LR)
3	Graphic	**Hydrant**	●			1	required		SIWA (NO & LR)
	3-1	Hydrant ID			●	1	required		SIWA (NO & LR)
	3-2	Hydrant type			●	1	required		SIWA (NO & LR)
	3-3	Last maintenance Date			●	1	required		SIWA (NO & LR)
4	Graphic	**Air valve**		●		1	required		SIWA (NO & LR)
	4-1	Air Valve ID			●	1	required		SIWA (NO & LR)
	4-2	Air Valve size			●	1	required		SIWA (NO & LR)
	4-3	Last maintenance Date			●	1	required		SIWA (NO & LR)
5	Graphic	**Flow meters**	●			1	required		SIWA (PO & NRW R)
	5-1	ID			●	1	required		SIWA (PO & NRW R)
	5-2	Size			●	1	required		SIWA (PO & NRW R)
6	Graphic	**Feeder pipes (service pipes)**		●		1	required	approx.60% is covered	SIWA (PO & NRW R)
	6-1	PipeID			●	1	required		SIWA (PO & NRW R)
	6-2	Pipe material			●	1	required		SIWA (PO & NRW R)
	6-3	Pipe size			●	1	required		SIWA (PO & NRW R)
7	Graphic	**Water meter**		●		1	Daily	no update since 1995	SIWA (PO & NRW R)
	7-1	MeterID			●	1	Daily		SIWA (PO & NRW R)
	7-2	HouseID			●	1	Daily		SIWA (PO & NRW R)
	7-3	CustName			●	1	Daily		SIWA (PO & NRW R)
8	Graphic	**Water pipe bridge**			●	1	required		SIWA (NO & LR)
	8-1	ID			●	1	required		SIWA (NO & LR)
	8-2	Length			●	1	required		SIWA (NO & LR)
	8-3	Pipe material			●	1	required		SIWA (NO & LR)
9	Graphic	**Leakage location**			●	1	Daily		SIWA (NO & LR)
	9-1	ID			●	1	Daily		SIWA (NO & LR)
	9-2	Date of survey			●	1	Daily		SIWA (NO & LR)
	9-3	Location			●	1	Daily		SIWA (NO & LR)
	9-4	Condition			●	1	Daily		SIWA (NO & LR)
	9-5	Scale of leakage			●	1	Daily		SIWA (NO & LR)

No.		GIS subject	progress of database			Priolity of updating and/or newly input*	Frequency of update	Remarks	Original data source
			covered	partly	not at all				
		2. Water Source information							
10	**Graphic**	**Bore holes**	●			1	required		SIWA (RT & PM)
	10-1	Well depth(m)		●		1	required		SIWA (RT & PM)
	10-2	Drilled diameter(mm)		●		1	required		SIWA (RT & PM)
	10-3	Casing diameter(mm)		●		1	required		SIWA (RT & PM)
	10-4	Numbers of well			●	1	required		SIWA (RT & PM)
	10-5	Yield of borehole			●	1	required		SIWA (RT & PM)
		3. Pump Station information							
11	**Graphic**	**Pump station**	●			1	required		SIWA (RT & PM)
	11-1	Unit name			●	1	required		SIWA (RT & PM)
	11-2	Quantity of discharge			●	1	required		SIWA (RT & PM)
	11-3	Number of pump			●	1	required		SIWA (RT & PM)
		4. Service reservoir information							
12	**Graphic**	**Service reservoir**	●			1	required		SIWA (NO & LR)
	12-1	Service reservoir name			●	2	–		SIWA (RT & PM)
	12-2	Structure of service reservoirs			●	2	–		SIWA (RT & PM)
	12-3	Elevation of service reservoirs	●			2	required		SIWA (RT & PM)
	12-4	H.W.L, L.W.L			●	2	required		SIWA (RT & PM)
	12-5	Capacity of service reservoir			●	2	required		SIWA (RT & PM)
13	Graphic	Distribution area of source			●	1	required		SIWA (RT & PM)
	13-1	Area name			●	1	required		SIWA (RT & PM)
		5. Customer's information							
14	**14-1**	**Customer's name**			●	1	Daily		SIWA (CC)
	14-2	Customer ID			●	1	Daily		SIWA (CC)
	14-3	Boundary of plot (land)		●		3	required	no update since 2000	Min. of Lands & Housing
	14-4	House ID			●	3	Daily		SIWA (NO & LR)
	14-5	Customer's status		●		3	Daily		SIWA (CC)
		6. Other informations							
15	**Graphic**	**Water quality (Fixed-point observation)**			●	2	Daily / Monthly		SIWA (RT & PM)
(16)	Graphic	Information of sewage pipeline		●		1	required		SIWA (RT & PM)

* Prioty "1": immediate
Prioty "2": soonest
Prioty "3": asap

NO & LR: Network Operations & Leakage Reduction
PO & NRW R: Provincial Operations & NRW Reduction
RT & PM: Resources, Treatment & Plant Maintenance
CC: Customer Care

Annex A-4



Workflow of GIS Database

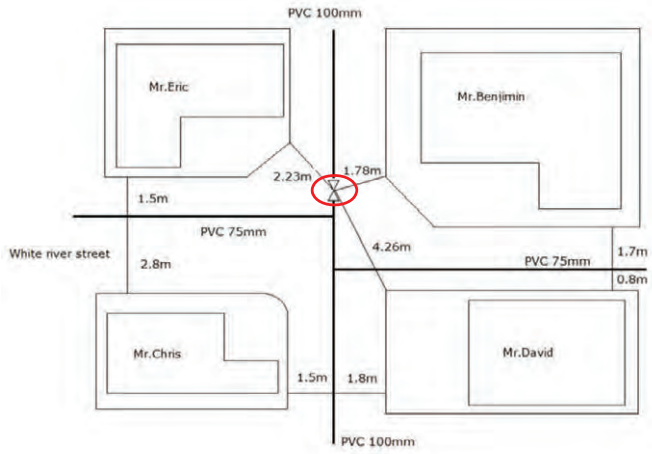
Annex A-5

Solomon Water GIS Information Sheet

Solomon Water GIS INFORMATION SHEET			
Record No	09-003	**Address:** White river- Namuruka, White river street in front of Mr. David house	
Site information			**System information**
Pipe size (mm)	100		ID
Pipe material	PVC		Network no
Depth (cm)	90		Networks
Valve size	100		Systems
Valve type	Gate V		System code
Direction of turn	Clockwise		Pipe number
Number of rotation	12		Pipe length ✔
Valve box & cover	Existence		Bedding
Box type	Standard		Date of pipe laid
Type of Construction			US node
1.Survey	✔		DS node
2.Repair			Roughness
3.Pipe laying			OM Zone
Valve			OM subzone no
1.Installation	✔		OM subzone
2.Replacement			Suburb
3.Abandonment			Notes
Others(Fire hydrant/service)			Valve no
1.Installation			
2.Replacement			
3.Abandonment			
4.Other			

Offset by 3points

Sample



Officer: Leak detection team: Eric GIS team: Gavin

Signature:

Date: 26 March, 2013

Annex A-6

Valve Condition Checking List

Name of Pilot Area : **Supplying hour:**

No.	Detected date	Diameter (mm)	Pipe material	Type of Valve	Valve Cover (Ok/Non)	Leak(Y/N)	Direction (Clockwise/ Anticlockwise)	Number of turns	Sound check (Little Open (sound of water passing))	Remarks
V1					Valve Cover	Viewing	Direction	Rotation		
V2										
V3										
V4										
V5										
V6										
V7										
V8										
V9										
V10										
V11										
V12										

Fire Hydrant					
H1					
H2					
H3					
H4					
H5					

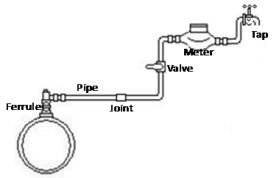
Isolation check				
Trial No.	Date	Starting time	Ending time	Isolation OK/NO	Remarks
1					
2					
3					

Annex A-7

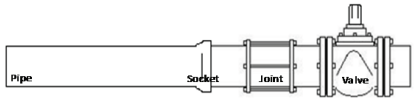
Leakage Record Sheet

Leakage Record Sheet				Leak. No
Date of survey:		Street		
Date of repair:		House No.		
Pilot area		Customer		
Main Pipe	1. CIP, 2. uPVC, 3. GP, 4. PE, 5. Others	Location	1. Pipe, 2. Connection, 3. Ferrule, 4. Valve, 5. Meter, 6. Tap, 7. Reservoir Tank, 8. Others,	
Diameter	mm	Condition	1. Hole, 2. Crack, 3. Breakage, 4. Packing, 5. Loose Connection, 6. Over Flow, 6. Unknown, 7. Others( )	
Service Pipe	1. PE, 2. uPVC, 3. GP, 4. Dux 5. Others( )	Cause	1. Corrosion, 2. Deterioration (Aging), 3. Traffic Load, 4. Wrong Construction, 5. Less Adhesive, 6. Pressure Fluctuation, 7. Defective Valve, 8. Vandalism, 9. Other Construction, 10. Unknown, 11. Others( )	
Diameter	16 mm			
Depth/Distance	(cm) / (m) from boundary	Surface	1.Asphalt, 2.Concrete, 3.Gravel, 4.Grass 5.Soil, 6.Others	
Leakage Size	1. Large, 2. Medium, 3. Small, 4. Drops, Measured or Estimated( )l/min	Detected Method	1. Patrol, 2. Customer Informing, 3. Acoustic, 4. Pinpoint,	

Leak Point



Hole/Crack Size:(mm)



Location Map

Photo

Remarks:

Disconnected line (Illegal use)

Information of leak repair

Excavation size: m X m X m = (m^3)

	Unit price	Hour	Volume	Sub total	Used Material	Size/Type	Unit price	Volume	Sub total
Worker					Pipe-1				
Plumber					Pipe-2				
Supervisor					Pipe-3				
Engineer					Joint-1				
					Joint-2				
Backhoe					Joint-3				
Generator					Joint-4				
Drainage Pump					Joint-5				
Lighting equipment					Meter				
					Packing				
Sand					Saddle				
Gravel									
Asphalt									
Total					Total				

S4.5.1-20

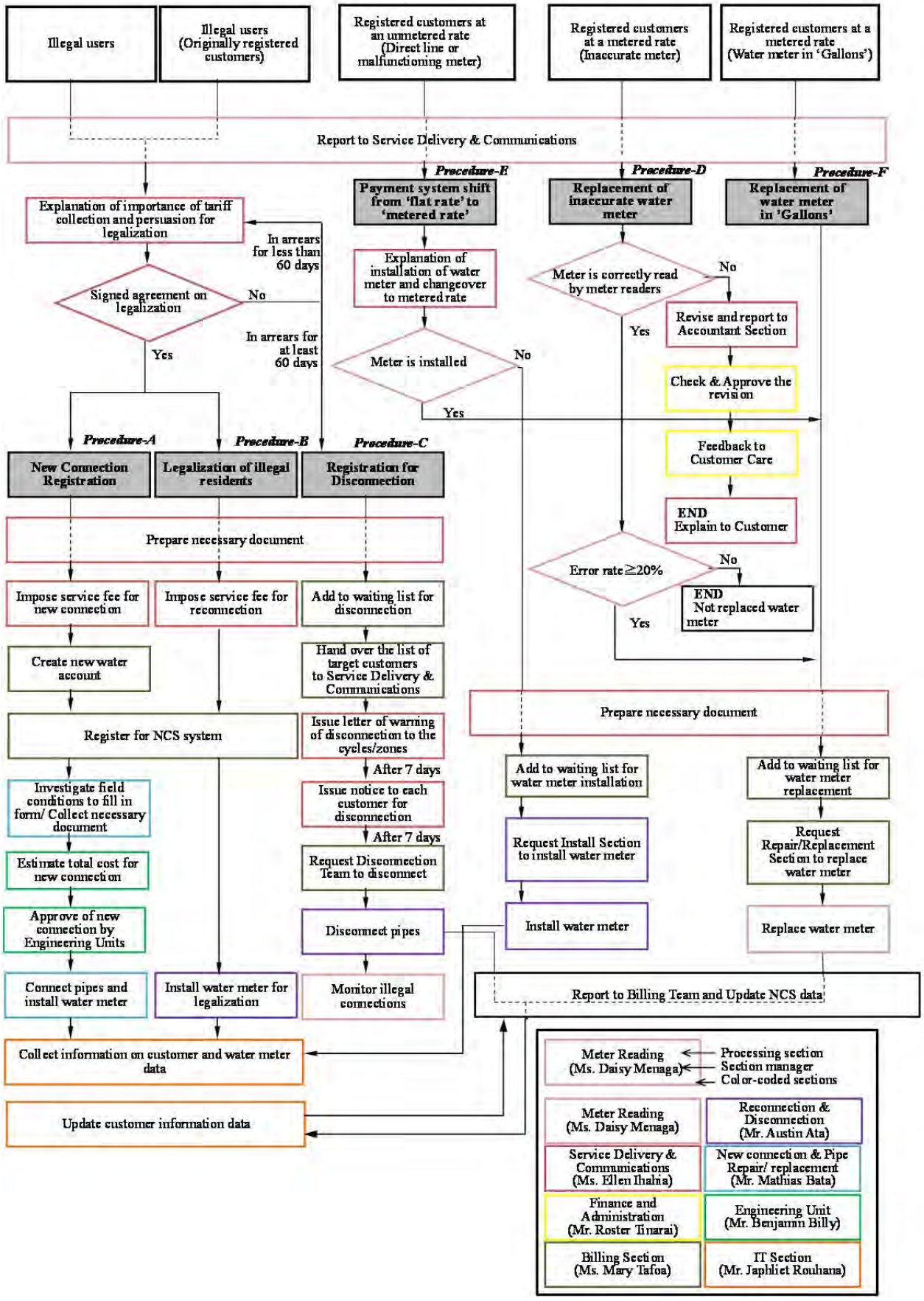
Annex A-8

Valve Operation Sheet of Step Test

Pilot area: Trial number_ 1

No,	Status	Valve No,	Operating Time	Flow rate(m3/h)	MNF(m3/h)	MNF(m3/h)	Remarks
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							

Annex A-9



Normalization Process of Service Connection

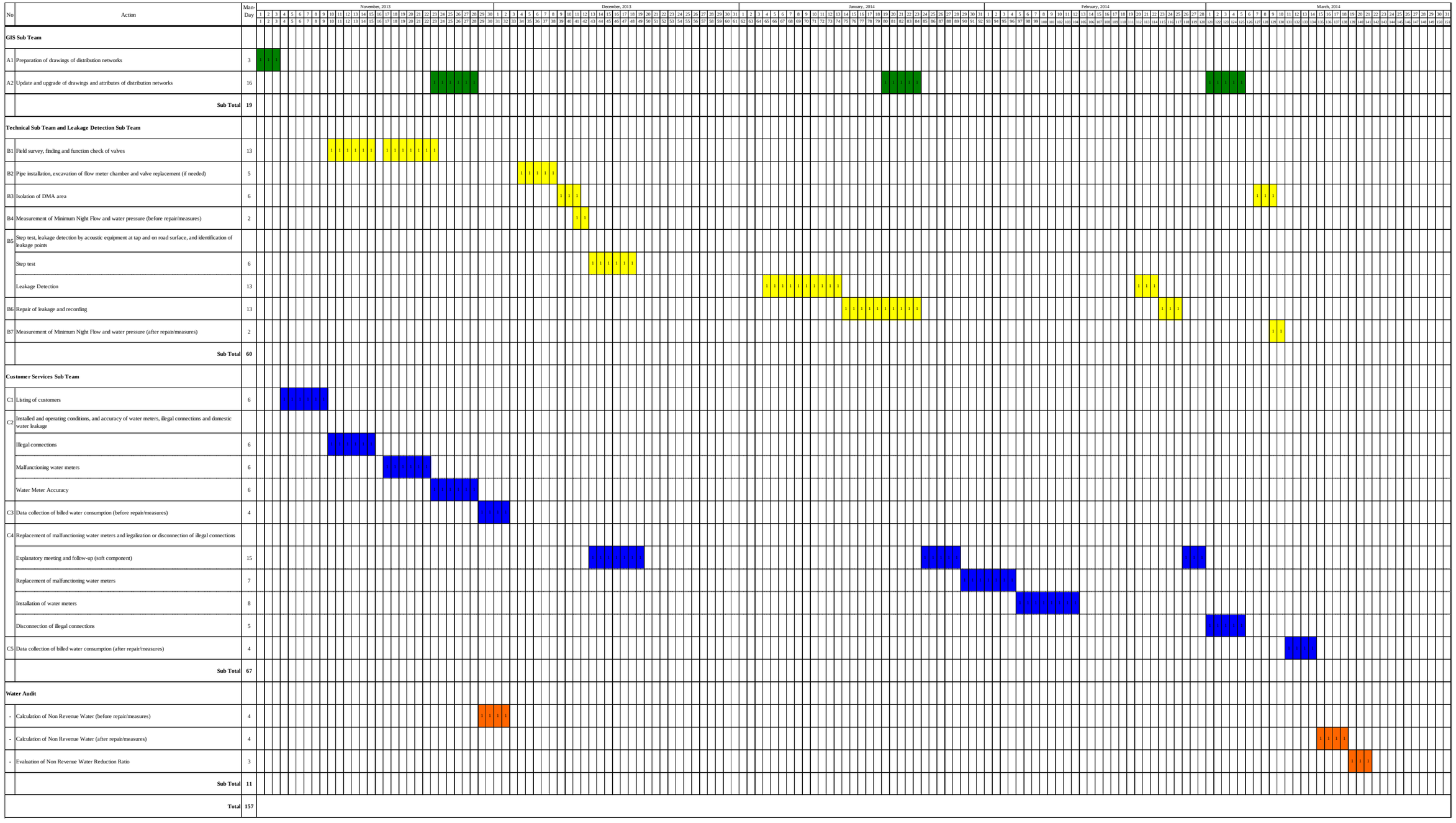
Annex A-10

No	Action	Man-Day	Pilot Project No.1 (1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60)
GIS Sub Team			
A1	Preparation of drawings of distribution networks	1	1
A2	Update and upgrade of drawings and attributes of distribution networks	6	1 1 1 1 1 1
	Sub Total	**7**	
Technical Sub Team and Leakage Detection Sub Team			
B1	Field survey, finding and function check of valves	3	1 1 1
B2	Pipe installation, excavation of flow meter chamber and valve replacement (if needed)	2	1 1
B3	Isolation of pilot project areas	2	1 1
B4	Measurement of Minimum Night Flow and water pressure (before repair/measures)	1.5	0.5 1
B5	Step test, leakage detection by acoustic equipment at tap and on road surface, and identification of leakage points	5	1 1 1 1 1
B6	Repair of leakage and recording	3	1 1 1
B7	Measurement of Minimum Night Flow and water pressure (after repair/measures)	1.5	0.5 1
	Sub Total	**18**	
Customer Services Sub Team			
C1	Listing of customers	2	1 1
C2	Installed and operating conditions, and accuracy of water meters, illegal connections and domestic water leakage	6	1 1 1 1 1 1 1 1
C3	Data collection of billed water consumption (before repair/measures)	2	1 1
C4	Replacement of malfunctioning water meters and legalization or disconnection of illegal connections	12	1 1 1 1 1 1 1 1 1 1 1 1
C5	Data collection of billed water consumption (after repair/measures)	2	1 1
	Sub Total	**24**	
Water Audit			
-	Calculation of Non Revenue Water (before repair/measures)	2	1 1
-	Calculation of Non Revenue Water (after repair/measures)	2	1 1
-	Evaluation of Non Revenue Water Reduction Ratio	1	1
	Sub Total	**5**	
	Total	**54**	

Detailed Implementation Schedule of Actions for per-Pilot Projects

Annex A-11

No	Action	Man-Day
GIS Sub Team		
A1	Preparation of drawings of distribution networks	3
A2	Update and upgrade of drawings and attributes of distribution networks	16
	Sub Total	**19**
Technical Sub Team and Leakage Detection Sub Team		
B1	Field survey, finding and function check of valves	13
B2	Pipe installation, excavation of flow meter chamber and valve replacement (if needed)	5
B3	Isolation of DMA area	6
B4	Measurement of Minimum Night Flow and water pressure (before repair/measures)	2
B5	Step test, leakage detection by acoustic equipment at tap and on road surface, and identification of leakage points	
	Step test	6
	Leakage Detection	13
B6	Repair of leakage and recording	13
B7	Measurement of Minimum Night Flow and water pressure (after repair/measures)	2
	Sub Total	**60**
Customer Services Sub Team		
C1	Listing of customers	6
C2	Installed and operating conditions, and accuracy of water meters, illegal connections and domestic water leakage	
	Illegal connections	6
	Malfunctioning water meters	6
	Water Meter Accuracy	6
C3	Data collection of billed water consumption (before repair/measures)	4
C4	Replacement of malfunctioning water meters and legalization or disconnection of illegal connections	
	Explanatory meeting and follow-up (soft component)	15
	Replacement of malfunctioning water meters	7
	Installation of water meters	8
	Disconnection of illegal connections	5
C5	Data collection of billed water consumption (after repair/measures)	4
	Sub Total	**67**
Water Audit		
-	Calculation of Non Revenue Water (before repair/measures)	4
-	Calculation of Non Revenue Water (after repair/measures)	4
-	Evaluation of Non Revenue Water Reduction Ratio	3
	Sub Total	**11**
	Total	**157**



Detailed Implementation Schedule of Actions for per-DMA

S4.5-2 年次行動計画 2014

Solomon Islands Water Authority

Japan International Cooperation Agency

S4.5-2-1

The Project for Improvement of Non-Revenue Water Reduction Capacity for Solomon Islands Water Authority in Solomon Islands

Annual Action Plan 2014

on NRW Reduction

June, 2014

Prepared by Project Team

Table of Contents

Annex

Abbreviation

AUD	Australian Dollar
CP	Counterpart
DFAT	Australian Department of Foreign Affairs and Trade
DMA	District Metered Area
GIS	Geographical Information System
IAP	Individual Action Plan
JICA	Japan International Cooperation Agency
LCZ	Leakage Control Zone
MNF	Minimum Night Flow
NRW	Non Revenue Water
OJT	On-the-Job Training
PCZ	Pressure Control Zone
SBD	Solomon Islands Dollar
SOP	Standard Operating Procedure
SW	Solomon Water
TWP	Two Year Plan of Solomon Water

Chapter 1 Introduction

In order to carry out Non Revenue Water (NRW) reduction activities in Honiara City under the Project for Improvement of Non Revenue Water Reduction Capacity for Solomon Islands Water Authority in Solomon Islands (hereinafter “the Project”), the Project Team formulates this Annual Action Plan 2014 (Phase-3, April 2014 to March 2015), which describes an approach to NRW and efforts at NRW reduction by the Project, in consideration of the lessons learned from Phase-2 and also in cooperation with the Two Year Plan of Solomon Water.

1.1 Project Purpose, Outputs and Activities of the Project

The purpose of the Project is that “Solomon Water is assisted to achieve its target of reducing the NRW ratio in Honiara to 30% by 2015”.

The objectively verifiable indicator for the purpose is that “The NRW ratio is reduced by 30 points in each pilot project area, selected District Meter Areas (DMAs) and/or Leakage Control Zones (LCZs)”.

In order to accomplish the purpose, the following four outputs were identified for the Project:

1. Planning process of SW for NRW reduction is systemized.
2. The procedures for NRW reduction is established through pilot projects and DMAs/LCZs.
3. NRW reduction is implemented in accordance with the procedures in pilot projects and DMAs/LCZs.
4. Water meter reading and billing process management are improved.

A number of activities and associated inputs for the each output were also specified, which are shown in Table 1-1 and Annex 1, Project Design Matrix$_2$ (PDM$_2$).

1.2 Two Year Plan of Solomon Water

Based on the Two Year Plan of Solomon Water, which is assisted financially by Australian Government, a variety of interventions has been introduced to improve levels of water supply services.

The objective of the Two Year Plan is that “Solomon Water provides improved levels of service (in terms of quality, quantity and reliability) to a larger proportion of the population in the existing service areas, based on a sound financial position”.

In order to achieve the objective, Solomon Water identified the five outputs for the Two Year Plan as follows:

1. Improved levels of service for water supply
2. Improved customer care and communications
3. Strengthened financial management and administration
4. Improved organizational capacity
5. Improved strategic planning

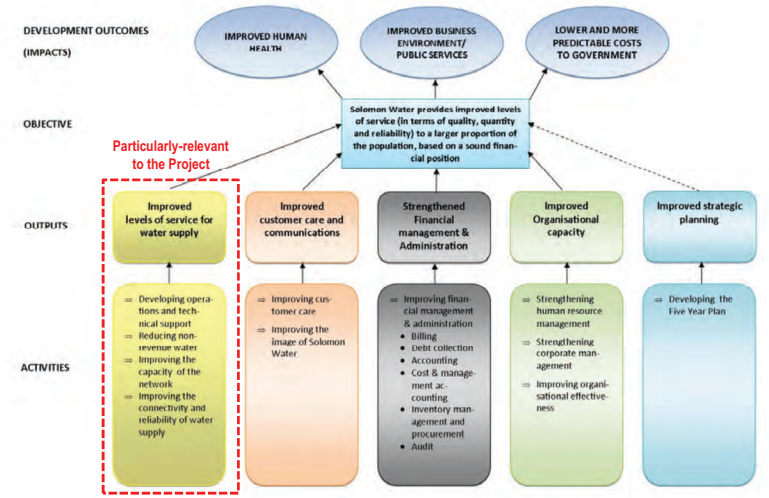
A number of activities for the each output were also specified, which are shown in Programme Logic of the Two Year Plan, shown in Figure 1-1.

Table 1-1 Overall Goal, Project Purpose, Outputs and Activities of the Project

Overall Goal	**SW's service levels are improved and SW's revenue is increased.** **Indicators** 1. The NRW ratio in Honiara City is reduced to 20%* by 2018. 2. Ratio of operational revenue-to-expenditure is sustained at greater than100%.
Project Purpose	**SW is assisted to achieve its target of reducing the NRW ratio in Honiara to 30%* by 2015.** **Indicator** 1. The NRW ratio is reduced by 30** points in each pilot project area, selected DMAs and/or LCZs.
Outputs and Activities	**Output-1: Planning process of SW for NRW reduction is systemized.** **Indicators** 1-1. Annual budget for NRW reduction is secured in the pilot project areas and DMAs/LCZs. 1-2. The strategic implementation (rolling-out) plan for NRW reduction is approved by management of SW. **Activities** 1-1 Establish the NRW Management Team in SW. 1-2 Review the current NRW reduction activities done by SW. 1-3 Assist in hydraulic analysis including identification of problems in the existing network. 1-4 Select pilot project areas and DMAs. 1-5 Formulate an annual action plan on NRW reduction in the pilot project areas and DMAs/LCZs. 1-6 Monitor the progress of NRW reduction activities in the pilot project areas and DMAs/LCZs. 1-7 Analyze cost-effectiveness of NRW reduction activities. 1-8 Prepare strategic implementation (rolling-out) plan for NRW reduction in the whole Honiara City.
	Output-2: The procedure for NRW reduction is established through the pilot projects and DMAs/LCZs. **Indicators** 2-1. A manual for NRW reduction measures is revised. 2-2. The number of authorizations and disconnections of illegal connections is increased in the pilot project areas and DMAs/LCZs. 2-3. The number of new service connections and replacement of malfunctioning customer meters is increased in the pilot project areas and DMAs/LCZs. **Activities** 2-1 Establish the NRW Action Team in SW. 2-2 Check existing flow meters and replace the malfunctioning meters with new ones at all the water sources. 2-3 Conduct training on NRW reduction for the NRW Action Team.
	Output-3: NRW reduction is implemented in accordance with the procedure in pilot projects and DMAs/LCZs. **Indicators** 3-1. The number of pipe repairs is increased in the pilot project areas and LCZ. **Activities** 3-1 Provide assistance in the definition and creation of discrete DMA's and their boundaries. 3-2 Provide assistance in the creation of LCZ within the DMAs. 3-3 Update existing water distribution network drawings by using GIS in the pilot project areas and DMAs. 3-4 Install necessary valves for isolation of the pilot project areas and DMAs, install flow meters, and measure the NRW ratio before implementation of the pilot project. 3-5 Identify the causes of NRW (water leakage, illegal connections and meter-related losses) in the pilot project areas and DMAs through the OJT. 3-6 Implement NRW reduction measures such as legalization of users, leakage detection, leakage repair, water meter installation and optimization of water pressure in the pilot project areas and DMAs, and measure the NRW ratio after implementation of pilot project. 3-7 Prepare reports of results including cost and benefit. 3-8 Provide advice for the improvement of pipe system design, installation and network operation. 3-9 Convene the workshops to share the experiences, outcomes and etc. of the pilot projects. 3-10 Provide capacity development and training using the DMA's and LCZ's as the basis for NRW reduction activities. 3-11 Prepare a manual for NRW reduction. (not mentioned in PDM_2)
	Output-4: Water meter reading and billing process management are improved. **Indicator** 4-1. Standard operating procedures (SOP) and training materials are formulated. **Activities** 4-1 Formulate the work schedule and staff assignment plan for water meter readers. 4-2 Conduct training on water meter reading and reporting methods for anomalies and illegal connections for water meter readers. 4-3 Promote PR activities on water conservation and saving, and water tariff for the customers. 4-4 Monitor the water meter reading and billing activities. 4-5 Report the monitoring results, such as anomalies and illegal connections, to the responsible sections.

Note: * Indicators are based on SW's Two-Year Plan (2013-2015) target.
** The target figure is set temporarily based on the result of only one pilot project. Therefore, the figure might be changed in the next JCC based on the progress of the pilot project.
Source: PDM_2

S4.5-2-3



Source: Two Year Plan of Solomon Water

Figure 1-1 Programme Logic of Two Year Plan of Solomon Water

The output particularly-relevant to the Project is the 1st output "Improved levels of service for water supply" and its activities are:

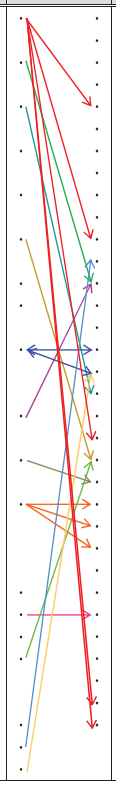
- Developing operations and technical support
- Reducing NRW (including pressure management)
- Improving the capacity of the network (such as renovation, replacement and redesign)
- Improving the connectivity and reliability of water supply

1.3 Scope of Responsibilities, Contribution and Cooperation between the Project and the Two Year Plan

The Project is not only to create own outputs but also to contribute to creation of the outputs of the Two Year Plan of Solomon Water.

Table 1-2 shows the scope of responsibilities and also how the activities of the Project in the Phase-3, which are described in detail in this Annual Action Plan 2014, contribute to and cooperate mutually with the activities of Two Year Plan particularly for its 1st output "Improved levels of service for water supply".

Table 1-2 Scope of Responsibilities, Contribution and Cooperation between the Project and the Two Year Plan

Activities in the Project		Activities for 1st Output in the Two Year Plan
1-3 Assist in hydraulic analysis including identification of problems in the existing network. 1-4 Select pilot project areas and DMAs. 1-6 Monitor the progress of NRW reduction activities in the pilot project areas and DMAs/LCZs. 1-7 Analyze cost-effectiveness of NRW reduction activities. 1-8 Prepare strategic implementation (rolling-out) plan for NRW reduction in the whole Honiara City. 2-3 Conduct training on NRW reduction for the NRW Action Team. 3-1 Provide assistance in the definition and creation of discrete DMA's and their boundaries. 3-2 Provide assistance in the creation of LCZ within the DMAs. 3-3 Update existing water distribution network drawings by using GIS in the pilot project areas and DMAs. 3-4 Install necessary valves for isolation of the pilot project areas and DMAs, install flow meters, and measure the NRW ratio before implementation of the pilot project. 3-5 Identify the causes of NRW (water leakage, illegal connections and meter-related losses) in the pilot project areas and DMAs through the OJT. 3-6 Implement NRW reduction measures such as legalization of users, leakage detection, leakage repair, water meter installation and optimization of water pressure in the pilot project areas and DMAs, and measure the NRW ratio after implementation of pilot project. 3-7 Prepare reports of results including cost and benefit. 3-8 Provide advice for the improvement of pipe system design, installation and network operation. 3-9 Convene the workshops to share the experiences, outcomes and etc. of the pilot projects. 3-10 Provide capacity development and training using the DMA's and LCZ's as the basis for NRW reduction activities. 3-11 Prepare a manual for NRW reduction. (not mentioned in PDM_2) 4-3 Promote PR activities on water conservation and saving, and water tariff for the customer 4-4 Monitor the water meter reading and billing activities		2.1 Developing operations and technical support 2.1.1 System Monitoring - Review, procure and install SCADA/Telemetry - Recruit and train technicians 2.1.2 Hydraulic Modelling of the Network - Procure modelling software - Establish modelling unit, recruit and train modellers - Develop a calibrated network model 2.2 Reducing NRW 2.2.2 Pressure Management - Procure, install PRVs and meters in chambers - Customer awareness campaign - Set up selected high priority supply zones as DMAs - Procure, install GSM data loggers in DMAs - NRW task force role expanded to include management of pressure zone - Geospatial referencing of all registered connections/meters - Establish MapInfo GIS link to customer billing - Ongoing monitoring of DMAs 2.2.3 Increasing Rate of Progress of NRW Reduction - Specs for materials identified and made available for installation - Train supervisors - Detailed in the field audit of illegal connections - Disconnection of illegal connections - Fit meters to flat rate connections - Procure materials for leak repair and main replacement - Recruit additional staff for leak repair, meter and billing teams - Vehicle and plant 2.3 Improving the capacity of the network - Review and select appropriate design standard - Trial relocation of first 200 customer meters - Improve capacity of SW repair team - Prepare prioritized main upgrade programme - Rolling upgrade of distribution system 2.4 Improving the connectivity and reliability of water supply Transmission, reservoir, borehole replacement/maintenance and generator

1.4 Definition of Terms

(1) Non Revenue Water (NRW)

NRW is characterized in the International Water Association (IWA) Water Balance as shown in Table 1-3.

Table 1-3 NRW in the IWA Water Balance

Water Production				
System Input Volume				
Authorized Consumption		Billed Authorized Consumption	Billed metered consumption	**Revenue Water**
			Billed unmetered consumption	
		Unbilled Authorized Consumption	Unbilled metered consumption	**Non Revenue Water (NRW)**
			Unbilled unmetered consumption	
Water Losses	Apparent Losses		Unauthorized consumption (incl. illegal connections)	
			Metering inaccuracies	
	Real Losses		Leakage on transmission and/or distribution networks	
			Leakage and overflow at utility's storage tanks	
			Leakage on service connections to customer meters	
Treatment Losses (Backwash, etc.) and Evaporation				

(2) District Metered Area (DMA)

"District Metered Area (DMA)" is defined as a discrete area of a distribution system permanently created by isolation or the complete disconnection of pipe work in which the quantities of water inflow and outflow the area are metered. The water flow is analyzed to quantify the level of NRW. In this way, it is possible to determine more precisely where and when it is most beneficial to undertake NRW reduction activities.

(3) Leakage Control Zone (LCZ)

"Leakage Control Zone (LCZ)" specially-introduced in Solomon Water is defined as a discrete zone of a distribution system tentatively created for implementation of countermeasures such as Active Leakage Control against leakage (rather NRW) by isolation or the complete disconnection of pipe work in which the quantities of water inflow and outflow the area are metered temporarily.

The Project assumes each DMA consists of a number of LCZs, but that may be not always the case because of DMA size or configuration of network. The size of LCZ and procedures of countermeasures are supposedly almost same as those of the Pilot Project in the Phase-2.

(4) Pressure Control Zone (PCZ) under the Two Year Plan

One of important factors in lowering and subsequently maintaining a low level of NRW in a water network is "Pressure Control". The division of network into DMAs facilitates the creation of a permanent pressure control system, thus enabling pressure reduction in DMAs which reduces the level of background leakage, the rate of flow of individual bursts and the rate of the annual burst frequency.

Solomon Water has already set up eight zones as "Pressure Control Zones (PCZs)" in which Pressure Reducing Valve (PRV) to be installed in the near future, and also other remaining zones as "Non Pressure Control Zones (Non-PCZs)", totally 29 zones for the whole water supply area of Honiara City under the Two Year Plan. Their locations are shown in Annex 2.

Table 1-4 Pressure Control Zones or Non Pressure Control Zones in Honiara City

No	Name		No	Name	
1	White River Gravity	Non-PCZ	16	Mbua Valley	PCZ
2	White River Gravity	Non-PCZ	17	Tracce House	Non-PCZ
3	Rove	Non-PCZ	18	West Kolaa Ridge B	PCZ
4	Tasahe A and B	PCZ	19	West Kolaa Ridge C	PCZ
5	Tasahe C	Non-PCZ	20	Tuvaruhu	Non-PCZ
6	Ngossi	Non-PCZ	21	Naha Valley 1	Non-PCZ
7	Bokona 1	PCZ	22	Vuri Height	Non-PCZ
8	Bokona 2	Non-PCZ	23	Naha Valley 2	Non-PCZ
9	Lenggakiki	Non-PCZ	24	Jakson Ridge	Non-PCZ
10	Vavaea Rigde	PCZ	25	Panatina West side	Non-PCZ
11	Bokonavera	Non-PCZ	26	Panatina Industrial	Non-PCZ
12	Mataniko SIWA	Non-PCZ	27	Panatina Gravity West	Non-PCZ
13	Skyline	Non-PCZ	28	Panatina Aiport	Non-PCZ
14	West Kolaa Ridge A	PCZ	29	Panatina Valley	Non-PCZ
15	Tanuli	PCZ			

Source: Two Year Plan of Solomon Water

(5) DMA Management and Maintenance

"DMA Management" (i.e. DMA-based Monitoring) is defined as a solution to NRW by creation of permanent leakage (rather NRW) control system by dividing the network into a number of sectors called DMA so that NRW in each sector can be quantified and the detection activities can always be directed to the part of the network with the most NRW. Once an acceptable level of NRW is achieved by countermeasures, the water flow into the area and water consumption in the area is monitored to identify new leakages or illegal connections immediately and prioritized them for solution. Then, further countermeasures are taken as "DMA Maintenance" to keep the acceptable level of NRW.

So, DMA Management and Maintenance contributes to shifting current passive leakage (rather NRW) control to active one.

1.5 Spatial Relationship among DMA, LCZ and PCZ/Non-PCZ

The following schematic drawing shows spatial relationship among DMA, LCZ and PCZ/Non-PCZ.

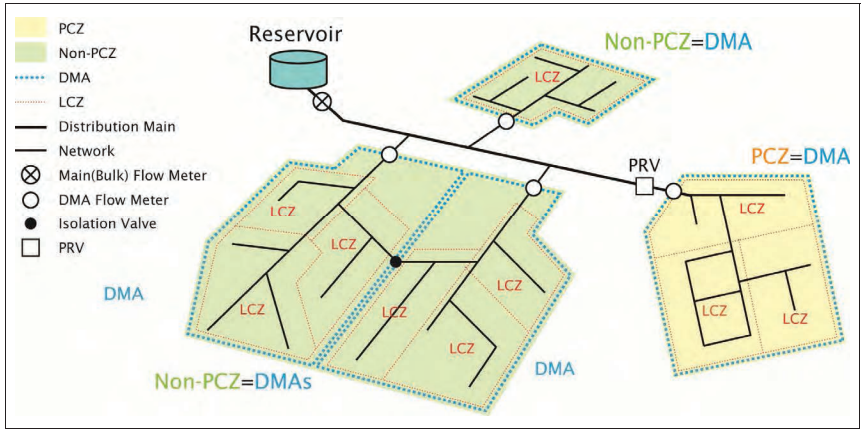


Figure 1-2 Spatial Relationship among DMA, LCZ and PCZ/Non-PCZ (an example)

S4.5-2-5

1.6 Project Team and Persons involved

The Project is carried out by the Project Team composed of the NRW Management Team, the NRW Action Team and the JICA Expert Team, in close cooperation with an expert on hydraulic analysis for supervising implementation of the Two Year Plan.

(1) NRW Management Team

The NRW Management Team consists of five managers of Solomon Water (see Table 1-5).

Table 1-5 Member List of NRW Management Team

Name	Position in the Project	Job Title in SW	Nationality
Mr. Richard AUSTIN	Project Director	General Manager	British
Mr. Ray ANDRESEN	Project Manager	Operations& Technical Manager	Solomon Islander
Ms. Debbie JOHNSEN	Finance & Administration Manager	Finance & Administration Manager	Australian
Ms. Tima KOFANA	Human Resources Manager	Human Resources Manager	Fijian/ Solomon Islander
Ms. Ellen MARUAROFA	Service Delivery& Communications Manager	Service Delivery& Communications Manager	Solomon Islander

Source: Organization Chart of SW
Note: Ms. Ellen Maruarofa is also a member of NRW Action Team.

(2) NRW Action Team

The NRW Action Team consists of 20 counterparts of Solomon Water and has been facilitated by an in-house consultant (see Table 1-6).

Table 1-6 Member List of NRW Action Team

Name	Position in the Project	Job Title in SW	Division
Technical Sub-Team			
Mr. Benjamin BILLY	Action Team Leader 1 / Sub-Team Leader (NRW Taskforce Leader)	Network Operations Team Leader	Operations & Technical
Mr. Austin ATA	Deputy Sub-Team Leader (Customer Connections)	Service Coordinator	Service Delivery & Communications
Mr. Moses RAMO	(Customer Connections)	New Connections Works Officer	Service Delivery & Communications
Mr. Silas TALOSUI	Deputy Sub-Team Leader (Network Maintenance & Repair)	Network Maintenance Team Leader	Operations & Technical
Mr. Mathias BERA	Pipe Repair (Network Pipe Maintenance & Repair)	Technical Assistant for Network Operations	Operations & Technical
Mr. Layten JACOB	Deputy Sub-Team Leader (Procurement)	Procurement Coordinator	Finance & Administration
Mr. Frank DAUKALIA	Meter Repair/Replacement (Pipe Materials Management & Procurement)	Technical Assistant for Network Operations	Operations & Technical
Mr. Chris MERIKO	Deputy Sub-Team Leader (Water Resources & Treatment)	Source Treatment & Plant Team Leader	Operations & Technical
Customer Service Sub-Team			
Ms. Ellen MARUAROFA	Action Team Leader 2 / Sub-Team Leader(Customer Care & Communications Manager)	Service Delivery & Communications Manager	Service Delivery & Communications
Ms. Beverly SAOHU	Deputy Sub-Team Leader	Customer Care Team	Service Delivery &

Name	Position in the Project	Job Title in SW	Division
	(Customer Care)	Leader	Communications
Mr. Carlos SALIGA	Deputy Sub-Team Leader (Community Relations & Media)	Communications & Public Relations Team Leader	Service Delivery & Communications
Ms. Sophia TANGO	(Community Relations & Media Assistant)	Communications & Public Relations Assistant	Service Delivery & Communications
Ms. Daisy MENAGA	Deputy Sub-Team Leader (Meter Reading)	Meter Reading Team Leader	Finance & Administration
Ms. Mary TAFOA	Deputy Sub-Team Leader (Billing)	Billing Team Leader	Finance & Administration
Mr. Lawrence IROI	(Chief Accountant)	Accountant	Finance & Administration
GIS Sub-Team			
Mr. Gavin BARE	Sub-Team Leader (GIS Technician)	GIS Technician for Network Operations	Operations & Technical
Mr. Japhliet ROUHANA	(IT Administration)	IT Technician	Finance & Administration
Leakage Detection Sub-Team			
Mr. Eric UNGA	Sub-Team Leader (Leakage)	Provincial & Leakage Operations Team Leader	Operations & Technical
Mr. Matthew MAFE	Plumber	Plumber for Provincial & Leakage Operations	Operations & Technical
Mr. David AKOEASI	Plumber	Plumber for Provincial & Leakage Operations	Operations & Technical
Consultant			
Ms. Marista KAPINI	In-house Consultant	In-house Consultant	-

Source: Organization Chart of SW
Note: Ms. Ellen Maruarofa is also a member of NRW Management Team.

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(3) JICA Expert Team

In the Phase-3, the JICA Expert Team consisting of the following Japanese members assists the Project (see Table 1-7).

Table 1-7 Member List of JICA Expert Team

Name	Expertise
Mr. Taketoshi FUJIYAMA	Leader /Water Supply Planning, Operation and Management
Mr. Akinori MIYOSHI	Deputy Leader / NRW Reduction Measures -1
Mr. Akihiko OKAZAKI	Leakage Detection Technology
Mr. Masakazu ASAI	GIS
Mr. Yoshiharu WADA	Customer Services & Public Relations
Mr. Kazutoshi MASUDA	GIS Advisor (Support Member)

(4) Expert for Two Year Plan

The following expert on hydraulic analysis to supervise technically implementation of the Two Year Plan is assigned by Solomon Water.

Ms. Kristina KARAVASILI, Technical Coordinator for Water Supply Systems

Chapter 2 Outline of the Project Activities for NRW Reduction

This chapter describes an overall implementing flow and schedule of NRW reduction by the Project in the Phase-3.

2.1 Components in the Project

The Project is divided into two components conveniently as follows, and the following chapters describe them each.

Component-A: Preparation for Future NRW Reduction by DMA and DMA Management (Chapter 3)

In consideration of future implementation of NRW reduction activities and establishment of DMA management after the Project, the Project creates DMAs/LCZs and formulates “Strategic Implementation Plan” together with assistance in GIS data updating and database, and preparation of manual on NRW reduction.

Component-B: NRW Reduction in the selected DMAs/LCZs (Chapter 4)

The Project selects and creates two DMA and some LCZs in early stage of Component-A, and then implement NRW reduction activities (countermeasures against NRW), evaluates IWA water balance and monitor NRW in the selected DMAs.

2.2 Overall Implementing Flow

The activities of both the Project and Two Year Plan listed in Table 1-2 are illustrated by using key processes in Figure 2-1, but the actual sequence will not necessarily be the same as the one planned in the figure.

2.3 Overall Implementing Schedule

Based on the activities and the overall implementing flow, the Project Team proposes implementing schedule tentatively from April 2014 to March 2015, as shown in Table 2-1.

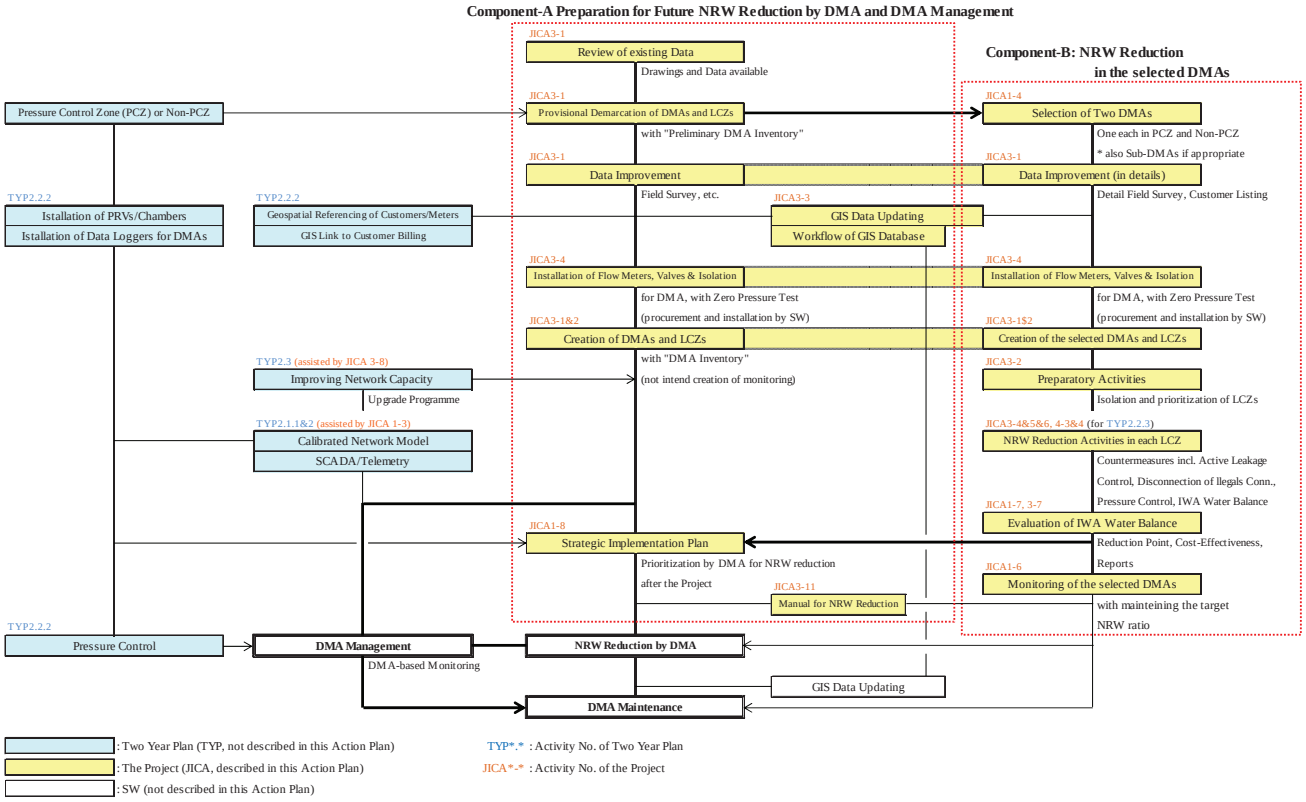

Figure 2-1 Overall Implementing Flow by Two Year Plan and the Project

Table 2-1 Overall Implementing Schedule of NRW Reduction by the Project

Activity			2014										2015		
No.	Description in PDM2	Description in Overall Implementing Flow	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.
1-3	Assist in hydraulic analysis including identification of problems in the existing network.	(Calibrated Network Model of TYP)	Suspended by Flood Disaster											
1-4	Select pilot project areas and DMAs.	Selection of Two DMAs												
1-6	Monitor the progress of NRW reduction activities in the pilot project areas and DMAs/LCZs.	Monitoring of DMAs			(including the Pilot Project areas)									
1-7	Analyze cost-effectiveness of NRW reduction activities.	IWA Water Balance and Evaluation												
1-8	Prepare strategic implementation (rolling-out) plan for NRW reduction in the whole Honiara City	Strategic Implementation Plan												
2-3	Conduct training on NRW reduction for the NRW Action Team.	(not described)												
3-1	Provide assistance in the definition and creation of discrete DMAs and their boundaries.	Review of existing Data, Provisional Demarcation of DMAs, Data Improvement, Creation of DMAs												
3-2	Provide assistance in the creation of LCZ within the DMAs.	Creation of LCZs, Preparatory Activities												
3-3	Update existing water distribution network drawings by using GIS in the pilot project areas and DMAs.	GIS Data Updating, Workflow of GIS Database			Ongoing Pilot Projects<-		->DMAs/LCZs							
3-4	Install necessary valves for isolation of the pilot project areas and DMAs, install flow meters, and measure the NRW ratio before implemetation of the pilot project.	Installation of Valves, Flow Meters and Isolation, and NRW Reduction Activities			Ongoing Pilot Projects<-		->DMAs/LCZs							
3-5	Identify the causes of NRW (water leakage, illegal connection and meter-related losses) in the pilot project areas and DMAs through the OJT.	NRW Reduction Activities			Ongoing Pilot Projects<-		->DMAs/LCZs							
3-6	Implement NRW reduction measures such as legalization of users, leakage detection, leakage repair, water meter installation and optimization of water pressure in the pilot project areas and DMAs, and measure the NRW ratio after implemetation of the pilot project.	NRW Reduction Activities			Ongoing Pilot Projects<-		->DMAs/LCZs							
3-7	Prepare reports of results including cost and benefit.	IWA Water Balance and Evaluation			Ongoing Pilot Projects<-					->DMAs/LCZs				
3-8	Provide advice for the improvement of pipe system design, installation and network operation.	(Improving Network Capacity of TYP)												
3-9	Convene the workshops to share the experiences, outcomes and etc. of the pilot projects and DMAs/LCZs.	(not described)			▲								▲	
3-10	Provide capacity development and training using the DMA's and LCZ's as the basis for NRW reduction activity.	(not described)												
3-11	Prepare a manual for NRW reduction. (not mentioned in PDM2)	Manual for NRW Reduction												
4-3	Promote PR activities on water conservation and saving, and water tariff for the customer	NRW Reduction Activities			Ongoing Pilot Projects<-		->DMAs/LCZs							
4-4	Monitor the water meter reading and billing activities	NRW Reduction Activities			Ongoing Pilot Projects<-		->DMAs/LCZs							
Implementation Period of NRW Reduction in the selected DMAs/LCZs														
DMA/ LCZ 1	To be determined (Non Pressure Control Zone)	NRW Reduction in the selected DMAs/LCZs												
DMA/ LCZ 2	To be determined (Pressure Control Zone)	NRW Reduction in the selected DMAs/LCZs												

Chapter 3 Component-A: Preparation for Future NRW Reduction by DMA, DMA Management and Maintenance

Along the "Implementing Flow" described in a preceding chapter, this chapter goes into detail of the processes for Component-A "Preparation for Future NRW Reduction by DMA and DMA Management" in the Phase-3.

3.1 Review of Existing Data

Prior to creation of DMAs and LCZs in the whole of Honiara City, the Project collects and reviews existing data such as the currently-updated network drawings and other data available including customer data.

It is necessary to fully understand and confirm the existing network configuration, and to plan measures required for DMA Management such as installation of DMA flow meters and isolation valves.

3.2 Provisional Demarcation of DMAs and LCZs

Because of discrepancy between the network drawings and the actually-installed pipelines, the Project defines the boundary of DMAs including LCZs provisionally with "Preliminary DMA Inventory" by using the above existing data and also considering the pressure control zones or non-pressure control zones set by the Technical Coordinator for the Two Year Plan.

The factors to be taken into consideration for designing a DMA in the Project are as follows and basically used as items of the inventory.

- Suitably-sized DMA/LCZ for efficient NRW reduction and DMA management (500-600 customers)
- Configuration of network (the discrete area without outflowing into adjacent DMAs/LCZs is much more preferable, and the area with water cascading into adjacent DMAs/LCZs should be avoided.)
- Ease of isolation physically and economically
- Single inlet
- Ground elevation of inlet point and outflow point from reservoir or water source if direct supply
- Variation of ground level (contour, height and bottom)
- Length and diameter of network in the area
- Conditions of network (hydraulic defectiveness, aged deterioration)
- Reliability and accuracy of data of facilities, network and customers
- Leakage frequency (area where leakage is common)
- Number of metered customers
- Number of direct-line customers (meters to be installed)
- Number of houses and commercial buildings
- Area characteristic (urban- or community- residential, commercial, industrial, governmental)
- Number of frequency of illegal connection (area where illegal connections exist or doubtful area)
- Density of customers per km of network
- Continuous (24hrs/7days) or intermittent water supply
- Water supply volume (estimate)
- Water source(s) on which the area depends
- O&M cost per revenue water supplied to the area

In the process of preparation of Preliminary DMA Inventory, the Project selects two DMAs for NRW reduction in the Phase-3, which is described in the Chapter 4.

3.3 Data Improvement

The design of DMAs based on accurate and reliable data is a key to success of DMA management. In order to ensure creation of DMAs including LCZs, the Project confirms and updates the existing data and raises their accuracy through field surveys and confirmation.

3.4 Installation of Flow Meters, Valves and Isolation

Once the demarcation is verified through the above data improvement, the Project determines position the DMA flow meters and valves in each DMA, which are procured and then installed or replaced by Solomon Water. After the installation or replacement, the Project confirms whether each DMA is isolated or not by "Zero Pressure Test", which involves closing the supply to a DMA and checking that the pressure drops towards zero. All boundary and divisional valves should be sounded to check whether the valves are tight. If faulty valves are found, these should be rectified and the test repeated.

A typical procedure for a zero pressure test is as follows, which are modified according to conditions of the DMA. On completion of the test, the supply valve is reopened. The pressure is monitored to ensure that supply has been restored to the DMA.

Typical Procedure of Zero Pressure Test

1. Indicate boundary valves by marking valve covers (e.g. often by painting the valve cover red).
2. Arrange for the test to take place between am 1:00 and am 5:00. Inform customers with special needs (hospitals, dialysis patients etc.)
3. Ensure staffs have plans indicating the boundary, boundary valves, and the inlet valve.
4. Set up pressure gauges or loggers at key locations such as fire hydrants, faucets, and pipe ends if flat landscape throughout the DMA.
5. Close the inlet valve to isolate the DMA.
6. Analyze the pressure data. If the pressure drops to zero then it is likely that the boundary is tight or at the very least, if there is an unknown connection, it is likely to be very small. However, if after 10 minutes, the pressure has not dropped, a second check should be made by simulating a consumption (e.g. opening a fire hydrant and faucets within the DMA) to induce some flow, which should zero the pressure. If there are no unknown connections, the pressure should remain at the low level when the hydrant is closed.
7. If the test fails, i.e. the pressure creeps up; it is likely that there is an unknown connection. An assessment of the heads (pressure + ground level) at each of the monitoring points will allow the area of a potential inlet to be identified. Further investigation is then necessary, possibly with additional zoning of the DMA, to identify the unknown inlet. It cannot be over stressed the importance of verifying the tightness of the DMA boundary, as all subsequent leakage location activities is dependent on the accuracy of the leakage estimate.

Source: IWA

3.5 Creation of DMAs and LCZs

Only after isolation of the DMAs including LCZs is confirmed, they can be created, but LCZs are demarcated only at this stage.

Based on the Preliminary DMA Inventory and its update or modification through the previous processes, the Project prepares “DMA Inventory” to be still updated continuously in the future.

3.6 Strategic Implementation Plan for NRW Reduction

Throughout the end of the Phase-3 until the beginning of the Phase-4, in consideration of the result of implementation of NRW reduction activities in the selected DMAs/LCZs (detailed in Chapter 4), the Project prepares “Strategic Implementation Plan for NRW Reduction” for Solomon Water to prioritize the DMAs in NRW reduction activities by using DMA Inventory after the Project, and proposes implementing schedule, structure and procedures, and estimates costs of the activities in the future.

Items to be described in the Strategic Implementation Plan are currently proposed as follows:

- Objective
- Definition of Terms
- DMAs in Honiara
- Implementing Structure
- Overall Implementing Flow
- Overall Implementing Schedule
- Prioritization of DMAs for NRW Reduction
- Procedures of NRW Reduction in a DMA
- DMA Management (DMA-based Monitoring System)
- Cost Estimation
- Log sheet, Forms

3.7 GIS Data Updating and Workflow of GIS Database

In order to operate and maintain water supply facilities and to manage customer services efficiently, the Solomon Water needs to utilize GIS database effectively. The workflow for construction and update of GIS database, which will be described in detail in the operational manual (draft), is illustrated in Annex 3.

The GIS Sub-Team updates geospatial referencing of the items as shown in Table 3-1, and then updates and upgrades the drawings of distribution networks and database. Their detail and attributes are shown in Annex 4, which is used as a sheet for progress management.

Besides, the GIS Sub-Team and staffs of related sections have discussed information of the water supply facility and have created forms for data collection and updating, as an example shown in Annex 5. These forms are basically filled in on site.

Table 3-1 Items to be updated

No	Layer	No	Layer
1	Water pipes	9	Leakage location
2	Sluice valve (gate valve)	10	Boreholes
3	Fire hydrant	11	Pump stations
4	Air valve	12	Service reservoirs
5	Flow meters	13	Distribution area of source
6	Feeder pipes (service connection pipelines)	14	Customer's information
7	Water meters	15	Water quality (Fixed-point observation)
8	Water pipe bridge	16	Wastewater pipe, Manhole

3.8 Manual for NRW Reduction

The Project prepares a manual for operation and maintenance especially targeting NRW reduction including Active Leakage Control (leakage identification, detection and repair), which consequently contributes to future NRW reduction in the created DMAs, as well as a manual for GIS data updating and development of GIS database.

Items to be described in the manual for NRW reduction are currently proposed as follows:

- NRW Reduction Concept, Approach and Methodology
- Preparation and Methods of Isolation
- Flow & Water Pressure Survey
- Leakage Detection Survey
- Recording and Data Management
- IWA Water Balance
- Cost-effectiveness Analysis

Items to be described in the manual or standard operating procedure (SOP) for GIS data updating and development of GIS database are currently proposed as follows:

- GIS data operational structure
- Database contents and management
- Data updating and maintenance
- Detail of data updating

Chapter 4 Component-B: NRW Reduction in the selected DMAs/LCZs

Along the "Implementing Flow" described in Chapter 2, this chapter goes into detail of the processes for Component-B "NRW Reduction in the selected DMAs and LCZs" in the Phase-3.

The Project Team proposes detailed implementation schedule of Component-B with man-day of each action, from April 2013 to March 2014, as shown in Annex 6.

4.1 Selection of Two DMAs

Based on the Preliminary DMA Inventory, the proposed criteria of selection and intention of Solomon Water, the Project examines the provisionally-demarcated DMAs in a comprehensive manner and then selects two of them for implementation of NRW reduction activities in terms of feasibility as the first trial subsequent to the past pilot projects.

The criteria of selection are proposed as follows:

- One DMA in PCZs and another DMA in Non-PCZs
- Not complicated network configuration (Dendritically-expanded networks are preferable.)
- Discrete DMA without outflowing into adjacent DMAs (preferable)
- Single inlet and easy isolation
- Proper size and number of customers (500-600) suitable for implementation and monitoring
- Domestic area (preferable)
- Enough and hydraulically-stable supply of water into the DMA
- Leakage or burst frequency (area where leakage or burst is common)
- Number of frequency of illegal connection (area where illegal connections exist or doubtful area)
- Conditions of network (hydraulic defectiveness, aged deterioration)

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4.2 Data Improvement (in detail)

The design of DMAs based on accurate and reliable data is a key to success of DMA management. In order to ensure creation of DMAs including LCZs, the Project confirms and updates the existing data and raises their accuracy through field surveys and confirmation.

In preparation for implementation of NRW reduction in the selected two DMAs, the Project conducts field surveys, customer listing and so on preferentially and in detail to verify conditions of the areas.

4.3 Installation of Flow Meters, Valves and Isolation

Once the demarcation is verified through the above data improvement, the Project determines position the DMA flow meters and valves in the selected DMAs, which are procured and then installed or replaced by Solomon Water. After the installation or replacement, the Project confirms whether the selected DMAs are isolated or not by "Zero Pressure Test", which its procedure is explained in Section 3.2.

4.4 Creation of the selected DMAs and LCZs

Only after isolation of the DMAs including LCZs is confirmed, they can be created, but LCZs are demarcated only at this stage.

4.5 Preparatory Activities before NRW Reduction

4.5.1 Methodology to narrow down NRW

Among some LCZs and extended distribution networks, priority approach to targeting area and effective countermeasures against NRW should be considered and taken. The approach can be divided conceptually into the following three methods in order of steps.

Methodology to narrow down NRW

- Area Method: To prioritize areas (LCZs) containing larger NRW relatively (see Section 4.5.3).
- Line Method: To prioritize pipeline sections containing larger NRW relatively (see Step Test in Action B3, Section 4.6.2).
- Point Method: To detect and finally identify cause of NRW. (For example, leakage detection methods with Electronic Acoustic Rod, Leakage Detector, Correlator and Accosting Rod in Action B3, Section 4.6.2).

4.5.2 Isolation of LCZs

Prior to implementation of NRW reduction, LCZs should be isolated and then it be confirmed. Procedure of isolation of LCZs is as follows:

Procedure of Isolation of LCZs

1. Identify boundary and inlet of LCZs.
2. Excavate a pit and if necessary replace existing pipe by PVC pipe and install a valve or replace the existing valve by new one at inlet of each LCZ. (*The pit should be left until NRW reduction activities are completed.)
3. Install isolation valve(s) at boundary to adjacent LCZ(s) if necessary.
4. Confirm if each LCZ is isolated by water flow check (Check visually whether water flow from all faucets stops or not after closing of inlet and isolation valves in the daytime).

4.5.3 Prioritization of LCZs

LCZs should be prioritized for efficient implementation. As an area method to narrow down NRW, procedure of prioritization of LCZs is as follows, unless water cascades into adjacent LCZ(s). If so, implementation should be done in order from the downstream LCZ to the upstream LCZ.

Procedure of Prioritization of LCZs

1. Estimate daily water consumption roughly in each LCZ, based on number of customers or meter reading records if possible.
2. Install ultrasonic flow meter and pressure gauge tentatively at inlet of each LCZ to measure water flow and pressure in 24 hours.
3. Graph and analyze the measured data to estimate NRW in each LCZ.
4. Compare the estimated NRW of LCZs, and prioritize them for reduction activities.

4.6 NRW Reduction Activities in each LCZ

4.6.1 Flow of Actions in Implementation of NRW Reduction

After the prioritization of LCZs, the NRW Action Team proceeds to following actions (see Figure 4-1) in implementation of NRW reduction in each LCZ.

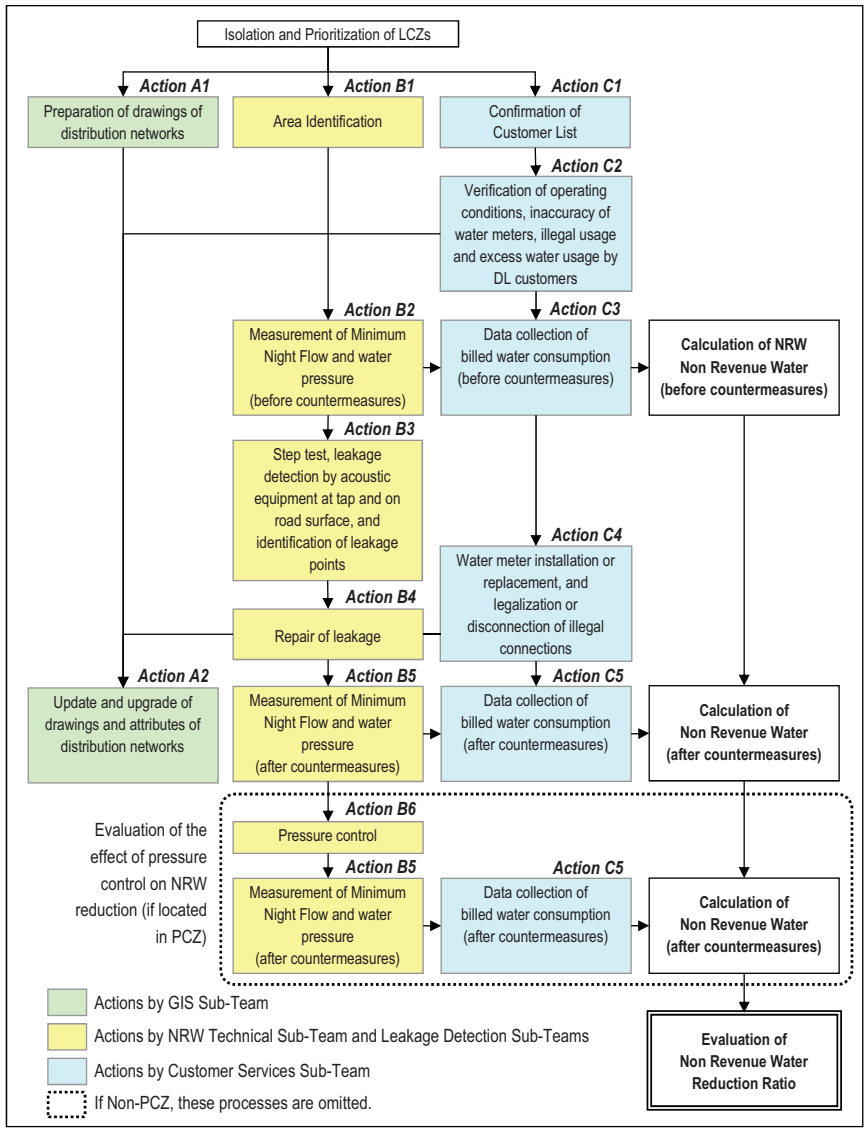


Figure 4-1 Flow of Actions in Implementation of NRW Reduction

S4.5-2-11

4.6.2 Description of Actions in Implementation of NRW Reduction

(1) Action A1: Preparation of drawings of distribution networks

Before other actions, drawings of distribution networks are prepared by the GIS Sub-Team, which should be in appropriate scale.

(2) Action A2: Update and upgrade of drawings and attributes of distribution networks

The GIS Sub-Team updates and upgrades GIS data in accordance with the workflow of GIS database prepared by the activity described above in Section 3-7.

(3) Action B1: Area identification

The NRW Technical Sub-Team identifies the LCZ by verifying particularly the following items:

- Exact boundary of the LCZ and inlet point
- Route, location, diameter and conditions of network, valves, fire hydrants
- Location, diameter and conditions of water meters
- Location and conditions of existing valves
- Number of households and customers
- Water leakages visually observed
- Location, type and conditions of illegal connections
- Location, quantity and conditions of excess usage by direct-line customers

Operating conditions of valves should be checked with “Valve Conditions Checking List” as shown in Annex 7. The list is useful for future maintenance of the valves and system operation.

(4) Action B2: Measurement of Minimum Night Flow and water pressure (before countermeasures)

1) Measurement of Minimum Night Flow

The NRW Technical Sub-Team measures System Input Volume for at least 24 hours into the isolated LCZ, with ultrasonic flow meter to be installed temporarily at an inlet. The lowest flow rate for 24 hours is defined as Minimum Night Flow.

The flow meter is ultrasonic type (see Figure 4-2), which can measure water flow in pipe by catching variation in the velocity of ultrasonic waves. An advantage of the meter is to measure water flow without interrupting water supply in the LCZ.

Figure 4-2 Ultrasonic Flow Meter

2) Measurement of Water Pressure

The higher water pressure rises, the more water leakage increases. The NRW Technical Sub-Team measures water pressure for at least 24 hours with automatic data logger (see Figure 4-3) to be installed temporarily at an inlet together with ultrasonic flow meter.

Figure 4-3 Data Logger

(5) Action B3: Step test, leakage detection by acoustic equipment at tap and on road surface, and identification of leakage points

After measurement of water flow and pressure by the above Action B2, the Leakage Detection Sub-Team detects water leakage in the LCZ as follows:

- Inspect surface/exposed leakage visually
- Identify pipeline sections having serious water leakage by step test
- Detect water leaking sound with electronic acoustic rod
- Detect water leaking points with leakage detector
- Detect water leaking points with correlator
- Identify water leaking points precisely with acoustic rod

All results of leakage detection should be recorded in "Leakage Record Sheet" as shown in Annex 8 so that Solomon Water can trace them when it comes to further intervention.

1) Step Test

As a line method to narrow down leakages, For prioritization of detection among a number of pipeline sections, the NRW Technical Sub-Team identifies which sections have serious water leakage in the LCZ by "Step Test"

By closing valves installed at appropriate locations such as branch points in order at a fixed interval, Step Test assists in measuring change in water flow and pressure with ultrasonic flow meter and data logger at an inlet, and then in identifying the degree of leakage (see Figure 4-4). If necessary, valve should be replaced or newly-installed.

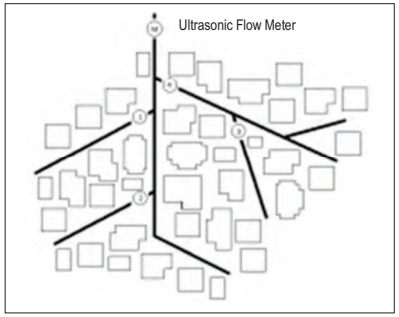


Figure 4-4 Step Test

In order to record the result of Step Test, "Valve Operating Sheet for Step Test" as shown in Annex 9 should be used.

2) Detection of Water Leaking Sound with Electronic Acoustic Rod

When water leakage occurs, the water leaking sound spreads through pipeline. So, the Leakage Detection Sub-Team detects the sound with Electronic Acoustic Rod at the point where valves are installed. Equipment of water leaking sound detection is shown in Figure 4-5.

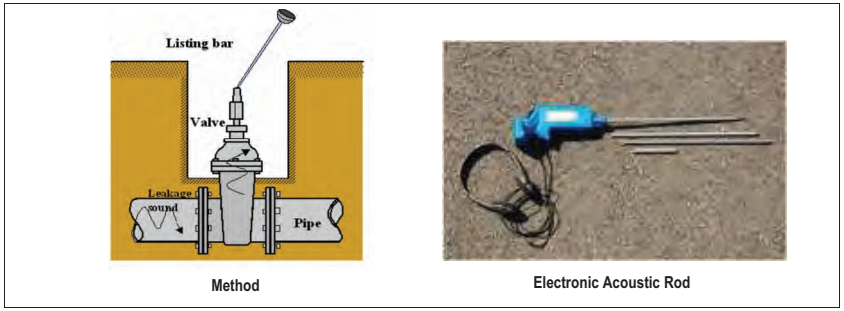


Figure 4-5 Method and Equipment of Water Leaking Sound Detection

3) Detection of Water Leaking Points with Leakage Detector

The Leakage Detection Sub-Team detects leaking points with Leakage Detector, as shown in Figure 4-6.

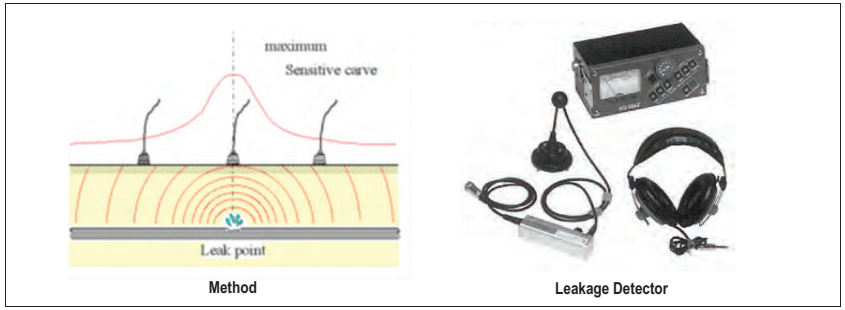


Figure 4-6 Method and Equipment of Water Leaking Point Detection

4) Detection of Water Leaking Points with Correlator

The Leakage Detection Sub-Team detects water leaking point with Correlator, which intercepts leaking noise caught between two certain points such as valves equipped tentatively with sensor each and also measures the difference in transmission time, as shown in Figure 4-7.

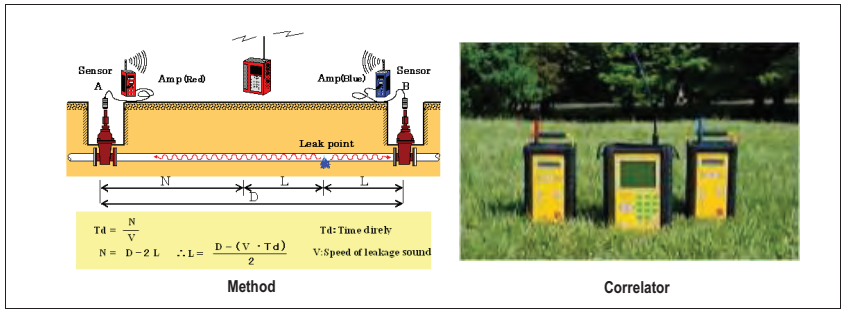


Figure 4-7 Method and Equipment of Water Leaking Point Detection

5) Precise Identification of Water Leaking Points with Acoustic Rod

After detection of water leaking points, the Leakage Detection Sub-Team drills some holes at the detected leaking points and inserts Acoustic Rod into each hole to identify leakage points precisely as shown in Figure 4-8.

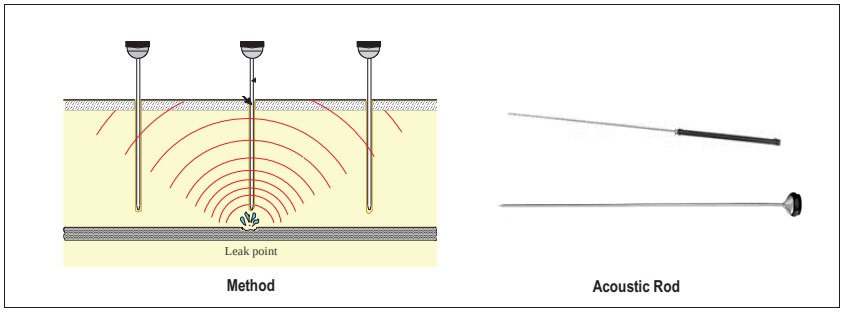


Figure 4-8 Method and Equipment of Precise Identification of Water Leaking Points

6) Pipe Locating Device

As a supporting device of locating metal materials such as pipes and valves in the above actions, Metal Locator assist in detecting the magnetic field created by metal materials (see Figure 4-9).

Figure 4-9 Metal Locator

S4.5-2-13

(6) Action B4: Repair of leakage

As the result of the above actions for water leakage detection, the Leakage Detection Sub-Team makes a prioritized list of water leaking points and estimates cost of the repair. Immediately after procurement or preparation of materials, the Sub-Team repairs the water leakage points.

(7) Action B5: Measurement of Minimum Night Flow and water pressure (after countermeasures)

After countermeasures, the NRW Technical Sub-Team measures System Input Volume and water pressure for at least 24 hours into the LCZ in the same way as the above Action B4. The lowest flow rate for 24 hours is defined as Minimum Night Flow.

(8) Action B6: Pressure control

If located in the PCZ, the Technical Sub-Team adjusts and decreases water pressure in the network by pressure reducing valve (PRV) to be installed under the Two Year Plan. The Project sets minimum and maximum pressure at a faucet as design criteria, respectively 0.15MPa (dynamic) and 0.75Mpa (static) in principle, then evaluates the effect of pressure control on NRW reduction through additional calculation of NRW after countermeasures (pressure control).

(9) Action C1: Confirmation of Customer List

The Customer Service Sub-Team confirms the list of the customers supplied in the LCZ. The list should contain service connection category of the customers such as metered, direct-line, domestic and commercial. The Sub-Team also confirms information on the illegal users or non-supplied households.

(10) Action C2: Verification of operating conditions, inaccuracy of water meters, illegal usage and excess water usage by DL customers

Based on the customer list confirmed by the above Action C1, the Customer Service Sub-Team verifies operating conditions, inaccuracy of all functioning water meters with Test Water Meter shown in Figure 4-10 to calculate the average, and illegal usage (direct or indirect), and if any, estimates excess water usage by direct-line customers by manual measurement such as measuring cup, glass or bucket.

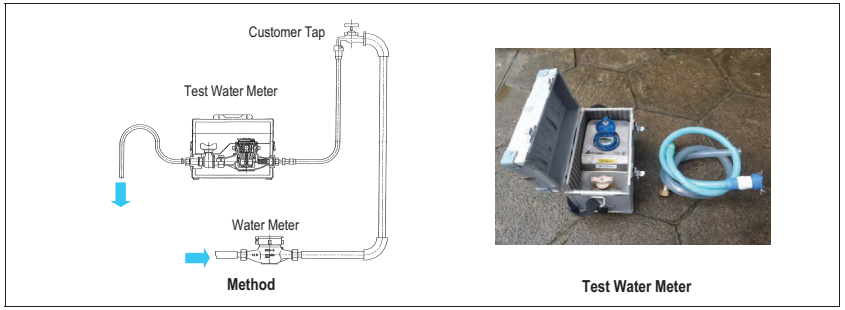


Figure 4-10 Method of Checking Accuracy of Water Meters

(11) Action C3: Data collection of billed water consumption (before countermeasures)

In order to sum up billed water consumption in the LCZ before countermeasures, the Customer Service Sub-Team reads and records all water meters of metered customers in the LCZ twice at intervals of 24 hours, in principle at the same time as the above Action B2, Measurement of Minimum Night Flow and water pressure (before countermeasures). In case of direct-line customer, standard consumption 32 m3/month (1.06 m3/month) per customer is applied for estimation.

(12) Action C4: Water meter installation or replacement, and legalization or disconnection of illegal connections

Subject to the result of the above Action C2, there are various types of service connections such as registered ones with metered or direct-line (flat rate) and also illegal connections. Approach to water meter installation is determined by the customer as shown in Annex 10.

In order for registered customers to understand fundamental principle on water supply services, the Customer Service Sub-team explains importance of the installation/replacement of water meter to the direct-line customers. Water meter in “gallon” unit is also replaced with one in “cubic meter” unit so as to avoid misreading and confusion in record for billing. See the meter replacement/installation forms in Annex 11, prepared by Customer Services Sub-Team.

Meanwhile, as a social intervention and countermeasures against illegal users, both the NRW Technical Sub-Team and the Customer Service Sub-Team explain to them the negative effects caused by illegal connections and importance and necessity of tariff collection in water supply services, and also should persuade them to accept legalization through mutual communication. Finally based on informed choice, illegal connections are legalized by registration if agreed and then a water meter is installed through the necessary procedures, or they are disconnected in principle if disagreed. But, the Customer Service Sub-Team should make efforts to avoid disconnection through the repeated communication.

(13) Action C5: Data collection of billed water consumption (after countermeasures)

In order to sum up billed water consumption in the LCZ after countermeasures, the Customer Service Sub-Team reads and records all water meters of metered customers in the LCZ twice at intervals of 24 hours, in principle at the same time as the above Action B4, Measurement of Minimum Night Flow and water pressure (after countermeasures). No more direct-line customers exist by the above Action C4.

4.7 IWA Water Balance and Evaluation

4.7.1 Calculation of Non Revenue Water (before countermeasures)

Billed water consumption is deducted from the System Input Volume to figure out NRW ratio before countermeasures such as repair of water leakages, installation/replacement of water meters, and legalization/disconnection of illegal connections and so on.

4.7.2 Calculation of Non Revenue Water (after countermeasures)

Billed water consumption is deducted from the System Input Volume to figure out NRW ratio after countermeasures such as repair of water leakages, installation/replacement of water meters, and legalization/disconnection of illegal connections and so on.

4.7.3 Evaluation of Non Revenue Water Reduction Ratio

The Project compares the calculation results of NRW ratio between before and after countermeasures to reduce NRW, and evaluates the activities in terms of cost-effectiveness, that is, cost of the activities against the estimated income from water tariff collection.

If reduction in NRW ratio does not reach the target “30 points” in the LCZ, the Project needs to clarify the reasons, repeat the above actions or take other approaches for NRW reduction.

4.8 Monitoring of the selected DMAs

After the completion of NRW reduction activities, IWA water balance and its evaluation with successful result of NRW reduction point in the selected DMAs, the Project carries on DMA-based monitoring by monthly calculation of NRW, which means the balance after deduction of total outflow (total consumption by customers) from total inflow at bulk flow meter.

The Project sets the specific level of NRW ratio in each selected DMA, then, monitor and analysis change in NRW ratio on a monthly basis. If NRW ratio exceeds the level, countermeasures against NRW should be taken immediately.

S4.5-2-14

Chapter 5 Cost Estimation

Based on the implementation schedule shown in Annex 6, cost of implementation of NRW reduction activities in a DMA is estimated as below in Table 5-1.

Table 5-1 Cost Estimation per DMA

No	Action	Unit Cost (SBD)	Cost (SBD)	Man-Day
GIS Sub Team				
A1	Preparation of drawings of distribution networks	975	2,925	3
A2	Update and upgrade of drawings and attributes of distribution networks	624	9,984	16
	Sub Total		**12,909**	**19**
Technical Sub Team and Leakage Detection Sub Team				
B1	Field survey, finding and function check of valves	936	12,168	13
B2	Pipe installation, excavation of flow meter chamber and valve replacement (if needed)	8,085	40,425	5
B3	Isolation of DMA area	936	5,616	6
B4	Measurement of Minimum Night Flow and water pressure (before repair/measures)	1,613	3,226	2
B5	Step test, leakage detection by acoustic equipment at tap and on road surface, and identification of leakage points			
	Step test	1,603	9,618	6
	Leakage Detection	1,405	18,265	13
B6	Repair of leakage, recording and pressure control	25,653	333,489	13
B7	Measurement of Minimum Night Flow and water pressure (after repair/measures)	1,613	3,226	2
	Sub Total		**426,033**	**60**
Customer Services Sub Team				
C1	Listing of customers	961	5,766	6
C2	Installed and operating conditions, and accuracy of water meters, illegal connections and domestic water leakage			
	Illegal connections	506	3,036	6
	Malfunctioning water meters	361	2,166	6
	Water Meter Accuracy	361	2,166	6
C3	Data collection of billed water consumption (before repair/measures)	1,010	4,040	4
C4	Replacement of malfunctioning water meters and legalization or disconnection of illegal connections			
	Explanatory meeting and follow-up (soft component)	1,746	26,190	15
	Replacement of malfunctioning water meters	6,239	43,673	7
	Installation of water meters	6,239	49,912	8
	Disconnection of illegal connections	5,495	27,475	5
C5	Data collection of billed water consumption (after repair/measures)	1,010	4,040	4
	Sub Total		**168,464**	**67**
Water Audit				
-	Calculation of Non Revenue Water (before repair/measures)	777	3,108	4
-	Calculation of Non Revenue Water (after repair/measures)	777	3,108	4
-	Evaluation of Non Revenue Water Reduction Ratio	777	2,331	3
	Sub Total		**8,547**	**11**
	Total		**615,953**	**157**

Therefore, total cost of the implementation in two DMAs from April 2014 to March 2015 is as follows:

SBD 615,953 per DMA x 2 DMAs = SBD 1,231,906

Chapter 6 Reports, Documents and Workshops

The Project proposes contents in DMA/LCZ reports as shown in Table 6-1, and convenes workshops so as to share information, knowledge and the results for the entire Solomon Water.

Table 6-1 Content of DMA/LCZ Report

Team	In charge	Contents
NRW Management Team	Team Members	1) Annual Action Plan on NRW reduction
NRW Action Team	Action Team Leaders	1) Numbers of population and households in project area 2) Both planned and actual work schedules 3) Input manpower by work item 4) NRW ratio before and after measures 5) Total cost on NRW reduction measurement, including personnel, fuel and pipe material costs 6) Issues and problems arising from measurement 7) Suggestions for future improvement
	GIS Sub-Team	1) Location of DMAs/LCZs 2) Information on distribution network
	Leakage Detection Sub-Team	1) Result of minimum night flow survey 2) Result of water meter survey 3) Result of illegal connection survey
	NRW Technical Sub-Team (Pipe Maintenance & Repair)	1) Pipe repairing (location, number of cases)
	NRW Technical Sub-Team (Service Pipe Connection)	1) Number of newly-registered connection
	NRW Technical Sub-Team (Service Pipe Disconnection)	1) Number of disconnection
	Customer Service Sub-Team (Water Meter Reading, Billing and Tariff Collection)	1) Result of illegal connection survey 2) Result of water meter survey 3) Income from collection (before and after measures)
	NRW Technical Sub-Team (Pipe Materials Management and Procurement)	1) Procured materials and number, etc

Chapter 7 Record Forms and Log Sheets

During the implementation of NRW reduction activities, the Project records the results of actions and keeps a log of various data observed in the field.

Table 7-1 Record Forms and Log Sheets

No	Items / Log	In charge	Remarks
1	Valve Conditions Checking List	NRW Technical Sub-Team	Annex 7
2	Leakage Record Sheet	Leakage Detection Sub-Team	Annex 8
3	Valve Operating Sheet for Step Test	NRW Technical Sub-Team	Annex 9
4	Meter Installation/Replacement Form	Customer Services Sub-Team	Annex 11

Chapter 8 Individual Action Plan

8.1 Evaluation Results of Individual Action Plan 2013

Evaluation results of Individual Action Plan 2013 for the Phase-2 of each counterpart members are shown in Annex 12.

8.2 Individual Action Plan 2014

Based on experience in the Phase-2, counterpart members prepared Annual Action Plan 2014 for the Phase-3, shown in Annex 13.

ANNEX

Annex 1 Project Design Matrix^2 (PDM^2)

Project Design Matrix (PDM$_2$)

Project Title: The Project for Improvement of Non-Revenue Water Reduction Capacity for Solomon Islands Water Authority in Solomon Islands **Version 13("PDM2, PO2Rev.13.xlsx")**

Target Area: Honiara City **Target Group: SW Staff** **Project Period: November 2012 to October 2015 (3 years)** **Date: 30 July 2013**

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
Overall Goal			
SW's service levels are improved and SW's revenue is increased.	1. The NRW ratio in Honiara City is reduced to 20%* by 2018. 2. Ratio of operational revenue-to-expenditure is sustained at greater than 100%.	1. SW Annual Operation Report 2. SW Annual Operation Report 3. SW Annual Operation Report	
Project Purpose			
SW is assisted to achieve its target of reducing the NRW ratio in Honiara to 30%* by 2015.	1. The NRW ratio is reduced by 30** points in each pilot project area, selected DMAs and/or LCZs.	1. Project Reports	
Outputs			
1. Planning process of SW for NRW reduction is systematized.	1-1. Annual budget for NRW reduction is secured in the pilot project areas and LCZs. 1-2. The strategic implementation (rolling-out) plan for NRW reduction is approved by management of SW.	1-1. Annual Budget Plans 1-2. Strategic implementation (rolling-out) plan for NRW reduction	Budgetary and human resources necessary for stable water supply are continuously allocated by SW.
2. The procedure for NRW reduction is established through the pilot areas and LCZs.	2-1. A manual for NRW reduction measures is prepared. 2-2. The number of authorizations and disconnections of illegal connections is increased in the pilot project areas and LCZs. 2-3. The number of new service connections and replacement of malfunctioning customer meters is increased in the pilot project areas and LCZs.	2-1. Project Reports 2-2. Project Reports 2-3. Project Reports	SW staff trained by the Project continue to work in their respective positions. Natural disasters do not give a profound effect to the project activities.
3. NRW reduction is implemented in accordance with the procedure in pilot areas and/or LCZs.	3-1. The number of pipe repairs is increased in the pilot project areas and LCZs.	3-1. Project Reports	
4. Water meter reading and billing process management are improved.	4-1. Standard operating procedures (SOP) and training materials are formulated.	4-1. Project Reports	

Activities

1-1. Establish the NRW Management Team in SW.
1-2. Review the current NRW reduction activities done by SW.
1-3. Assist in hydraulic analysis including identification of problems in the existing network.
1-4. Select pilot project areas and DMAs.
1-5. Formulate an annual action plan on NRW reduction in the pilot project areas and LCZs.
1-6. Monitor the progress of NRW reduction activities in the pilot project areas and LCZs.
1-7. Analyze cost-effectiveness of NRW reduction activities.
1-8. Prepare strategic implementation (rolling-out) plan for NRW reduction in the whole Honiara City.

2-1. Establish the NRW Action Team in SW.
2-2. Check existing flow meters and replace the malfunctioning meters with new ones at all the water sources.
2-3. Conduct training on NRW reduction for the NRW Action Team.

3-1. Provide assistance in the definition and creation of discrete DMA's and their boundaries.
3-2. Provide assistance in the creation of LCZ within the DMAs.
3-3. Update existing water distribution network drawings by using GIS in the pilot project areas and DMAs.
3-4. Install necessary valves for isolation of the pilot project areas and DMAs, install flow meters, and measure the NRW ratio before implementation of the pilot project.
3-5. Identify the causes of NRW (water leakage, illegal connections and meter-related losses) in the pilot project areas and DMAs through the OJT.
3-6. Implement NRW reduction measures such as legalization of users, leakage detection, leakage repair, water meter installation and optimization of water pressure in the pilot project areas and DMAs, and measure the NRW ratio after implementation of the pilot projects .
3-7. Prepare reports of results including cost and benefit.
3-8. Provide advice for the improvement of pipe system design, installation and network operation.
3-9. Convene the workshops to share the experiences, outcomes and etc. of the pilot projects.
3-10. Provide capacity development and training using the DMA's and LCZ's as the basis for NRW reduction activities.

4-1. Formulate the work schedule and staff assignment plan for water meter readers.
4-2. Conduct training on water meter reading and reporting methods for anomalies and illegal connections for water meter readers.
4-3. Promote PR activities on water conservation and saving, and water tariff for the customers.
4-4. Monitor the water meter reading and billing activities.
4-5. Report the monitoring results, such as anomalies and illegal connections, to the responsible sections.

Inputs

Solomon Islands Side

1. Personnel
- Project Director
- Project Manager
- NRW Management Team (5 members)
- NRW Action Team (19 members)
  Technical Sub-Team (8 members)
  Customer Services Sub-Team (6 members)
  GIS Sub-Team (2 members)
  Leakage Detection Sub-Team (3 members)

2. Creation of discrete DMAs

3. Provision of the project offices and facilities necessary for the project implementation

4. Expenses for implementing pilot projects in Honiara City:
- Provide the necessary valves, meters, pipes fittings and other materials.
- Provide labor to implement the project including PR resources.
- Provide management support to facilitate successful implementation of the pilot project

5. Administrative and operational expenses
- Electricity, water, communication, etc.
- Local traveling costs and daily subsistence allowance (DSA) for counterpart personnel
- Others as necessary

Japanese Side

1. Expert
- Leader / Water Supply Planning, Operation and Management
- Deputy Leader / NRW Reduction Measures -1
- NRW Reduction Measures -2
- Leakage Detection Technology
- GIS
- Customer Services & Public Relations
- Coordinator
- GIS Adviser

Japanese Side (continued)

2. Training of counterpart personnel in Japan

3. Provision of machinery and equipment
<Equipment by JICA Expert Team>
- Ultrasonic flow meter
- Data logger
- Water leak detector (Leak noise correlator)
- Water leak detector (Acoustic type)
- Non-metal pipe locator
- Distance meter
- Hammer drill
- Drill bits
- Boring bar
- Generator
- Acoustic rods
- Residual chlorine analyzer
- Bulk flow meters
- Sluice valves (To isolate pilot areas)
- Test meter
- Handy Terminals (Data recorder of meter reading)
- GPSs
- Personal computers
- Plotter
- Printer
- Multifunction copier
<Equipment by JICA offices>
- Small-size excavator
- Pick-up trucks
- Data loggers
- Customer meters

4. Local expenses for the project activities
- Teaching materials for training and workshops
- Others

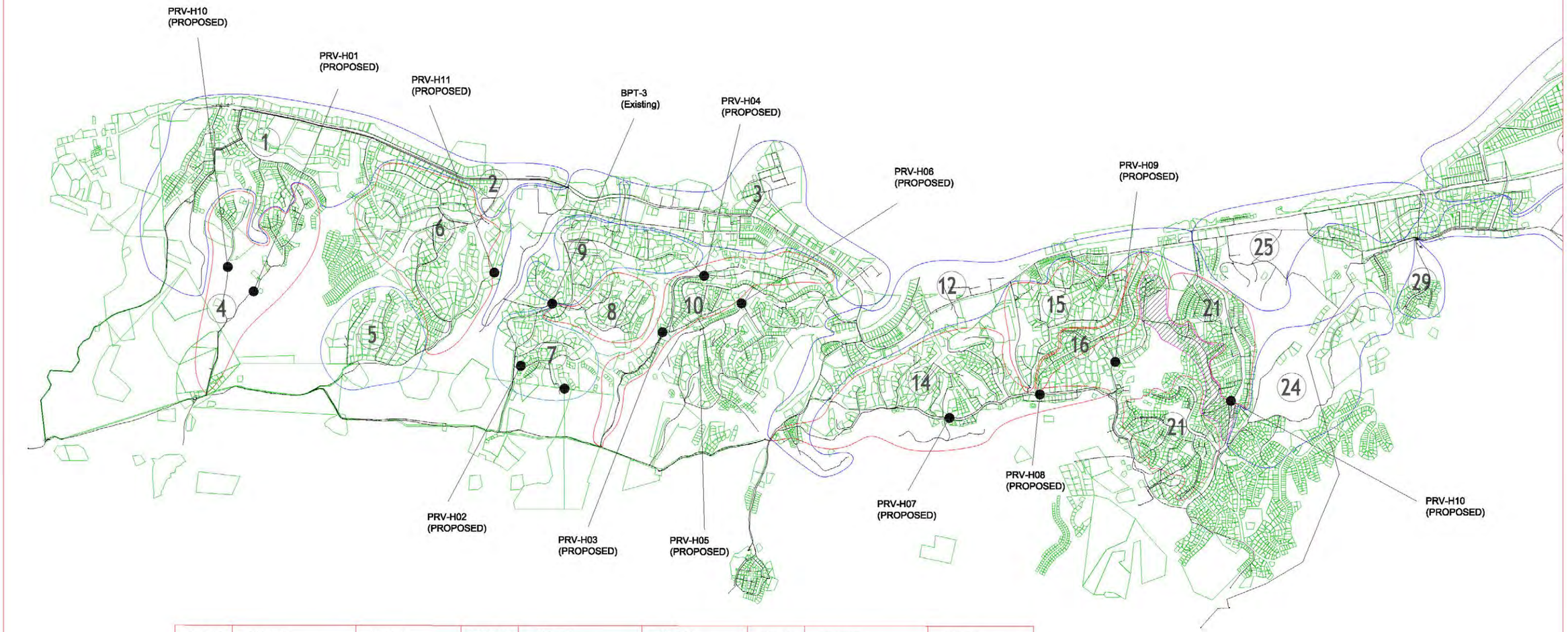
Precondition

Note: Pilot Project includes NRW reduction activities not only in Pilot Area but also in DMAs.

* Indicators are based on SW's Two-year plan (2013-2015) target.

** The target figure is set temporarily based on the result of only one pilot project. Therefore, the figure might be changed in next JCC based on the progress of the pilot project.

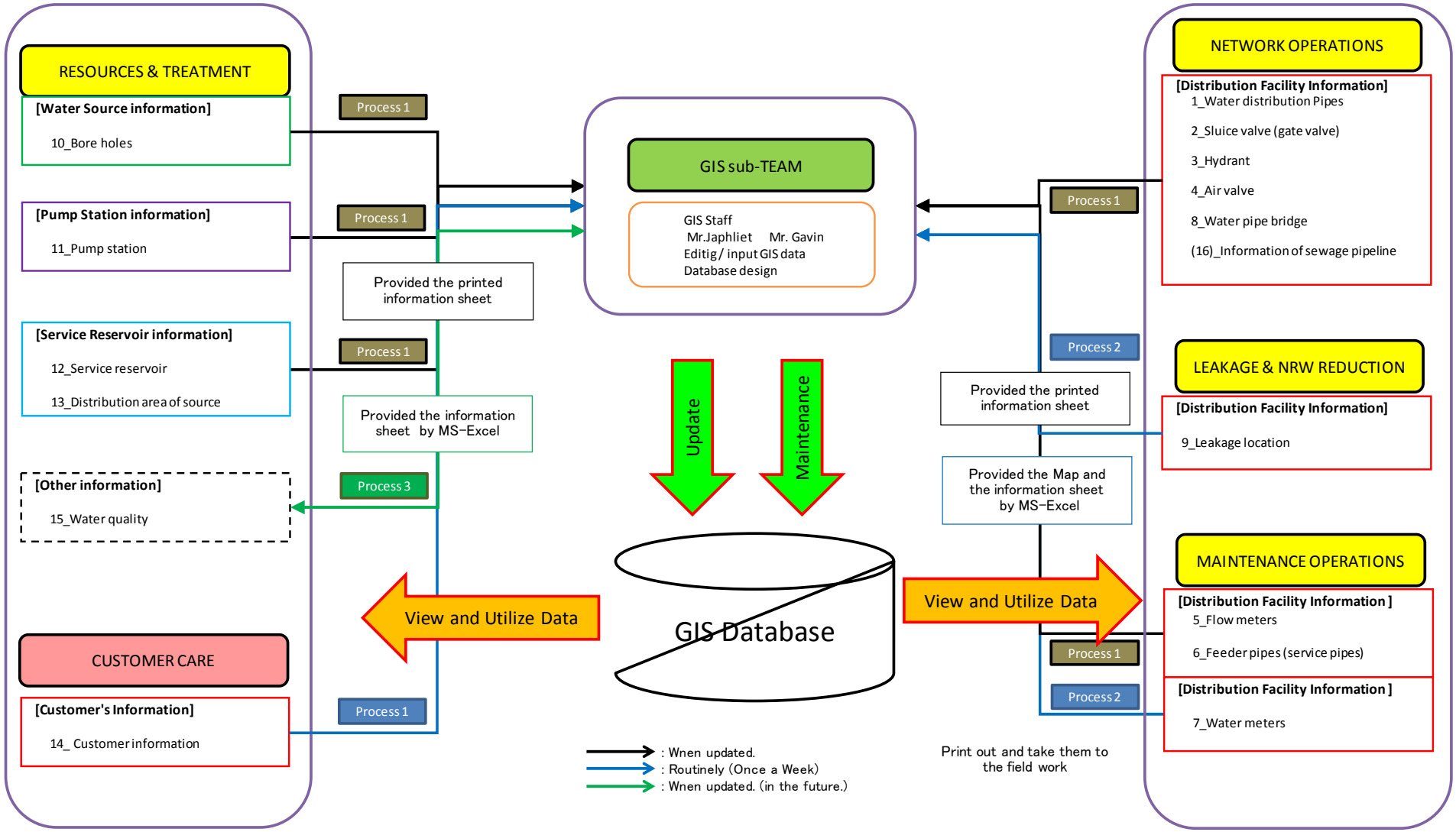
Annex 2 Location Map of Pressure or Non Pressure Control Zones



ZONE REF	ZONE NAME	COMMENTS	ZONE REF	ZONE NAME	COMMENTS	ZONE REF	ZONE NAME	COMMENTS
1	WHITE RIVER GRAVITY		11	BOKONAVERA		21	NAHA VALLEY 1	
2	WHITE RIVER GRAVITY		12	MATANIKO SIWA		22	VURI HEIGHTS	
3	ROVE		13	SKYLINE		23	NAHA VALLEY 2	
4	TASAHE A AND B	PRESSURE CONTROL (B)	14	WEST KOLAA RIDGE A	PRESSURE CONTROL	24	JAKSON RIDGE	
5	TASAHE C		15	TANULI	PRESSURE CONTROL	25	PANATINA WEST SIDE	
6	NGOSSI		16	BUA VALLEY	PRESSURE CONTROL	26	PANATINA INDUSTRIAL	
7	BOKANA 1	PRESSURE CONTROL	17	TRACCE HOUSE		27	PANATINA GRAVITY WEST	
8	BOKANA 2		18	WEST KOLAA RIDGE B	PRESSURE CONTROL	28	PANATINA AIRPORT	
9	LENGAKIKI		19	WEST KOLAA RIDGE C	PRESSURE CONTROL	29	PANATINA VALLEY	
10	VAVAE RIDGE	PRESSURE CONTROL	20	TUVARAUHU				

Source: Two Year Plan

Annex 3 Workflow of Construction and Update of GIS Database



Annex 4 Items to be updated for GIS Database

No.		GIS Subject	Progress of Database			Frequency of Update(*1)	Remarks
			Updated	Partly	Not at all		
		1. Distribution Facility information					
1	Graphic	Water distribution pipes	●			required	
	1-1	Pipe ID	●			required	
	1-2	Pipe material	●			required	
	1-3	Pipe diameters	●			required	
	1-4	Pipe length	●			required	
	1-5	Completion year		●		required	
	1-6	Date of Replacement / Rehabilitation			●	required	
	1-7	Date of Repairing			●	required	
	1-8	Date of Leakage detection			●	required	
	1-9	Water pressure			●	required	
2	Graphic	Sluice valve (gate valve)	●			required	
	2-1	Valve ID	●			required	
	2-2	Valve material	●			required	
	2-3	Valve size	●			required	
	2-4	Valve type	●			required	
	2-5	Depth			●	required	
	2-6	Valve status	●			required	
	2-7	Direction of turn	●			required	
3	Graphic	Hydrant	-			required	
	3-1	Hydrant ID	-			required	
	3-2	Hydrant type	-			required	
	3-3	Last maintenance Date	-			required	
4	Graphic	Air valve	-			required	
	4-1	Air Valve ID	-			required	
	4-2	Air Valve size	-			required	
	4-3	Last maintenance Date	-			required	
5	Graphic	Flow meters	●			required	
	5-1	ID			●	required	
	5-2	Size			●	required	
6	Graphic	Feeder pipes (service pipes)			●	required	
	6-1	PipeID			●	required	
	6-2	Pipe material			●	required	
	6-3	Pipe size			●	required	
7	Graphic	Water meter	●			Daily	
	7-1	MeterID	●			Daily	
	7-2	HouseID	●			Daily	
	7-3	CustName	●			Daily	
8	Graphic	Water pipe bridge	-			required	
	8-1	ID	-			required	
	8-2	Length	-			required	
	8-3	Pipe material	-			required	
9	Graphic	Leakage location	●			Daily	
	9-1	ID	●			Daily	
	9-2	Date of survey	●			Daily	
	9-3	Location	●			Daily	
	9-4	Condition	●			Daily	
	9-5	Scale of leakage	●			Daily	
		2. Water Source information					
10	Graphic	Bore holes	-			required	
	10-1	Well depth(m)	-			required	
	10-2	Drilled diameter(mm)	-			required	
	10-3	Casing diameter(mm)	-			required	
	10-4	Numbers of well	-			required	
	10-5	Yield of borehole	-			required	
		3. Pump Station information					
11	Graphic	Pump station	-			required	
	11-1	Unit name	-			required	
	11-2	Quantity of discharge	-			required	
	11-3	Number of pump	-			required	
		4. Service reservoir information					
12	Graphic	Service reservoir			●	required	
	12-1	Service reservoir name			●	-	
	12-2	Structure of service reservoirs			●	-	
	12-3	Elevation of service reservoirs			●	required	
	12-4	H.W.L, L.W.L			●	required	
	12-5	Capacity of service reservoir			●	required	
13	Graphic	Distribution area of source			●	required	
	13-1	Area name			●	required	
		5. Customer's information					
14	14-1	Customer's name	●			Daily	
	14-2	Customer ID	●			Daily	
	14-3	Boundary of plot (land)			●	required	
	14-4	House ID			●	Daily	
	14-5	Customer's status	●			Daily	
		6. Other informations					
15	Graphic	Water quality (Fixed-point observation)			●	Daily / Monthly	
16	Graphic	Information of sewage pipeline			●	required	

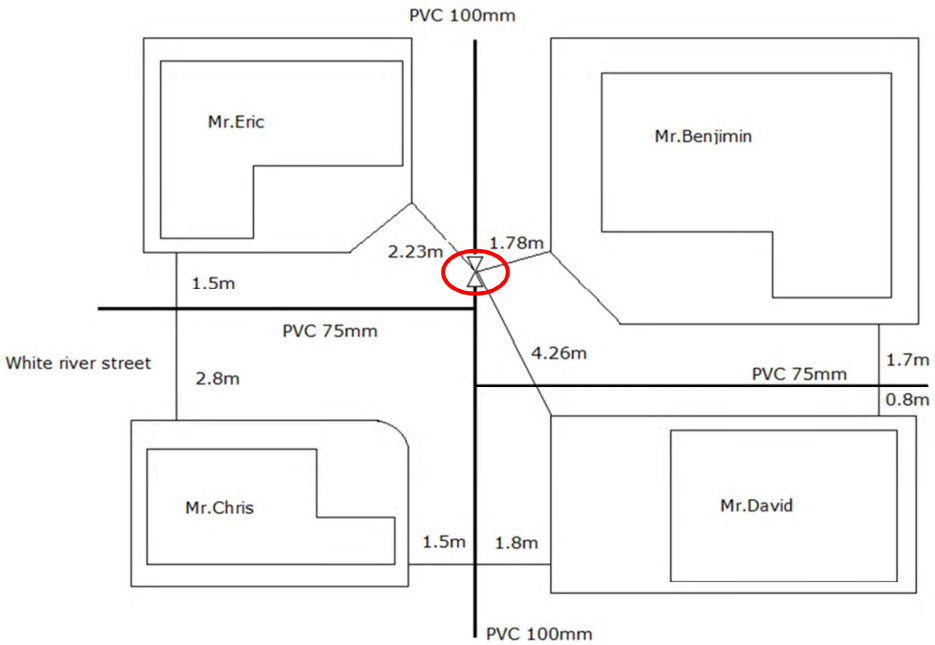
*1 : The term of "Required" indicates the irregular update work.
For example, such as "updating, if ten information sheets accumulate."
Since it is an ambiguous definition, SW and JICA expert team will discuss and decide clearly from now on.
And it will indicate by an operation manual.

Annex 5 Items to be updated for GIS Database (Example)

SW GIS INFORMATION SHEET

Record No	09-003	Address: White river- Namuruka, White river street in front of Mr. David house

Site information	
Pipe size (mm)	100
Pipe material	PVC
Depth (cm)	90
Valve size	100
Valve type	Gate V
Direction of turn	Clockwise
Number of rotation	12
Valve box & cover	Existence
Box type	Standard
Type of Construction	
1.Survey	✔
2.Repair	
3.Pipe laying	
Valve	
1.Installation	✔
2.Replacement	
3.Abandonment	
Others(Fire hydrant/service)	
1.Installation	
2.Replacement	
3.Abandonment	
4.Other	



System information	
ID	
Network no	
Networks	
Systems	
System code	
Pipe number	
Pipe length	
Bedding	
Date of pipe laid	
US node	
DS node	
Roughness	
OM Zone	
OM subzone no	
OM subzone	
Suburb	
Notes	
Valve no	

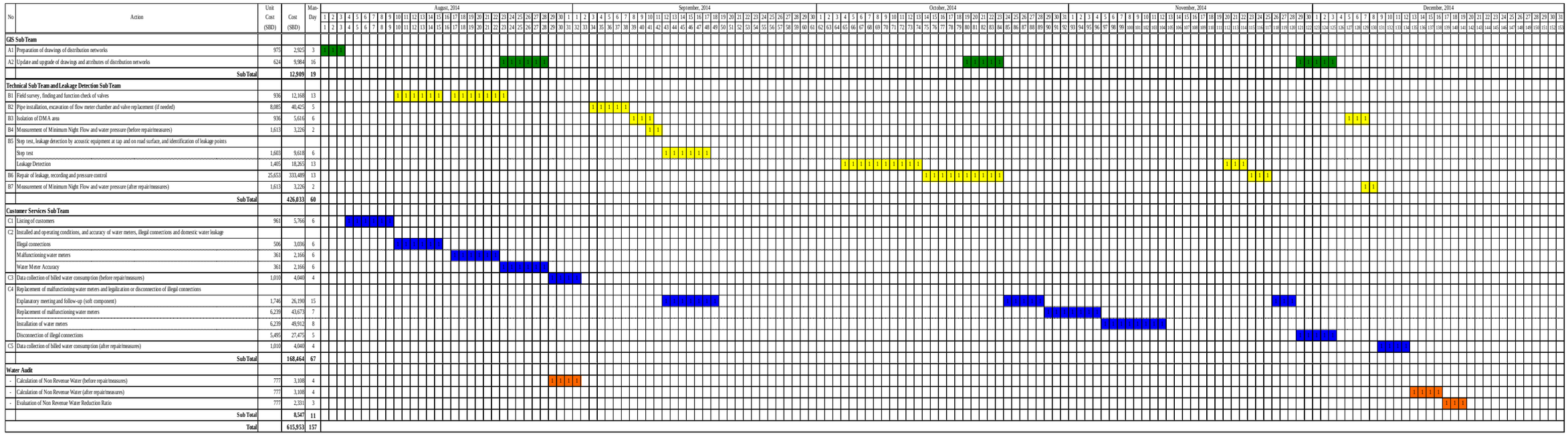
Officer: Leak detection team: Eric GIS team: Gavin

Signature:

Date: 26 March, 2013

Annex 6 Detailed Implementation Schedule of Component-B

No	Action	Unit Cost (SBD)	Cost (SBD)	Man-Day
GIS Sub Team				
A1	Preparation of drawings of distribution networks	975	2,925	3
A2	Update and upgrade of drawings and attributes of distribution networks	624	9,984	16
	Sub Total		**12,909**	**19**
Technical Sub Team and Leakage Detection Sub Team				
B1	Field survey , finding and function check of valves	936	12,168	13
B2	Pipe installation, excavation of flow meter chamber and valve replacement (if needed)	8,085	40,425	5
B3	Isolation of DMA area	936	5,616	6
B4	Measurement of Minimum Night Flow and water pressure (before repair/measures)	1,613	3,226	2
B5	Step test, leakage detection by acoustic equipment at tap and on road surface, and identification of leakage points			
	Step test	1,603	9,618	6
	Leakage Detection	1,405	18,265	13
B6	Repair of leakage, recording and pressure control	25,653	333,489	13
B7	Measurement of Minimum Night Flow and water pressure (after repair/measures)	1,613	3,226	2
	Sub Total		**426,033**	**60**
Customer Services Sub Team				
C1	Listing of customers	961	5,766	6
C2	Installed and operating conditions, and accuracy of water meters, illegal connections and domestic water leakage			
	Illegal connections	506	3,036	6
	Malfunctioning water meters	361	2,166	6
	Water Meter Accuracy	361	2,166	6
C3	Data collection of billed water consumption (before repair/measures)	1,010	4,040	4
C4	Replacement of malfunctioning water meters and legalization or disconnection of illegal connections			
	Explanatory meeting and follow-up (soft component)	1,746	26,190	15
	Replacement of malfunctioning water meters	6,239	43,673	7
	Installation of water meters	6,239	49,912	8
	Disconnection of illegal connections	5,495	27,475	5
C5	Data collection of billed water consumption (after repair/measures)	1,010	4,040	4
	Sub Total		**168,464**	**67**
Water Audit				
-	Calculation of Non Revenue Water (before repair/measures)	777	3,108	4
-	Calculation of Non Revenue Water (after repair/measures)	777	3,108	4
-	Evaluation of Non Revenue Water Reduction Ratio	777	2,331	3
	Sub Total		**8,547**	**11**
	Total		**615,953**	**157**



Annex 7 Valve Conditions Checking List

Name of Area : **Supplying hour:**

	No.	Detected date	Diameter (mm)	Pipe material	Type of valve	Valve Cover	Viewing	Direction	Rotation	Sound check	Remarks
						Valve Cover (Ok/Non)	Leak(Y/N)	Direction (Clockwise/ Anticlockwise)	Number of turns	Little Open (sound of water passing)	
Valve	V1										
	V2										
	V3										
	V4										
	V5										
	V6										
	V7										
	V8										
	V9										
	V10										
	V11										
	V12										
Fire Hydrant	H1										
	H2										
	H3										
	H4										
	H5										

Isolation check

Traial No,	Date	Starting time	Ending time	Isolation OK/NO	Remarks
1					
2					
3					

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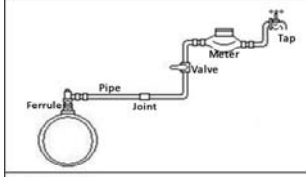
Annex 8 Leakage Record Sheet

Leakage Record Sheet

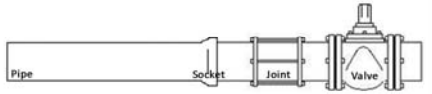
Leak. No

Date of survey:		Street	
Date of repair:		House No.	
Area		Customer	
Main Pipe	1. CIP, 2. uPVC, 3. GP, 4. PE, 5. Others	**Location**	1. Pipe, 2. Connection, 3. Ferrure, 4. Valve, 5. Meter, 6. Tap, 7. Reservor Tank, 8. Others,
Diameter	mm	**Condition**	1. Hole, 2. Crack, 3. Brakeage, 4. Packing, 5. Loose Connection, 6. Over Flow, 6. Unknown, 7. Others( )
Service Pipe	1. PE, 2. uPVC, 3. GP, 4. Dux 5. Others( )	**Cause**	1. Corrosion, 2. Deterioration (Aging), 3. Traffic Load, 4. Wrong Construction, 5. Less Adhesive, 6. Pressure Fluctuation, 7. Defective Valve, 8. Vandalism, 9. Other Construction, 10. Unknown, 11. Others( )
Diameter	16 mm		
Depth/Distance	(cm) / (m) from boundary	**Surface**	1.Asphalt, 2.Concrete, 3.Gravel, 4.Grass 5.Soil, 6.Others
Leakage Size	1. Large, 2. Middium, 3. Small, 4. Drops, Measured or Estimatated( )L/min	Detected Method	1. Patrol, 2. Customer Informing, 3. Acoustic, 4. Pinpoint,

Leak Point



Hole/Crack Size:(mm)



Location Map

Photo

Remarks:

Disconnected line (Illegal use)

Information of leak repair

Excavation size: m X m X m = (m³)

	Unit price	Hour	Volume	Sub total	Used Material	Size/Type	Unit price	Volume	Sub total
Worker					Pipe-1				
Plamber					Pipe-2				
Supervisor					Pipe-3				
Engineer					Joint-1				
					Joint-2				
Backhor					Joint-3				
Generator					Joint-4				
Drainage Pump					Joint-5				
Lighting equipment					Meter				
					Packing				
Sand					Saddle				
Gravel									
Asphalt									
Total					**Total**				

Annex 9 Valve Operating Sheet for Step Test

Area:

No.	Status	Valve No.	Operating Time	Flow rate(m3/h)	MNF(m3/h)	MNF(m3/h)	Remarks
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							

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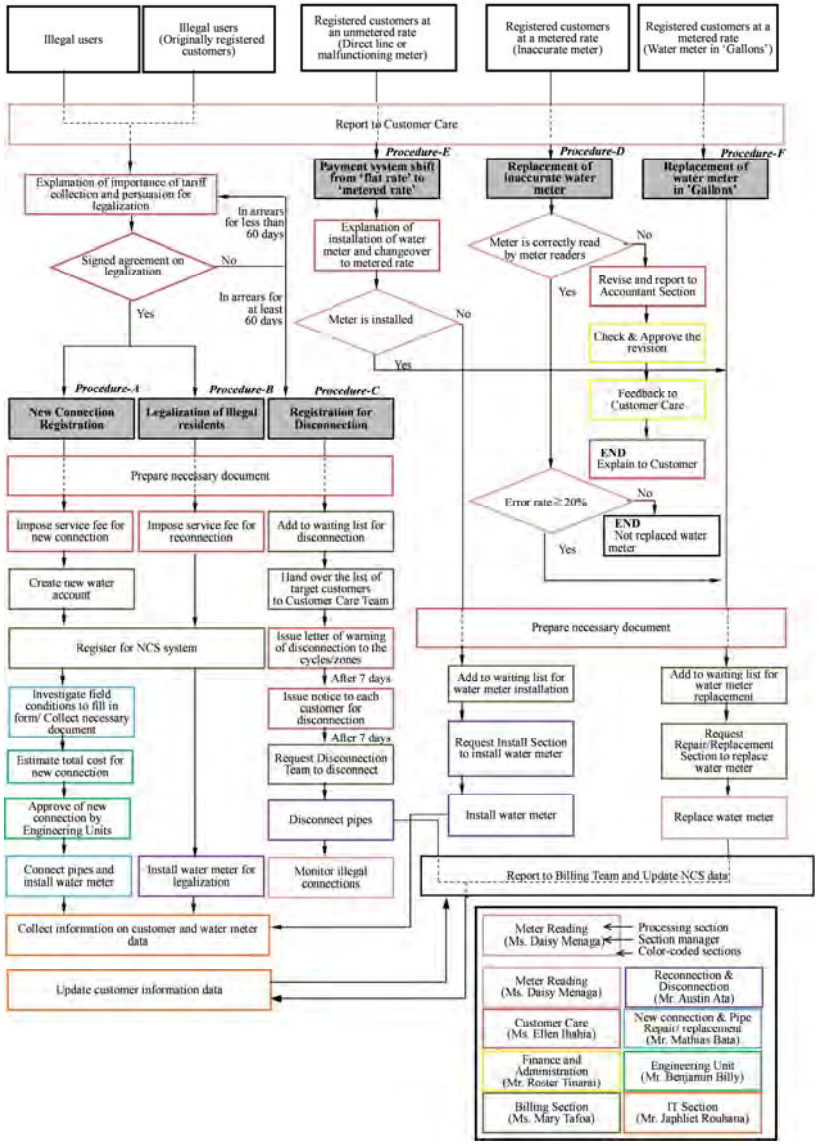
Annex 10 Normalization Process of Service Connections



Annex 11 Meter Replacement/Installation Form (2 pages)

S4.5-2-25

Solomon Water

Meter Replacement Form

P.O.Box 1407,Honiara,Solomon Islands. Phone: 23984/23986 Fax: 20723 Email: slwa@solomon.com.sb

Part 1. Customer Details (To be filled by Customer Care Staff or other relevant Unit)

Team		Vehicle Reg No	
Account Name		Account No	
Location		Consumer Type	
Nature of Meter		Cycle No	
Current Meter ID		Current Meter Reading	
Prepared by		Date	
Signed Off by		Date	

Part 2. New Meter ID Details (To be filled by the Meter Replacement Team)

New Meter ID		Current Meter Reading		New Meter Reading	
Type of Meter	☐ Metric ☐ Imperial	Meter Size	☐ 15 mm ☐ 20 mm ☐ 32 mm ☐ 32 mm ☐ 50 mm		
Account Name					
Account No		Replaced by		Dials	
Replacement Date		Status of Meter	☐ Used / Existing Meter ☐ New Meter		
Job Completed by		Date			
Verified by Team leader		Date		Signed	

Part 3. Update of Accounts Information (To be Filled by the Billing Clerk)

New Meter ID		New Meter Reading		Date	
Changes done by		Signed		Date	
Verified by		Signed		Date	

Part 4. Approval by Head of Department

Signed		Date	
Comment (if any)			

Part 5. Filing (Customer Care Team)

Recieved by		Signed		Date	

1

Please draw your sketch here

2

Annex 12 Evaluation Results of Individual Action Plan 2013

Performance Appraisal Interview Report

NRW Management Team

Mr. Ray ANDRESEN
Ms. Tima KOFANA
Ms. Ellen MARUAROFA

NRW Action Team

Mr. Benjamin BILLY
Mr. Austin ATA
Mr. Silas TALOSUI
Mr. Mathias BERA
Mr. Frank DAUKALIA
Ms. Beverly SAOHU
Mr. Carlos SALIGA
Ms. Sophia TANGO
Ms. Daisy MENAGA
Ms. Mary TAFOA
Mr. Marilyn PIDOKE
Mr. Gavin BARE
Mr. Matthew MAFE
Mr. David AKOEASI

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Friday 23rd May, 2014

PERFORMANCE APPRAISAL INTERVIEW REPORT
NON REVENUE WATER PROJECT TEAM

Presented to: Mr FUJIYAMA Taketoshi

Leader – JICA Expert Team

Non-Revenue Water Project JICA/YACHIYO – Engineering /Solomon Water

Presented by: Tima Kofana

Human Resource Manager

Solomon Water

Signature: Tkofana

Date: 23/05/14

Background:

Performance appraisal is a key evaluation process to gauge the performance of individuals and to inform employers of the challenges they face in the workplace. It also looks at option on how to improve on performance. For the NRW Project, Team Members also went through this process ending with the appraisal interview. Each team member was interviewed based on their Individual Action Plan. The performance interviews for the NRW team started on Monday 5th May, 2014 and continued until Friday 16th May, 2014. Except for 2 members, others were available for the interview. Whilst majority understood their tasks in respect to the project, others were not sure if they played any role at all. In total, the team acknowledged the importance of the project to Solomon Water. They have agreed that the NRW activities have increased their skill base and knowledge.

A summary of the each team member's achievements, challenges and recommendations for better performance and productivity is provided in the table below:

Department	Name	Achievements	Challenges	Way Forward
Operations	1. Benjamin Billy (Team Leader)	Teamwork Acquiring new work processes, knowledge and skills from Expert team	• Balancing NRW Activities and other normal activities • Coordination of data • Different interpretation of data • No proper training in analysis and reporting of data	• Teams should be aware of their responsibility. • Each team should analyse data and provide report before submitting to team leader.
	2. Mathias Bera	New skills and knowledge. Working with and appreciate what other teams are doing but more needs to be done	• No proper monitoring done for all activities • Overall system might fail because not all teams are working together. • Finance team approach is too harsh on customers • Some customers can't afford so we have to be flexible • Social problems not well understood	• Manpower to do regular monitoring of pilot sites. • Sustainability of the project if all teams are not working together, especially finance team hard approach to customers.
	3. Frank Daukalia	Working with other teams	• No proper flow of activity • To meet deadlines have to do others tasks. • Some not doing their tasks thus putting pressure on others.	• Everyone needs to be aware of their area of responsibility. • Field guys need to be more responsible with their tools and equipment.
	4. Gavin Bare	• Knowledge and skills broadened • Importance of base station appreciated	• Delays in procurement also contribute to slow progress in work	• Training in how to use devices and equipment so that error is minimised

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Friday 23rd May, 2014

	5. Eric Unga	• Knowledge on how to use new devices and equipment like chlorinator • Teams assist each other • Lots of things learned in the field	• Still not comfortable with some equipment.	• More training needed on proper use of different equipment's
	6. David Akoeasi	• Have learned a lot of skills like surveying, how to identify leaks, and how to calculate water lost through leakages and the use of chlorinator machine	• Still not confident in doing mid night test. Need supervision and guidance from Benji and Eric	• Need further training on use of equipment
	7. Matthew Mafe	• Great learning experience • Enjoy sharing of workload in a team environment	• Jobs delayed due to unavailability of materials. • Slow processes • Team is not motivated	• Order directly to supplier rather than middle man. • Need of morning briefings like other teams • Provision of report template so that proper reporting can be done
	8. Silas Talosu	On Leave		
	9. Elvis Meiko	Non Responsive – Does not think that he is part of NRW		
Service Delivery and Communications	10. Austin Ata	A privilege to be part of this team Learned a lot; Like minimum night flow Meter raising	Sustainability of the project because not all teams are working together. Finance team are not flexible with customer who can't afford	Need to prioritize NRW activities All new connections should have raised meters not pilot sites only. Need more staff for illegal Team. Reliable truck/vehicle needed More awareness for customers needed.
	11. Beverly Dai	• Appreciate new terms and mechanisms • Knowledge of counter measures and Technical test • Opportunity to do more filed work,	• Slow feedback from other teams. • Too many delays in responses from others. • Do not know much about	• More customer awareness • Tracking sheet for all teams and activities. • Follow up must be done on a regular basis

		participate in awareness and interacting with customers. • Working closely with other teams and updating each other during weekly meetings	water tariffs. • Do not really understand why other teams not responding.	
	12. James Carlos	Enjoys working with the Team Leader. Have learned new things	Coordination with other teams is weak Information does not flow properly Communication to others not sufficient. Not enough resources like camera, computer and voice recorder to help in the job	NRW activities need to be spread out to everyone including every team as it affects all of us in way or the other. This will allow everyone to be informed and thus inform customers and the public appropriately
	13. Sophia Tango	Learned new things	Sometimes cannot explain properly to customers as we don't know the right technical terms for it. Not enough cooperation from other teams	Prioritising task Time Management Team work needs to be strengthened Those with long experience need to be part of awareness team.
	14. Mesio Iimo	Non Responsive – Does not think that he is part of NRW		
Finance and Administration	15. Layten Jacob	Working closely with other teams	Specifications not clear. Changing shipping schedules Long custom process Confusion over exemption certificate (out-dated – don't have renewed copy) Contracts are on adhoc basis depending on need. Strict requirements often contribute to delays	Proper planning and coordination of all teams.
	16. Daisy Menaga	NRW project has increased my knowledge and skills From no appreciation to awareness and	Updating data on time Lack of knowledge Intimidated at first but later gained	Cooperation between everyone New vehicles to help out Work closely with Frank

Friday 23rd May, 2014

		acknowledgment of the importance of NRW activities Very Good Team Leader Technical team helps out a lot	confidence to discuss issues	
	17. Japhliet Rouhanna	Was involved at first but stepped back when Smith took over	Confusion of role	Will assist if the need arises
	18. Lawrence Iroi	Not clear about role at first Link with other teams like GIS	Low Capacity of team NCS System	Coordination of all teams Work closely with GIS Proper zoning of customer base
	19. Mary Tafoa	Enjoy working with other teams Able to go to field and experience firsthand what happens during awareness programs Report on monthly cycles and consumption	Extra workload Sometimes forget report Deadlines not met Customers information not clear Don't have correct figures on which customer is connected to sewerage	Need to work closely with GIS team

Annex 13 Individual Action Plan 2014

NRW Management Team

Mr. Ray ANDRESEN
Ms. Tima KOFANA
Ms. Ellen MARUAROFA

NRW Action Team

Mr. Benjamin BILLY
Mr. Austin ATA
Mr. Moses RAMO
Mr. Silas TALOSUI
Mr. Mathias BERA
Mr. Layten JACOB
Mr. Frank DAUKALIA
Mr. Chris MERIKO
Ms. Beverly SAOHU
Mr. Carlos SALIGA
Ms. Sophia TANGO
Ms. Daisy MENAGA
Ms. Mary TAFOA
Mr. Lawrence IROI
Ms. Rosta TINARAI
Mr. Gavin BARE
Mr. Japhliet ROUHANA
Mr. Eric UNGA
Mr. Matthew MAFE
Mr. David AKOEASI

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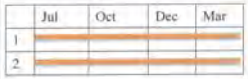
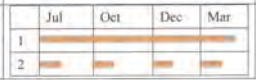
Individual Action Plan (Challenging Program) **(Mr. Ray Andresen, Opera[illegible] Te[illegible] Ju[illegible]**

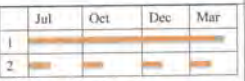
Main Activities	Verifiable Indicator	Methods of Implemen[illegible]ion
1. Contribution to water supply service of Solomon Water		
(i) Develop Operations Annual Plan (OAP)	1).**OAP:** a. Complete OAP within 1- 6 months b. Complete OAP within 6- 8 months c. Complete OAP within 8-12 months d. Not able to complete OAP at all.	Jul / Oct / Dec / M 1 2 3 4
(ii) Develop Operations Annual Budget (OAB)	2).**OAB:** a. Complete within 1-3months b. Complete within 3-6 months c. Complete within 6-9 months d. Complete within 9-12 months e. Not able to complete at all.	1. Create monthly schedules f[illegible] wor[illegible] 2. Meet with Operations tea[illegible] guide[illegible] weekly basis for update[illegible] achievements and challenges 3. Liaise with SW's manager[illegible] n da[illegible] weekly basis 4. Prepare Progress report[illegible] mo[illegible] basis
(iii) Preparation of Monthly Reports	3).**Monthly Reports:** a. 12 reports annually b. 10 reports annually c. 6 reports annually d. 2 reports annually e. no reports at all	
(iv) Formulate Policies, Practices &	4) **Formulation of Operations Policy/ Procedures(OPP)**	

Not completed but continue with SW two year plan

Complete with assistance from Finance department

Monthly operations reports presented to SWboard meeting

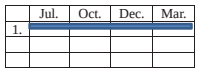
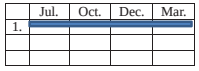
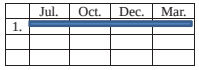
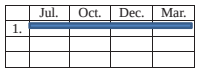
	Procedures for Systems Operation & Maintenance	a. Complete OPP within 1- 6 months b. Complete OPP within 6- 8 months c. Complete OPP within 8-12 months (d.) Not able to complete OPP at all.		Not completed. Task set for work together with TA team funded by 2 year plan
2. Contribution to pilot project				
(i)	Develop 2014 NRW Budget	a. Complete Budget within 3-4 months b. Complete Budget within 4-5 months (c.) Complete Budget within 5-6 months d. Not able to complete budget at all.		Used the 2013 NRW actual spendings with more details in budget allocation for ease in monitoring
(ii)	Formulate NRW Policy, Practice & Procedures (NRW PPP)	a. Complete NRW PPP within 1-6 months b. Complete NRW PPP within 6-8 months d. Complete NRW PPP within 8-12 months (c.) Not able to complete NRW PPP at all.	1. Attend NRW weekly update meeting 2. Continual liaison with JICA Expert Team	Not completed
3. Challenging target (Voluntary)				
(i)	Work in partnership with the JICA Water Supply Improvement Project	Weekly update meetings and Liasing with JICA and Kitano Construction Group.		

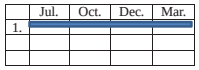
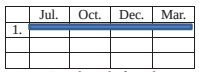
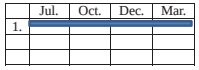
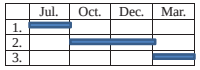
		a. Meeting 4 times a month (b.) Meeting 2 times a month c. Meeting once a month d. Not able to meet at all.	1. Attend update week meeting on progress of activities 2. Continual liaising and forming good networking between all SW stakeholders including JICA	meeting 2 times a month on average due to several challenging issues arising.
4. Enlightening activities (Voluntary)				
(i)	Health and Fitness	Sick days per year: (a.) Zero days per year b. 5 days per year c. 10 days per year d. 20 days per year	 1. Continual Exercise 2. Monthly medical checkups	No sick day for 2013

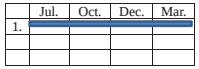
S4.5-2-30

S4.5-2-31

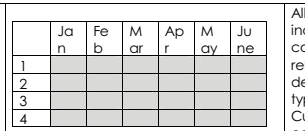
Individual Action Plan (Challenging Program) (Ms. Tima Kofana, HRM)

Main Activities	Verifiable Indicator	Methods of Implementation	Achievement (Self-evaluation at the middle of march)
1. Contribution to Water Supply service of Solomon Water			
In order to contribute to Solomon Water, I will do work efficiently.	Achieve the 6 key KRA's A. 50% B. 70% C. 90% D. 100%	 1. Do work efficiently	A Was not able to achieve all KRA' as expected due to lack of support and commitment from team members
Building or developing the HR Unit	A. On a daily basis B. Twice a month C. Once a month	 1. Continuous development of unit	B The unit is now 100% operational but needs to be continuously guided to achieve objectives
Team Management • Coordinating team activities	A. Once a month B. Twice a month C. Four times a month D. None	 1. Monitoring 2. Mentoring and coaching	B Meetings were happening but often there are clashes with interviews, unplanned meetings and emergencies and so often meetings are rescheduled.
Develop and Monitor the HR database	A. Twice a month B. Once a month C. On a daily basis None	 1. Improve staff record keeping	C. Working closely with Payroll to ensure that both systems are in synergy. Have managed to update new staff listing and code to HR database.

Developing the People Management Group	A. Once a month B. Twice a month C. Four times a month D. None	 1. Up skilling of change agents.	B. Not really working as expected due to emergencies and non-availability of members
Developing People Management Platform	A. To be able to improve HR processes B. To be able to develop relevant policies like OHS C. To be able to improve management of HR	 1. Develop draft policies - OHS 2. Develop PM Policy	A Ongoing. Still developing forms and reviewing older ones. Will arrange meetings with Labor division to provide awareness training for all of us. Other relevant training like First Aid has been conducted.
Reporting	D. Once a month E. Twice a month F. Four times a month G. None	 1. Daily Reporting 2. Weekly Reporting 3. Fortnightly Reporting 4. Monthly Reporting	D. Provide report to GM. Team supposed to be reporting on monthly weekly basis.
	H.		
2.Contribution to pilot project			
In order to improve capacity for reduction of NRW, I will mentor and recruit the right people	A. To be able to recruit the right people to fill in the gaps. B. To be able to provide the right environment for learning and development. C. To be able to contribute to decision making process.	 1. Recruitment 2. Job Rotation 3. Training in office 4. Hands-on training	A. Recruitment target for the year almost achieved. The Challenge is finding office space to cater for new recruits.

		5. Reporting	
3.Challenging target			
I will learn & work hard to present work progress during meetings	A. Two times per year B. one time per year C. Zero per year	 1. Preparing progress 2. Presenting at meetings or workshop	B. Lots of other meetings and commitment to attend. Sometimes I send the HR Generalist to attend so that he keeps us updated
	D.		

Individual Action Plan (Challenging Program) **(Mrs Ellen Maruarofa-** Service **Delivery Manager)**

Main Activities	Variable Indicator	Methods of Implementation	Achievement
1. Contribution to water supply service of Solomon Water (SW)			
i. Ensure that the units of Service Delivery and Communication Department enhanced its services to its customers ii. Liaise and support the other departments of SW to deliver efficient and effective services to its customers iii. Formulate appropriate processes and procedures iv. Effective flow of information between departments.	Ensure effective facilitation of customer complaints/queries a. By hour b. By day c. After 2 days d. After 1 week e. After forthnight f. Not at all Assess and formulate customer care processes/procedures and flow of information within departments a. Achievement within 1 – 4 months b. Achieve within 4 – 7 months c. Achieve within 7 – 10 months d. Achieve after 10 months	 To achieve the activities listed, the various methods to be utilized are: 1. Meetings 2. Research 3. Trainings 4. Orientation programs 5. Face to face direct interactions	All timing as indicated on the VI column are all relevant except "f" depending on types of Customer complaints and enquiries. However, it is important to note that after dealing with huge backlogs of customer complaints, the customer care ensures that all customer complaints/enquires are dealt with it no longer as was the case in the past. Progressive improvements so far though the need for greater efforts to be vested on this area of our service.

			The most obvious achievement for the formulation of processes was the connection services. The effective and efficient flow of new connection was a precise achievement as previously installation of new water services took ages but now it only takes 3 weeks from lodge in of application to installation of meter. Other connection services were able to be monitored through the forms and processes formulated. Improved flow of information for customer complaints/enquiries:

			This still remains a challenge for the department though some progressive efforts have been made.
2. Contribution to pilot project			
i. Work closely with the NRW consultant and the Project Coordinator to ensure its planned activities are implemented through my department team members – reduction of NRW.	Continual liaison /meeting with NRW Reduction heads a. 4 times a month b. 3 times a month c. 2 times a month d. Once a month Update all NRW teams on the issues and reductions of illegal users in the pilot sites. a. Weekly basis	<table><tr><th></th><th>Jan</th><th>Feb</th><th>Mar</th><th>Apr</th><th>May</th><th>June</th></tr><tr><td>1</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>2</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>3</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>4</td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table> To achieve the activities listed, the various methods to be utilized are: 1. Meetings 2. Supervision 3. On field training 4. Facilitation 5. Media	B. The department team leaders who are all part of the NRW team have shown commitment to their expected roles. Attend most of the meetings organized for all NRW team members.
3. Challenging target (voluntary)			
i. Ensuring that the three units are keeping up with their expected roles noting the high demand		<table><tr><th></th><th>Jan</th><th>Feb</th><th>Mar</th><th>Apr</th><th>May</th><th>June</th></tr></table>	Customer care often prepared to handle customers who were being

on dealing with customers. ii. Continuous commitment of field workers to report as well as disconnecting all illegals identified; thus resulting in increasing illegals iii. Inconsistency of monitoring activities as well as disconnection/reconnection practices that may resulted in increasing level of illegals		<table><tr><td>1</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>2</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>3</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>4</td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table> By now all are expected to be familiarizing themselves with the specific activities they are expected to perform.	referred to our customer care centre particularly for legalization of their water service. The Connection service team have worked extra hard to respond to illegal users reported to by the NRW team taking into account that the team personnel's are inadequate as well as they have a lot do in their own roles; they have been actively responded to NRW in timely manner. The communication team have effectively worked with the NRW for public awareness programs & distribution of NRW pamphlets prior to implementation of planned activities at each pilot site. The challenge faced are; Poor monitoring and inconsistent disconnections of illegal users were due to; - Manpower is short - Transportation (only 2 vehicles) - Weather (at times)
1. Enlightening activities (voluntary)			
i. Monitor progress reduction of NRW activities through activities implemented by the SDCD	Maintaining progressive reduction of NRW work by department staffs who are members of the NRW task force. a. Weekly basis b. Forthrightly basis c. Monthly basis d. Quarterly basis e. Semi-annually f. Annually	<table><tr><td></td><td>Jan</td><td>Feb</td><td>Mar</td><td>Apr</td><td>May</td><td>June</td></tr><tr><td>1</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>2</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>3</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>4</td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table> Monitoring of individual unit planned activities of NRW.	Monitoring still remains a challenge as far as I observed. We need to identify a best method to monitor our progress on all our NRW activities.

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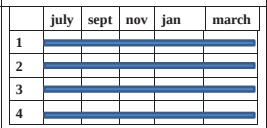
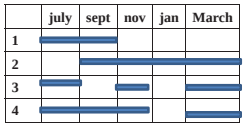
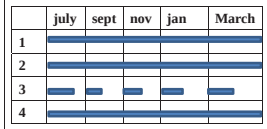
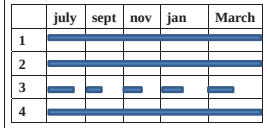
Note: Based on Capacity Assessment & Capacity Development Plan, be requested to prepare individual Action Plan. **Individual Action Plan (Challenging Program)** **(Mr. Benjamin Billy Sub technical Team)**

Main Activities	Verifiable Indicator	Methods of Implementation	Achievement
1. Contribution to water supply service of Solomon Water			
a) Management of Network Operations to achieve maximum supply durations	A. Average 24.hours supply B. Average 18.hours supply C. Average 14.hours supply D. Average 12.hours supply E. Average 10.hours supply	 1. Keep supply durations records 2. Liaison with source works for water sources performance 3. Liaison with pipe replacement team to improve flow and pressure. 4. Liaison with NRW team on improvement on water losses.	**B.** We managed to increase with the additional water sources from JICA & Rap input. But depending on the Source works and Network Maintenance we could only achieve this far.
b) Network Operations- Network Modeling.	A. >=6km/month B. 5km/month. C. 3km/month D. 2km/month		**C.** Could only practice with EPANET. Since we still waiting for the TA to assist me with the Water Gems Modeling software

c) Staff Management - performance Reporting on Network Operations & NRW for SW	A. Reporting 4 /month B. Reporting 2 /month C. Reporting 1 /month **D.** Reporting non /month A. Once a month B. Once every two month C. Once every three months D. Once every six months E. Non/year	1. Check with GIS for network updates 2. Practice Modeling software(EPANET) 3. Site visit to confirm pipe network and features at sites 4. Collection of billing data (demand).  1. Daily briefing 2. Weekly 3. Fortnightly 4. Monthly  1. Get daily records of supply times 2. Get information from Daily	**D.** Due to information not available and been kept by different section(HR) not able to accomplish within this time period. **C.** Just managed qtrly report and adhoc reports only for operations manager

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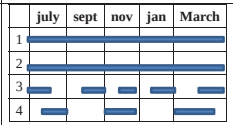
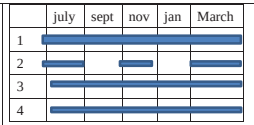
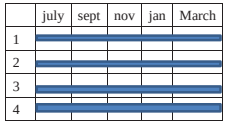
		briefing. 3. Getting information from bulk readings @ water sources and distributions. **4.** Work out NRW for al systems	
2. Contribution to pilot project			
a) Pilot site isolation.	A. Isolation of sites and confirmed site boundaries & customer without assistance or supervision B. Isolation of sites and confirmed site boundaries (customer) with assistance or supervision C. Isolation of sites and confirmed site boundaries (customer) with assistant and further training.	 1. Identify pilot sites on GIS Map. 2. Confirm boundary at Sites with works Officers & Plumbers. 3. Confirm customer boundaries with meter readers. 4. Identify network Features & Appliances & Pipe routes	**B.** Able to understand Isolations of Network & Customers, thou physical checks at sites still need assistances

b) Customer registration	A. distinguished customer types and categorized accordingly without advice B. distinguished customer types with less advice C. distinguished customer types with much advice D. Not confident at all to Distinguish customer types	 1. Identified directly line customers 2. Identified parasite customers 3. Identified Illegal customers 4. Cross check customer status in the field against billing	**A.** Confident in the field to distinguish different customer types with ease.
c) In order to identify causes of NRW, I will learn MNF measure and report to relevant team by for each pilot sites for Before and after counter measures.	A. To be able to measure Minimum Night Flow without any advice, to make graph and report. B. To be able to measure Minimum Night Flow & Make graph and report with supervision only.. C. Not Able to measure Minimum Night Flow and Make graph and report at all	 1. Analysis of 24 hour consumption data for metered and direct lines. 2. Categories of different connection types for apparent loss 3. Meter accuracy test results 4. Leakages component (visible &	**A.** Able to do this activity with confident

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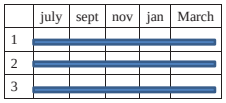
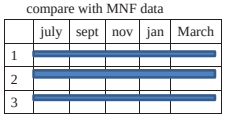
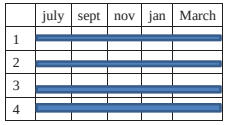
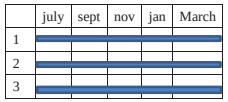
		invisible leaks, site in inspections & leakage rate.	
d) Analysis Water Audit for Solomon Water & IWA.	A. Compile data with no assistance B. Compiling data with some assistance C. Compiling data with much assistant.	 1. Identify Solomon water component of NRW and much with IWA tables 2. Keep record of different connection types 3. Compiling tables for leakages & compare with MNF data	**B.** Progressing on this frontier , though need some more concentration miniature details of the data inputs.
e) Understand water supply cost.	A. Verified cost of NRW reduction with no difficulties. B. Verified cost of NRW reduction with some advices & training C. Verified cost of NRW	 1. Keep records of asset & materials used for each pilot sites	**B.** Need more concentration on collecting and analysis this data, but now I contributes only data and not analysis of the

	reduction with much coaching and advice	2. Keep records of personnel used with overtimes 3. Measure plan with actual occurrence of activities Keeping daily records of NRW cost incurred.	cost.
f) Understand NRW ratio & Water Leakages.	A. Differentiate NRW ratio & Water leakage with easy B. Differentiate NRW ratio & Water leakage with advice C. Differentiate NRW ratio & Water leakage with Advice & consultation.	 1. Keep tables for customer connections 2. Collect tables for meter inaccuracy 3. Collect tables for leakages 4. Collect tables for 24 hour consumptions	**A.** Has the confidence in differentiate the NRW ratio & Leakages ratio and other NRW components in Solomon Water.
g) Completion of each pilot sites	A. One pilot site per 1.5 month B. One pilot site per 2 month C. One pilot site per 3 months D. One pilot site per > 3 month		**C.** More focus in capacity build training as begin of the year , this slows down the

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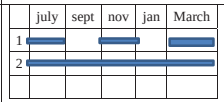
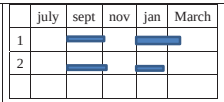
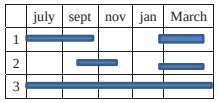
		4 1. Create schedule for all activities for each pilot sites with resources and time frame 2. Do over time if possible activities is lagging 3. Liaison with each Technical sub team GIS & Hence Customer care and go through their respective actives before commencement of pilot sites	implementation process as time taken to deliver lectures in office and field going through each activities with slow pace. Also bad weather begin of this year 2014 contributes a lot in the project delays.
3. Challenging target (Voluntary)			
a) Operation reporting & NRW presentation	A. Four times a year B. Three times a year C. Two times a year D. One times a year	 1. Keeping month summary on operational for monthly data **2.** Presentation to all network operations & NRW teams	**B.** Some progress though, slows down due to commitments on the NRW project sites activities and Network operations as new supply boundaries are explore with the New Water source addition

b) Training on operations & NRW	A. Four per six months B. Three per six month C. Two per six month D. One per six month	 1. Network modeling basics **2.** NRW analysis Water Audit	into the Honiara Water Supply system.
4. Enlightening activities (Voluntary)			
a) Question and Answer session social informal sharing of experiences & lesson learnt on NRW activities on pilot sites.	A. Once every three months B. Once every four months C. Once every six months.	 1.0 Quiz of NRW components.	**C.** still planning this program with the Social group for Solomon Water.
b) Sporting activities -	A. 20 times a month B. 15 times a month C. 10 times a month D. 5 time a month E. None a month	 1. soccer 2. Volley ball. **3.** Walk for life	**C.** achieving some progress but due to to much commitment in NRW & Network operations I do not have

			spare time to go out and have this life saving sporting activities.

Note: Based on Capacity Assessment & Capacity Development Plan, be requested to prepare individual Action Plan.

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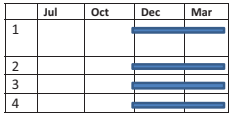
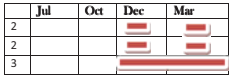
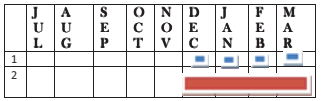
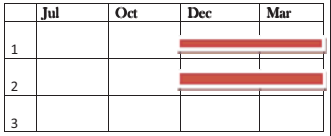
Individual Action Plan (Challenging Program) (Mr. Austin Ata – Connection Services Team Leader) December 2013 -March 2014

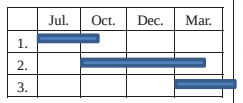
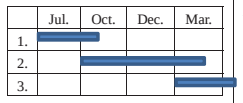
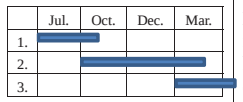
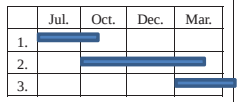
Main Activities	Verifiable Indicator	Methods of Implementation	Achievement
1. Contribution to water supply Services of Solomon Water			
1.1 New Connection: ➢ Survey/assessment ➢ Costing ➢ Approval ➢ Installation ➢ Billing ➢ Report ➢ Filling/achieving **1.2 Disconnection – Illegal Service users:** ➢ Report analysis ➢ Schedule ➢ Disconnection ➢ Account validation ➢ Monitoring ➢ Report ➢ Filling/achieving **1.3 Reconnection Applications (Customers Disconnected more than 3months)** ➢ Survey/assessment ➢ Costing ➢ Approval ➢ Reconnection ➢ Account validation with billing ➢ Report ➢ Filling achieving	**1.1 New Connections:** A. 3 weeks - 100% B. 4 weeks – 80% C. 5 weeks – 60% D. 6 weeks – 40% E. More than 6 weeks – 20% **1.2 Disconnection – Illegal Service Users:** A. 24 hours – 100% B. 48 hours – 80% C. 72 hours – 60% D. 96 hours – 40% E. More than 96 hours – 20% **1.3 Reconnection Applications (Disconnections more than 3 months):** A. 2 weeks – 100% B. 3 weeks – 80% C. 4 weeks – 60% D. 5 weeks – 40% E. More than 5 weeks – 20%	 1 1. Monthly monitoring 2. Liaise with key units and sections 3. Customer feedback trend **Disconnection Illegal Users** 1. Monthly monitoring 2. Liaise with key units and sections 3. Illegal users reduction trend report **Reconnection Applications** 1. Monthly monitoring 2. Liaise with key units and sections 3. Customer feedback trend	**New Connections: -80%** achieved. Requires efficiency to meet set target **Disconnection Illegal Users -60%** achieved. Requires more attention, and proactive approach. **Reconnection Applications -80%** achieved. Needs a bit of efficiency to achieve set target.

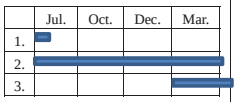
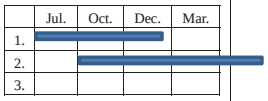
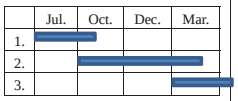
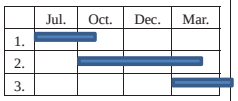
1.4 Meter Management (Replacement/ repairs/relocation) 2. Regular Replacement of meter request both domestic and commercial 3. Monthly check/servicing/replacement of bulk meters 4. Timely monthly report 5. Regular supply of replacement data to meter reading team and billing 6. Regular verification of material orders	**1.4 Meter Replacement/repairs/relocation** A. 24 hours – 100% B. 48 hours – 80% 72 hours – 60% D. 96 hours – 40% E. More than 96 hours – 20%	**Meter Replacement/repairs/relocation** 1. Monthly monitoring 2. Liaise with key units and sections 3. Customer feedback trend	**Meter Replacement** -**60%** achieved due to schedule days.
2. Contribution to NRW pilot Sites			
2.1 Weekly Meeting Attendance ➢ Presentation of activity progress ➢ Reporting **2.2 Illegal Disconnection** ➢ Disconnection ➢ Monitoring ➢ Reporting	**Attendance of NRW Weekly Meeting** A. Weekly – 100% fortnightly – 80% C. Monthly – 60% D. Not at all – 40% **Monitoring of disconnected illegal water users** A. Weekly – 100% B. Fortnightly – 80% Monthly – 60% D. Not at all – 40%	 1. Prioritize key reports/activities for regular presentation at NRW meetings 2. Regular follow up with customer service for illegal disconnection status.	**NRW weekly meeting attendance** -**80%** achieved. Needs commitment to meet set target **Pilot site Monitoring** -**60%** once a month. Needs more routine

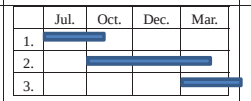
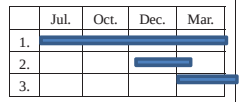
			check
3. Challenging target (Voluntary)			
1. Visiting and reporting and at the pilot sites on illegal status is key activity that must be done at the NRW meeting. 2. Reporting and verification meter raising activities at the pilot sites.	**Site Visits and reporting** A. Once a week – 100% B. Once a fortnight – 80% Once a month – 60% D. Not at all – 40% **Reporting and verification** A. Weekly – 100% Fortnightly – 80% C. Monthly – 60% D. Not at all – 40%	 1. Site visits 2. Monthly reports	**Site Visit** **-60%** - Needs More routine visit **Reporting and Verification** **-80%** needs regular reporting

4.Enlightening activities (Voluntary)	**Participate in organise sporting and health activities**		
	A. Weekly – 100% B. Fortnightly – 80% monthly – 60% D. Not at all -40%	 Active participation and self - assessment in the organised sports activities such as: 1. Volley ball 2. Soccer 3. And walk for life	- **60%** needs active partici pation on weekly basis

Individual Action Plan (Challenging Program) Mr.silas Talosui

Main Activities	Verifiable Indicator	Methods of Implementation	Achievement
1. Contribution to water supply service of Solomon Water			
Pipe line replacement	a. Identification of pipeline to be replaced b. Replace 2 km of pipeline **c.** Replace more than 10km of pipeline	 1.site visit & planning 2.Hands-on job 3.Reporting	B. identified and replaced 2km of pipe so far.
Pipeline maintenance and leakage & repair	A .Over 50 faults per month b. Over 20 faults per month c. Under 20 faults per month	 1.awareness 2.Hands-on job 3.Reporting	B. faults at times are still over 20 fualts per month
Fault attendance/ attending to complains	a. Response within 1-10 days b. Response within 1- 6 days c. Response within 1-3 days	 1.training and awareness 2.Hands-on job 3.Reporting	B. response are mostly 1-6 six, however there are cases more than 10 days.
Make sure of safety at work.	a. Unsafe work practices b. safe work practices with high risk c. safer work practices with low risk	 1.training and awareness 2.Hands-on job 3.Reporting	A. Work practices are still unsafe.

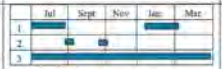
Inside tank cleaning Tools, equipment & logistic supports	a. Schedule tank cleaning b. All tank cleaning c. Tank cleaning according to schedule a. Few right tools b. Right tools and logistics support	 1.planning 2.Hands-on job 3.Reporting  1.training and awareness 2.Hands-on job 3.Reporting	a. Only scheduling has been carried out. B. Right tools and logistics however tools are missing all the time.
2 Contribution to pilot project			
In order to identify causes of NRW, I will learn MNF measure and report to relevant team by March 2014. Be able to learn, apply the process and procedures involve in assessing NRW as conducted and carry out on pilot project sites	A. To be able to measure Minimum Night Flow without any advice, to make graph and report. B. To be able to measure Minimum Night Flow without any advice. C. To be able to measure Minimum Night Flow with advice a. Able to carry out process of accessing NRW with advice b. Able to carry out process without advice c. Able to advice or lead a team in assessing NRW process procedures	 1.Training in office 2.Hands-on training 3.Reporting  1.Training in office 2.Hands-on training 3.Reporting	Not even achieved A. Not even achieved A

Be able to obtain data for and carry water audit Analysis and to calculate NRW ration.	a. Work along side someone with relevant knowledge b. Able to carry out analysis with advice c. Do it without advice.	 1.Training in office 2.Hands-on training 3.Reporting	B have knowledge to carry out water audit analysis but not carried out an exercise for a while.
2. Challenging target (Voluntary)			
To supply water to no water areas.	a. Supply water once a week b. To supply water once a day c. To supply water 24/7	 1.awareness 2.improve water supply 3.Reporting	B water supply are mostly 24/7 but few pockets are once a day.
3. Enlightening activities (Voluntary)			
To improve water supply within honiara town			

Note: Based on

Individual Action Plan (Challenging Program) **(Mr. Mathias Bera Network Operations Team) July 2013-March 2013**

Team)

Main Activities	Verifiable Indicator	Methods of Implementation	Achievement
1. Contribution to water supply service of Solomon Water			
1) In order to contribute to Solomon Water I will work hard to ensure that all pipe installation, repair and maintenance works are done according to the required standards.	A. Supervise installation without assistance B. Supervise installation with assistance C. Not confident to Supervisor installation at all with or without assistance.	 1) On the job training 2) Hands on training 3) Reporting and evaluation.	-C- Always caught up in NRW works. Most pipe installation repair and maintenance works are done by Maintenance team. Do not have time to join them.
2) Work with network operations and creating basic network modeling for White river gravity (using EPANET)	A. 5km per month B. 3 km per month C. 2 km per month D. None per month	 1) Get pipe network features from GIS. 2) Collection data both in the field & GIS 3) Build basic skeleton EPAnet model. 4) Collection of customer data - billing & other relevant source.	-D- Haven't got any free time to study Epanet Manual or Program.
2. Contribution to pilot project			
1) In order for me to fully understand NRW reduction activities I need to learn and improve my understanding on the cost of water supply.	A. Confidently collect and analysis cost of water supply without assistance B. Confidently collect and analysis cost of water supply with assistant C. Not Confident at all in collecting and analyzing cost of water supply with or without assistance	 1) Gain understanding through mini-workshops the contents that make up water supply cost. 2) Calculate water supply cost through training and close supervision. 3) Reporting and evaluation.	-C- Never actualy participate in collecting and analyzing cost of water supply.
2) Understand and carry out MNF as means to work out NRW reduction measures.	A. Conduct MNF with no supervision B. Conduct MNF with		-B- Since we do not have 24/7 supply of water and pressure fluctuations the machine does sometimes play up.

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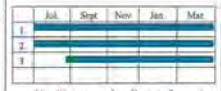
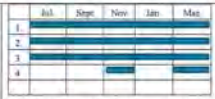
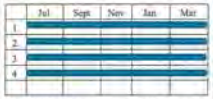
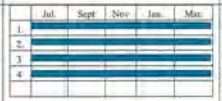
	supervision C. Conduct MNF with supervision and site coaching. D. Not Confident at all to conduct MNF with or without supervision	1) Training on theoretical manual & procedures for MNF & flow meter 2) Training on MNF output in office & field 3) Field practical on MNF measurement 4) Evaluation & reporting on progress	
3) Understanding Step Test -	A. Carry out step test with no supervision B. Carry out step test with supervision C. Carry out step test with team assistance and closer supervision. D. Not confident in carrying out step test with or without supervision	 1) Picture and collect information on the network to be step tested 2) Get an understanding of the flow in each network when valves are closed which section of pipe line is record different flows. 3) Evaluated the result and report on the result of the step test.	-B- Still not feeling confident on how to set up the machine.

4) Understand using of leakage detection machines and methods as a media of identify leakages for NRW reduction purposes.	A. Confident in using leakage detection methods & machines without supervision B. Confident in using leakage detection methods & machines with some supervision C. Confident in using leakage detection methods & machines with much supervision D. Not confident at all to use leakage detection methods and machines with or without supervision	 1) Measurement of measure visible leaks 2) Using leakage detection equipment such as acoustics rod & electronic leak acoustics & correlator. 3) Documentation of leaks & repairs 4) Differentiate leak sounds	-C- Need more practice
5) Able to perform water audit for SW pilot sites.	A. Collect and categories components for Water Audit table for Solomon water without assistance. B. Collect and categories components for Water	 1) Differentiate connection types	-B- Should be okay in the near future.

	Audit table for Solomon water with assistance C. Not confident to collect and categories components for Water Audit table for Solomon water with or without team assistance	and categories accordingly 2) Table meter accuracy table 3) Table leakage measures 4) Link SW Audit table with IWA table.	
3. Challenging target (Voluntary)			
Presentation on Operation & NRW for pilot sites.	A. Once every two months B. Once every three months C. Once every six months	 1) Training need 2) Hands on job 3) Reporting and evaluation on experience & lesson learnt.	-C- No presentation on NRW Activities being conducted on pilot sites over the last couple of months.
4. Enlightening activities (Voluntary)			
Playing sport activities.	A. 5 times a week B. 4 times week C. 3 times a week D. 2 times a week	 1) Muscle art	-C- Depends on weather. Could go up to 5 times a week during fine weather.

		2) Soccer 3) Volleyball 4) Walk for life	

Individual Action Plan (Challenging Program) (Mr. Frank Daukalia, NRW Technical Sub-Team Team)

Main Activities	Verifiable Indicator	Methods of Implementation	Achievement
1. Contribution to water supply service of Solomon Water.			
1.1 Network operations	A. 24 hours water supply -100% B. 20 hours water supply – 80% C. 16 hours water supply – 60% D. 12 hours water supply – 40% E. 10 hours water supply – 20%	 1. Monitoring of Source & Storage tanks. 2. Liaison with responsible teams to fix leakage on mains, service lines etc. 3.Data of Water consumption for each HH, Block etc. 4. Liaison with source workers from each source	❖ 80% water supply daily for most parts of Honiara. Other 20% for leakages, illegal connections, poor network connections and low pressure.

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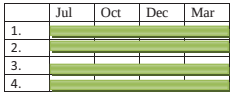
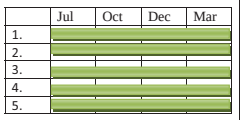
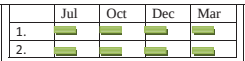
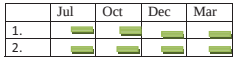
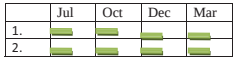
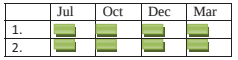
2.0 Contribution to pilot project			
2.1 Isolation of Pilot Site	A. Confident in Isolation of pilot sites and confirmation of boundaries (customers) without assistance or supervision. – 100% B. Confident in Isolation of pilot sites and confirmation of boundaries (customers) with less assistance. -80% C. Not confident at all in Isolation of pilot sites and confirmation of boundaries – 10%	 1. Identify pilot sites on topographic map (GIS). 2. Confirmation of boundaries on site with assistance of field officers. 3. Confirm customer boundary with meter readers 4. Identity network features	❖ 80% done. This job requires input from some field staff and meter readers.
2.2 Customer survey	A. Differentiate customer types & classify them without any Assistance. – 100% B. Differentiate customer types & classify them with less Assistance. – 95% C. Differentiate customer types & classify them with much assistance. – 10%	 1. Confirm metered customers 2. Confirm direct line customers 3. Confirm parasite customers 4. Confirm illegal customers 5. Confirm non-exist customers etc.	❖ 95% was done. This job requires input from meter Readers and billing team.

2.3 Customer meter inaccuracy Test	A. Conduct meter inaccuracy test efficiently& compile data with confidence. – 100% B. Conduct meter inaccuracy test efficiently& compile data with less assistance. – 95% C. Conduct meter inaccuracy test efficiently& compile data with much assistance. – 10%	 1. Distinguish different types of meters & Condition. 2. Analysis conditions of meters.	❖ 95% was done. Constant time interval of 5 minutes during the meter inaccuracy test. Assistance from NRW team.
2.4 Leak detection & Compilation	A. Be able to figure out different types of leakage without any advice & compile a report. -100% B. Be able to figure out leakages With less assistance & compile report. – 90% C. Be able to figure out leakage only. – 10%	 1. Distinguish leak types and collect right information. 2. Compile of leak report	❖ 90% was done. This requires input from field staff that did leakage detection.
2.5 Step Test	A. Confidently do the setup for step test and compilation of the data without supervision. 100% B. Confidently do the setup for step test and compilation of data with less assistance-90% C. Not Confident to do the setup for step test and compilation of the data at all. -20%	 1. Hands-on training on field. 2. Installation of setup and collection of data.	❖ 90% was done. Remaining percentage needs staff to assist in order to achieve.

2.6 Minimum Night Flow Measurement (MNF)	A. To be able to measure Minimum Night Flow & make graph and report without assistance. -100% B. To be able to measure Minimum Night Flow & make graph and report with less assistance. – 90% C. Not able to measure Minimum Night Flow & make graph and report at all. – 0%	 1. Hands-on training on field 2. Reporting	❖ 90% was done. Need assistance from other NRW project team members.
3. 0 Challenging target (Voluntary)			
3.1 Presentation of work progress at weekly meetings.	A. Four times every month -100% B. Twice every month – 60% C. Once every month – 20% D. None at all -0% .	 1. Preparing progress. 2. Presenting at the meeting.	❖ 100% was done.NRW weekly Meeting presentations on field work progress.
4. 0 Enlightening activities (Voluntary)			

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4.1 Solomon Water sports committee member □ All staff involved in sporting activities to keep them fit & healthy. □ Encourage staff to know each other well through social activities. □ Well-being of all staff 4.2 Sports involvement	A. Zero Staff Sick leaves per month – 100% B. 5-10 Staff sick leaves per Month – 80% C. 15 Staff sick leaves per Month – 30% D. >= 16 staff sick leaves per Month – 5% A. Every day – 100% B. Three times a week – 80% C. Once a week – 30% D. Non per week – 0%	 1. Keep records of staff physical health improvements. 2. Organize weekly sporting activities.  1. Rugby / Soccer / Volleyball. 2. Walk for life by all SW staff.	❖ 80% of staff sick leaves per month. Need to organize sporting activities to keep staff fitness level back on track. ❖ 30% of sports involvement.

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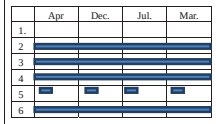
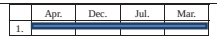
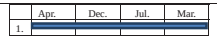
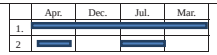
Individual Action Plan (Challenging Program) (Ms. Beverly Sa'ohu, Team Leader customer Care) April 2014 –March 2013

Main Activities	Verifiable Indicator	Methods of Implementation	Achievement (Self-evaluation at the middle of March
1. Contribution to water supply service of Solomon Water			
A. Ensure that I manage the customer care department in accordance to SW regulation and policy and to enhance customers' satisfaction on deliverance of service provided by customer service staff. B. Ensure that all customers' queries are satisfactorily answered on timely manner. C. Ensure that other departments are informed quickly on customers request to ensure that services are delivered on timely manner. D. Provide weekly updates to service delivery Manager.	Consultation of SW policy/ Regulation: a. Twice a week b. Once a week c. Once a fortnight d. Once a month e. None at all Customers queries are answered a. Same hour b. Same day c. After one day d. After 3 days e. After 1 week f. Not at all Customer needs relayed to relevant department a. Same hour b. Same day c. After one day d. After 3 days e. After 1 week f. Not at all Weekly Reports a. 4 times a month b. 2 times a month	 1. Scheduling of work for customer care. 2. Managing and supervising the customer care team. 3. Weekly report writing 4. Daily meeting with customer care staff. 5. Assess staff performance 6. Meet Daily with other team heads	B. To conduct meetings and ensure every customers are satisfied. I did it once a week. To ensure that customers are attended to. This is done daily when stepping in at the front counter. A. Same hour. But this depends Entirely on the nature of complaint. It can take some time if the customer issue is too complicated because we have to work closely with the other relevant departments for feedbacks. This includes customer's correspondences. And emails from customers. A. Same hour. Sometimes within a week. Depends on customers we have attended and the nature of their issue.

E. Liaise with HR upon identifying needs of customer care staff to skill building requirements. F. Liaise with the PR team to inform customers on important events	c. 1 time a month d. Not at all Skill assessment on staff a. Once a month b. Once every 6 weeks c. Once a year d. Not at all Public awareness a. Fortnightly basis b. Once a month c. Once every two months d. Once every 6 months e. Not at all		C. Customer care reports are produced on monthly basis to the CC & C Manager. D. Not yet liaising with the HRM for training in order to build staff skills. Currently I'm doing skill assessment on staff, especially monitoring the CC staff and also working closely with them at the front counter to identify skills they need to improve on. Especially the approach and the information given to our customers. Also currently I am compiling customer suggestion and comments customers usually fill in our feedback forms that we use at the front counter. I'm liaising with the PR team whenever they did awareness programs, especially during their awareness events and Radio programs; this is when they need 1 customer care representative.
2. Contribution to pilot project • Involve in awareness programs on pilot sites.	a. Once fortnightly b. Once a month c. Once every 3 months d. Once every 6 months e. Once a year f. Not at all	 1. Prepare and Provide information to customers	Accompany PR team when conducted awareness on Pilots sites. So far have done 1 last year at NAMORUKA, with this I prepare illegal users listing and fees they are supposed to pay. In fact we have done general customer service on that awareness day.

• Weekly reporting of status of pilot customers to other NRW Reduction sub teams.	a. 4 times a month b. 2 times c. Once a month d. Once after 2 months e. Once after 6 months f. Not at all	 1. Keep track of customers status on daily basis	Reports mainly on activated illegal users on pilot sites during NRW meetings. And also the feedback and the update customer research which was analyzed by WADA, We have gone through 15 pilot sites doing interview and also inputting data taken by customers.
• Assisting customers in validating their accounts	a. The same hour b. The same day c. After 1 day d. After 1 week e. After 1 month	 1. Provide customers with proper information on SW requirements.	A. This one is done on the same hour, and it depends entirely On the nature of complaints and the customers we have attended.
3. Challenging target (Voluntary)			
I will present work progress at the meeting or workshop.	a. Monthly basis b. After 3 months c. After 6 Months d. After 1 year e. Not at all	 1. Keep track on daily achievements and challenges 2. Prepare monthly summary reports	A. This is done on monthly basis. Sometimes During the NRW meetings.
4. Enlightening activities (Voluntary)			
Health and fitness	Exercise a. 5 times a week b. 3 times week c. 1 time a week d. Not at all	 1. Walk for Life 2. Volley and netball	A. 5 times a week. Walk to and from office

Note: Based on Capacity Assessment & Capacity Development Plan, be requested to prepare individual Action Plan

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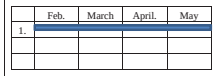
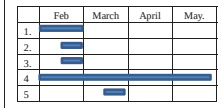
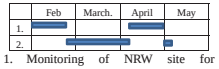
Individual Action Plan (Challenging Program) **(Mr. James Carlos Saliga | Communications Team)**

Main Activities	Verifiable Indicator	Methods of Implementation	Achievement (Self-evaluation at the middle of April
1. Contribution to water supply service of Solomon Water			
In order to contribute to Solomon Water, I will do work efficiently by abiding to the specific goals and objective of my unit, department and company as whole	A. 8hrs in a Working Day B. 40 Hrs in a Week C. 1600 Hrs in a Month D. 20 Hrs in overtime in a month	 1. Work key activities are scheduled into intervals which are then prioritized into order of implementation in the 5 working days in a week	Defined tasks are sometimes too many giving no room for accomplishment of all of them one time. A proper schedule of work implementation should be considered to ensure activities do not overlap each other but rather complement each other. Hence this aspect is ongoing.
2. Contribution to pilot project			
Ensure relevant key messages and notifications is disseminated to the pilot site areas and facilitation of appropriate research and survey essential to the full implementation of the NRW project.	A. To be able to state clearly the objectives and key functions of the project B. Be able to help the pilot site areas to know more about the NRW program, its impact and benefit to them and Solomon Water in whole C. To be able to deliver the Information, communications and awareness (ICW) materials to the pilot site areas in time and when required D. Issue of notices for illegal users with clear instructions of how to be a legal users and a genuine customer of Solomon Water. E. Conduct research and survey when required & assist in the data input of information gathered in templates prepared by the JICA expert team F. Conduct awareness when necessary or if	 1. Data input advise and hands on training in office 2. Assessment and analysis procedure for ICW material 3. Field implementation of research and survey activities 4. Communication, coordination and networking of activities prerequisite for the achievement of NRW activities in the pilot zones	The communication team had played an important role in the communication, networking and awareness of the NRW in key pilot site areas. However more needs to be done in this area to ensure people understand critically the importance of this program and be part of this improvement.

	required G. Use the radio as an medium to share the key messages and knowledge and also update of the NRW activities in different pilot sites	5. NRW basic assessment test	
3. Challenging target (Voluntary)			
To ensure the key messages, knowledge's, information and awareness is given on time before project commences in pilot site areas. To ensure thorough communication of NRW weekly and monthly strategies are taken heed of prior to implementation. To ensure people know about the importance of the NRW project and be part of it To be able to understand fully the technical calculations of NRW measures in different sites and be able to assess thoroughly how this has contributed to the improvement of revenue water in pilot site areas Ensure technical aspect of the NRW is made simpler for all staff and the public to understand how to manage NRW	A. Monthly B. 6 Months C. Yearly	 1. Monitoring of NRW site for implementation of project 2. Communicating and networking with the operation team, customer service team, billing team, connection team for progress of NRW activities and when communication team will be required to conduct awareness, brochure and pamphlets distributions	The challenging target detailed is the important aspect considered by the communication team in this area. Communication team should embrace more the NRW content and be able to share it more clearly with the NRW audiences. This is an ongoing task for the communication team and efforts are primarily placed in facilitating communications and awareness of this important project. Ongoing task for Comm Team as evidently more needs to be done in this area
4. Enlightening activities (Voluntary)			

Note: Based on Capacity Assessment & Capacity Development Plan, be requested to prepare individual Action Plan

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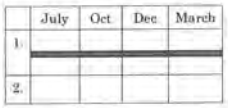
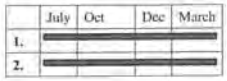
Individual Action Plan (Challenging Program) **Ms. Tango: Communication /Awareness Team**

Main Activities	Verifiable Indicator	Methods of Implementation	Achievement
1. Contribution to water supply service of Solomon Water			
- Inoder to contribute to Solomon Water, I will involve relevant departments to assist our team to do awareness in schools and communities. (Teamwork)	**A. 15hrs/one month** **B. 10hrs/ one month** **C. 8hrs/ month and overtime**	 - Good teamwork	**B.** **- Questions asked by students are mainly on the operational part of SW. Our team has involved relevant departments to assist us in our awareness programs.** **– By involving other departments we also learn a lot from them.**
2. Contribution to pilot project			
- In Oder to contribute to pilot project our team have distributed NRW pamphlets to Pilot sites and have involve other team members	**A.10 hrs. /Once a Month** **B.11hrs./ Twice a Month** **C. 9hrs./ month in overtime**		**B.** **Pamphlets was distributed to NRW Pilot Sites.**

from operations to assist in distributing the pamphlets. - Notice and Information updates posted on our Facebook page and Solomon Star News paper			**Notice and information updates posted on our Facebook and Solomon Star**
A. Challenging target (Voluntary)			
-			
A. Enlightening activities (Voluntary)			

Note: Based on Capacity Assessment & Capacity Development Plan, be requested to prepare individual Action Plan.

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Individual Action Plan (Challenging Program) (Ms. Daisy Menaga, Team Leader Meter Reading)

Main Activities	**Verifiable Indicator**	**Methods of Implementation**	**Achievement (Self-evaluation at the middle of march)**
1. Contribution to Water Supply service of Solomon Water			
In contribution to Solomon Water, I will do my work more effective & efficiently	A. 10hours Overtime in a month B. 20hours Overtime in a month C. 30hours Overtime in a month D. 40hours Overtime in a month	1. Jul Sept Dec Mar 1. Commit to work effective & efficiently	**Achieved 20hours and still working towards achieving the target of 40hours Overtime in a month**
Preparation of Monthly Work Schedule	A. Week one B. Week two C. Week three D. Week four	1. Jul Sept Dec Mar 1. Availability of Schedules when needed	Achieved A – all schedules were prepared at week one
Preparation of Monthly reading Schedules	A. Week one B. Week two C. Week three D. Week four	Jul Sept Dec Mar 1. 1. Availability of monthly reading schedules.	Achieved A - all schedules needed were provided at week one
Staff Training • Computer & Device terminal training • Water tariffs & charges • Effective Communications Training • Report Writing	A. To be able to know how to use handheld devices B. To be able to read customers water meter without any advice C. Able to be answerable to customers in a proper & polite way. D. All of the Above	Jul Sept Dec Mar 1. 2. 3. 1. Training in the office 2. Hands – on training 3. Reporting 4. Role play	Role Plays and trainings needed to improve capacity building and work in this phase was carried out for our team members Achieved D

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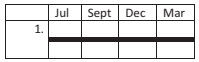
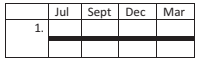
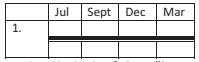
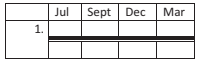
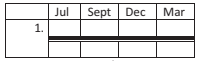
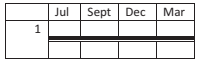
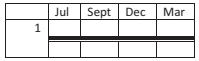
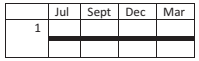
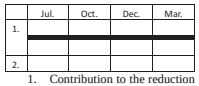
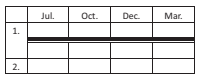
Downloading & Uploading Cycle readings into NCS system	A. 50% B. 70% C. 90% D. 100%	 1. Effective & reliable system 2. Handheld devices must be in good condition 3. Extra hours overtime 4. Address issues affecting reading – Natural disturbances (rain & cyclone) & social unrest	Achieved D All reading Data were 100% done – updated in the system (Delayed update of Data resulted from natural disturbances and technical problem in the system)
Reporting	A. Once a month B. Twice a month C. Four times a month D. None	 1. Daily Reporting 2. Weekly Reporting 3. Fortnightly Reporting 4. Monthly Reporting	Achieved C Non-revenue reading and fault updates were done weekly for progress on project sites.
Team Management • Addressing team members grievances and welfare	A. Once a month B. Twice a month C. Four times a month D. None	 1. Monitoring & Cancelling 2. Assessing 3. Team work & Discipline 4. Decision Making	Achieved C Team meeting and briefing is done every week. This is to ensure that task is effectively carried out and reporting of uprising issues that might affect work performance
Team Regular Meeting • Updates • Arising Issues	1. Able to know the job and the expected outcome 2. To be able to know that the arising issues are answerable 3. Able to know what NRW is and why it is vital 4. All of the Above	 1. Improvement on Work progress 2. Good team work 3. Effective & Efficient meter reading (Accuracy)	Achieved no. 4 Team meeting for progress updates were carried out twice a week to ensure that the team know about their job and the expected outcome, identify solutions for upraising issues and have the knowledge about NRW and why it is important

2.Contribution to pilot project			
Updating Customer information (Changes) • Meter Id's • Meter locations • Statuses	A. 50 B. 70 C. 90 D. <100	 1. Up to date customer information update 2. Efficient & Reliable system (NCS) 3. Reporting	Achieved C updating of customer information depends on the other team that verifies the Customer Information out in the field and delay of updating resulted from system problem and/or late feedback
Reporting field findings from team members to NRW Team leader	A. Twice a month B. Once a month C. On a daily basis D. None	 1. Daily 2. Weekly 3. Fortnightly 4. Monthly	Achieved B Reports are done once a month as we visit every site once every month. However, Monitoring was now done once a week.
Downloading & Uploading Cycle readings into NCS system	A. 50% B. 70% C. 90% D. 100%	 1. Effective & reliable system 2. Handheld devices must be in good condition 3. Extra hours overtime 4. Address issues affecting reading – Natural disturbances (rain & cyclone) & social unrest	Achieved D – all reading are uploaded and updated in the system
Networking	1. To be able to form a good working relationship within the sub-team members and other sub-team members	 1. Good and regular communication team	Achieve 1 Good team work and still working to improve more on it also assisting in problem solving

		2. Team work 3. Assist is problem solving	
Weekly Meeting • Team Update • Updating sub-teams on work progress • Issues faced	1. To be able to have a broader knowledge of NRW & its components 2. Able to know that issues faced are answerable and dealt with…	 1. Contribution to the reduction of NRW 2. Give feedbacks during NRW weekly meetings	Achieve 1 Team Meeting and meeting conducted by NRW Team Leader for the team to broaden team's knowledge on NRW. More Knowledge is acquired during this phase about NRW and its Component
3.Challenging target			
I will learn & work hard to present work progress during meetings	A. Two times per year B. one time per year C. Zero per year	 1. Preparing progress 2. Presenting at meetings or workshop	Achieve A Attended weekly meeting except when something came up or when sick

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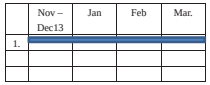
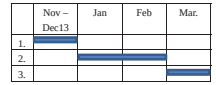
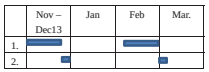
Individual Action Plan (Challenging Program) (Mary Tafoa, NRW Customer Care Sub-Team)

Main Activities	Verifiable Indicator	Methods of Implementation	Achievement (Self-evaluation at the middle of March
1. Contribution to water supply service of Solomon Water			
In order to contribute to Solomon Water, I will bill customers with accurate water meter reading, efficiently and on timely basis.	A. 10hours/month in overtime B. 15hours/month in overtime C. 20hours/month in overtime D. Over 20hours/month in overtime	 1. Do work efficiently	B. To bill customers on timely, accurate and consistent reading each month. Month end is the deadline so over time is given every 4th weekend to do work and last day of month after 4:30pm.
2. Contribution to pilot project			
In order to identify causes of NRW, beginning of each month, I will prepare customers list for the respective pilot sites: Account numbers, names, meter identification numbers, location, consumption unit/value used per month. This report will be forward to Benjamin, Frank and other relevant team members. Provide month end report to Benjamin on monthly consumption for pilot sites.	A. To be able to extract and produce water details of customers within the pilot site requested by Benjamin Billy from NCS billing system. B. To be able to monitor the monthly water consumption at the pilot site. C. To be able to report any findings (example: high water unit used, underground leakage) at the pilot site to Benjamin Billy.	 1. Training in office 2. Hands-on training 3. Reporting	A. I can manage to prepare customers list for pilot sites and monitor the monthly water consumption but not sort out high readings due to unable to go out to the field to identify myself.
3. Challenging target (Voluntary)			

	A. Two times per year B. one time per year C. Zero per year	 1. Preparing progress 2. Presenting at Workshop or meeting	I could not request to present the work progress by myself. I was just appointed to present it by our leader once.
4. Enlightening activities (Voluntary)			
Joining sports/Games (SW)			

Note: Based on Capacity Assessment & Capacity Development Plan, be requested to prepare individual Action Plan

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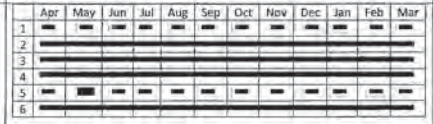
Individual Action Plan (Challenging Program) **(Ms. Mary Pidoke, Customer Care) March 2013-March 2014**

Main Activities	Verifiable Indicator	Methods of Implementation	Achievement
1. Contribution to water supply service of Solomon Water			
A. Ensure that I work in accordance to SW regulation and policy and to enhance customer satisfaction on deliverance of service provided by customer service staff	Consultation of SW Policy/Regulation: a. Twice a week b. Once a week c. Once a fortnight d. Once a month e. None at all	 1. Scheduling of work 2. Keep daily records of achievements and challenges 3. Weekly report writing 4. Daily meeting with customer care staff 5. Individual skill assessment 6. Meet daily with team head and colleagues for briefing	B. Currently there is no policy/regulation in placed, therefore to enhance customer satisfaction on deliverance of service provided, need to liaise with the team head and other departments
B. Ensure that all customers' queries are satisfactory answered on timely manner	Customer queries are answered a. Same hour b. Same day c. After one day d. After 3 days e. After 1 week f. Not at all		A Customer queries are answered depending on the nature of complaint/queries. For some can be answered right away and some depending on as soon as we get feedback
C. Ensure that other departments are informed quickly on customers request to ensure that service are delivered on timely manner	Customers needs relayed to relevant department a. Same hour b. Same day c. After 1 day d. After 3 days e. After 1 week f. Not at all		B. Other departments are informed on the same day on customer requests

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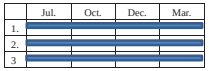
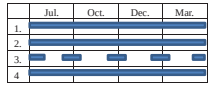
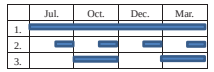
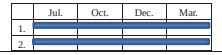
D. Provide weekly updates to customer service team leader	Weekly reports a. 4 times a month b. 2 times a month (c.) 1 time a month d. Not at all		C Weekly updates is done on weekly basis
E. Ensure that I carry out personal assessment based on performance indicators outline in job descriptions	Individual skill assessment a. Once a month b. Once every 6 months c. Once a year (d.) Not at all		D. This was not done at all because I still did not have any Job description, since I moved to customer care
F. Liaise with PR team to inform customers on important events	Public awareness (a.) Fortnightly basis b. Once a month c. Once every 2 months d. Once every 6 months e. Not at all		A I inform customers on important events through email, face to face when customer comes in at the customer service
2. Contribution to pilot project			
• Involve in awareness programs on pilot sites	a. Once fortnightly b. Once a month c. Once every 3 months d. Once every 6 months (e.) Once a year f. Not at all	Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar 1 ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ 2 1. Prepare and provide information to customers	E. I only attend 1 awareness program on pilot site at Namoruka and provide information to customers

• Weekly reporting of status of pilot customers to other NRW reduction sub teams	a. 4 times a month b. 2 times a month (c.) Once a month d. Once after 2 months e. After 6 months f. Not at all	Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar 1 ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ 2 1. Keep track of customers status on daily basis	C. Weekly reporting was done fortnightly
• Assisting customer in validating their accounts	a. The same hour (b.) The same day c. After 1 day d. After 1 week e. After 1 month	Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar 1 ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ 2 1. Provide customers with proper information on SW	B Assisting customers in validating accounts depends as soon as customer comes
3. Challenging target (voluntary)			
I will present work progress at the meeting or workshop	(a.) Monthly basis b. After 3 months c. After 6 months d. After 1 year e. Not at all	Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar 1 ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ 2 ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ 1. Keep track of daily achievements and challenges 2. Prepare monthly summary reports	A I could not present work progress every time, only if I was asked to.
Enlightening activities (voluntary)			
Health and fitness	Exercise (a.) 5 times a week b. 3 times a week c. 1 time a week d. Not at all	Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb mar 1 ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ ▬ 2 ▬ ▬ ▬ 3 ▬ ▬ 1. Walk for life 2. Volley ball 3. Weight lifting	A. I did walk every day and as for volley ball depends on our sports schedule and the weather.

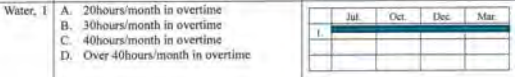
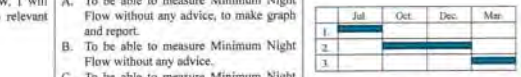
Individual Action Plan (Challenging Program) **(Mr. Gavin Bare, GIS Technician)**

Main Activities	Verifiable Indicator	Methods of Implementation	Achievement
1. Contribution to water supply service of Solomon Water			
Develop a reliable GIS database by collecting accurate data, efficiently managing and producing GIS information for SW operations. • Achieve Base Station (Improve Accuracy) • Update/Verify Field Data. • Provide GIS Reports	**Achieve Base Station By;** A. July – Sept B. Oct – Dec C. Jan – March D. None **Update/Verify field data** A. 10km/month B. 6km/month C. 2km/month D. 0km/month **Provide GIS Reports** A. Fortnightly B. Monthly C. Quarterly	 1. Field Work (Collection of Data). 2. GIS Data Managing. 3. Providing GIS Information	**Base cannot be achieved due to a possible incompatibility with the version of the TerraSync software being supplied.** **Update/Verify Field data** For the month of March alone an approximately 42km of distribution pipeline is recorded (excluding pilot sites). GIS reports weekly in NRW weekly meetings.
2. Contribution to pilot project			
• Record Leakage points locations • Update Pipe network locations • Produce relevant Maps for field work. • Record raised customer meter locations.	Update/Verify field data for NRW pilot project sites. A. 1 - 2 km/month B. 500m – 1km/month C. 100 – 500km/month	 1. Office and field training for field officer. 2. Fieldwork 3. Reporting for update weekly meetings. 4. Update GIS system.	Mbua Valley = 2km Bahai/Kukum = 1.5km Panatina = 0.9km **Total = 4.4km**
A. Challenging target (Voluntary)			
Do presentation of updated features of NRW and SW system to all staff for familiarization.	**A. Once every 2 months** **B. Once every 3 months** **C. Once every 4 months** **D. Once every 6 months** **E. Never**	 **1. Keep record of daily inputs** **2. Compile monthly summary** **3. Prepare presentation**	**E**
B. Enlightening activities (Voluntary)			
Sports Activities	**a. 5 days/week** **b. 3 days/week** **c. 1 day/week**		**C**

	d. Never	**1. Manage time properly.** **2. Proper dieting.**	

Note: Based on Capacity Assessment & Capacity Development Plan, be requested to prepare individual Action Plan.

Individual Action Plan (Challenging Program) **(Mr. Mathew Mafe, NRW Technical Sub-Team)**

Main Activities	Verifiable Indicator	Methods of Implementation	Achievement (Self-evaluation at the middle of March
1. Contribution to water supply service of Solomon Water			
In order to contribute to Solomon Water, I will do work efficiently.	A. 20hours/month in overtime B. 30hours/month in overtime C. 40hours/month in overtime D. Over 40hours/month in overtime	 1. Do work efficiently	• Achieved point D which I do Over 40hours/month in overtime
2. Contribution to pilot project			
In order to identify causes of NRW, I will learn MNF measure and report to relevant team by March 2014.	A. To be able to measure Minimum Night Flow without any advice, to make graph and report. B. To be able to measure Minimum Night Flow without any advice. C. To be able to measure Minimum Night Flow with advice	 1. Training in office 2. Hands-on training 3. Reporting	• Achieved point B which I can able to measure Minimum Night flow with any advice
3. Challenging target (Voluntary)			
I will present work progress at the meeting or workshop.	A. Two times per year B. one time per year C. Zero per year	 1. Preparing progress 2. Presenting at Workshop or meeting	• Achieved point A which I present the work progress to team leaders.
4. Enlightening activities (Voluntary)			

Note: Based on Capacity Assessment & Capacity Development Plan, be requested to prepare individual Action Plan.

Individual Action Plan (Challenging Program) **(Mr.Mathew mafe Leakage Assistant** **Team)**

Main Activities	Verifiable Indicator	Methods of Implementation	Achievement
1. Contribution to water supply service of Solomon Water			
a) Survey and identify the types of leaks.	A. 5 days / Week B. 3 days / Week C. 2 days / Week D. 1day/Week	Jul | Oct | Sep | Nov | Dec | Mar • Basic. ✓ Report visible leaks to maintenance. • Medium ✓ Listening rod.	B. Reporting leaks and also using listening rod.
2. Contribution to pilot project			
A. Locating; S/lines, Main, Valves.	LOCATING; S/Lines, W/Mains, Valves. a) Confident with no advice. b) Confident with advice. c) Less confident to locate.	Jul | Oct | Sep | Dec | Jan | Mar • Training on project site. • Training on office. • Reporting.	A. Have Confident with no advice
B. Conduct minimum night flow test.	MNF test; a) Confident with no advice. b) Confident with advice. c) Less confident.		A. Have confident with no advice
C. Conduct step test.	CONDUCT STEP TEST. a) Conduct with no advice. b) Conduct with advice. c) No conduct at all.		A. Have confident with to conduct step test with no advice.
3. Challenging target (Voluntary)			
a) Update and analyses data collected from project site and able to determine accurately.	A. Two times per month B. One time per month	Jul | Oct | Nov | Dec | Jan | Mar • Collecting data. • Determine data. • Re determines data accurately.	Team leader to brief figure for me to A. Have confident to collect data and analysis.

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4. Enlightening activities (Voluntary)			
Sporting activities	A. 4 times a week B. 3 times a week C. 2 times a week D. 1 times a week E. Non in a week	Jul Oct Nov Dec Jan Mar 1. Playing volley 2. Playing soccer 3. Walking	A Before work and after work I walking back home.

Note: Based on Capacity Assessment & Capacity Development Plan, be requested to prepare individual Action Plan.

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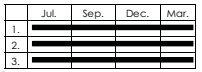
Individual Action Plan (Challenging Program) **(Mr.David Akoeasi Leakage AssistantTeam)**

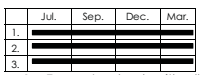
Main Activities	Verifiable Indicator	Methods of Implementation	Achievement
1. Contribution to water supply service of Solomon Water			
a) Survey to visible leakage	A. 5 days / Week B. 3 days / Week C. 2 days / Week D. 1 day / Week	Jul Oct Sep Nov Dec Mar 1. Identify of different types of leak 2. Monitoring of water supply on 3. main pipe line and service line of prevent leaks	C. 2 Days/week, because I am not only work on Survey to visible leakage, but do other work of NRW. And also the period of time I am attaching on Aptc Training.
b) Maintenance of visible leakage	A. 6 days/Week B. 5days/Week C. 4days/Week		C. 4 Days/Week, because I do some work on NRW like Customer Registration, Account measure Meter Inaccuracy. So I am not doing same work every days.

2. Contribution to pilot project			
a) Minimum Night Flow b) Step Testing c) Valve Locator	A. Minimum Night Flow ➢ Confident to do MNF without supervision ➢ With supervision ➢ Not confident at all B. Step Test ➢ Confident to do ST without supervision ➢ With supervision ➢ Not confident at all C. Valve Locator ➢ Confident to do VL without supervision ➢ With supervision ➢ Not confident at all	Jul / Oct / Sep / Dec / Jan / Mar 1. Training in office 2. Hands-on training 3. Actual work or implement of sides 4. Reporting	A. With Supervision, Because I not realy confident to set-up of recording data for 24 Hrs But I improve of learning of skill from supervision and workmate. B. Confident to do ST without supervision, Because I understand of procces of st, but I need to work hard to improve C. Confident to do VL without supervision, But I need understand pilot side system, to know what types of material pipe is use, like I know it easy to detect of Galvize
3. Challenging target (Voluntary)			

Individual Action Plan (Challenging Program) for Phase-3 (Mrs. Ellen Maruarofa, Service Delivery & Communications Department)

Main Activities	Verifiable Indicator	Methods of Implementation	Achievement (Self-evaluation and reason at the middle of March 2015)	Achievement (Evaluation by Chief Executive Officer at the end of March 2015)
1. Contribution to Water Supply Services of Solomon Water (Essential)				
A. Review processes developed particularly for the Connection Services as well as the Customer Care units. B. Establish a customer recording system; a record plan and a customer record guideline C. Formulate relevant policies for the Connection Services. D. Formulate Communication guideline for Solomon Water	Ensure effective management of customer quires/complaints: A. Daily B. Weekly C. Monthly Depending on the nature of the complaints; the above timings are all relevant. Assess and formulate customer care processes/procedures and flow of information within departments a. Achievement within 1 – 4 months b. Achieve within 4 – 7 months c. Achieve within 7 – 10 months d. Achieve after 10 months Currently most of the processes have been developed and currently on pretesting.	Jun. / Sep. / Dec. / Mar. 1. 1. To achieve the activities enlisted, the various methods to be utilized are: i. Meetings ii. Research iii. Trainings iv. Orientation programs v. Face to face or direct interactions vi. Coaching/Mentoring		

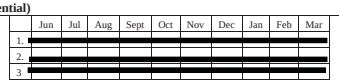
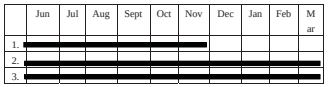
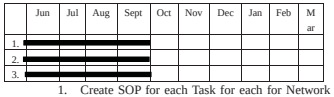
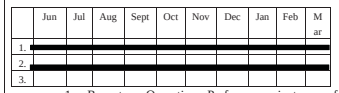
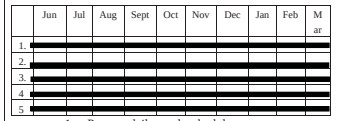
2. Contribution to the Project on NRW Reduction (Essential)				
A. Liaise with the NRW consultant and team to ensure that the three units of Service Delivery and Communication Department know their roles to meet the expected outputs for reduction of NRW activities: **B. Communication Unit** • Establish relations with identified pilot sites • Communicate information to target audience/customers • Organize and facilitate awareness programs to pilot sites • Help print & distribute NRW pamphlets • Produce notifications & radio productions on NRW activities • Communication appropriate information within SW **C. Customer Care:** • Liaise with NRW team to identify and facilitate legalization of illegal customers • Identify customer issues that are significant to help reduce illegal activities **D. Connection Services:**	Effective monitoring of NRW activities in collaboration with NRW team as well as the units within Service Delivery and Communication Department. A. Weekly B. Monthly C. 6 Months D. Yearly Committed to include NRW activities/updates or promotional bits into the communication public awareness programs such as the radio weekly programs and print media if see fit.	 1.Support NRW activities by ensuring all units within my department committed to the goal of NRW as scheduled. 2.Receive feedbacks from TLs – team leaders meeting 3.Ensure all illegal users are legalized and monitored. 4.Public awareness to be effectively provided by the Communication unit.		

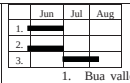
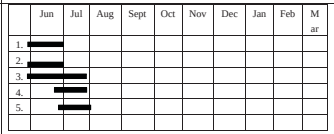
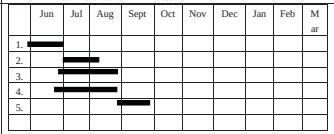
• Identify and liaise with relevant for disconnections of all illegals A. Maintained the continuous support and activities identified for by the NRW team to be implemented by the Connection Service team				
3. Challenging Target (Voluntary)				
A. Ensuring that the three units are keeping up with their expected roles noting the high demand on dealing with customers. B. Continuous commitment of field workers to report as well as disconnecting all illegals identified; thus resulting in increasing illegals C. Inconsistency of monitoring activities as well as disconnection/reconnection practices that may resulted in increasing level of illegals	Include NRW updates – Team Leaders Meeting A. Daily B. Weekly C. Monthly D. 6 Months	 1. Ensure to check with all the concerned TLs 2. Follow up with TLs on how effective the mechanism in place for reporting of illegal activities 3. Monitor progress on all illegal activities & propose improvements		
4. Self-Development or Social Action (Voluntary)				
A. Participate during company health, social and recreation activities. B. Keep up with my morning walk program.	A. Once a week B. 5 days a week	 1. Maintain good relations with all company staff. **2.** Keep fit and healthy.		

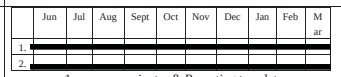
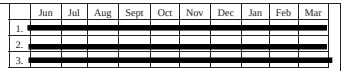
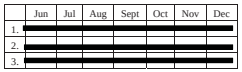
Note: Based on Capacity Assessment & Capacity Development Plan, be requested to prepare Individual Action Plan

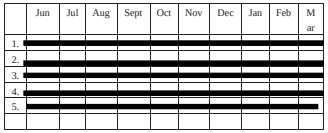
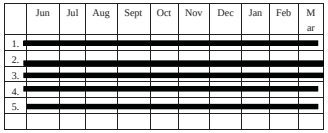
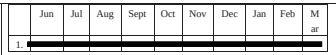
Individual Action Plan (Challenging Program) for Phase-3

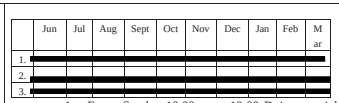
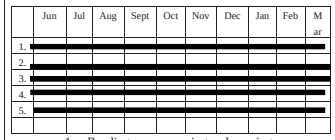
(Mr. Benjamin Billy NRW Technical Sub-Team)

Main Activities	Verifiable Indicator	Methods of Implementation	Achievement (Self-evaluation and reason at the middle of March 2015)	Achievement (Evaluation by Manager at the end of March 2015)
1. Contribution to Water Supply Services of Solomon Water (Essential)				
1. Presentation of system Operation to operations Team.	A. Once a month B. Every two month C. Once in six months D. Once a year.	 1. Preparation of Hand outs 2. Presentation of system Scenarios & Changes. 3. SOP Preparation		
2. Revised Job Description for Network Operation Staff	A. By end of June 2014 B. By end of July 2014 C. By End of August 2014 D. By End of September 2014 E. Some progress in 2014	 1. Create SOP for each Task for each for Network Operations 2. Involve staff on their IWP Creations. 3. Finalized and sent to HR to check and confirm with OM		
3. Preparation of IWP and Appraisal for Network Operations Staff.	A. By End Of June 2014 B. By End of July 2014 C. By End of August 2014 D. End of the September 2014 E. Some progress in 2014.	 1. Create SOP for each Task for each for Network Operations 2. Involve staff on their IWP Creations.		
4. Operations Monthly Report	A. Monthly B. Every Two Months C. Quarterly D. Every Six Months E. Once a year	3. Finalized and sent to HR to check and confirm with OM.  1. Report on Operations Performance in terms of Service level 2. Report on production cost for each system & DMA		
5. Dash Board – work program	A. daily B. twice a week C. Weekly D. fortnightly	 1. Prepare daily work schedules 2. Task delegation to staff 3. status of System Operations 4. Highlight difficulties & strategies.		
2. Contribution to the Project on NRW Reduction (Essential)				

7. Completion of Pilot Sites.	A. Completion of all pilot sites by end of July 2014 B. Completion of all pilot sites by end of August 2014 C. Completion of all pilot sites by end of September 2014 D. Completion of all pilot sites by end of October 2014	 1. Bua valley & Panatina & Kukum Baha'i After counter measure activities. End of June 2. Naha 2 & 3 Counter measures end of June 2 week 3. FFA preparation & Completion begin first July to End of July 2014.		
8. Preparation of procedure for collecting Inventory for DMAs.	A. Preparation of Provisional DMA Inventory by end of July 2014 B. Preparation of Provisional DMA Inventory by end of August 2014 C. Preparation of Provisional DMA Inventory by end of September 2014 2014 D. Preparation of Provisional DMA Inventory by end of October 2014	 1. Drawing of Proposed DMA Boundaries 2. Locating of Pipe lines 3. Liaise with Meter readers for customer locations & GIS Geo spacing. 4. Work out Production cost for each system. 5. draft of all DMA sites		
9. Selection of two of two DMA for JICA project with pressure & Non Pressure Zone	A. By end of September 2014 B. By End of October 2014 C. By end of November 2014 D. By End of December 2014.	 1. Drawing of Proposed DMA Boundaries 2. Locating of Pipe lines 3. Liase with Meter readers for customer locations & GIS Geo spacing.		

		4. carry out Base line Data 5. Document all information for base line.		
10. organize weekly meetings	A. weekly meeting B. fortnightly meeting C. monthly meeting D. Quarterly. meeting	 1. prepare minutes & Reporting template 2. Organize activity schedules to action plan.		
3. Challenging Target (Voluntary)				
Optimize running of Water supply operations.	A. Reduction of Pumping cost by 20% by end of September 2014 B. Reduction of Pumping cost by 20% by end of October 2014 C. Reduction of Pumping cost by 20% by end of November 2014 D. Reduction of pumping cost by 20% by end of December 2014.	 1. Analysis electrical data(Cost) with Production 2. Monitor production every month. 3. Monitor system operations service level.		
6. Prepared Operational Manual. (System Operation Scenarios)	A. By end of September 2014 B. By end of October 2014 C. By End of November. D. By End of December 2014	 1. Operational Test for system operations. 2. Collect Data for Bulk readings & Tank Level r production every month. 3. Daily check for Water Pressure for end of each System		

10. System Operational Training for System Operational Staff.	A. Monthly B. Once every two months C. Quarterly D. every six months	 1. Prepare system configuration for operations. 2. Filling of System operations forms. 3. SOP for system Operations 4. Pilot & DMA NRW analysis		
11. NRW monitoring for DMA/ Pilot sites	A. once a month B. once every two months C. quarterly D. Once every six months	 1. Collect Consumption data from Billing. 2. Collect system input from Operations 3. Analysis data for NRW Components 4. Report to DMA Maintenance team & Customer service of results. 5. Get feedback and check result after these interventions.		
4. Self-Development or Social Action (Voluntary)				
12 Muscle Art training(physical-Development)	A. Twice Weekly B. Once Weekly C. Once fortnight D. Once a month	 1. Attend training on Mon & Tues every week. .		

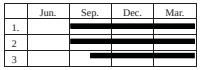
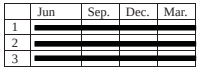
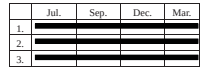
13 Learn about Water Gems./ Modeling software.(Self Development)	A. Once Weekly B. Once fortnight C. Once a month D. Once every two Months E. Quarterly.	 1. Every Sunday 10:00am to 12:00 Doing tutorial with Mathias & 2. Reading notes & Books about modeling 3. Do practical exercises.		
14 Bible reading.(mental and Spiritual Development)	A. daily B. three times a week C. Twice Weekly D. Once Weekly	 1. Reading every morning and evening. 2. 30 x chapters for Saturday. 3. Write dairy for this reading completions. 4. Create schedules foe weekly reading. 5. Completed bible reading by March 2014.		

Note: Based on Capacity Assessment & Capacity Development Plan , be requested to prepare Individual Action Plan.

S4.5-2-66

Individual Action Plan (Challenging Program) for Phase-3

(Mr. MATHIAS BERA, NRW Technical Sub-Team)

Main Activities	Verifiable Indicator	Methods of Implementation	Achievement (Self-evaluation and reason at the middle of March 2015)	Achievement (Evaluation by Manager at the end of March 2015)
1. Contribution to Water Supply Services of Solomon Water (Essential)				
I will ensure that I start working on modeling for NORO this year.	A.Start October B.Start November C.Start December D.Start January 2015 E.Not start at all	 1. Get pipe network features from GIS 2. Collection of data in field and GIS 3. Build Skeleton of Model using Water Gems vi8 software.		
I will make sure that I start working in Honiara model. .	A. 75% complete by March B. 60% complete by March C. 30% complete by March D. 10% complete by March E. Not start at all.	 1. Get pipe network features from GIS 2. Collection of data in field and GIS 3. Build Skeleton of Model using Water Gems vi8 software.		
2. Contribution to the Project on NRW Reduction (Essential)				
I will utilize my skills in modeling to regularly determine NRW in sections of SW system and also in DMA's	A.Weekly B.Fortnightly C.Monthly D.After 3 months E. Not at all	 1.I will make sure that I obtain the daily system input volumes through bulk meters. 2.I will analyze the data for NRW 3.I will communicate my findings with leakage team and maintenance team to carryout site assessment and fix leaks if required to.	.	
3. Challenging Target (Voluntary)				
Presentation on Hydraulic Modelling Updates of Solomon Water's System.	A Once a month B Once in two months C Once in three months D Once in six months	1 Training need 2 Hands on 3 Reporting and evaluation on experience and lessons learnt.		
4. Self-Development or Social Action (Voluntary)				
Training MYY Karate Combat and Self Defense Martial Arts.	**A. 5 times a week** **B. 4 times a week** **C. 3 times a week** **D. 2 times a week**	**Master the basic kicking, punching/striking and blocking techniques.** **Go in to Basic Kata Training** **Go to Advance Kicking and Fighting Movements.** **Go to Advance Kata training.**		

Note: Based on Capacity Assessment & Capacity Development Plan, be requested to prepare Individual Action Plan.

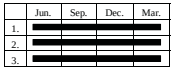
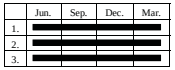
Individual Action Plan (Challenging Program) for Phase 3 **(Mr/Ms. , Team)**

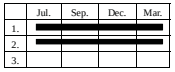
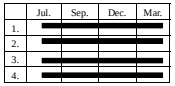
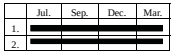
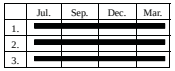
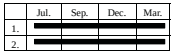
Main Activities	Verifiable Indicator	Methods of Implementation	Achievement (Self-evaluation and reason at the middle of March 2015)	Achievement (Evaluation by Manager at the end of March 2015)
1. Contribution to Water Supply Services of Solomon Water (Essential)				
2. Contribution to the Project of NRW Reduction (Essential)				
3. Challenging Target (Voluntary)				
4. Self-Development or Social Action (Voluntary)				

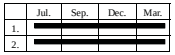
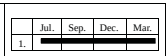
Note: Based on Capacity Assessment & Capacity Development Plan, be requested to prepare Individual Action Plan.

S4.5-2-67

Individual Action Plan (Challenging Program) for Phase-3 **(Mr. Frank Daukalia, NRW Technical Sub-Team)**

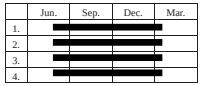
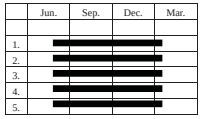
Main Activities	Verifiable Indicator	Methods of Implementation	Achievement (Self-evaluation and reason at the middle of March 2015)	Achievement (Evaluation by Manager at the end of March 2015)
1. Contribution to Water Supply Services of Solomon Water (Essential)				
1.1 Assessment and preparation of quotation for new applications for New water connections.	A.Everyday B.Once every 2 days C.Once a week D.Fortnightly	 1. Carry out site survey. 2. Prepare quotation for each application. 3.Assessment, planning for installation of service line		
1.2 I will attend monthly department meetings and report /share ideas on how to improve the operations of the company.	A. Every month B. Once every 2 months C. Once every 3 months D. Once every 6 months	 1. Check the emails and schedule for correct time and venue. 2. Prepare monthly activities report. 3. Conduct regular meeting to obtain up to date data on progress.		

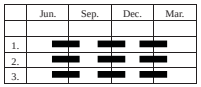
2. Contribution to the Project on NRW Reduction / DMA (Essential)				
2.1 I will organized daily briefings and share ideas with my field staff to improve on NRW activities in the field.	A. Everyday B. Three days a week C. Once a week D. Once a month	 1. I will update on the activities completed and what task required completing each day to meet the deadline. 2. Prepare work plan each day.		
2.2 I will attend the weekly meetings and share ideas with staff to improve NRW reduction activities.	A. Every weekly meeting B. Twice a month C. Once in three months D. Once in six months	 1. I will check schedule of the weekly meeting every time. 2. I will report on progress of NRW activities in the Pilot Sites. 3. Hold daily meeting with field staff for task progress 4. Site Visit		
2.3 I will compile and analyze raw data efficiently and effectively.	A. Daily B. Three times a week C. Once in a month D. Once in six months	 1. Gather all field data from field staff on time. 2. Analyze and document results.		
2.4 I will assist NRW field team carryout Minimum Night Flow, Step Test, Leakage detection at each pilot site.	A. 100% Pilot Sites (6) B. 75% pilot sites (4) C. 50% Pilot sites (3) D. 20% Pilot sites (1)	 1. Liase with team to arrange for suitable time to do MNF and leakage detection. 2. Prepare appropriate equipment to conduct measurements. 3. Establish great team work with NRW staff.		
3. Challenging Target (Voluntary)				
3.1 I will compile data and report back to my department team leader the achievements at the end of each month.	A. Monthly B. After every 2 months C. After 6 months	 1. Gather all necessary information.		

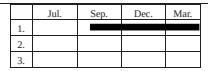
3.2 I will monitor and manage NRW reduction activities in the field more efficient and effectively.	A. With Confidence B. With little confidence & some Supervision. C. With no confidence and much Supervision.	2. Report writing  1. Up today on the work progress in the field. 2. Set up targets to meet the dead lines.		
4. Self-Development or Social Action (Voluntary)				
4.1 I will engage in all social activities organize by Solomon Water such as sports and other social gatherings.	A. Attend all organize activities on time. B. Attend 50% of activities C. Not attend any organize activity	 1. Check my emails and notice boards regularly for Information and notices.		

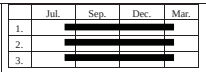
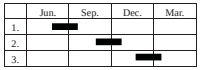
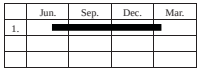
Note: Based on Capacity Assessment & Capacity Development Plan, be requested to prepare Individual Action Plan.

Individual Action Plan (Challenging Program) for Phase 3 (Ms. Beverly Sa'ohu, Team Leader Customer Care)

Main Activities	Verifiable Indicator	Methods of Implementation	Achievement (Self-evaluation and reason at the middle of March 2015)	Achievement (Evaluation by Manager at the end of March 2015)
1. Contribution to Water Supply Services of Solomon Water (Essential)				
I will ensure that I hold a meeting with my customer care team counterparts to discuss important issues for the day that needs to be addressed and also to inform them on important information that needs to be relayed to customers on status of SW services.	A. Daily B. Once a week C. Fortnightly D. Once a month	 1. Assess outstanding customer issue at the end of each working day to be addressed on the next day 2. Liaise with other SW departments on daily basis to better improve status of services. 3. Prepare information for the daily briefing. 4. Conduct short meeting (15 minutes) before opening of customer service counter.		
I will ensure that all customers complaints that comes through email and letters are opened daily, analyzed and immediately action or forwarded to relevant department for action in a timely manner. Along with this, I will ensure that I communicate customer issue on timely manner on progress of issues or complaints received to	A. Daily B. Weekly C. Fortnightly D. Monthly	 		

our customers. • I will ensure that I produce the Customer care Report to the SD & C Manager.	A. Weekly B. Monthly C. Every three months D. Not at all	1. I will open the letter of complaint as soon as I receive it. 2. I will make sure the entire customer complaints letter are analyzed properly. 3. Compile all necessary documents together with appropriate form and complaint letter and forwarded to responsible units for action. 4. Advice customer of the process that needs to take and the status or the progress of the complaint. 5. Maintain follow up on relevant units until it is solved.  1. Liaise with the customer care team members to collect information / data on progress of activity. 2. Analyze and summarized information. 3. Produce brief but relevant report out of the data.		

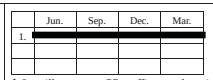
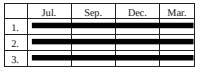
2. Contribution to the Project of NRW Reduction (Essential)				
• I will make sure that I daily check the status of illegal users that have been identified within the pilot areas, if they have responded to validate their account with SW within the grace period. This information will be daily passed on to the illegal team (Under Connection services) and the NRW taskforce Leader. .	A. Daily B. Weekly C. Fortnightly D. Monthly	 1. Make sure that I receive the illegal users list for pilot area on a timely manner. 2. I will check against the NCS system at each end of the day to see if payments are made. 3. I will notify my Customer care staffs on the names of the illegal users to keep an eye on them whenever they come in. 4. I will daily update NRW on status. .		

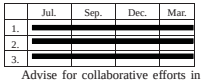
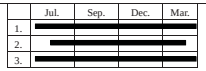
• I will ensure that I attend all NRW weekly meetings to inform the NRW counterparts on status of illegal users and also other information/ issues that is important to be discussed in the meeting..	A. Weekly B. Fortnightly C. Monthly D. Not at all	 1. Keep daily records of processing of issues. 2. Keep record of status of illegal users 3. Provide update in the weekly meeting.		
3. Challenging Target (Voluntary)				
• Ensure that I will train my junior staff to analyze and disseminate right information to customers.	A. Weekly B. Fortnightly C. Monthly D. Two times in a month	 1. Assess their need. 2. Prepare session or action plan. 3. Actual training.		
4. Self-Development or Social Action (Voluntary)				
• 30 Minutes' walk in the morning and evening.	A. Daily B. Weekly C. Fortnightly **D.** Monthly	 1. Walk to keep fit and healthy always.		

Note: Based on Capacity Assessment & Capacity Development Plan, be requested to prepare Individual Action Plan.

Individual Action Plan (Challenging Program) for Phase-3

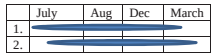
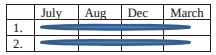
(Mr. James Carlos Saliga, Communications)

Main Activities	Verifiable Indicator	Methods of Implementation	Achievement (Self-evaluation and reason at the middle of March 2015)	Achievement (Evaluation by Manager at the end of March 2015)
1. Contribution to Water Supply Services of Solomon Water (Essential)				
I will work hard with my defined communication tasks to contribute and be part of the daily activities of Solomon Water to achieve the overall goal of Solomon Water.	A. Daily B. Weekly C. Monthly	 1. I will ensure PR officers also is responsible for implementation of communication activities (Radio Program & Awareness program)		
2. Contribution to the Project on NRW Reduction (Essential)				
A. Be able to help the pilot site areas to know more about the NRW program, its impact and benefit to them and Solomon Water in whole B. To be able to deliver the Information, communications and awareness (ICW) materials to the pilot site areas in time and when required C. Issue of notices for illegal users with clear instructions of how to be a legal users and a genuine customer of Solomon Water. D. Conduct research and survey when required & assist in the data input of information gathered in templates prepared by the JICA expert team E. Conduct awareness when necessary or if required F. Use the radio as an medium to share the key messages and knowledge and also update of the NRW activities in different pilot sites G. To ensure the key messages, knowledge's, information and awareness is given on time	A. Weekly B. Monthly C. 6 Months D. Yearly	 1. Prioritize NRW activities 2. Be able to defined key task and see if there is a need for adjustment and improvement or prompt action.		

before project commences in pilot site areas. H. To ensure thorough communication of NRW weekly and monthly strategies are taken heed of prior to implementation. I. To ensure people know about the importance of the NRW project and be part of it J. To be able to understand fully the technical calculations of NRW measures in different sites and be able to assess thoroughly how this has contributed to the improvement of revenue water in pilot site areas K. Ensure technical aspect of the NRW is made simple for all staff and the public to understand how to manage NRW				
3. Challenging Target (Voluntary)				
Be able to attend all the NRW meetings, make follow up with the key departments involved in the project and be able to translate and bring to implementation the day to day activities which require my input, facilitation and support.	A. Weekly B. Monthly C. 6 Months	 Advise for collaborative efforts in ensuring everyone has some basic understanding of the progress of NRW		
4. Self-Development or Social Action (Voluntary)				
Volunteering with NRW team when carrying out MNF and Step test in pilot sites and thirty minutes work back home	A. Twice in a month B. Once in three months C. Twice in six months			

Note: Based on Capacity Assessment & Capacity Development Plan, be requested to prepare Individual Action Plan

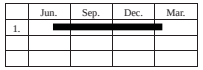
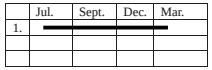
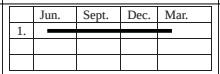
Individual Action Plan (Challenging Program) for Phase 3 Ms. Sophia Angelique Tango Team: CCC

Main Activities	Verifiable Indicator	Methods of Implementation	Achievement (Self-evaluation and reason at the middle of March 2015)	Achievement (Evaluation by Manager at the end of March 2015)
1. Contribution to Water Supply Services of Solomon Water (Essential)				
• Assisting customers in responding to emails, telephone calls and customer queries • Awareness Programs (Schools/Communities)	a. Five days a week b. Once a month c. Twice a month d. Three times a month			
2. Contribution to the Project of NRW Reduction (Essential)				
• I will make an effort to attend NRW Weekly meeting to discuss and Share Ideas • I will continue with my School awareness activities and provide pamphlets for school students	a. Every weekly meeting b. Twice a month c. Once in three months d. Once in six months	 Make sure to check meeting dates and attend meetings		
3. Challenging Target (Voluntary)				
• Resources/Materials are not kept in one place. • Availability of Engineers to assist awareness team is sometimes a challenge.				

Main Activities	Verifiable Indicator	Methods of Implementation	Achievement (Self-evaluation and reason at the middle of March 2015)	Achievement (Evaluation by Manager at the end of March 2015)
4. Self-Development or Social Action (Voluntary) Involve in Sports to stay healthy				

Note: Based on Capacity Assessment & Capacity Development Plan, be requested to prepare Individual Action Plan.

Individual Action Plan (Challenging Program) for Phase 3 (Ms. Daisy Rose Menaga, Meter Reading Team)

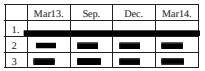
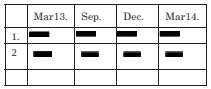
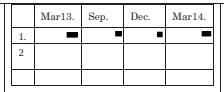
Main Activities	Verifiable Indicator	Methods of Implementation	Achievement (Self-evaluation and reason at the middle of March 2015)	Achievement (Evaluation by Manager at the end of March 2015)
1. Contribution to Water Supply Services of Solomon Water (Essential)				
I will ensure that meter reader's reading schedules are prepared daily	A. Daily B. Weekly C. Monthly D. Not at all	 1. Prepare reading schedule on a daily basis 2. Delegate preparation of reading schedules to others when required.		
Managing & Monitoring of Customer Meter Readings ✓ Ensure to avoid mistakes to make improvement	A. On a daily basis B. Once a week C. Once a month D. Not at all	 1. Ensure that Incoming customer readings are inputted and uploaded into the system on the same day		
Attend to Customer Queries ✓ Ensure that customer queries are all attended to without exception in a timely manner	A. Within 10 days B. Within 20 days C. Within 30 days D. Not at all	 1. Ensure that all customer queries are attended to in a timely manner		

Main Activities	Verifiable Indicator	Methods of Implementation	Achievement (Self-evaluation and reason at the middle of March 2015)	Achievement (Evaluation by Manager at the end of March 2015)
2. Contribution to the Project of NRW Reduction (Essential)				
Ensure attendance in NRW daily meetings by myself and/or substitute and share relevant information with team members	A.Every weekly meeting B.Twice a month C.Once in three months D.Once in six months	Jul. Sep. Dec. Mar. 1. ▬▬▬▬ 2. 3. 1. I will check schedule of the weekly meeting every time and attend. 2. Share relevant information with team members		
Conduct Monitoring of status of pilot customers	A. On a monthly basis B. Once every two months C. Once in six months D. Not at all	Jul. Sept. Dec. Mar. 1. ▬▬▬▬ 1. Report update in NRW weekly meeting 2. Report To NRW Team leader		
Check to verify if Meter Information for pilot site is updated in the billing system	A. Weekly B. Twice a month C. Once in three months D. Not at all	Jul. Sept. Dec. Mar. 1. ▬▬▬▬ 1. Ensure that all meter installation for pilot site is updated in the system 2. Report Update to NRW Team Leader		

Main Activities	Verifiable Indicator	Methods of Implementation	Achievement (Self-evaluation and reason at the middle of March 2015)	Achievement (Evaluation by Manager at the end of March 2015)
3. Challenging Target (Voluntary)				
Create a friendly and conducive working environment for team members ✓ Clean & tidy ✓ Feel happy about their work ✓ Their own space – freedom to work and communicate with co-workers ✓ Good workplace Culture	A. July B. September C. November D. February	Jul. Sept. Dec. Mar. 1. ▬▬▬▬ 1. Create a good workplace, culture and working environment for team members		
4. Self-Development or Social Action (Voluntary)				
Reading of Books	A. Two per week B. 1 per week C. 1 per fortnight D. 1 per month	Jul. Sept. Dec. Mar. 1. ▬▬▬▬ 1. Read good books for self development		
Create SW Netball Team	A. By end of July B. By end of August C. By end of September D. By end of October	Jul. Sept. Dec. Mar. 1. ▬▬▬▬ 1. Create a netball team for all SW ladies		

Note: Based on Capacity Assessment & Capacity Development Plan, be requested to prepare Individual Action Plan.

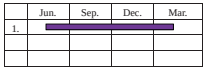
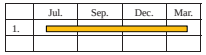
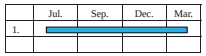
Individual Action Plan (Challenging Program) for Phase-3 (Ms. Mary Tafoa, NRW Billing Team Leader)

Main Activities	Verifiable Indicator	Methods of Implementation	Achievement (Self-evaluation and reason at the middle of March 2013)	Achievement (Evaluation by Manager at the end of March 2014)
1. Contribution to Water Supply Services of Solomon Water (Essential)				
I will ensure that I am productive in my role as a billing team leader to contact SW Province officers to email me the water meter readings each month between 22nd to 28th. Strive to achieve accuracy in Province readings when manually inputted in the system. I must also ensure that bills are sending out to Province officer as soon as I update the readings in the NCS system. Setup the indicators so that 'A' is the highest indicator.	A. Receive readings every Month B. Receive readings 10 months in a year C. Receive readings twice in every 3 months D. Receive readings twice in a year	 1. I will ensure that each customer status is correct by liaise with province staff through email or contact by phone. 2. I will backdate and update accounts that use water illegally or installation of new connection was later identified. 3. I ensure reconnection fee for province accounts are shown in each account and monitor.	A	
2. Contribution to the Project on NRW Reduction (Essential)				
I update customer information. Especially pilot sites meter replaced and raised to higher ground was conscious about water consumption for each customer within the site after the meters being raised. Therefore, at the end of the month, I produce monthly cycle report and email to NRW team for monthly monitoring of the consumption.	A. Update 50 customers a month B. 40 customers a month C. 30 customers a month D. 20 customers a month	 1. Updating changes of meter information. 2. Report of update data to NRW team and also water consumption for pilot site	A	
3. Challenging Target (Voluntary)				
Brief meetings within our section just to build our team work and improvement on some other task.	A. 6 times in a year B. 4 times in a year C. 2 times in a year D. 0 meeting		A	
4. Self-Development or Social Action (Voluntary)				
Join SW Sports team to walk after hours and also fun run.	A. 10 times in a year B. 4 times in a year C. 2 times in a year D. 0		A	

Note: Based on Capacity Assessment & Capacity Development Plan, be requested to prepare Individual Action Plan.

Individual Action Plan (Challenging Program) for Phase 3

(Mr. Lawrence Iroi, Revenue Coordinator, Revenue Management Team)

Main Activities	Verifiable Indicator	Methods of Implementation	Achievement (Self-evaluation and reason at the middle of March 2015)	Achievement (Evaluation by Manager at the end of March 2015)
1. Contribution to Water Supply Services of Solomon Water (Essential)				
I will have meetings with our staff to ensure that they understand measures to detect and report leakage and illegal activities.	A. Once a week B. Twice a week C. Once a month D. Once every two month	 1. I will prepare meeting minutes and allow other members to add on to the minutes before every meeting		
2. Contribution to the Project of NRW Reduction (Essential)				
I will attend NRW meetings and share ideas as to how to detect and reduce NRW rate.	A. Every weekly meeting B. Twice a month C. Once every three month D. Once every six months	 1. I will check weekly schedule every time		
3. Challenging Target (Voluntary)				
I will closely monitor team performance by ensuring reports on billing, meter reading and debt collection are done on time, accurate and relevant.	A. Every weekly meeting B. Fortnightly C. Once every month D. Once every two months	 1. I will monitor the progress of activities from each team from team leaders 2. I will assist them with the monthly planning and reporting		
4. Self-Development or Social Action (Voluntary)				

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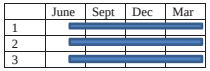
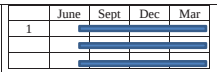
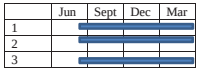
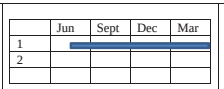
Main Activities	Verifiable Indicator	Methods of Implementation	Achievement (Self-evaluation and reason at the middle of March 2015)	Achievement (Evaluation by Manager at the end of March 2015)
I will interact with other team members to share ideas about improving our work environment and customer relationship	A. Daily B. Weekly C. Fortnightly D. Once a month	 1. I will share personal work and life experiences and new ideas about office settings and how to do things effectively and efficiently		

Note: Based on Capacity Assessment & Capacity Development Plan, be requested to prepare Individual Action Plan.

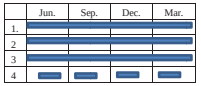
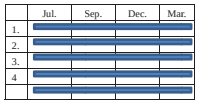
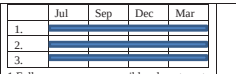
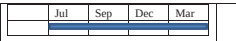
Individual Action Plan (Challenging Program) for Phase 3 (Ms. Roster Tinarai, Debt Collection Team)

Main Activities	Verifiable Indicator	Methods of Implementation	Achievement (Self-evaluation and reason at the middle of March 2015)	Achievement (Evaluation by Manager at the end of March 2015)
1. Contribution to Water Supply Services of Solomon Water (Essential)				
Ensure that payment plan are monitored and customers to turn up to pay on time or on due dates.	A. Daily B. Twice in a week C. Every Fortnightly D. End of each month E. Once in 2 month	 1. Manually go through payment plan customer records (NCS system). 2. Remind customer by phone when pay plan fail. 3. Advice disconnection team to disconnect fail customers		
2. Contribution to the Project of NRW Reduction (Essential)				
Provide update information on disconnections in pilot areas due to high outstanding bills.	A. Once a week B. Fortnightly C. Once in a Month D. Once in 3 Month	 1. Keep records of all disconnected customers and continually cross check with pilot customers. 2. Liaise with NRW counterparts on regular basis. 3. Produce weekly data on disconnected customers on pilot areas for weekly meetings		
3. Challenging Target (Voluntary)				
Ensure I collect 70 % of outstanding debts for Honiara customers	A. Twice a week B. Once a month C. Twice a month D. Once in two			

Main Activities	Verifiable Indicator	Methods of Implementation	Achievement (Self-evaluation and reason at the middle of March 2015)	Achievement (Evaluation by Manager at the end of March 2015)
	month	1. Deliver demand notice on selected areas door to door 2. Remind commercial customers via telephone, emails for payments. 3. Disconnect services with outstanding bills.		
4. Self-Development or Social Action (Voluntary)				
Sports – ensure I attend sport activity organize by SIWA	A. Once a week B. Twice in a month C. Once in a month D. Once in two month	 1. liaise with the sport coordinators for activities for the week.		

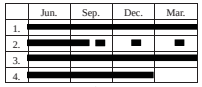
Note: Based on Capacity Assessment & Capacity Development Plan, be requested to prepare Individual Action Plan.

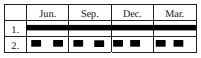
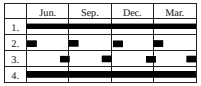
Individual Action Plan (Challenging Program) for Phase-3 (Ms. Marilyn B Pidoke – CC & C)

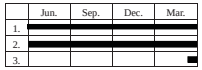
Main Activities	Verifiable Indicator	Methods of Implementation	Achievement (Self-evaluation and reason at the middle of March 2015)	Achievement (Evaluation by Manager at the end of March 2015)
1. Contribution to Water Supply Services of Solomon Water (Essential)				
Will ensure that all customer complaint forms are immediately segregated into order and recorded into our customer complaint database and forwarded to relevant departments for action.	A. Daily B. 3 times a week C. Once a week D. Once fortnightly E. Not at all	 1. I will regularly check customer complaint forms in tray. 2. Will regularly update complaints into the data base 3. Will forward complaint to relevant department for action 4. I will inform customers regarding the status of their complaint.		
2. Contribution to the Project on NRW Reduction (Essential)				
I will make sure that I work closely with the customer registration field team to gather information in the list of customers that are included in each pilot site and to be informed on issues or inconsistency between billing and field reports. This is to be prepared beforehand on how to handle these customer issues when they arrive at SW customer service center. The outcome of this will be informed at the NRW weekly meetings, either by me or my substitute (Beverly).	A. Daily B. Weekly C. Monthly D. Not at all	 1. Constantly check registration team on status of their activities 2. Gather customer listing with completed data from field 3. Inform CC front counter staff to identified customers to look out for 4. Gather daily customers at the end of each day to compile report		
		5. Report to weekly meeting on customer issues and solutions		
3. Challenging Target (Voluntary)				
1. To come up with a mechanism to report to our customers with regards to their complaint in a timely manner	1. Daily 2. Weekly 3. Fortnightly 4. Monthly	 1. Follow up on responsible departments with regards to customer inquiries 2. Ensure that customer complaints are solved and answered in a timely manner 3. Ensure that the right information is relayed to customers on time		
4. Self-Development or Social Action (Voluntary)				
1. Walk from home to the work place	1. Daily 2. Weekly 3. Fortnightly 4. Monthly			

Note: Based on Capacity Assessment & Capacity Development Plan, be requested to prepare Individual Action Plan.

Individual Action Plan (Challenging Program) for Phase 3 (Mr. GAVIN BARE, NRW Technical Sub-Team)

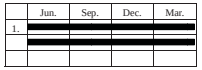
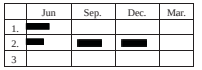
Main Activities	Verifiable Indicator	Methods of Implementation	Achievement (Self-evaluation and reason at the middle of March 2015)	Achievement (Evaluation by Manager at the end of March 2015)
1. Contribution to Water Supply Services of Solomon Water (Essential)				
Develop a reliable GIS database by collecting accurate data, efficiently managing and producing GIS information for SW operations. i) Update Map of Honiara Water Supply System ii) Map Customer accounts for Honiara iii) Update Map of Honiara Waste Water System iv) Develop GIS Workflow	Update Map of Honiara Water Supply System A. 100% B. 75% C. 50% D. 25% Map Customer accounts for Honiara A. Data ready for use B. Data collected and prepared C. Data collected D. No data collected **Update Map of Honiara Waste Water System** A. 100% B. 75% C. 50% D. 25% **Development of GIS Workflow** A. Workable System B. Implementation Stage C. Development Stage D. No Activity	 1. Conduct field survey to update/locate SW assets. 2. Utilize meter readers to collect data while doing their meter reading schedule. 4. Liaise between departments and JICA GIS expert team in developing workflow for GIS.		
2. Contribution to the Project of NRW Reduction (Essential)				

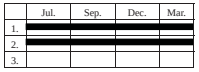
Main Activities	Verifiable Indicator	Methods of Implementation	Achievement (Self-evaluation and reason at the middle of March 2015)	Achievement (Evaluation by Manager at the end of March 2015)
Continue with main activities for Pilot Sites i) Record Leakage points locations ii) Update Pipe network locations iii) Record customer meter.	Collect Field Data; A. Once a week B. Once a month C. Once every 2 months D. Once every 6 months	GPS data collected during field survey  1. Liaise closely with other NRW counterparts to be informed of where every system features are installed on site. 2. Collect field data.		
3. Challenging Target (Voluntary)				
Using GIS customer data to join Billing customer data to determine consumption by geographical location or supply zones in order to assist towards DMA implementation.	A. Operational B. Linking work complete but not operational. C. Linking work is still ongoing. D. Still collecting customer data.	 1. Collect customer data from field 2. Liaise with Billing and meter readers to properly verify each customer and their status. 3. Schedule into phases to ensure that work progress can be monitored. 4. Link customer data to GIS 5. Implement it as best suit requirement.		

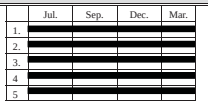
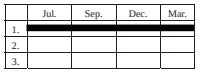
Main Activities	Verifiable Indicator	Methods of Implementation	Achievement (Self-evaluation and reason at the middle of March 2015)	Achievement (Evaluation by Manager at the end of March 2015)
4. Self-Development or Social Action (Voluntary)				
Assist in development of GIS procedures/manual or handbook.	A. Complete by March 2015 B. 75% complete C. 50% complete D. 10% complete E. Not started	 1. Work with JICA team on production of manual. 2. Share ideas on how to improve manual. 3. Publish manual.		

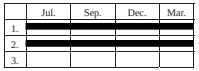
Note: Based on Capacity Assessment & Capacity Development Plan, be requested to prepare Individual Action Plan.

Individual Action Plan (Challenging Program) for Phase 3 (Mr Eric Unga , NRW - Leak Detection Sub Team Leader)

Main Activities	Verifiable Indicator	Methods of Implementation	Achievement (Self-evaluation and reason at the middle of March 2015)	Achievement (Evaluation by Manager at the end of March 2015)
1. Contribution to Water Supply Services of Solomon Water (Essential)				
1.1 I will ensure that I have daily communication with all the 3 provincial office to be informed of their daily progresses and to learn from any immediate issues that needs to be resolved quickly. Also to inform them of important notices that they need to take note of or progress of activities that relate to the management of the provincial operation.	A. Every day B. Every alternative days C. Twice a week D. Once a week	 1. I will make a daily routine to call all provincial office every morning part of the day and if necessary in the afternoon to follow-up on important activities. 2. I must ensure that I am updated on a daily basis on important information or update of activities from SW head office to pass on to provincial office. 3. I will produce weekly report on the important events in the provincial operations.		
1.2 I will ensure that I monitor the staff appraisal work plan for the provincial office staff and to provide continual mentoring opportunities to enable them to perform to the standard required by SW.	A. Once a month B. Once in 3 months C. Once every 6 months D. Once a year	 1. I will ensure that I communicate to all provincial staff about my intention to monitor their work appraisal and to encourage them to communicate any areas that		

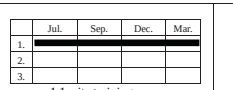
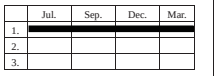
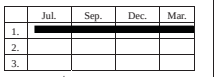
Main Activities	Verifiable Indicator	Methods of Implementation	Achievement (Self-evaluation and reason at the middle of March 2015)	Achievement (Evaluation by Manager at the end of March 2015)
		they need help with to perform according to standards. 2. I will make recommendation to the training department of HR on required field of training for the provincial staff. 3. I will communicate in confidentiality my assessment for each staff and to encourage them on regular basis to continue to strive to perform well.		
2. Contribution to the Project of NRW Reduction (Essential)				
2.1 I will make certain that I conduct weekly meetings for the Leak Detection Team to provide opportunity where progress of leakage activities in pilot areas or DMA's can be shared and where challenges encountered can be discussed and resolved accordingly. The outcomes of these meetings will be shared during the NRW weekly meetings for further actions if required.	A. Twice a week B. Once a week C. Once in 2 weeks D. Once a month	 1. Create weekly meeting schedule and inform counterparts about meeting times. 2. Conduct meeting and produce minutes of meeting for records. 3. Update the outcomes of meeting to NRW meetings		

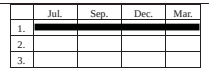
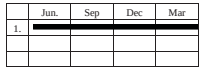
Main Activities	Verifiable Indicator	Methods of Implementation	Achievement (Self-evaluation and reason at the middle of March 2015)	Achievement (Evaluation by Manager at the end of March 2015)
2.2 I will make sure that I am well informed about the progress of field activities in the pilot areas by daily consulting with field staff for updates, conduct site visits and assist in analyzing data. I will make sure that I will be able to confidently report on any updates of activity progress in the NRW weekly meeting	A. Once a week B. Once in 2 weeks C. Once a month	 1. Make sure that I attend daily morning briefing for field staff and be informed of the progress of their activities and other activities proposed for the day. 2. Will follow with site visits to confirm activities 3. I will make daily records of activities achieved in each day and activities proposed for the days ahead. 4. I will always avail myself to assist in analyzing field data. 5. I will prepare a short report on important achievements, progress and results to be presented in NRW meetings.		
3. Challenging Target (Voluntary)				
3.1 Presentation of work progress reports at the NRW meeting.	A. Once a week B. Once in 2 weeks C. Once a month	 Presentation of weekly report – progress and challenges.		

Main Activities	Verifiable Indicator	Methods of Implementation	Achievement (Self-evaluation and reason at the middle of March 2015)	Achievement (Evaluation by Manager at the end of March 2015)
4. Self-Development or Social Action (Voluntary)				
4.1Involve in Solomon Water Social Activities (Sports). 4.2 Involve in Sup Sup garden	**A. Once a week** **B. Once in 2 weeks** **C. Once a month** **A. Twice a week** **B. Once a week** **C. Once in 2 weeks**	 1. Participate in volley-ball and walk for life. 2. Grow vegetables around our house (home)		

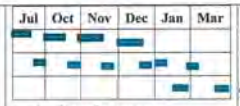
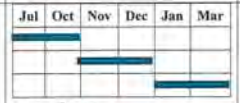
Note: Based on Capacity Assessment & Capacity Development Plan, be requested to prepare Individual Action Plan.

Individual Action Plan (Challenging Program) for Phase 3 (Mr. MATHEW MAFE, NRW technical Team)

Main Activities	Verifiable Indicator	Methods of Implementation	Achievement (Self-evaluation and reason at the middle of March 2015)	Achievement (Evaluation by Manager at the end of March 2015)
1. Contribution to Water Supply Services of Solomon Water (Essential)				
2. Contribution to the Project of NRW Reduction (Essential)				
A. I will mastermind how to operate the ultrasonic flow meter and the correlator.	a. Weekly b. Fortnightly c. Monthly d. Once in two month.	 1.1 site training 1.2 office training 1.3 workshop		
B. I will supervise the constructors at pilot sites according to the check list.	a. Daily b. Weekly c. Fortnightly d. Monthly	 1.1 Provide the design and measurement for the contractor. 1.2 Right materials for the task. 1.3 Proper installation is carried		
C. I will calculate leakage lose on expose leaks from pilot sites.	a. Weekly b. Fortnightly c. Monthly d. Once in two month	 out. 1.1 Seek training from JICA expert and from team leaders. 1.2 Office training		

		1.3 workshop		
2. Challenging Target (Voluntary)				
A. I will learn how to draw or design water utilities and related ones	a. weekly b. Monthly c. Once in two month. d. Once in three month	 1.1 See responsible department to arrange training. 1.2 Seek training from expert 1.3 Office training. 1.4 Workshop.		
4. Self-Development or Social Action (Voluntary)				
A. I will play table tennis	a. Daily b. Weekly c. Fortnightly d. monthly	 1.1 allocate time after official hours		

Note: Based on Capacity Assessment & Capacity Development Plan, be requested to prepare Individual Action Plan.

a). Update work progress in past month at the meeting or workshop. b) Presenting work progress at the meeting or workshop	A. Two times per month B. One time per month	 1. Preparing progress 2. Presenting at Work or meeting.	C. not at all, because I on leave ~~to~~ to do Study on Apte Trainings.
4. Enlightening activities (Voluntary)			
Sporting activity	**A. 15 time a month** **B. 12 times a month** **C. 8 times a month** **D. 6 time a month** **E. Non a month**	 1. Soccer 2. Volley ball 3. Work for life	E. Non a month.

Note: Based on Capacity Assessment & Capacity Development Plan, be requested to prepare individual Action Plan.

S4.5-3 年次個人行動計画に基づく自己評価

PERFORMANCE APPRAISAL INTERVIEW REPORT
NON REVENUE WATER PROJECT TEAM

Presented to: Mr FUJIYAMA Taketoshi
Leader – JICA Expert Team
Non-Revenue Water Project JICA/YACHIYO - Engineering /Solomon Water

Presented by: Tina Kofana
Human Resource Manager
Solomon Water
Signature:
Date: 23/05/14

Background:

Performance appraisal is a key evaluation process to gauge the performance of individuals and to inform employers of the challenges they face in the workplace. It also looks at option on how to improve or performance. For the NRW Project, Team Members also went through this process ending with the appraisal interview. Each team member was interviewed based on their Individual Action Plan. The performance interviews for the NRW team started on Monday 5th May, 2014 and continued until Friday 16th May, 2014. Except for 2 members, others were available for the interview. Whilst majority understood their tasks in respect to the project, others were not sure if they played any role at all. In total, the team acknowledged the importance of the project to Solomon Water. They have agreed that the NRW activities have increased their skill base and knowledge.

S4.5-3-1

A summary of the each team member's achievements, challenges and recommendations for better performance and productivity is provided in the table below:

Department	Name	Achievements	Challenges	Way Forward
Operations	1. Benjamin Billy (Team Leader)	Teamwork Acquiring new work processes, knowledge and skills from Expert team	• Balancing NRW Activities and other normal activities • Coordination of data • Different interpretation of data • No proper training in analysis and reporting of data	• Teams should be aware of their responsibility. • Each team should analyse data and provide report before submitting to team leader.
	2. Mathias Bera	New skills and knowledge. Working with and appreciate what other teams are doing but more needs to be done	• No proper monitoring done for all activities • Overall system might fail because not all teams are working together. • Finance team approach is too harsh on customers • Some customers can't afford so we have to be flexible • Social problems not well understood	• Manpower to do regular monitoring of pilot sites. • Sustainability of the project if all teams are not working together, especially finance team hard approach to customers.
	3. Frank Daukalia	Working with other teams	• No proper flow of activity • To meet deadlines have to do others tasks. • Some not doing their tasks thus putting pressure on others.	• Everyone needs to be aware of their area of responsibility. • Field guys need to be more responsible with their tools and equipment.
	4. Gavin Bare	• Knowledge and skills broadened • Importance of base station appreciated	• Delays in procurement also contribute to slow progress in work	• Training in how to use devices and equipment so that error is minimised
	5. Eric Unga	• Knowledge on how to use new devices and equipment like chlorinator • Teams assist each other • Lots of things learned in the field	• Still not comfortable with some equipment.	• More training needed on proper use of different equipment's
	6. David Akoeasi	• Have learned a lot of skills like surveying, how to identify leaks, and how to calculate water lost through leakages and the use of chlorinator machine	• Still not confident in doing mid night test. Need supervision and guidance from Benji and Eric	• Need further training on use of equipment
	7. Matthew Mafe	• Great learning experience • Enjoy sharing of workload in a team environment	• Jobs delayed due to unavailability of materials. • Slow processes • Team is not motivated	• Order directly to supplier rather than middle man. • Need of morning briefings like other teams • Provision of report template so that proper reporting can be done
	8. Silas Talosui	On Leave		
	9. Chris Meriko	Non Responsive – Does not think that he is part of NRW		
Service Delivery and Communications	10. Austin Ata	A privilege to be part of this team Learned a lot; Like minimum night flow Meter raising	Sustainability of the project because not all teams are working together. Finance team are not flexible with customer who can't afford	Need to prioritize NRW activities All new connections should have raised meters not pilot sites only. Need more staff for Illegal Team. Reliable truck/vehicle needed More awareness for customers needed.
	11. Beverly Dai	• Appreciate new terms and mechanisms • Knowledge of counter measures and Technical test • Opportunity to do more filed work,	• Slow feedback from other teams. • Too many delays in responses from others. • Do not know much about	• More customer awareness • Tracking sheet for all teams and activities. • Follow up must be done on a regular basis

Friday 23rd May, 2014

		participate in awareness and interacting with customers. • Working closely with other teams and updating each other during weekly meetings	water tariffs. • Do not really understand why other teams not responding.	
	12. James Carlos	Enjoys working with the Team Leader. Have learned new things	Coordination with other teams is weak Information does not flow properly Communication to others not sufficient. Not enough resources like camera, computer and voice recorder to help in the job	NRW activities need to be spread out to everyone including every team as it affects all of us in way or the other. This will allow everyone to be informed and thus inform customers and the public appropriately
	13. Sophia Tango	Learned new things	Sometimes cannot explain properly to customers as we don't know the right technical terms for it. Not enough cooperation from other teams	Prioritising task Time Management Team work needs to be strengthened Those with long experience need to be part of awareness team.
	14. Moses Ramo	Non Responsive – Does not think that he is part of NRW		
Finance and Administration	15. Layten Jacob	Working closely with other teams	Specifications not clear. Changing shipping schedules Long custom process Confusion over exemption certificate (out-dated – don't have renewed copy) Contracts are on adhoc basis depending on need. Strict requirements often contribute to delays	Proper planning and coordination of all teams.
	16. Daisy Menaga	NRW project has increased my knowledge and skills From no appreciation to awareness and	Updating data on time Lack of knowledge Intimidated at first but later gained	Cooperation between everyone New vehicles to help out Work closely with Frank

		acknowledgment of the importance of NRW activities Very Good Team Leader Technical team helps out a lot	confidence to discuss issues	
	17. Japhliet Rouhanna	Was involved at first but stepped back when Smith took over	Confusion of role	Will assist if the need arises
	18. Lawrence Iroi	Not clear about role at first Link with other teams like GIS	Low Capacity of team NCS System	Coordination of all teams Work closely with GIS Proper zoning of customer base
	19. Mary Tafoa	Enjoy working with other teams Able to go to field and experience firsthand what happens during awareness programs Report on monthly cycles and consumption	Extra workload Sometimes forget report Deadlines not met Customers information not clear Don't have correct figures on which customer is connected to sewerage	Need to work closely with GIS team

S4.5-3-2

Individual Action Plan (Challenging Program) **(Mr. Ray Andresen, Operation Te... J...**

Main Activities	Verifiable Indicator	Methods of Implementation	
1. Contribution to water supply service of Solomon Water			
(i) Develop Operations Annual Plan (OAP)	1).**OAP:** a. Complete OAP within 1- 6 months b. Complete OAP within 6- 8 months c. Complete OAP within 8-12 months d. Not able to complete OAP at all.	Jul / Oct / Dec / M... 1 2 3 4	Not completed but continue with SW two year plan.
(ii) Develop Operations Annual Budget (OAB)	2).**OAB:** a. Complete within 1-3months b. Complete within 3-6 months c. Complete within 6-9 months d. Complete within 9-12 months e. Not able to complete at all.	1. Create monthly schedules f... wor... 2. Meet with Operations tean... eade... ... weekly basis for updates on ... s achievements and challenges 3. Liaise with SW's managers on da... or weekly basis 4. Prepare Progress report on mon... basis	Complete with assistance from Finance department
(iii) Preparation of Monthly Reports	3).**Monthly Reports:** a. 2 reports annually b. 10 reports annually c. 6 reports annually d. 2 reports annually e. no reports at all		Monthly operations reports presented to SW board meeting.
(iv) Formulate Policies, Practices & Procedures for Systems Operation & Maintenance	4) **Formulation of Operations Policy/ Procedures(OPP)** a. Complete OPP within 1- 6 months b. Complete OPP within 6- 8 months c. Complete OPP within 8-12 months d. Not able to complete OPP at all.		Not completed. Task set for work together with TA team funded by 2 year plan.
2. Contribution to pilot project			
(i) Develop 2014 NRW Budget	a. Complete Budget within 3-4 months b. Complete Budget within 4-5 months c. Complete Budget within 5-6 months d. Not able to complete budget at all.	Jul / Oct / Dec / Mar 1 2	Used the 2013 NRW actual spendings with more details in budget allocation for ease in monitoring
(ii) Formulate NRW Policy, Practice & Procedures (NRW PPP)	a. Complete NRW PPP within 1-6 months b. Complete NRW PPP within 6-8 months d. Complete NRW PPP within 8-12 months e. Not able to complete NRW PPP at all.	1. Attend NRW weekly update meeting 2. Continual liaison with JICA Expert Team	Not completed.
3. Challenging target (Voluntary)			
(i) Work in partnership with the JICA Water Supply Improvement Project	Weekly update meetings and Liasing with JICA and Kitano Construction Group.	Jul / Oct / Dec / Mar 1 2	

	a. Meeting 4 times a month b. Meeting 2 times a month c. Meeting once a month d. Not able to meet at all.	1. Attend update week meeting on progress of activities 2. Continual liaising and forming good networking between all SW stakeholders including JICA	meeting 2 times a month on average due to several challenging issues arising
4. Enlightening activities (Voluntary)			
(i) Health and Fitness	Sick days per year: a. Zero days per year b. 5 days per year c. 10 days per year d. 20 days per year	Jul Oct Dec Mar 1 2 1. Continual Exercise 2. Monthly medical checkups	No sick day for 2013

S4.5-3-3

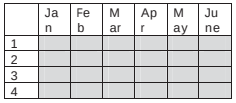
Individual Action Plan (Challenging Program) **(Ms. Tima Kofana, HRM)**

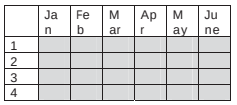
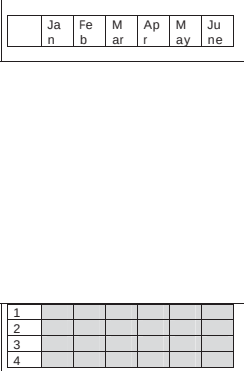
Main Activities	Verifiable Indicator	Methods of Implementation	Achievement (Self-evaluation at the middle of march)
1. Contribution to Water Supply service of Solomon Water			
In order to contribute to Solomon Water, I will do work efficiently.	Achieve the 6 key KRA's A. 50% B. 70% C. 90% D. 100%	Jul. Oct. Dec. Mar. 1. 1. Do work efficiently	A Was not able to achieve all KRA' as expected due to lack of support and commitment from team members
Building or developing the HR Unit	A. On a daily basis B. Twice a month C. Once a month	Jul. Oct. Dec. Mar. 1. 1. Continuous development of unit	B The unit is now 100% operational but needs to be continuously guided to achieve objectives
Team Management • Coordinating team activities	A. Once a month B. Twice a month C. Four times a month D. None	Jul. Oct. Dec. Mar. 1. 1. Monitoring 2. Mentoring and coaching	B Meetings were happening but often there are clashes with interviews, unplanned meetings and emergencies and so often meetings are rescheduled.
Develop and Monitor the HR database	A. Twice a month B. Once a month C. On a daily basis None	Jul. Oct. Dec. Mar. 1. 1. Improve staff record keeping	C. Working closely with Payroll to ensure that both systems are in synergy. Have managed to update new staff listing and code to HR database.

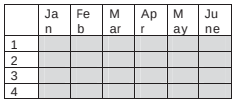
Developing the People Management Group	A. Once a month B. Twice a month C. Four times a month D. None	Jul. Oct. Dec. Mar. 1. 1. Up skilling of change agents.	B. Not really working as expected due to emergencies and non-availability of members
Developing People Management Platform	A. To be able to improve HR processes B. To be able to develop relevant policies like OHS C. To be able to improve management of HR	Jul. Oct. Dec. Mar. 1. 1. Develop draft policies - OHS 2. Develop PM Policy	A Ongoing. Still developing forms and reviewing older ones. Will arrange meetings with Labor division to provide awareness training for all of us. Other relevant training like First Aid has been conducted.
Reporting	D. Once a month E. Twice a month F. Four times a month G. None	Jul. Oct. Dec. Mar. 1. 1. Daily Reporting 2. Weekly Reporting 3. Fortnightly Reporting 4. Monthly Reporting	D. Provide report to GM. Team supposed to be reporting on monthly weekly basis.
	H.		
2.Contribution to pilot project			
In order to improve capacity for reduction of NRW, I will mentor and recruit the right people	A. To be able to recruit the right people to fill in the gaps. B. To be able to provide the right environment for learning and development. C. To be able to contribute to decision making process.	Jul. Oct. Dec. Mar. 1. 2. 3. 1. Recruitment 2. Job Rotation 3. Training in office 4. Hands-on training	A. Recruitment target for the year almost achieved. The Challenge is finding office space to cater for new recruits.

		5. Reporting	
3.Challenging target			
I will learn & work hard to present work progress during meetings	A. Two times per year B. one time per year C. Zero per year	Jul. Oct. Dec. Mar. 1. 1. Preparing progress 2. Presenting at meetings or workshop	B. Lots of other meetings and commitment to attend. Sometimes I send the HR Generalist to attend so that he keeps us updated
	D.		

Individual Action Plan (Challenging Program) (Mrs Ellen Maruarofa- Service Delivery Manager)

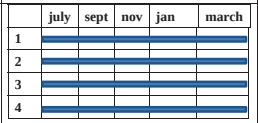
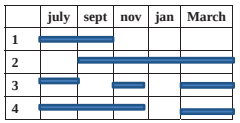
Main Activities	Variable Indicator	Methods of Implementation	Achievement
1. Contribution to water supply service of Solomon Water (SW)			
i. Ensure that the units of Service Delivery and Communication Department enhanced its services to its customers ii. Liaise and support the other departments of SW to deliver efficient and effective services to its customers iii. Formulate appropriate processes and procedures iv. Effective flow of information between departments.	Ensure effective facilitation of customer complaints/queries a. By hour b. By day c. After 2 days d. After 1 week e. After forthnight f. Not at all Assess and formulate customer care processes/procedures and flow of information within departments a. Achievement within 1 – 4 months b. Achieve within 4 – 7 months c. Achieve within 7 – 10 months d. Achieve after 10 months	 To achieve the activities listed, the various methods to be utilized are: 1. Meetings 2. Research 3. Trainings 4. Orientation programs 5. Face to face direct interactions	All timing as indicated on the VI column are all relevant except "f" depending on types of Customer complaints and enquiries. However, it is important to note that after dealing with huge backlogs of customer complaints, the customer care ensures that all customer complaints/enquires are dealt with it no longer as was the case in the past. Progressive improvements so far though the need for greater efforts to be vested on this area of our service.
			The most obvious achievement for the formulation of processes was the connection services. The effective and efficient flow of new connection was a precise achievement as previously installation of new water services took ages but now it only takes 3 weeks from lodge in of application to installation of meter. Other connection services were able to be monitored through the forms and processes formulated. Improved flow of information for customer complaints/enquiries:

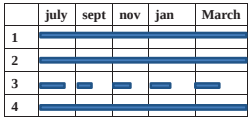
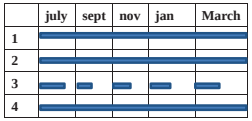
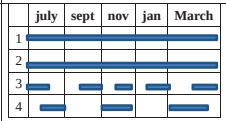
			This still remains a challenge for the department though some progressive efforts have been made.
2. Contribution to pilot project			
i. Work closely with the NRW consultant and the Project Coordinator to ensure its planned activities are implemented through my department team members – reduction of NRW.	Continual liaison /meeting with NRW Reduction heads a. 4 times a month b. 3 times a month c. 2 times a month d. Once a month Update all NRW teams on the issues and reductions of illegal users in the pilot sites. a. Weekly basis	 To achieve the activities listed, the various methods to be utilized are: 1. Meetings 2. Supervision 3. On field training 4. Facilitation 5. Media	B. The department team leaders who are all part of the NRW team have shown commitment to their expected roles. Attend most of the meetings organized for all NRW team members.
3. Challenging target (voluntary)			
i. Ensuring that the three units are keeping up with their expected roles noting the high demand on dealing with customers. ii. Continuous commitment of field workers to report as well as disconnecting all illegals identified; thus resulting in increasing illegals iii. Inconsistency of monitoring activities as well as disconnection/reconnection practices that may resulted in increasing level of illegals		 By now all are expected to be familiarizing themselves with the specific activities they are expected to perform.	Customer care often prepared to handle customers who were being referred to our customer care centre particularly for legalization of their water service. The Connection service team have worked extra hard to respond to illegal users reported to by the NRW team taking into account that the team personnel's are inadequate as well as they have a lot do in their own roles; they have been actively responded to NRW in timely manner. The communication team have effectively worked with the NRW for public awareness programs & distribution of NRW

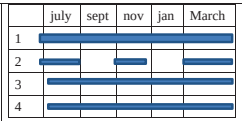
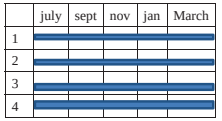
			pamphlets prior to implementation of planned activities at each pilot site. The challenge faced are; Poor monitoring and inconsistent disconnections of illegal users were due to; - Manpower is short - Transportation (only 2 vehicles) - Weather (at times)
1. Enlightening activities (voluntary)			
i. Monitor progress reduction of NRW activities through activities implemented by the SDCD	Maintaining progressive reduction of NRW work by department staffs who are members of the NRW task force. a. Weekly basis b. Forthrightly basis c. Monthly basis d. Quarterly basis e. Semi-annually f. Annually	 Monitoring of individual unit planned activities of NRW.	Monitoring still remains a challenge as far as I observed. We need to identify a best method to monitor our progress on all our NRW activities.

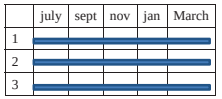
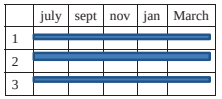
S4.5-3-5

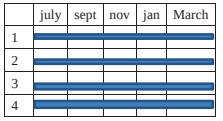
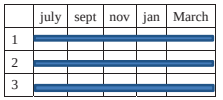
Note: Based on Capacity Assessment & Capacity Development Plan, be requested to prepare individual Action Plan. **Individual Action Plan (Challenging Program) (Mr. Benjamin Billy Sub technical Team)**

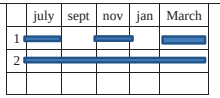
Main Activities	Verifiable Indicator	Methods of Implementation	Achievement
1. Contribution to water supply service of Solomon Water			
a) Management of Network Operations to achieve maximum supply durations	A. Average 24.hours supply B. Average 18.hours supply C. Average 14.hours supply D. Average 12.hours supply E. Average 10.hours supply	 1. Keep supply durations records 2. Liaison with source works for water sources performance 3. Liaison with pipe replacement team to improve flow and pressure. 4. Liaison with NRW team on improvement on water losses.	**B.** We managed to increase with the additional water sources from JICA & Rap input. But depending on the Source works and Network Maintenance we could only achieve this far.
b) Network Operations- Network Modeling.	A. >=6km/month B. 5km/month. C. 3km/month D. 2km/month		**C.** Could only practice with EPANET. Since we still waiting for the TA to assist me with the Water Gems Modeling software

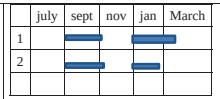
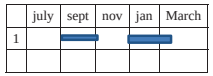
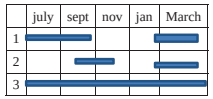
c) Staff Management - performance	A. Reporting 4 /month B. Reporting 2 /month C. Reporting 1 /month **D.** Reporting non /month	1. Check with GIS for network updates 2. Practice Modeling software(EPANET) 3. Site visit to confirm pipe network and features at sites 4. Collection of billing data (demand).  1. Daily briefing 2. Weekly 3. Fortnightly 4. Monthly	**D.** Due to information not available and been kept by different section(HR) not able to accomplish within this time period.
Reporting on Network Operations & NRW for SW	A. Once a month B. Once every two month C. Once every three months D. Once every six months E. Non/year	 1. Get daily records of supply times 2. Get information from Daily briefing. 3. Getting information from bulk readings @ water sources and distributions. **4.** Work out NRW for al systems	**C.** Just managed qtrly report and adhoc reports only for operations manager
2. Contribution to pilot project			
a) Pilot site isolation.	A. Isolation of sites and confirmed site boundaries & customer without assistance or supervision B. Isolation of sites and confirmed site boundaries (customer) with assistance or supervision C. Isolation of sites and confirmed site boundaries (customer) with assistant and further training.	 1. Identify pilot sites on GIS Map. 2. Confirm boundary at Sites with works Officers & Plumbers. 3. Confirm customer boundaries with meter readers. 4. Identify network Features & Appliances & Pipe routes	**B.** Able to understand Isolations of Network & Customers, thou physical checks at sites still need assistances

b) Customer registration	A. distinguished customer types and categorized accordingly without advice B. distinguished customer types with less advice C. distinguished customer types with much advice D. Not confident at all to Distinguish customer types	 1. Identified directly line customers 2. Identified parasite customers 3. Identified Illegal customers 4. Cross check customer status in the field against billing	**A.** Confident in the field to distinguish different customer types with ease.
c) In order to identify causes of NRW, I will learn MNF measure and report to relevant team by for each pilot sites for Before and after counter measures.	A. To be able to measure Minimum Night Flow without any advice, to make graph and report. B. To be able to measure Minimum Night Flow & Make graph and report with supervision only.. C. Not Able to measure Minimum Night Flow and Make graph and report at all	 1. Analysis of 24 hour consumption data for metered and direct lines. 2. Categories of different connection types for apparent loss 3. Meter accuracy test results 4. Leakages component (visible &	**A.** Able to do this activity with confident

		invisible leaks, site in inspections & leakage rate.	
d) Analysis Water Audit for Solomon Water & IWA.	A. Compile data with no assistance B. Compiling data with some assistance C. Compiling data with much assistant.	 1. Identify Solomon water component of NRW and much with IWA tables 2. Keep record of different connection types 3. Compiling tables for leakages & compare with MNF data	**B.** Progressing on this frontier , though need some more concentration miniature details of the data inputs.
e) Understand water supply cost.	A. Verified cost of NRW reduction with no difficulties. B. Verified cost of NRW reduction with some advices & training C. Verified cost of NRW	 1. Keep records of asset & materials used for each pilot sites	**B.** Need more concentration on collecting and analysis this data, but now I contributes only data and not analysis of the

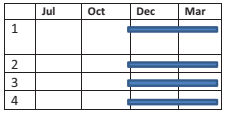
	reduction with much coaching and advice	2. Keep records of personnel used with overtimes 3. Measure plan with actual occurrence of activities Keeping daily records of NRW cost incurred.	cost.
f) Understand NRW ratio & Water Leakages.	A. Differentiate NRW ratio & Water leakage with easy B. Differentiate NRW ratio & Water leakage with advice C. Differentiate NRW ratio & Water leakage with Advice & consultation.	 1. Keep tables for customer connections 2. Collect tables for meter inaccuracy 3. Collect tables for leakages 4. Collect tables for 24 hour consumptions	**A.** Has the confidence in differentiate the NRW ratio & Leakages ratio and other NRW components in Solomon Water.
g) Completion of each pilot sites	A. One pilot site per 1.5 month B. One pilot site per 2 month C. One pilot site per 3 months D. One pilot site per > 3 month		**C.** More focus in capacity build training as begin of the year , this slows down the

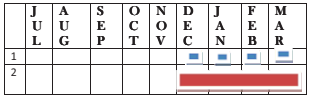
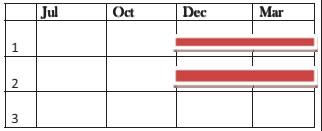
		4	implementation process as time taken to deliver lectures in office and field going through each activities with slow pace. Also bad weather begin of this year 2014 contributes a lot in the project delays.
		1. Create schedule for all activities for each pilot sites with resources and time frame 2. Do over time if possible activities is lagging 3. Liaison with each Technical sub team GIS & Hence Customer care and go through their respective actives before commencement of pilot sites	
3. Challenging target (Voluntary)			
a) Operation reporting & NRW presentation	A. Four times a year B. Three times a year C. Two times a year D. One times a year	 1. Keeping month summary on operational for monthly data 2. Presentation to all network operations & NRW teams	**B.** Some progress though, slows down due to commitments on the NRW project sites activities and Network operations as new supply boundaries are explore with the New Water source addition

b) Training on operations & NRW	A. Four per six months B. Three per six month C. Two per six month D. One per six month	 1. Network modeling basics **2.** NRW analysis Water Audit	into the Honiara Water Supply system.
4. Enlightening activities (Voluntary) a) Question and Answer session social informal sharing of experiences & lesson learnt on NRW activities on pilot sites. b) Sporting activities -	A. Once every three months B. Once every four months C. Once every six months. A. 20 times a month B. 15 times a month C. 10 times a month D. 5 time a month E. None a month	 1.0 Quiz of NRW components.  1. soccer 2. Volley ball. **3.** Walk for life	**C.** still planning this program with the Social group for Solomon Water. **C.** achieving some progress but due to to much commitment in NRW & Network operations I do not have spare time to go out and have this life saving sporting activities.

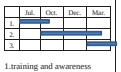
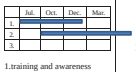
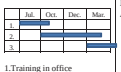
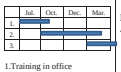
Note: Based on Capacity Assessment & Capacity Development Plan, be requested to prepare individual Action Plan.

Individual Action Plan (Challenging Program) (Mr. Austin Ata – Connection Services Team Leader) December 2013 -March 2014

Main Activities	Verifiable Indicator	Methods of Implementation	Achievement
1. Contribution to water supply Services of Solomon Water			
1.1 New Connection: ➢ Survey/assessment ➢ Costing ➢ Approval ➢ Installation ➢ Billing ➢ Report ➢ Filling/achieving **1.2 Disconnection – Illegal Service users:** ➢ Report analysis ➢ Schedule ➢ Disconnection ➢ Account validation ➢ Monitoring ➢ Report ➢ Filling/achieving **1.3 Reconnection Applications (Customers Disconnected more than 3months)** ➢ Survey/assessment ➢ Costing ➢ Approval ➢ Reconnection ➢ Account validation with billing ➢ Report ➢ Filling achieving	**1.1 New Connections:** A. 3 weeks - 100% 4 weeks – 80% C. 5 weeks – 60% D. 6 weeks – 40% E. More than 6 weeks – 20% **1.2 Disconnection – Illegal Service Users:** A. 24 hours – 100% B. 48 hours – 80% 72 hours – 60% D. 96 hours – 40% E. More than 96 hours – 20% **1.3 Reconnection Applications (Disconnections more than 3 months):** A. 2 weeks – 100% 3 weeks – 80% C. 4 weeks – 60% D. 5 weeks – 40% E. More than 5 weeks – 20%	 1. Monthly monitoring 2. Liaise with key units and sections 3. Customer feedback trend **Disconnection Illegal Users** 1. Monthly monitoring 2. Liaise with key units and sections 3. Illegal users reduction trend report **Reconnection Applications** 1. Monthly monitoring 2. Liaise with key units and sections 3. Customer feedback trend	**New Connections:** **-80%** achieved. Requires efficiency to meet set target **Disconnection Illegal Users** **-60%** achieved. Requires more attention, and proactive approach. **Reconnection Applications** **-80%** achieved. Needs a bit of efficiency to achieve set target.
1.4 Meter Management (Replacement/ repairs/relocation) 2. Regular Replacement of meter request both domestic and commercial 3. Monthly check/servicing/replacement of bulk meters 4. Timely monthly report 5. Regular supply of replacement data to meter reading team and billing 6. Regular verification of material orders	**1.4 Meter Replacement/repairs/relocation** A. 24 hours – 100% B. 48 hours – 80% 72 hours – 60% D. 96 hours – 40% E. More than 96 hours – 20%	**Meter Replacement/repairs/relocation** 1. Monthly monitoring 2. Liaise with key units and sections 3. Customer feedback trend	**Meter Replacement** **-60%** achieved due to schedule days.
2. Contribution to NRW pilot Sites			
2.1 Weekly Meeting Attendance ➢ Presentation of activity progress ➢ Reporting **2.2 Illegal Disconnection** ➢ Disconnection ➢ Monitoring ➢ Reporting	**Attendance of NRW Weekly Meeting** A. Weekly – 100% fortnightly – 80% C. Monthly – 60% D. Not at all – 40% **Monitoring of disconnected illegal water users** A. Weekly – 100% B. Fortnightly – 80% Monthly – 60% D. Not at all – 40%	 1. Prioritize key reports/activities for regular presentation at NRW meetings 2. Regular follow up with customer service for illegal disconnection status.	**NRW weekly meeting attendance** **-80%** achieved. Needs commitment to meet set target **Pilot site Monitoring** **-60%** once a month. Needs more routine

			check
3. Challenging target (Voluntary)			
1. Visiting and reporting and at the pilot sites on illegal status is key activity that must be done at the NRW meeting. 2. Reporting and verification meter raising activities at the pilot sites.	**Site Visits and reporting** A. Once a week – 100% B. Once a fortnight – 80% Once a month – 60% D. Not at all – 40% **Reporting and verification** A. Weekly – 100% Fortnightly – 80% C. Monthly – 60% D. Not at all – 40%	 1. Site visits 2. Monthly reports	- **Site Visit -60%** Needs More routine visit **Reporting and Verification -80%** needs regular reporting
4.**Enlightening activities (Voluntary)**	**Participate in organise sporting and health activities**		
	A. Weekly – 100% B. Fortnightly – 80% monthly – 60% D. Not at all -40%	 Active participation and self - assessment in the organised sports activities such as: 1. Volley ball 2. Soccer 3. And walk for life	- **60%** needs active participation on weekly basis

Individual Action Plan (Challenging Program) **Mr.silas Talosui**

Main Activities	Verifiable Indicator	Methods of Implementation	Achievement
1. Contribution to water supply service of Solomon Water			
Pipe line replacement	a. Identification of pipeline to be replaced b. Replace 2 km of pipeline c. Replace more than 10km of pipeline	 1.site visit & planning 2.Hands-on job 3.Reporting	**B. identified and replaced 2km of pipe so far.**
Pipeline maintenance and leakage & repair	A .Over 50 faults per month b. Over 20 faults per month c. Under 20 faults per month	 1.awareness 2.Hands-on job 3.Reporting	**B. faults at times are still over 20 faults per month**
Fault attendance/ attending to complains	a. Response within 1-10 days b. Response within 1- 6 days c. Response within 1-3 days	 1.training and awareness 2.Hands-on job 3.Reporting	**B. response are mostly 1-6 six, however there are cases more than 10 days.**
Make sure of safety at work.	a. Unsafe work practices b. safe work practices with high risk c. safer work practices with low risk	 1.training and awareness 2.Hands-on job 3.Reporting	**A. Work practices are still unsafe.**
Inside tank cleaning Tools, equipment & logistic supports	a. Schedule tank cleaning b. All tank cleaning c. Tank cleaning according to schedule a. Few right tools b. Right tools and logistics support	 1.planning 2.Hands-on job 3.Reporting  1.training and awareness 2.Hands-on job 3.Reporting	**a. Only scheduling has been carried out.** **B. Right tools and logistics however tools are missing all the time.**
2 Contribution to pilot project			
In order to identify causes of NRW, I will learn MNF measure and report to relevant team by March 2014. Be able to learn, apply the process and procedures involve in assessing NRW as conducted and carry out on pilot project sites	A. To be able to measure Minimum Night Flow without any advice, to make graph and report. B. To be able to measure Minimum Night Flow without any advice. C. To be able to measure Minimum Night Flow with advice a. Able to carry out process of accessing NRW with advice b. Able to carry out process without advice c. Able to advice or lead a team in assessing NRW process procedures	 1.Training in office 2.Hands-on training 3.Reporting  1.Training in office 2.Hands-on training 3.Reporting	**Not even achieved A.** **Not even achieved A**

Be able to obtain data for and carry water audit Analysis and to calculate NRW ration.	a. Work along side someone with relevant knowledge b. Able to carry out analysis with advice c. Do it without advice.	 1.Training in office 2.Hands-on training 3.Reporting	**B have knowledge to carry out water audit analysis but not carried out an exercise for a while.**
2. Challenging target (Voluntary)			
To supply water to no water areas.	**a. Supply water once a week** **b. To supply water once a day** **c. To supply water 24/7**	 1.awareness 2.improve water supply 3.Reporting	**B water supply are mostly 24/7 but few pockets are once a day.**
3. Enlightening activities (Voluntary)			
To improve water supply within honiara town			

Note: Based on

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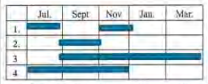
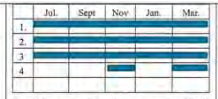
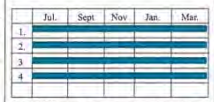
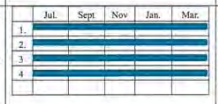
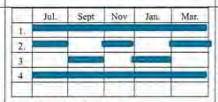
Individual Action Plan (Challenging Program) **(Mr. Mathias Bera Network Operations Team) July 2013-March 2013 Team)**

Main Activities	Verifiable Indicator	Methods of Implementation	Achievement
1. Contribution to water supply service of Solomon Water			
1) In order to contribute to Solomon Water I will work hard to ensure that all pipe installation, repair and maintenance works are done according to the required standards.	A. Supervise installation without assistance B. Supervise installation with assistance C. Not confident to Supervisor installation at all with or without assistance.	 1) On the job training 2) Hands on training 3) Reporting and evaluation.	-C- Always caught up in NRW works. Most pipe installation repair and maintenance works are done by Maintenance team. Do not have time to join them.
2) Work with network operations and creating basic network modeling for White river gravity (using EPANET)	A. 5km per month B. 3 km per month C. 2 km per month D. None per month	 1) Get pipe network features from GIS. 2) Collection data both in the field & GIS . 3) Build basic skeleton EPAnet model.	-D- Haven't got any free time to study Epanet Manual or Program.

		4) Collection of customer data – billing & other relevant source.	
2. Contribution to pilot project			
1) In order for me to fully understand NRW reduction activities I need to learn and improve my understanding on the cost of water supply.	A. Confidently collect and analysis cost of water supply without assistance B. Confidently collect and analysis cost of water supply with assistant C. Not Confident at all in collecting and analyzing cost of water supply with or without assistance	 1) Gain understanding through mini-workshops the contents that make up water supply cost. 2) Calculate water supply cost through training and close supervision. 3) Reporting and evaluation.	-C- Never actively participate in collecting and analyzing cost of water supply.
2) Understand and carry out MNF as means to work out NRW reduction measures.	A. Conduct MNF with no supervision B. Conduct MNF with		-B- Since we do not have 24/7 supply of water and pressure fluctuations the machine does sometimes play up.

	supervision C. Conduct MNF with supervision and site coaching. D. Not Confident at all to conduct MNF with or without supervision	1) Training on theoretical manual & procedures for MNF & flow meter 2) Training on MNF output in office & field 3) Field practical on MNF measurement 4) Evaluation & reporting on progress	
3) Understanding Step Test -	A. Carry out step test with no supervision B. Carry out step test with supervision C. Carry out step test with team assistance and closer supervision. D. Not confident in carrying out step test with or without supervision	 1) Picture and collect information on the network to be step tested 2) Get an understanding of the flow in each network when valves are closed which section of pipe line is record different flows. 3) Evaluated the result and report on the result of the step test.	-B- Still not feeling confident on how to set up the machine.

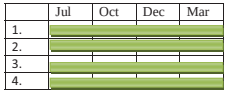
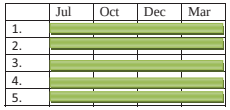
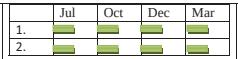
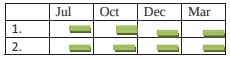
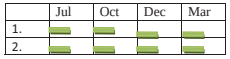
4) Understand using of leakage detection machines and methods as a media of identify leakages for NRW reduction purposes.	A. Confident in using leakage detection methods & machines without supervision B. Confident in using leakage detection methods & machines with some supervision C. Confident in using leakage detection methods & machines with much supervision D. Not confident at all to use leakage detection methods and machines with or without supervision	 1) Measurement of measure visible leaks 2) Using leakage detection equipment such as acoustics rod & electronic leak acoustics & correlator. 3) Documentation of leaks & repairs 4) Differentiate leak sounds	-C- Need more practice
5) Able to perform water audit for SW pilot sites.	A. Collect and categories components for Water Audit table for Solomon water without assistance. B. Collect and categories components for Water Audit table for Solomon water with assistance C. Not confident to collect and categories components for Water Audit table for Solomon water with or without team assistance	 1) Differentiate connection types and categories accordingly 2) Table meter accuracy table 3) Table leakage measures 4) Link SW Audit table with IWA table.	-B- Should be okay in the near future.
3. Challenging target (Voluntary)			
Presentation on Operation & NRW for pilot sites .	A. Once every two months B. Once every three months C. Once every six months	 1) Training need 2) Hands on job 3) Reporting and evaluation on experience & lesson learnt.	-C- No presentation on NRW Activities being conducted on pilot sites over the last couple of months .
4. Enlightening activities (Voluntary)			
Playing sport activities.	A. 5 times a week B. 4 times week C. 3 times a week D. 2 times a week	 1) Muscle art	-C- Depends on weather. Could go up to 5 times a week during fine weather.

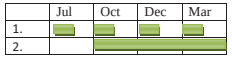
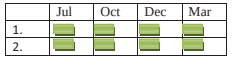
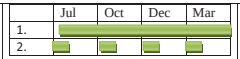
S4.5-3-10

		2) Soccer 3) Volleyball 4) Walk for life	

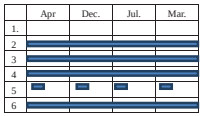
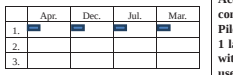
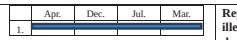
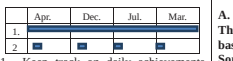
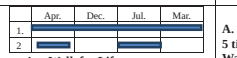
Individual Action Plan (Challenging Program) **(Mr. Frank Daukalia, NRW Technical Sub-Team Team)**

Main Activities	Verifiable Indicator	Methods of Implementation	Achievement
1. Contribution to water supply service of Solomon Water.			
1.1 Network operations	A. 24 hours water supply -100% B. 20 hours water supply – 80% C. 16 hours water supply – 60% D. 12 hours water supply – 40% E. 10 hours water supply – 20%	 1. Monitoring of Source & Storage tanks. 2. Liaison with responsible teams to fix leakage on mains, service lines etc. 3.Data of Water consumption for each HH, Block etc. 4. Liaison with source workers from each source	❖ 80% water supply daily for most parts of Honiara. Other 20% for leakages, illegal connections, poor network connections and low pressure.

2.0 Contribution to pilot project			
2.1 Isolation of Pilot Site	A. Confident in Isolation of pilot sites and confirmation of boundaries (customers) without assistance or supervision. – 100% B. Confident in Isolation of pilot sites and confirmation of boundaries (customers) with less assistance. -80% C. Not confident at all in Isolation of pilot sites and confirmation of boundaries – 10%	 1. Identify pilot sites on topographic map (GIS). 2. Confirmation of boundaries on site with assistance of field officers. 3. Confirm customer boundary with meter readers 4. Identity network features	❖ 80% done. This job requires input from some field staff and meter readers.
2.2 Customer survey	A. Differentiate customer types & classify them without any Assistance. – 100% B. Differentiate customer types & classify them with less Assistance. – 95% C. Differentiate customer types & classify them with much assistance. – 10%	 1. Confirm metered customers 2. Confirm direct line customers 3. Confirm parasite customers 4. Confirm illegal customers 5. Confirm non-exist customers etc.	❖ 95% was done. This job requires input from meter Readers and billing team.
2.3 Customer meter inaccuracy Test	A. Conduct meter inaccuracy test efficiently& compile data with confidence. – 100% B. Conduct meter inaccuracy test efficiently& compile data with less assistance. – 95% C. Conduct meter inaccuracy test efficiently& compile data with much assistance. – 10%	 1. Distinguish different types of meters & Condition. 2. Analysis conditions of meters.	❖ 95% was done. Constant time interval of 5 minutes during the meter inaccuracy test. Assistance from NRW team.
2.4 Leak detection & Compilation	A. Be able to figure out different types of leakage without any advice & compile a report. -100% B. Be able to figure out leakages With less assistance & compile report. – 90% C. Be able to figure out leakage only. – 10%	 1. Distinguish leak types and collect right information. 2. Compile of leak report	❖ 90% was done. This requires input from field staff that did leakage detection.
2.5 Step Test	A. Confidently do the setup for step test and compilation of the data without supervision. 100% B. Confidently do the setup for step test and compilation of data with less assistance-90% C. Not Confident to do the setup for step test and compilation of the data at all. -20%	 1. Hands-on training on field. 2. Installation of setup and collection of data.	❖ 90% was done. Remaining percentage needs staff to assist in order to achieve.

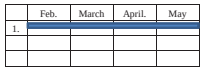
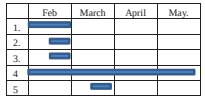
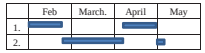
2.6 Minimum Night Flow Measurement (MNF)	A. To be able to measure Minimum Night Flow & make graph and report without assistance. -100% B. To be able to measure Minimum Night Flow & make graph and report with less assistance. – 90% C. Not able to measure Minimum Night Flow & make graph and report at all. – 0%	 1. Hands-on training on field 2. Reporting	❖ 90% was done. Need assistance from other NRW project team members.
3. 0 Challenging target (Voluntary)			
3.1 Presentation of work progress at weekly meetings.	A. Four times every month -100% B. Twice every month – 60% C. Once every month – 20% D. None at all -0% .	 1. Preparing progress. 2. Presenting at the meeting.	❖ 100% was done.NRW weekly Meeting presentations on field work progress.
4. 0 Enlightening activities (Voluntary)			
4.1 Solomon Water sports committee member □ All staff involved in sporting activities to keep them fit & healthy. □ Encourage staff to know each other well through social activities. □ Well-being of all staff	A. Zero Staff Sick leaves per month – 100% B. 5-10 Staff sick leaves per Month – 80% C. 15 Staff sick leaves per Month – 30% D. >= 16 staff sick leaves per Month – 5%	 1. Keep records of staff physical health improvements. 2. Organize weekly sporting activities.	❖ 80% of staff sick leaves per month. Need to organize sporting activities to keep staff fitness level back on track.
4.2 Sports involvement	A. Every day – 100% B. Three times a week – 80% C. Once a week – 30% D. Non per week – 0%	 1. Rugby / Soccer / Volleyball. 2. Walk for life by all SW staff.	❖ 30% of sports involvement.

Individual Action Plan (Challenging Program) **(Ms. Beverly Sa'ohu, Team Leader customer Care) April 2014 –March 2013**

Main Activities	Verifiable Indicator	Methods of Implementation	Achievement (Self-evaluation at the middle of March
1. **Contribution to water supply service of Solomon Water**			
A. Ensure that I manage the customer care department in accordance to SW regulation and policy and to enhance customers' satisfaction on deliverance of service provided by customer service staff. B. Ensure that all customers' queries are satisfactorily answered on timely manner. C. Ensure that other departments are informed quickly on customers request to ensure that services are delivered on timely manner. D. Provide weekly updates to service delivery Manager.	Consultation of SW policy/ Regulation: a. Twice a week b. Once a week c. Once a fortnight d. Once a month e. None at all Customers queries are answered a. Same hour b. Same day c. After one day d. After 3 days e. After 1 week f. Not at all Customer needs relayed to relevant department a. Same hour b. Same day c. After one day d. After 3 days e. After 1 week f. Not at all Weekly Reports a. 4 times a month b. 2 times a month	 1. Scheduling of work for customer care. 2. Managing and supervising the customer care team. 3. Weekly report writing 4. Daily meeting with customer care staff. 5. Assess staff performance 6. Meet Daily with other team heads	**B.** **To conduct meetings and ensure every customers are satisfied. I did it once a week. To ensure that customers are attended to. This is done daily when stepping in at the front counter.** **A.** **Same hour. But this depends Entirely on the nature of complaint. It can take some time if the customer issue is too complicated because we have to work closely with the other relevant departments for feedbacks. This includes customer's correspondences. And emails from customers.** **A.** **Same hour. Sometimes within a week. Depends on customers we have attended and the nature of their issue.**
	c. 1 time a month d. Not at all		**C.** **Customer care reports are produced on monthly basis to the CC & C Manager.**
E. Liaise with HR upon identifying needs of customer care staff to skill building requirements.	Skill assessment on staff a. Once a month b. Once every 6 weeks c. Once a year d. Not at all		**D.** **Not yet liaising with the HRM for training in order to build staff skills. Currently I'm doing skill assessment on staff, especially monitoring the CC staff and also working closely with them at the front counter to identify skills they need to improve on. Especially the approach and the information given to our customers. Also currently I am compiling customer suggestion and comments customers usually fill in our feedback forms that we use at the front counter.**
F. Liaise with the PR team to inform customers on important events	Public awareness a. Fortnightly basis b. Once a month c. Once every two months d. Once every 6 months e. Not at all		**I'm liaising with the PR team whenever they did awareness programs, especially during their awareness events and Radio programs; this is when they need 1 customer care representative.**
2. **Contribution to pilot project**			
• Involve in awareness programs on pilot sites.	a. Once fortnightly b. Once a month c. Once every 3 months d. Once every 6 months e. Once a year f. Not at all	 1. Prepare and Provide information to customers	**Accompany PR team when conducted awareness on Pilots sites. So far have done 1 last year at NAMORUKA, with this I prepare illegal users listing and fees they are supposed to pay. In fact we have done general customer service on that awareness day.**
• Weekly reporting of status of pilot customers to other NRW Reduction sub teams.	a. 4 times a month b. 2 times c. Once a month d. Once after 2 months e. Once after 6 months f. Not at all	 1. Keep track of customers status on daily basis	**Reports mainly on activated illegal users on pilot sites during NRW meetings. And also the feedback and the update customer research which was analyzed by WADA, We have gone through 15 pilot sites doing interview and also inputting data taken by customers.**
• Assisting customers in validating their accounts	a. The same hour b. The same day c. After 1 day d. After 1 week e. After 1 month	 1. Provide customers with proper information on SW requirements.	**A.** **This one is done on the same hour, and it depends entirely On the nature of complaints and the customers we have attended.**
3. **Challenging target (Voluntary)**			
I will present work progress at the meeting or workshop.	a. Monthly basis b. After 3 months c. After 6 Months d. After 1 year e. Not at all	 1. Keep track on daily achievements and challenges 2. Prepare monthly summary reports	**A.** **This is done on monthly basis.** **Sometimes During the NRW meetings.**
4. **Enlightening activities (Voluntary)**			
Health and fitness	**Exercise** **a. 5 times a week** **b. 3 times week** **c. 1 time a week** **d. Not at all**	 **1. Walk for Life** **2. Volley and netball**	**A.** **5 times a week.** **Walk to and from office**

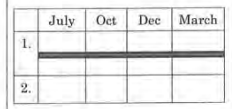
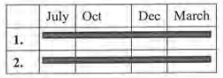
Note: Based on Capacity Assessment & Capacity Development Plan, be requested to prepare individual Action Plan

Individual Action Plan (Challenging Program) **(Mr. James Carlos Saliga | Communications Team)**

Main Activities	Verifiable Indicator	Methods of Implementation	Achievement (Self-evaluation at the middle of April
1. **Contribution to water supply service of Solomon Water**			
In order to contribute to Solomon Water, I will do work efficiently by abiding to the specific goals and objective of my unit, department and company as whole	A. 8hrs in a Working Day B. 40 Hrs in a Week C. 1600 Hrs in a Month D. 20 Hrs in overtime in a month	 1. Work key activities are scheduled into intervals which are then prioritized into order of implementation in the 5 working days in a week	Defined tasks are sometimes too many giving no room for accomplishment of all of them one time. A proper schedule of work implementation should be considered to ensure activities do not overlap each other but rather complement each other. Hence this aspect is ongoing.
2. **Contribution to pilot project**			
Ensure relevant key messages and notifications is disseminated to the pilot site areas and facilitation of appropriate research and survey essential to the full implementation of the NRW project.	A. To be able to state clearly the objectives and key functions of the project B. Be able to help the pilot site areas to know more about the NRW program, its impact and benefit to them and Solomon Water in whole C. To be able to deliver the Information, communications and awareness (ICW) materials to the pilot site areas in time and when required D. Issue of notices for illegal users with clear instructions of how to be a legal users and a genuine customer of Solomon Water. E. Conduct research and survey when required & assist in the data input of information gathered in templates prepared by the JICA expert team F. Conduct awareness when necessary or if	 1. Data input advise and hands on training in office 2. Assessment and analysis procedure for ICW material 3. Field implementation of research and survey activities 4. Communication, coordination and networking of activities prerequisite for the achievement of NRW activities in the pilot zones	The communication team had played an important role in the communication, networking and awareness of the NRW in key pilot site areas. However more needs to be done in this area to ensure people understand critically the importance of this program and be part of this improvement.
	required G. Use the radio as an medium to share the key messages and knowledge and also update of the NRW activities in different pilot sites	5. NRW basic assessment test	
3. **Challenging target (Voluntary)**			
To ensure the key messages, knowledge's, information and awareness is given on time before project commences in pilot site areas. To ensure thorough communication of NRW weekly and monthly strategies are taken heed of prior to implementation. To ensure people know about the importance of the NRW project and be part of it To be able to understand fully the technical calculations of NRW measures in different sites and be able to assess thoroughly how this has contributed to the improvement of revenue water in pilot site areas Ensure technical aspect of the NRW is made simpler for all staff and the public to understand how to manage NRW	A. Monthly B. 6 Months C. Yearly	 1. Monitoring of NRW site for implementation of project 2. Communicating and networking with the operation team, customer service team, billing team, connection team for progress of NRW activities and when communication team will be required to conduct awareness, brochure and pamphlets distributions	The challenging target detailed is the important aspect considered by the communication team in this area. Communication team should embrace more the NRW content and be able to share it more clearly with the NRW audiences. This is an ongoing task for the communication team and efforts are primarily placed in facilitating communications and awareness of this important project. Ongoing task for Comm Team as evidently more needs to be done in this area
4. **Enlightening activities (Voluntary)**			

Note: Based on Capacity Assessment & Capacity Development Plan, be requested to prepare individual Action Plan

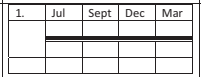
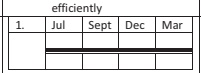
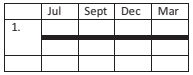
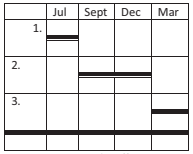
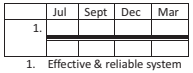
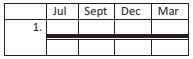
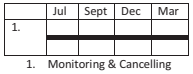
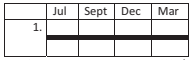
Individual Action Plan (Challenging Program) **Ms. Tango: Communication /Awareness Team**

Main Activities	Verifiable Indicator	Methods of Implementation	Achievement
1. Contribution to water supply service of Solomon Water			
- Inoder to contribute to Solomon Water, I will involve relevant departments to assist our team to do awareness in schools and communities. (Teamwork)	**A. 15hrs/one month** **B. 10hrs/ one month** **C. 8hrs/ month and overtime**	 - Good teamwork	**B.** **- Questions asked by students are mainly on the operational part of SW. Our team has involved relevant departments to assist us in our awareness programs.** **- By involving other departments we also learn a lot from them.**
2. Contribution to pilot project			
- In Oder to contribute to pilot project our team have distributed NRW pamphlets to Pilot sites and have involve other team members	**A.10 hrs. /Once a Month** **B.11hrs./ Twice a Month** **C. 9hrs./ month in overtime**		**B.** **Pamphlets was distributed to NRW Pilot Sites.**
from operations to assist in distributing the pamphlets. - Notice and Information updates posted on our Facebook page and Solomon Star News paper		-	**Notice and information updates posted on our Facebook and Solomon Star**
A. Challenging target (Voluntary)			
-			
A. Enlightening activities (Voluntary)			

Note: Based on Capacity Assessment & Capacity Development Plan, be requested to prepare individual Action Plan.

S4.5-3-13

Individual Action Plan (Challenging Program) **(Ms. Daisy Menaga, Team Leader Meter Reading)**

Main Activities	Verifiable Indicator	Methods of Implementation	Achievement (Self-evaluation at the middle of march)
1. Contribution to Water Supply service of Solomon Water			
In contribution to Solomon Water, I will do my work more effective & efficiently	A. 10hours Overtime in a month B. 20hours Overtime in a month C. 30hours Overtime in a month D. 40hours Overtime in a month	 1. Commit to work effective & efficiently	**Achieved 20hours and still working towards achieving the target of 40hours Overtime in a month**
Preparation of Monthly Work Schedule	A. Week one B. Week two C. Week three D. Week four	 1. Availability of Schedules when needed	Achieved A – all schedules were prepared at week one
Preparation of Monthly reading Schedules	A. Week one B. Week two C. Week three D. Week four	 1. Availability of monthly reading schedules.	Achieved A - all schedules needed were provided at week one
Staff Training • Computer & Device terminal training • Water tariffs & charges • Effective Communications Training • Report Writing	A. To be able to know how to use handheld devices B. To be able to read customers water meter without any advice C. Able to be answerable to customers in a proper & polite way. D. All of the Above	 1. Training in the office 2. Hands – on training 3. Reporting 4. Role play	Role Plays and trainings needed to improve capacity building and work in this phase was carried out for our team members Achieved D
Downloading & Uploading Cycle readings into NCS system	A. 50% B. 70% C. 90% D. 100%	 1. Effective & reliable system 2. Handheld devices must be in good condition 3. Extra hours overtime 4. Address issues affecting reading – Natural disturbances (rain & cyclone) & social unrest	Achieved D All reading Data were 100% done – updated in the system (Delayed update of Data resulted from natural disturbances and technical problem in the system)
Reporting	A. Once a month B. Twice a month C. Four times a month D. None	 1. Daily Reporting 2. Weekly Reporting 3. Fortnightly Reporting 4. Monthly Reporting	Achieved C Non-revenue reading and fault updates were done weekly for progress on project sites.
Team Management • Addressing team members grievances and welfare	A. Once a month B. Twice a month C. Four times a month D. None	 1. Monitoring & Cancelling 2. Assessing 3. Team work & Discipline 4. Decision Making	Achieved C Team meeting and briefing is done every week. This is to ensure that task is effectively carried out and reporting of uprising issues that might affect work performance
Team Regular Meeting • Updates • Arising Issues	1. Able to know the job and the expected outcome 2. To be able to know that the arising issues are answerable 3. Able to know what NRW is and why it is vital 4. All of the Above	 1. Improvement on Work progress 2. Good team work 3. Effective & Efficient meter reading (Accuracy)	Achieved no. 4 Team meeting for progress updates were carried out twice a week to ensure that the team know about their job and the expected outcome, identify solutions for upraising issues and have the knowledge about NRW and why it is important

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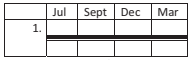
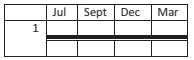
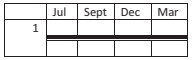
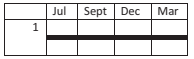
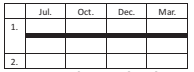
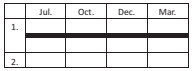
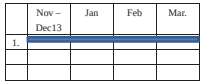
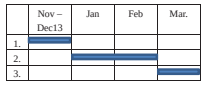
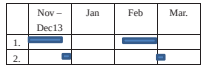
2.Contribution to pilot project			
Updating Customer information (Changes) • Meter Id's • Meter locations • Statuses	A. 50 B. 70 C. 90 D. <100	 1. Up to date customer information update 2. Efficient & Reliable system (NCS) 3. Reporting	Achieved C updating of customer information depends on the other team that verifies the Customer Information out in the field and delay of updating resulted from system problem and/or late feedback
Reporting field findings from team members to NRW Team leader	A. Twice a month B. Once a month C. On a daily basis D. None	 1. Daily 2. Weekly 3. Fortnightly 4. Monthly	Achieved B Reports are done once a month as we visit every site once every month. However, Monitoring was now done once a week.
Downloading & Uploading Cycle readings into NCS system	A. 50% B. 70% C. 90% D. 100%	 1. Effective & reliable system 2. Handheld devices must be in good condition 3. Extra hours overtime 4. Address issues affecting reading – Natural disturbances (rain & cyclone) & social unrest	Achieved D – all reading are uploaded and updated in the system
Networking	1. To be able to form a good working relationship within the sub-team members and other sub-team members	 1. Good and regular communication team 2. Team work 3. Assist is problem solving	Achieve 1 Good team work and still working to improve more on it also assisting in problem solving
Weekly Meeting • Team Update • Updating sub-teams on work progress • Issues faced	1. To be able to have a broader knowledge of NRW & its components 2. Able to know that issues faced are answerable and dealt with…	 1. Contribution to the reduction of NRW 2. Give feedbacks during NRW weekly meetings	Achieve 1 Team Meeting and meeting conducted by NRW Team Leader for the team to broaden team's knowledge on NRW. More Knowledge is acquired during this phase about NRW and its Component
3.Challenging target			
I will learn & work hard to present work progress during meetings	A. Two times per year B. one time per year C. Zero per year	 1. Preparing progress 2. Presenting at meetings or workshop	Achieve A Attended weekly meeting except when something came up or when sick

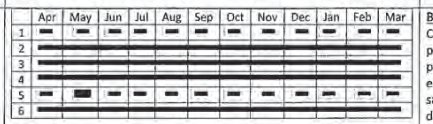
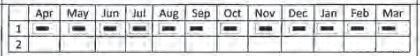
Individual Action Plan (Challenging Program) **(Mary Tafoa, NRW Customer Care Sub-Team)**

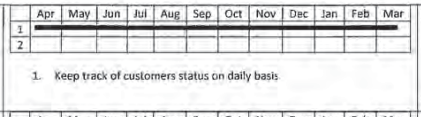
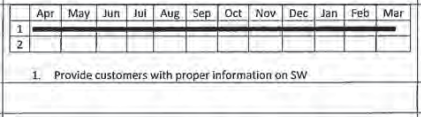
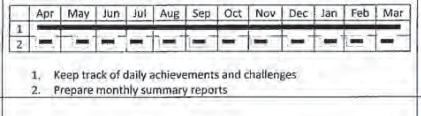
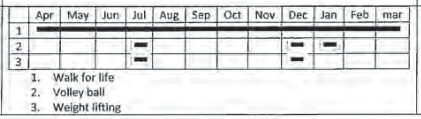
Main Activities	Verifiable Indicator	Methods of Implementation	Achievement (Self-evaluation at the middle of March
1. **Contribution to water supply service of Solomon Water**			
In order to contribute to Solomon Water, I will bill customers with accurate water meter reading, efficiently and on timely basis.	A. 10hours/month in overtime B. 15hours/month in overtime C. 20hours/month in overtime D. Over 20hours/month in overtime	 1. Do work efficiently	**B.** To bill customers on timely, accurate and consistent reading each month. Month end is the deadline so over time is given every 4th weekend to do work and last day of month after 4:30pm.
2. **Contribution to pilot project**			
In order to identify causes of NRW, beginning of each month, I will prepare customers list for the respective pilot sites: Account numbers, names, meter identification numbers, location, consumption unit/value used per month. This report will be forward to Benjamin, Frank and other relevant team members. Provide month end report to Benjamin on monthly consumption for pilot sites.	A. To be able to extract and produce water details of customers within the pilot site requested by Benjamin Billy from NCS billing system. B. To be able to monitor the monthly water consumption at the pilot site. C. To be able to report any findings (example: high water unit used, underground leakage) at the pilot site to Benjamin Billy.	 1. Training in office 2. Hands-on training 3. Reporting	**A.** I can manage to prepare customers list for pilot sites and monitor the monthly water consumption but not sort out high readings due to unable to go out to the field to identify myself.
3. **Challenging target (Voluntary)**			
	A. Two times per year B. one time per year C. Zero per year	 1. Preparing progress 2. Presenting at Workshop or meeting	- I could not request to present the work progress by myself. I was just appointed to present it by our leader once.
4. **Enlightening activities (Voluntary)**			
Joining sports/Games (SW)			

Note: Based on Capacity Assessment & Capacity Development Plan, be requested to prepare individual Action Plan

S4.5-3-15

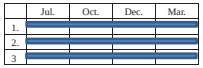
Individual Action Plan (Challenging Program) **(Ms. Mary Pidoke, Customer Care) March 2013-March 2014**

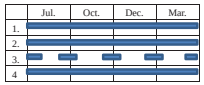
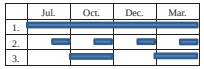
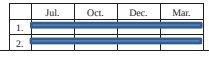
Main Activities	Verifiable Indicator	Methods of Implementation	Achievement
1. **Contribution to water supply service of Solomon Water**			
A. Ensure that I work in accordance to SW regulation and policy and to enhance customer satisfaction on deliverance of service provided by customer service staff	Consultation of SW Policy/Regulation: a. Twice a week (b.) Once a week c. Once a fortnight d. Once a month e. None at all	 1. Scheduling of work 2. Keep daily records of achievements and challenges 3. Weekly report writing 4. Daily meeting with customer care staff 5. Individual skill assessment 6. Meet daily with team head and colleagues for briefing	**B.** Currently there is no policy/regulation in placed, therefore to enhance customer satisfaction on deliverance of service provided, need to liaise with the team head and other departments
B. Ensure that all customers' queries are satisfactory answered on timely manner	Customer queries are answered a. Same hour (b.) Same day c. After one day d. After 3 days e. After 1 week f. Not at all		B Customer queries are answered depending on the nature of complaint/queries. For some can be answered right away and some depending on as soon as we get feedback
C. Ensure that other departments are informed quickly on customers request to ensure that service are delivered on timely manner	Customers needs relayed to relevant department a. Same hour (b.) Same day c. After 1 day d. After 3 days e. After 1 week f. Not at all		**B.** Other departments are informed on the same day on customer requests
D. Provide weekly updates to customer service team leader	Weekly reports a. 4 times a month b. 2 times a month (c.) 1 time a month d. Not at all		C Weekly updates is done on weekly basis
E. Ensure that I carry out personal assessment based on performance indicators outline in job descriptions	Individual skill assessment a. Once a month b. Once every 6 months c. Once a year (d.) Not at all		**D.** This was not done at all because I still did not have any Job description, since I moved to customer care
F. Liaise with PR team to inform customers on important events	Public awareness (a.) Fortnightly basis b. Once a month c. Once every 2 months d. Once every 6 months e. Not at all		A I inform customers on important events through email, face to face when customer comes in at the customer service
2. **Contribution to pilot project**			
• Involve in awareness programs on pilot sites	a. Once fortnightly b. Once a month c. Once every 3 months d. Once every 6 months (e.) Once a year f. Not at all	 1. Prepare and provide information to customers	**E.** I only attend 1 awareness program on pilot site at Namoruka and provide information to customers

• Weekly reporting of status of pilot customers to other NRW reduction sub teams	a. 4 times a month b. 2 times a month c. Once a month d. Once after 2 months e. After 6 months f. Not at all	 1. Keep track of customers status on daily basis	C. Weekly reporting was done fortnightly
• Assisting customer in validating their accounts	a. The same hour b. The same day c. After 1 day d. After 1 week e. After 1 month	 1. Provide customers with proper information on SW	B Assisting customers in validating accounts depends as soon as customer comes
3. Challenging target (voluntary)			
I will present work progress at the meeting or workshop	a. Monthly basis b. After 3 months c. After 6 months d. After 1 year e. Not at all	 1. Keep track of daily achievements and challenges 2. Prepare monthly summary reports	A I could not present work progress every time, only if I was asked to.
Enlightening activities (voluntary)			
Health and fitness	Exercise a. 5 times a week b. 3 times a week c. 1 time a week d. Not at all	 1. Walk for life 2. Volley ball 3. Weight lifting	A. I did walk every day and as for volley ball depends on our sports schedule and the weather.

S4.5-3-16

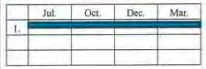
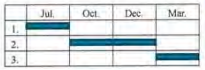
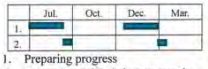
Individual Action Plan (Challenging Program) **(Mr. Gavin Bare, GIS Technician)**

Main Activities	Verifiable Indicator	Methods of Implementation	Achievement
1. Contribution to water supply service of Solomon Water			
Develop a reliable GIS database by collecting accurate data, efficiently managing and producing GIS information for SW operations. • Achieve Base Station (Improve Accuracy) • Update/Verify Field Data. • Provide GIS Reports	**Achieve Base Station By;** A. July – Sept B. Oct – Dec C. Jan – March D. None **Update/Verify field data** A. 10km/month B. 6km/month C. 2km/month D. 0km/month **Provide GIS Reports** A. Fortnightly B. Monthly C. Quarterly	 1. Field Work (Collection of Data). 2. GIS Data Managing. 3. Providing GIS Information	**Base cannot be achieved due to a possible incompatibility with the version of the TerraSync software being supplied.** **Update/Verify Field data** For the month of March alone an approximately 42km of distribution pipeline is recorded (excluding pilot sites). GIS reports weekly in NRW weekly meetings.
2. Contribution to pilot project			

• Record Leakage points locations • Update Pipe network locations • Produce relevant Maps for field work. • Record raised customer meter locations.	Update/Verify field data for NRW pilot project sites. A. 1 - 2 km/month B. 500m – 1km/month C. 100 – 500km/month	 1. Office and field training for field officer. 2. Fieldwork 3. Reporting for update weekly meetings. 4. Update GIS system.	Mbua Valley = 2km Bahai/Kukum = 1.5km Panatina = 0.9km **Total = 4.4km**
A. Challenging target (Voluntary)			
Do presentation of updated features of NRW and SW system to all staff for familiarization.	**A. Once every 2 months** **B. Once every 3 months** **C. Once every 4 months** **D. Once every 6 months** **E. Never**	 **1. Keep record of daily inputs** **2. Compile monthly summary** **3. Prepare presentation**	**E**
B. Enlightening activities (Voluntary)			
Sports Activities	**a. 5 days/week** **b. 3 days/week** **c. 1 day/week**		**C**
	d. Never	**1. Manage time properly.** **2. Proper dieting.**	

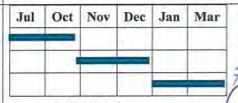
Note: Based on Capacity Assessment & Capacity Development Plan, be requested to prepare individual Action Plan.

Individual Action Plan (Challenging Program) **(Mr. Mathew Mafe, NRW Technical Sub-Team)**

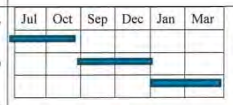
Main Activities	Verifiable Indicator	Methods of Implementation	Achievement (Self-evaluation at the middle of March
1. **Contribution to water supply service of Solomon Water**			
In order to contribute to Solomon Water, I will do work efficiently.	A. 20hours/month in overtime B. 30hours/month in overtime C. 40hours/month in overtime D. Over 40hours/month in overtime	 1. Do work efficiently	• Achieved point D which I do over 40hours/month in overtime
2. **Contribution to pilot project**			
In order to identify causes of NRW, I will learn MNF measure and report to relevant team by March 2014.	A. To be able to measure Minimum Night Flow without any advice, to make graph and report. B. To be able to measure Minimum Night Flow without any advice. C. To be able to measure Minimum Night Flow with advice	 1. Training in office 2. Hands-on training 3. Reporting	• Achieved point B which I can able to measure Minimum Night flow whit any advice
3. **Challenging target (Voluntary)**			
I will present work progress at the meeting or workshop.	A. Two times per year B. one time per year C. Zero per year	 1. Preparing progress 2. Presenting at Workshop or meeting	• Achieved point B which I finished the work progress to team leaders.
4. **Enlightening activities (Voluntary)**			

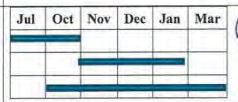
Note: Based on Capacity Assessment & Capacity Development Plan, be requested to prepare individual Action Plan.

S4.5-3-17

B. Conduct minimum night flow test.	MNF test; a) Confident with no advice. b) Confident with advice. c) Less confident.		A Have confident with no advice
C. Conduct step test.	CONDUCT STEP TEST. a) Conduct with no advice. b) Conduct with advice. c) No conduct at all.		A Have confident with to conduct step test with no advice.
3. Challenging target (Voluntary)			
a) Update and analyses data collected from project site and able to determine accurately.	A. Two times per month B. One time per month	 • Collecting data. • Determine data. • Re determines data accurately.	Team leader to create training for me to A Have confident to collect data and analyse.

Individual Action Plan (Challenging Program) **(Mr.Mathew mafe Leakage Assistant Team)**

Main Activities	Verifiable Indicator	Methods of Implementation	Achievement
1. Contribution to water supply service of Solomon Water			
a) Survey and identify the types of leaks.	A. 5 days / Week B. 3 days / Week C. 2 days / Week D. 1day/Week	 • Basic. ✓ Report visible leaks to maintenance. • Medium ✓ Listening rod.	B Reporting leaks and also using listening rod.
2. Contribution to pilot project			
A. Locating; S/lines, Main, Valves.	LOCATING; S/Lines, W/Mains, Valves. a) Confident with no advice. b) Confident with advice. c) Less confident to locate.	 • Training on project site. • Training on office. • Reporting.	A Have Confident with no advice

4. Enlightening activities (Voluntary)			
Sporting activities	A. 4 times a week B. 3 times a week C. 2 times a week D. 1 times a week E. Non in a week	 1. Playing volley 2. Playing soccer 3. Walking	A Before work and after work I'm walking back home.

Note: Based on Capacity Assessment & Capacity Development Plan, be requested to prepare individual Action Plan.

Individual Action Plan (Challenging Program) **(Mr.David Akoeasi Leakage AssistantTeam)**

Main Activities	Verifiable Indicator	Methods of Implementation	Achievement
1. Contribution to water supply service of Solomon Water			
a) Survey to visible leakage	A. 5 days / Week B. 3 days / Week C. 2 days / Week D. 1 day / Week	Jul Oct Sep Nov Dec Mar 1. Identify of different types of leak 2. Monitoring of water supply on	C. 2 Days/week, because I am not only work on Survey to visible leakage, but do other work of NRW. And also the period of time I am attending on Aptc Training.
b) Maintenance of visible leakage	A. 6 days/Week B. 5days/Week C. 4days/Week	3. main pipe line and service line of prevent leaks	C. 4 Days/Week, because I do some work on NRW like Customer Registration, Accounter measure Meter Inaccuracy. So I am not doing same work every days.
2. Contribution to pilot project			
a) Minimum Night Flow b) Step Testing c) Valve Locator	A. Minimum Night Flow ➢ Confident to do MNF without supervision ➢ With supervision ➢ Not confident at all B. Step Test ➢ Confident to do ST without supervision ➢ With supervision ➢ Not confident at all C. Valve Locator ➢ Confident to do VL without supervision ➢ With supervision ➢ Not confident at all	Jul Oct Sep Dec Jan Mar 1. Training in office 2. Hands-on training 3. Actual work or implement of sides 4. Reporting	A. With Supervision, Because I not really confident to set-up of recording data for 24 Hrs But I improve of learning of skill from supervision and network mate. B. Confident to do ST without Supervision, Because I understad of procces of ST, but I need to work hard to improve C. Confident to do VL without Supervision, But I need understand pilot side System, to know what types of material pipe is use, like I know it easy to Detect of Galvize
3. Challenging target (Voluntary)			

a) Update work progress in past month at the meeting or workshop. b) Presenting work progress at the meeting or workshop	A. Two times per month B. One time per month	Jul Oct Nov Dec Jan Mar 1. Preparing progress 2. Presenting at Work or meeting	C. Not at all, Because I on leave ~~on~~ to do Study on Aptc Training.
4. Enlightening activities (Voluntary)			
Sporting activity	**A. 15 time a month** **B. 12 times a month** **C. 8 times a month** **D. 6 time a month** **E. Non a month**	Jul Oct Nov Dec Jan Mar 1. Soccer 2. Volley ball 3. Work for life	E. Non a month.

Note: Based on Capacity Assessment & Capacity Development Plan, be requested to prepare individual Action Plan.

S4.5-3-18

A/Interview 7/05/15
Time 2pm.

Individual Action Plan (Challenging Program) for Phase-3 (Mr. Benjamin Billy NRW Technical Sub-Team)

Main Activities	Verifiable Indicator	Methods of Implementation	Achievement (Self-evaluation and reason at the middle of March 2015)	Achievement (Evaluation by Manager at the end of March 2015)
1. Contribution to Water Supply Services of Solomon Water (Essential)				
1. Presentation of system Operation to operations Team.	(A.) Once a month B. Every two month C. Once in six months D. Once a year.	Jun Jul Aug Sept Oct Nov Dec Jan Feb Mar 1. 2. 3. 1. Preparation of Hand outs 2. Presentation of system Scenarios & Changes. 3. SOP Preparation	Update of Supply Boundaries o the dash Board and hence	–
2. Revised Job Description for Network Operation Staff	A. By end of June 2014 B. By end of July 2014 C. By End of August 2014 D. By End of September 2014 (E.) Some progress in 2014	Jun Jul Aug Sept Oct Nov Dec Jan Feb Mar 1. 2. 3. 1. Create SOP for each Task for each for Network Operations 2. Involve staff on their IWP Creations. 3. Finalized and sent to HR to check and confirm with OM	Some progress. Still working on revised task &	
3. Preparation of IWP and Appraisal for Network Operations Staff.	A. By End Of June 2014 (B.) By End of July 2014 C. By End of August 2014 D. End of the September 2014 E. Some progress in 2014.	Jun Jul Aug Sept Oct Nov Dec Jan Feb Mar 1. 2. 3. 1. Create SOP for each Task for each for Network Operations 2. Involve staff on their IWP Creations. 3. Finalized and sent to HR to check and confirm with OM.	Brief IAP is created for each Staff But additional Staff Join so need to Create IWP for them	

1

2. Contribution to the Project on NRW Reduction (Essential)				
5. Completion of Pilot Sites.	A. Completion of all pilot sites by end of July 2014 B. Completion of all pilot sites by end of August 2014 (C.) Completion of all pilot sites by end of September 2014 D. Completion of all pilot sites by end of October 2014	Jun Jul Aug 1. 2. 3. 1. Bua valley & Panatina & Kukum Baha'i After counter measure activities. End of June 2. Naha 2 & 3 Counter measures end of June 2 week 3. FFA preparation & Completion begin first July to End of July 2014.	Completed by September since we also did for two pilot sites that did not achieved 30 point reductions	
7. Preparation of procedure for collecting Inventory for DMAs.	A. Preparation of Provisional DMA Inventory by end of July 2014 B. Preparation of Provisional DMA Inventory by end of August 2014 (C.) Preparation of Provisional DMA Inventory by end of September 2014 2014 D. Preparation of Provisional DMA Inventory by end of October 2014	Jun Jul Aug Sept Oct Nov Dec Jan Feb Mar 1. 2. 3. 4. 5. 1. Drawing of Proposed DMA Boundaries 2. Locating of Pipe lines 3. Liaise with Meter readers for customer locations & GIS Geo spacing. 4. Work out Production cost for each system. 5. draft of all DMA sites	Completed with Presentation with Assistant from JICA Expert Team	
8. Selection of two of two DMA for JICA project with pressure & Non Pressure Zone	A. By end of September 2014 (B.) By End of October 2014 C. By end of November 2014 D. By End of December 2014.	Jun Jul Aug Sept Oct Nov Dec Jan Feb Mar 1. 2. 3. 4. 5. 1. Drawing of Proposed DMA Boundaries	West Kola ridge A & Tasahe A & B Selected Base on a Selection Criteria with	

3

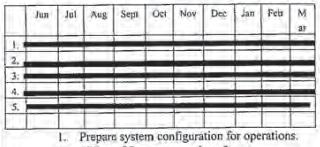
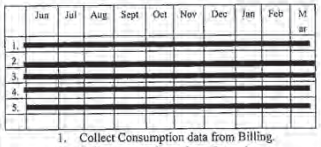
S4.5-3-19

4. Operations Monthly Report	(A.) Monthly B. Every Two Months C. Quarterly D. Every Six Months E. Once a year	Jun Jul Aug Sept Oct Nov Dec Jan Feb Mar 1. 2. 3. 1. Report on Operations Performance in terms of Service level 2. Report on production cost for each system & DMA	Producing Supply Duration to the Board every Month	
5. Dash Board – work program	A. daily B. twice a week (C.) Weekly D. fortnightly	Jun Jul Aug Sept Oct Nov Dec Jan Feb Mar 1. 2. 3. 4. 5. 1. Prepare daily work schedules 2. Task delegation to staff 3. status of System Operations 4. Highlight difficulties & strategies.	Daily & weekly	

2

		2. Locating of Pipe lines 3. Liase with Meter readers for customer locations & GIS Geo spacing. 4. carry out Base line Data 5. Document all information for base line.	High NRW	
9. organize weekly meetings	(A.) weekly meeting B. fortnightly meeting C. monthly meeting D. Quarterly meeting	Jun Jul Aug Sept Oct Nov Dec Jan Feb Mar 1. 2. 1. prepare minutes & Reporting template 2. Organize activity schedules to action plan.	Weekly NRW Meetings with Action Team Members & Hence Field Team as well.	
3. Challenging Target (Voluntary)				
10. Optimize running of Water supply operations.	A. Reduction of Pumping cost by 20% by end of September 2014 B. Reduction of Pumping cost by 20% by end of October 2014 C. Reduction of Pumping cost by 20% by end of November 2014 (D.) Reduction of pumping cost by 20% by end of December 2014.	Jun Jul Aug Sept Oct Nov Dec Jan Feb Mar 1. 2. 3. 1. Analysis electrical data(Cost) with Production 2. Monitor production every month. 3. Monitor system operations service level.	In progress though data collected Reduction for NRW for some priorities DMA need to happen before we can achieved this	
11. Prepared Operational Manual. (System Operation Scenarios)	A. By end of September 2014 B. By end of October 2014 C. By End of November. (D.) By End of December 2014	Jun Jul Aug Sept Oct Nov Dec 1. 2. 3. 1. Operational Test for system operations. 2. Collect Data for Bulk readings & Tank Level r production every month. 3. Daily check for Water Pressure for end of each	Working closely with the Operations Advice to Document this Manual	

4

		System		
12 System Operational Training for System Operational Staff.	(A) Monthly B. Once every two months C. Quarterly D. every six months	 1. Prepare system configuration for operations. 2. Filling of System operations forms. 3. SOP for system Operations 4. Pilot & DMA NRW analysis	Monthly Base work on system operations for Field Staff. But yet to work on SOP since System Operations scenario awaiting Modeling	
13 NRW monitoring for DMA/ Pilot sites	(A) once a month B. once every two months C. quarterly D. Once every six months	 1. Collect Consumption data from Billing. 2. Collect system input from Operations 3. Analysis data for NRW Components 4. Report to DMA Maintenance team & Customer service of results. 5. Get feedback and check result after these interventions.	Monthly with Tasahe A & B , West Kola ridge & Lengkiki on Daily and Monthly Bases.	
4. Self-Development or Social Action (Voluntary)				

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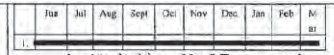
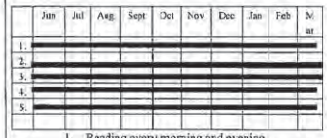
Individual Action Plan (Challenging Program) (Mr. Austin Ata Connection Services Sub-Team)

Main Activities	Verifiable Indicator	Methods of Implementation	Achievement (Self-evaluation and reason at the middle of March 2015)	Achievement (Evaluation by Manager at the end of March 2015)
1. Contribution to Water Supply Services of Solomon Water (Essential)				
1. New Connection ➢ Survey/Assessment ➢ Costing ➢ Approval ➢ Installation ➢ Verification ➢ Billing ➢ achieving	A. 3 weeks – 100% B. 4 weeks – 80% C. 5 weeks – 60% D. 6 weeks – 40%	 1. Through daily linkages with responsible team (Customer Care) and weekly plan schedule according to the dash board 2. Collective support for improvement of NC processes and time frame 3. Weekly team briefings	New Connections Achievement – (B)	
2. Meter Replacement ➢ Facilitate replacement request ➢ Approval of schedules ➢ Monthly bulk meter check and maintenance ➢ Weekly report ➢ Monthly report ➢ Billing changes Update ➢ Materials requisition sign off	A. 48 hours – 100% B. 72 hours – 80% C. 96 hours – 60% D. More than 96 hours – 40%	1. Through daily team linkages 2. Daily dash board update of Plan activities measured against actual field output 3. Weekly replacement update	Meter Replacement Achievement – (C)	

14 Muscle Art training(physical-Development)	A. Twice Weekly B. Once Weekly (C) Once fortnight D. Once a month	 1. Attend training on Mon & Tues every week.	Twice a week.	
15 Learn about Water Gems./ Modeling software (Self Development)	A. Once Weekly B. Once fortnight C. Once a month D. Once every two Months (E) Quarterly.	 1. Every Sunday 10:00am to 12:00 Doing tutorial with Mathias & 2. Reading notes & Books about modeling 3. Do practical exercises.	With Mathias for example two example done Mathias will conduct training in 2015 .	
16 Bible reading,(mental and Spiritual Development)	A. daily B. three times a week C. Twice Weekly D. Once Weekly	 1. Reading every morning and evening. 2. 30 x chapters for Saturday. 3. Write dairy for this reading completions. 4. Create schedules foe weekly reading. 5. Completed bible reading by March 2014.	Progress completed the first 5 books on of the Bible 3 charpter a day but stop since last year 2014	

Note: Based on Capacity Assessment & Capacity Development Plan , be requested to prepare Individual Action Plan.

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3. Illegal Disconnections	A. 48 hours – 100% B. 72 hours – 80% C. 96 hours – 60% D. More than 96 hours – 40%	1.Through daily team linkages 2.Daily dash board update of Plan activities measured against actual field output 3 Weekly replacement update	Illegal Disconnection Achievement (C)	
4. Connection Services Monthly Report	A. 07 Days after month end – 100% B. 12 Days after month end – 80% C. 17 days after month end – 60% D. More than 17 days after month end – 40%	1. Through daily team linkages 2.Daily dash board update of Plan activities measured against actual field output 3.Weekly replacement update	Monthly Report Achievement – (B)	
2. Contribution to the Project on NRW Reduction (Essential)				

5 NRW Weekly Meeting Attendance ➢ Presentation of pilot site and DMA activities progress ➢ Reporting update (Illegal Disconnection and Monitoring	A. Weekly – 100% B. Fortnighty - 80% C. Monthly – 60% D. More than a Month – 40%	1. Through daily team linkages 2.Daily dash board update of Plan activities measured against actual field output 3.Weekly replacement update	Weekly Attendance Achievement – (B)	
3. Challenging Target (Voluntary)				
6 Time Management ➢ Reduction of overtime work punctuality	A. Reduce Overtime/lateness by 100% B. Reduce Overtime/lateness by 80% C. Reduce Overtime/lateness by 60% D. Reduce Overtime/lateness by 40% and less	1. Through effective Dash board schedule activities: ➢ Staff attendance daily monitoring register ➢ Plan activities measured against actual activities	Time Management Achievement – (B)	
7 Self-Development or Social Action (Voluntary) Sports Fitness ➢ Weekly games ➢ Weekly walk				

Note: Based on Capacity Assessment & Capacity Development Plan be requested to prepare Individual Action Plan.

S4.5-3-21

Individual Action Plan (Challenging Program) for Phase-3 (Mr. MATHIAS BERA, NRW Technical Sub-Team)

Main Activities	Verifiable Indicator	Methods of Implementation	Achievement (Self-evaluation and reason at the middle of March 2015)	Achievement (Evaluation by Manager at the end of March 2015)
1. Contribution to Water Supply Services of Solomon Water (Essential)				
I will ensure that I start working on modeling for NORO this this year.	(A) Start October B.Start November C.Start December D.Start January 2015 E.Not start at all	Jun. Sep. Dec. Mar. 1. 2 3 1. Get pipe network features from GIS 2. Collection of data in field and GIS 3. Build Skeleton of Model using Water Gems vi8 software.		
I will make sure that I start working in Honiara model.	(A) 75% complete by March B. 60% complete by March C. 30% complete by March D. 10% complete by March E. Not start at all.	Jun Sep. Dec. Mar. 1. 2 3 1. Get pipe network features from GIS 2. Collection of data in field and GIS 3. Build Skeleton of Model using Water Gems vi8 software.		
2. Contribution to the Project on NRW Reduction (Essential)				

I will utilize my skills in modeling to regularly determine NRW in sections of SW system and also in DMA's	A.Weekly B.Fortnightly (C)Monthly D.After 3 months E.Not at all	Jul. Sep. Dec. Mar. 1. 2. 3. 1.I will make sure that I obtain the daily system input volumes through bulk meters. 2.I will analyze the data for NRW 3.I will commenicate my findings with leakage team and maintenance team to carryout site assessment and fix leaks if required to.		
3. Challenging Target (Voluntary)				
Presentation on Hydraulic Modelling Updates of Solomon Water's System.	A Once a month B Once in two months (C)Once in three months D Once in six months	1 Training need 2 Hands on 3 Reporting and evaluation on experience and lessons learnt.		
4. Self-Development or Social Action (Voluntary)				
Training MYY Karate Combat and Self Defense Martial Arts.	(A) 5 times a week B. 4 times a week C. 3 times a week D. 2 times a week	Master the basic kicking, punching/striking and blocking techniques. Go in to Basic Kata Training Go to Advance Kicking and Fighting Movements. Go to Advance Kata training.		

Note: Based on Capacity Assessment & Capacity Development Plan, be requested to prepare Individual Action Plan.

Individual Action Plan (Challenging Program) for Phase 3 (Mr/Ms. Team)

Main Activities	Verifiable Indicator	Methods of Implementation	Achievement (Self-evaluation and reason at the middle of March 2015)	Achievement (Evaluation by Manager at the end of March 2015)
1. Contribution to Water Supply Services of Solomon Water (Essential)				
2. Contribution to the Project of NRW Reduction (Essential)				
3. Challenging Target (Voluntary)				
4. Self-Development or Social Action (Voluntary)				

Note: Based on Capacity Assessment & Capacity Development Plan, be requested to prepare Individual Action Plan.

A/Interview 7/05/15
3pm

Individual Action Plan (Challenging Program) for Phase-3 (Mr. Frank Daukalia NRW Technical Sub-Team)

Main Activities	Verifiable Indicator	Methods of Implementation	Achievement (Self-evaluation and reason at the middle of March 2015)	Achievement (Evaluation by Team Leader at the end of March 2015)
1. Contribution to Water Supply Services of Solomon Water (Essential)				
1. Contribution to network operations activities for continuous water supply to customers.	A. 24 hours water supply (B.) 21 hours water supply C. 16 hours water supply D. 10 hours water supply	Jun Jul Aug Sept Oct Nov Dec Jan Feb Mar 1. 2. 3. 1. Liaison with responsible team to fix burst pipes on mains and service pipes. 2. Continuous technical support towards improvement of network system 3. Attendance on network operations meetings	• Supply to customers not 24hours due to power failure sometimes and NRW components.	
2. Technical support to field staff during field survey of new connections in Honiara and provinces	A. Carryout survey assessment with confidence & no assistance (B.) Carryout survey assessment with confidence & less assistance C. Less confidence in doing survey for new connections D. No confidence in doing survey for new connections	Jun Jul Aug Sept Oct Nov Dec Jan Feb Mar 1. 2. 3. 1. Preparation of site maps for areas to survey 2. Continuous study and familiarize with network features in the system 3. Research on ways to improve water supply network.	• The new connection feld team assists me during survey.	

1

	C. No confidence at all in supervision during isolation of pilot sites and confirmation of boundaries.	3. Confirm customer boundary with meter readers & GIS Geo spacing 4. Identify network features.	this task.	
6. Supervision of customer survey in the field and compilation of customer list.	(A.) Confident in supervision during customer survey. B. Less confidence in supervision during customer survey C. No confidence in supervision during customer survey.	Jun Jul Aug Sept Oct Nov Dec Jan Feb Mar 1. 2. 1. Confirm customer status and types with billing team, metering team and field staff. 2. Liaise with customer service and billing team.	• I am confident & have the knowledge, skills & experience to supervise this task	
7. Supervision of meter inaccuracy testing activities	(A.) Supervising of the metering test effectively and precisely with confidence B. Supervising of metering test with Less confidence. C. Supervising of metering test with no confidence.	Jun Jul Aug Sept Oct Nov Dec Jan Feb Mar 1. 2. 3. 1. Facilitate materials fittings to use for this activity. 2. Liaise with meter readers for status of meters. 3. Liaise with Meter readers for customer locations & GIS Geo spacing	• I am confident & have the knowledge, skills & experience to supervise this task	

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3. Preparation of quotations for new connections, meter separation, diversion of pipeline and sewerage installations.	(A.) Full completion of quotations and submission for payment within given timeframe B. some completion of quotations and submission within timeframe C. Late submission of quotations for payment	Jun Jul Aug Sept Oct Nov Dec Jan Feb Mar 1. 2. 3. 1. Time management to complete quotations on time 2. Continuous update of local material pricing for preparation of quotes 3. Liaise with procurement and stores team for overseas materials pricing	• I always achieved this target because it was scheduled accordingly.	
4. Attend to customer issues regarding new connections, meter separation, diversion of pipelines.	(A.) Confident and sort out customer issues with no assistance. B. Confident and sort out customer issues with some assistance. C. Less confident to sort out customer issues	Jun Jul Aug Sept Oct Nov Dec Jan Feb Mar 1. 2. 1. Good customer service skills 2. Liaise with customer care staff & other departments.	• I always confident & have the experience in sorting out customer issues on spot.	
2. Contribution to the Project on NRW Reduction (Essential)				
5. Supervision for Isolation and boundary of pilot sites.	(A.) Confident in supervision during isolation of Pilot sites and confirmation of boundaries. B. Some Confidence in supervision during isolation and confirmation of boundaries.	Jun Jul Aug Sept Oct Nov Dec Jan Feb Mar 1. 2. 3. 1. Identify Pilot sites on topographic map (GIS) 2. Confirmation of boundaries on site with assistance of field officers.	• I have the knowledge, experience & scills in supervising	

2

8. Supervision during leakage detection activities.	(A.) Well coordination and assisting leakage team. B. Some coordination and assistance to leakage team. C. Less coordination and assistance to leakage team	Jun Jul Aug Sept Oct Nov Dec Jan Feb Mar 1. 2. 1. Improve practical knowledge of using leakage equipments. 2. Continuous on job training on leakage detection techniques.	• I am confident & have the knowledge, skills & experience to assist the team.	
9. Supervision during minimum night flow at pilot sites.	(A.) Confident in step up of flow meter and supervision. B. Some confidence in step up of flow meter and supervision C. Less confidence in step up of flow meter and supervision	Jun Jul Aug Sept Oct Nov Dec Jan Feb Mar 1. 2. 3. 1. Hands –on training in the field 2. Setup installation and data analysis 3. Reporting	• I am confident & have the knowledge, skills & experience in Supervising the team.	
10. Supervision & observation during step test at pilot sites3	(A.) Confident in step up of flow meter and supervision B. Some confidence in step up of flow meter and supervision C. Less confidence in step up of flow meter and supervision	Jun Jul Aug Sept Oct Nov Dec Jan Feb Mar 1. 2. 3. 4. Hands –on training in the field 5. Setup installation and data analysis 6. Reporting	• I am confident & have the knowledge, skills & experience in Supervising the team.	

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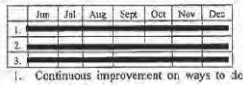
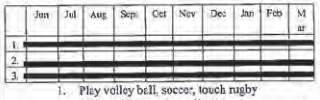
3. Challenging Target (Voluntary)					
11. Strictly monitor running of new connections service pipes > 10 meters.	A. Reduction of NRW by 20% for whole of Honiara by 2016 (B) Reduction of NRW by 40% for whole of Honiara by 2016 C. Reduction of NRW by 50% for whole of Honiara by 2016	 1. Liaise with customer care & new connection team 2. Liaise with NRW reduction team for support. 3. Proactively participate in survey for new connections.	• This will require all efforts from other teams to help reduce NRW in Honiara.	
12. Effective and precise raw data collected from the field	A. Required data collected only once within schedule. (B) Required data collected at consecutive times within schedule. C. Require data collected several times and out of schedule. D. Wrong data collected and out of schedule.	 1. Continuous improvement on ways to document data effectively. 2. Liaise with responsible teams to clear off confusions etc. 3. Update other departments with necessary data	• This activity still needs improvement by field staff and NRW action team.	

5

S4.5-3-23

4. Self-Development or Social Action (Voluntary)				
13. Walking & Jogging (physical-Development)	(A) Twice Weekly B. Once Weekly C. Once fortnight D. Once a month	 1. Walk & jog for 5km	• I am always committed in this activity.	
14. Participation in Solomon Water sports activities.(Physical - Development)	(A) Every week B. Twice a month C. Once a months D. Once after a month	 1. Play volley ball, soccer, touch rugby 2. Liaise with sports coordinator 3. Attend social gatherings	• I prioritize this activity because it's the only time every staff have fun.	

Note: Based on Capacity Assessment & Capacity Development Plan, be requested to prepare Individual Action Plan.

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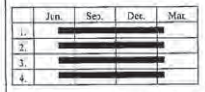
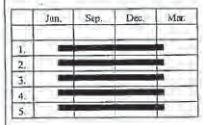
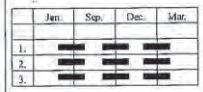
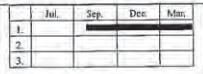
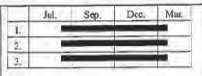
Individual Action Plan (Challenging Program) for Phase 3 (Ms. Beverly Sa'ohu, Team Leader Customer Care)

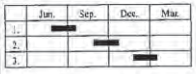
Main Activities	Verifiable Indicator	Methods of Implementation	Achievement (Self evaluation and reason at the middle of March 2015)	Achievement (Evaluation by Manager at the end of March 2015)
1. Contribution to Water Supply Services of Solomon Water (Essential)				
I will ensure that I hold a meeting with my customer care team counterparts to discuss important issues for the day that needs to be addressed and also to inform them on important information that needs to be relayed to customers on status of SW services.	A. Daily B. Once a week C. Fortnightly D. Once a month	 1. Assess outstanding customer issue at the end of each working day to be addressed on the next day 2. Liaise with other SW departments on daily basis to better improve status of services. 3. Prepare information for the daily briefing. 4. Conduct short meeting (15 minutes) before opening of customer service counter.	B. We did have a meeting once a week unless we have an urgent task to do then we might postponed.	
I will ensure that all customers complaints that comes through email and letters are opened daily, analyzed and immediately action or forwarded to relevant department for action in a timely manner. Along with this, I will ensure that I communicate customer issue on timely manner on progress of issues or complaints received to our customers.	A. Daily B. Weekly C. Fortnightly D. Monthly	 1. I will open the letter of complaint as soon as I receive it 2. I will make sure the entire customer complaints letter are analyzed properly. 3. Compile all necessary documents together with appropriate form and complaint letter and forwarded to responsible units for action. 4. Advice customer of the process that needs to take and the status or the progress of the complaint. 5. Maintain follow up on relevant units until it is solved.	A. We did that every day. But we have pending ones that caused by slow feedback on other units.	
• I will ensure that I produce the Customer care Report to the SD & C Manager.	A. Weekly B. Monthly C. Every three months D. Not at all	 1. Liaise with the customer care team members to collect information / data on progress of activity. 2. Analyze and summarized information. 3. Produce brief but relevant report out of the data.	B.	

2. Contribution to the Project of NRW Reduction (Essential)

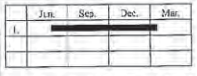
• I will make sure that I daily check the status of illegal users that have been identified within the pilot areas, if they have responded to validate their account with SW within the grace period. This information will be daily passed on to the illegal team (Under Connection services) and the NRW taskforce Leader.	A. Daily B. Weekly C. Fortnightly D. Monthly	 1. Make sure that I receive the illegal users list for pilot area on a timely manner. 2. I will check against the NCS system at each end of the day to see if payments are made. 3. I will notify my Customer care staffs on the names of the illegal users to keep an eye on them whenever they come in. 4. I will daily update NRW on status.	B.	

• I will ensure that I attend all NRW weekly meetings to inform the NRW counterparts on status of illegal users and also other information/ issues that is important to be discussed in the meeting..	A. Weekly B. Fortnightly C. Monthly D. Not at all	 1. Keep daily records of processing of issues. 2. Keep record of status of illegal users 3. Provide update in the weekly meeting.	B.	

3. Challenging Target (Voluntary)

• Ensure that I will train my junior staff to analyze and disseminate right information to customers.	A. Weekly B. Fortnightly C. Monthly D. Two times in a month	 1. Assess their need. 2. Prepare session or action plan. 3. Actual training.	B. Done in a form of briefing but currently schedule for one on one training session.	

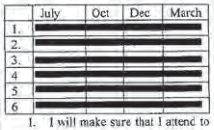
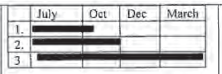
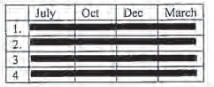
4. Self-Development or Social Action (Voluntary)

• 30 Minutes' walk in the morning and evening.	A. Daily B. Weekly C. Fortnightly **D.** Monthly	 1. Walk to keep fit and healthy always.	A.	

Note: Based on Capacity Assessment & Capacity Development Plan, be requested to prepare Individual Action Plan.

S4.5-3-24

Individual Action Plan (Challenging Program) for Phase 3 Ms Sophia Angelique Tango Team: CCC

Main Activities	Verifiable Indicator	Methods of Implementation	Achievement (Self-evaluation and reason at the middle of March 2015)	Achievement (Evaluation by Manager at the end of March 2015)
1. Contribution to Water Supply Services of Solomon Water (Essential)				
1. **Attendance to customer queries by phone and email.** I will make it my goal to ensure that all customer queries that I receive through email and phone are attended to immediately and also ensuring that the responds we provice achieve satisfaction to them.	a. Every Day b. Once in 2 days c. Once a week d. Once in every fort nigh:	 1. I will make sure that I attend to all incoming calls to SW. 2. I will make sure that I check SW email regularly and acknowledge to customer that their queries been received. 3. I will ensure that I provide correct information to customer on the spot forward to relevant staff if required. 4. I will ensure that I am in regular contact with various departments to be updated on important information for customers. 5. I will ensure that I follow up with different department on customer issues daily. 6. Replying to customers daily	a.	
2. I will make it my goal to complete all school education materials soon and start using them to provide awareness to schools in Honiara as soon as possible.	a. By end of August b. By End of September c. By End of November d. By March 2015	 1. Discuss with other SW departments on what is best to put in school education materials. 2. Produce different types of awareness mediums based on the important information including brochures, power point presentation etc. 3. Carryout schools awareness programs.	b.	
2. Contribution to the Project of NRW Reduction (Essential)				
1. I will make sure that for each weekly meeting, I must contribute the progress of PR activities in terms of NRW each week and also to gather information what PR activities is required for the week ahead.	a. Weekly b. Twice a month c. Once in three months d. Once in six months	 1. I will ensure that all PR activities proposed by NRW is carried out within the timeline before the next meeting. 2. I will prepare brief progress	a.	

		report on PR activities for NRW to be presented in the meeting. 3. I will attend meeting and present achievements. 4. I will keep continuous contact with all NRW sub teams.		
3. Challenging Target (Voluntary)				
1. I will ensure that PR team has a proper archiving system to keep all PR materials for ongoing use. 2. I will ensure that for PR activities, a representative from operation team attends to assist in giving the public correct information regarding technical questions	Achieve by: A. September B. November C. February 2015 D. Not achieved at all A. All of PR public activities B. 80% of PR public activities C. 50% of PR public activities D. 10% of PR public activities	Jul / Oct / Dec / Mar 1. ▬▬▬▬ 2. ▬▬▬▬ 1. Create database record of all PR materials 2. Proper filing system where materials are categorized based on the contents of it. Jul / Oct / Dec / Mar 1. ▬▬▬▬ 1. I must involve at all times the operation team when preparing for public awareness program	b. November	
4. Self-Development or Social Action (Voluntary) Involve in Sports to stay healthy				

Note: Based on Capacity Assessment & Capacity Development Plan, be requested to prepare Individual Action Plan.

S4.5-3-25

Individual Action Plan (Challenging Program) for Phase 4 (Mar 2014 – Mar 2015) (Ms. Daisy Rose Menaga, Meter Reading Team)

Main Activities	Verifiable Indicator	Methods of Implementation	Achievement (Self-evaluation and reason at the middle of March 2015)	Achievement (Evaluation by Manager at the end of March 2015)
1. Contribution to Water Supply Services of Solomon Water (Essential)				
I will ensure that meter reader's reading schedules are prepared daily	A. Daily B. Weekly C. Monthly D. Not at all	Jun. / Sep. / Dec. / Mar. 1. ▬▬▬▬ 1. Prepare reading schedule on a daily basis 2. Delegate preparation of reading schedules to others when required.	Achieved C Sometimes we experienced internet problem so Reading schedule was prepared monthly to avoid late reading as we use schedule + the handheld device	
Managing & Monitoring of Customer Meter Readings ✓ Ensure to avoid mistakes to make improvement	A. On a daily basis B. Once a week C. Once a month D. Not at all	Jul. / Sept. / Dec. / Mar. 1. ▬▬▬▬ 1. Ensure that Incoming customer readings are inputted and uploaded into the system on the same day	Achieved A Reading data were uploaded on the same day except when the system is down and we have to wait on IT team to fix the problem	
Attend to Customer Queries ✓ Ensure that customer queries are all attended to without exception in a timely manner	A. Within 10 days B. Within 20 days C. Within 30 days D. Not at all	Jun. / Sept. / Dec. / Mar. 1. ▬▬▬▬ 1. Ensure that all customer queries are attended to in a timely manner	Attending to Customer Queries was bit of a challenge before but now the length to respond improved a lot since when reading photos were introduced.	

Main Activities	Verifiable Indicator	Methods of Implementation	Achievement (Self-evaluation and reason at the middle of March 2015)	Achievement (Evaluation by Manager at the end of March 2015)
			Achieved A	
2. Contribution to the Project of NRW Reduction (Essential)				
Ensure attendance in NRW daily meetings by myself and/or substitute and share relevant information with team members	A.Every weekly meeting B.Twice a month C.Once in three months D.Once in six months	Jul. / Sep. / Dec. / Mar. 1. ▬▬▬▬ 2. 3. 1. I will check schedule of the weekly meeting every time and attend. 2. Share relevant information with team members	Achieved A Attended NRW daily meetings except when on annual leave and sick leave	
Conduct Monitoring of status of pilot customers	A. On a monthly basis B. Once every two months C. Once in six months D. Not at all	Jul. / Sept. / Dec. / Mar. 1. ▬▬▬▬ 1. Report update in NRW weekly meeting 2. Report To NRW Team leader	Reports were done on a monthly basis (A) based on reports done by the meter Readers	
Check to verify if Meter Information for pilot site is updated in the billing system	A. Weekly B. Twice a month C. Once in three months D. Not at all	Jul. / Sept. / Dec. / Mar. 1. ▬▬▬▬ 1. Ensure that all meter	Weekly Checks to confirm Meter updated in the system	

Main Activities	Verifiable Indicator	Methods of Implementation	Achievement (Self-evaluation and reason at the middle of March 2015)	Achievement (Evaluation by Manager at the end of March 2015)
		installation for pilot site is updated in the system 2. Report Update to NRW Team Leader		
3. Challenging Target (Voluntary)				
Create a friendly and conducive working environment for team members ✓ Clean & tidy ✓ Feel happy about their work ✓ Their own space – freedom to work and communicate with co-workers ✓ Good workplace Culture	A. July B. September C. November D. February	Jul. / Sept. / Dec. / Mar. 1. ▬▬▬▬ 1. Create a good workplace, culture and working environment for team members	Taking of reading pictures started in August 2014 and in September, we've experienced a change in our working environment. A positive change.	
4. Self-Development or Social Action (Voluntary)				
Reading of Books	A. Two per week B. 1 per week C. 1 per fortnight D. 1 per month	Jul. / Sept. / Dec. / Mar. 1. ▬▬▬▬ 1. Read good books for self development	Achieved B	
Create SW Netball Team	A. By end of July B. By end of August C. By end of September D. By end of October	Jul. / Sept. / Dec. / Mar. 1. ▬▬▬▬ 1. Create a netball team for all SW ladies	**SW Netball team was established early this year. First game played in March 2015 against Solomon Airlines Netball team**	

Note: Based on Capacity Assessment & Capacity Development Plan, be requested to prepare Individual Action Plan.

Individual Action Plan (Challenging Program) for Phase-3 (Ms. Mary Tafoa, NRW Billing Team Leader)

Main Activities	Verifiable Indicator	Methods of Implementation	Achievement (Self-evaluation and reason at the middle of March 2014)	Achievement (Evaluation by Manager at the end of March 2015)
1. Contribution to Water Supply Services of Solomon Water (Essential)				
I will ensure that I am productive in my role as a billing team leader to contact SW Province officers to email me the water meter readings each month between 22nd to 28th. Strive to achieve accuracy in Province readings when manually inputted in the system. I must also ensure that bills are sending out to Province officer as soon as I update the readings in the NCS system.	A.Receive readings every Month B.Receive readings 10 months in a year C.Receive readings twice in every 3 months D.Receive readings twice in a year Setup the indicators so that 'A' is the highest indicator.	Mar14. Sep. Dec. Mar15. 1. 2. 3. 1.I will ensure that each customer status is correct by liaise with province staff through email or contact by phone. 2. I will backdate and update accounts that use water illegally or installation of new connection was later identified. 3. I ensure reconnection fee for province accounts are shown in each account and monitor.	A	
I will ensure that meter reading schedule produced for meter readers to follow billing date range.	A.Prepare reading schedule once a month B.Prepare reading schedule every two months C.Prepare reading schedule on quarterly.		A	
I will ensure to produce water sales report, Aged debtors summary, monthly cycle report, Top 100 water users/customers for the month and other reports to Revenue coordinator(my boss) after month end rollover is in progress.	A.Produce monthly report on the first week. B.Produce monthly reports on the second week. C.Produce monthly report on the third week D.Produce monthly reports as and when required		A	
I will ensure that all disconnected customers who paid their bills and reconnection fees must be activated in the system (NCS) the following day upon receiving the hard copy customer list from the cashier.	A.Every week B.Twice a month C.Once a month		A	
I will ensure to keep the records of all bills that are dispatched to SI Postal Coorperation every month.	A.95% B.80% C.70% D.60%		B	
monitoring the daily activities of the billing section	A.80% B70% C.60% D50%		B Another 30% I delegate to my other colleagues to be responsible for.	
2. Contribution to the Project on NRW Reduction (Essential)				
I update customer information. Especially pilot sites and new DMA meter replaced and raised to higher ground was conscious about water consumption for each customer within the site after the meters being raised. Therefore, at the end of the month, I produce monthly cycle report and email to NRW team for monthly monitoring of the consumption.	A.Update 50 customers a month B.40 customers a month C.30 customers a month D.20 customers a month	Mar14. Sep. Dec. Mar15. 1. 2. 1. Updating changes of meter information. 2. Report of update data to NRW team and also water consumption for pilot site	A There are plenty DMA and therefore meter replacement input in the system per month also increases.	
3. Challenging Target (Voluntary)				

Brief meetings within our billing section as and when any issues arise and any task to be done.	A. 12 times in a year B. 10 times in a year C. 2 times in a year D. 0 meeting	Mar14. Sep. Dec. Mar15. 1. 2.	B	
4. Self-Development or Social Action (Voluntary)				
I used to walk back home after work with other ladies and participate in sports in my community.	**A. 20 hours a month** **B. 30 hours a month** **C. 40 hours a month** **D. 0**		A	

Note: Based on Capacity Assessment & Capacity Development Plan, be requested to prepare Individual Action Plan.

Individual Action Plan (Challenging Program) for Phase 3 (Ms. Roster Tinarai, Debt Collection Team)

Main Activities	Verifiable Indicator	Methods of Implementation	Achievement (Self-evaluation and reason at the middle of March 2015)	Achievement (Evaluation by Manager at the end of March 2015)
1. Contribution to Water Supply Services of Solomon Water (Essential)				
Ensure that payment plan are monitored and customers to turn up to pay on time or on due dates.	A. Daily B. Twice in a week C. Every Fortnightly D. End of each month E. Once in 2 month	June Sept Dec Mar 1. 2. 3. 1. Manually go through payment plan customer records (NCS system). 2. Remind customer by phone when pay plan fail. 3. Advice disconnection team to disconnect fail customers	B. 80 % I have done this at every end of months.	
2. Contribution to the Project of NRW Reduction (Essential)				
Provide update information on disconnections in pilot areas due to high outstanding bills.	A. Once a week B. Fortnightly C. Once in a Month D. Once in 3 Month	June Sept Dec Mar 1. 2. 3. 1. Keep records of all disconnected customers and continually cross check with pilot customers. 2. Liaise with NRW counterparts on regular basis. 3. Produce weekly data on disconnected customers on pilot areas for weekly meetings	A. 60 % doing this during the period, especially to our NRW team.	
3. Challenging Target (Voluntary)				
Ensure I collect 70 % of outstanding debts for Honiara customers	A. Twice a week B. Once a month C. Twice a month D. Once in two	Jun Sept Dec Mar 1. 2. 3.	A. I have tried my best and I rate my self	

S4.5-3-26

Main Activities	Verifiable Indicator	Methods of Implementation	Achievement (Self-evaluation and reason at the middle of March 2015)	Achievement (Evaluation by Manager at the end of March 2015)
	month	1. Deliver demand notice on selected areas door to door 2. Remind commercial customers via telephone, emails for payments. 3. Disconnect services with outstanding bills.	that I only achieve 60% or less	
4. Self-Development or Social Action (Voluntary)				
Sports – ensure I attend sport activity organize by S.WA	A. Once a week B. Twice in a month C. Once in a month D. Once in two month	Jun / Sept / Dec / Mar 1. 2. 1. liaise with the sport coordinators for activities for the week.	**B.** **40% attend to sports, need to improve on these.**	

Note: Based on Capacity Assessment & Capacity Development Plan, be requested to prepare Individual Action Plan.

S4.5-3-27

Individual Action Plan (Challenging Program) **(Ms. Mary Pidoke, Customer Care) March 2014-March 2015**

Main Activities	Verifiable Indicator	Methods of Implementation	Achievement
1. Contribution to water supply service of Solomon Water			
A. Ensure that I work in accordance to SW regulation and policy and to enhance customer satisfaction on deliverance of service provided by customer service staff	Consultation of SW Policy/Regulation: a. Twice a week b. Once a week c. Once a fortnight d. Once a month e. None at all	Apr / May / Jun / Jul / Aug / Sep / Oct / Nov / Dec / Jan / Feb / Mar 1. Scheduling of work 2. Keep daily records of achievements and challenges 3. Weekly report writing 4. Daily meeting with customer care staff 5. Individual skill assessment 6. Meet daily with team head and colleagues for briefing	**A.** Currently there is no policy/regulation in placed, therefore to enhance customer satisfaction on deliverance of service provided, need to liaise with the team head and other departments
B. Ensure that all customers' queries are satisfactory answered on timely manner	Customer queries are answered a. Same hour b. Same day c. After one day d. After 3 days e. After 1 week f. Not at all		Customer queries are answered depending on the nature of complaint/queries. For some can be answered right away and some depending on as soon as we get feedback
C. Ensure that other departments are informed quickly on customers request to ensure that service are delivered on timely manner	Customers needs relayed to relevant department a. Same hour b. Same day c. After 1 day d. After 3 days e. After 1 week f. Not at all		**B.** Other departments are informed on the same day on customer requests
D. Provide weekly updates to customer service team leader	Weekly reports: a. 4 times a month b. 2 times a month c. 1 time a month		Weekly updates is done on weekly basis

E. Ensure that I carry out personal assessment based on performance indicators outline in job descriptions	d. Not at all Individual skill assessment a. Once a month b. Once every 6 months c. Once a year d. Not at all		**D.** This was not done at all because I still did not have any job description, since I moved to customer care
F. Liaise with PR team to inform customers on important events	Public awareness a. Fortnightly basis b. Once a month c. Once every 2 months d. Once every 6 months e. Not at all		I inform customers on important events through email, face to face when customer comes in at the customer service
2. Contribution to pilot project			
• Involve in awareness programs on pilot sites	a. Once fortnightly b. Once a month c. Once every 3 months d. Once every 6 months e. Once a year f. Not at all	Apr / May / Jun / Jul / Aug / Sep / Oct / Nov / Dec / Jan / Feb / Mar 1. 2. 1. Prepare and provide information to customers	**E.** I did not attend any awareness programs on pilot sites
• Weekly reporting of status of pilot customers to other NRW reduction sub teams	a. 4 times a month b. 2 times a month c. Once a month d. Once after 2 months e. After 6 months f. Not at all	Apr / May / Jun / Jul / Aug / Sep / Oct / Nov / Dec / Jan / Feb / Mar 1. 2. 1. Keep track of customers status on daily basis	**E.** I did not do weekly reporting of status of pilot customers. I only do during Beverly's absence.
• Assisting customer in validating their accounts	a. The same hour b. The same day c. After 1 day d. After 1 week e. After 1 month	Apr / May / Jun / Jul / Aug / Sep / Oct / Nov / Dec / Jan / Feb / Mar 1. 2. 1. Provide customers with proper information on SW	Assisting customers in validating accounts depends as soon as customer comes
3. Challenging target (voluntary)			
I will present work progress at the meeting or workshop	a. Monthly basis b. After 3 months c. After 6 months	Apr / May / Jun / Jul / Aug / Sep / Oct / Nov / Dec / Jan / Feb / Mar 1.	I could not present work progress every time, only if I was asked to

	d. After 1 year e. Not at all	2 1. Keep track of daily achievements and challenges 2. Prepare monthly summary reports	
Enlightening activities (voluntary)			
Health and fitness	Exercise a. 5 times a week b. 3 times a week c. 1 time a week d. Not at all	Apr / May / Jun / Jul / Aug / Sep / Oct / Nov / Dec / Jan / Feb / mar 1. 2. 3. 1. Walk for life 2. Volley ball 3. Weight lifting	**A.** I did walk every day and as for volley ball depends on our sports schedule and the weather.

Individual Action Plan(Challenging Program) for Phase 3(Mr. GAVIN BARE, NRW Technical Sub-Team)

Main Activities	Verifiable Indicator	Methods of Implementation	Achievement (Self-evaluation and reason at the middle of March 2015)	Achievement (Evaluation by Manager at the end of March 2015)
1. Contribution to Water Supply Services of Solomon Water (Essential)				
Develop a reliable GIS database by collecting accurate data, efficiently managing and producing GIS information for SW operations. i) Update Map of Honiara Water Supply System ii) Map Customer accounts for Honiara iii) Update Map of Honiara Waste Water System iv)Develop GIS Workflow	**Update Map of Honiara Water Supply System** A. 100% B. 75% C. 50% D. 25% **Map Customer accounts for Honiara** A. Data ready for use B. Data collected and prepared C. Data collected D. No data collected **Update Map of Honiara Waste Water System** A. 100% B. 75% C. 50% D. 25% **Development of GIS Workflow** A. Workable System B. Implementation Stage C. Development Stage D. No Activity	Jan. Sep. Dec. Mar. 1. 2. 3. 4. 1. Conduct field survey to update/locate SW assets. 2. Utilize meter readers to collect data while doing their meter reading schedule. 4. Liaise between departments and JICA GIS expert team in developing workflow for GIS.		
2. Contribution to the Project of NRW Reduction (Essential)				
Continue with main activities for Pilot Sites i) Record Leakage points locations ii) Update Pipe network locations iii) Record customer meter.	Collect Field Data; A. Once a week B. Once a month C. Once every 2 months D. Once every 6 months	GPS data collected during field survey Jan. Sep. Dec. Mar. 1. 2. 1. Liaise closely with other NRW counterparts to be informed of where every system features are installed on site. 2. Collect field data.		
3. Challenging Target (Voluntary)				
Using GIS customer data to join Billing customer data to determine consumption by geographical location or supply zones in order to assist towards DMA implementation.	A. Operational B. Linking work complete but not operational. C. Linking work is still ongoing. D. Still collecting customer data.	Jan. Sep. Dec. Mar. 1. 2. 3. 4. 1. Collect customer data from field 2. Liaise with Billing and meter readers to properly verify each customer and their status. 3. Schedule into phases to ensure that work progress can be monitored. 4. Link customer data to GIS 5. Implement it as best suit requirement.		

S4.5-3-28

A/Interview 7/05/15 4pm

Individual Action Plan (Challenging Program) for Phase 3 (Mr/MATHEW MAFE, Leakage supervisor, NRW technical Team)

Main Activities	Verifiable Indicator	Methods of Implementation	Achievement (Self-evaluation and reason at the middle of March 2015)	Achievement (Evaluation by Manager at the end of March 2015)
1. Contribution to Water Supply Services of Solomon Water (Essential)				
A. I will learn how to upload data from Pressure logger, correlator and ultrasonic flow meter and then analyses the data.	a. Weekly (b) Fortnightly c. Monthly d. After two month	Jan. Sep. Dec. Mar. 1. 2. 3. 1.1 Site training 1.2 Office training. 1.3 Work shop.	A. Achieved on how to upload data but still need training on how to analyses data collected.	Recognising achievements –
B. I will train new staffs and apprentership on how to operate leakage equipment's'.	a. Once in a month b. Once in two month (c) After three month d. Once in a Semester	Jun. Sep. Dec. Mar. 1.1 1.2 1.1 Plan the training and propose to the team leader. 1.2 Select staffs need training and equipment going to be used.	B. Achieved in training staff in the field on how to operate leakage equipment.	
C. I will document reports on daily tasks and a monthly report to the team leader.	(a) Daily b. Weekly c Fortnightly d. monthly	Jul. Sep. Dec. Mar. 1.1 1.2 1.3 1.1 Prepared all report forms for field tasks. 1.2 Fill in report forms according to daily task completed 1.3 Compile monthly report folder.	C. Achieved on daily reporting but still working on monthly report.	
2. Contribution to the Project of NRW Reduction (Essential)				
A. I will mastermind how to operate the ultrasonic flow meter and the correlator.	a. Weekly (b) Fortnightly c. Monthly d. Once in two month.	Jul. Sep. Dec. Mar. 1.1 1.2 1.3 1.1 site training 1.2 office training 1.3 workshop	A. Achieved and can operate the ultrasonic with no support.	
B. I will supervise the constructors at pilot sites according to the check list.	(a) Daily b. Weekly c. Fortnightly d. Monthly	Jul. Sep. Dec. Mar. 1.1 1.2 1.3 1.1 Provide the design and measurement for the contractor. 1.2 Right materials for the task. 1.3 Proper installation is carried out.	B. Achieved and able to supervise the contractors with no help, according to the Siwa standard.	

C. I will calculate leakage lose on expose leaks from DMA.	a. Weekly b. Fortnightly (c) Monthly d. Once in two month	Jul. Sep. Dec. Mar. 1.1 1.2 1.3 1.1 Seek training from JICA expert and from team leaders. 1.2 Office training 1.3 workshop	C. Achieved and understand how to calculate leakage lose on expose leaks.	
2. Challenging Target (Voluntary)				
A. I will learn how to draw or design water utilities and related ones	a. weekly b. Monthly c. Once in two month. (d) Once in three month	Jul. Sep. Dec. Mar. 1.1 1.2. 1.3. 1.1 See responsible department to arrange training. 1.2 Seek training from expert 1.3 Office training.	A. Not achieved but still on going.	
4. Self-Development or Social Action (Voluntary)				
A. I will play table tennis	a. Daily (b) Weekly c. Fortnightly d. monthly	Jun. Sep. Dec. Mar. 1. 1.1 allocate time after official hours	A. Some times.	

Note: Based on Capacity Assessment & Capacity Development Plan, be requested to prepare Individual Action Plan.

S4.5-3-29

Individual Action Plan (Challenging Program) for Phase 3 (Mr. David Akoeasi, NRW Technical sub -Team)

Main Activities	Verifiable Indicator	Methods of implementation	Achievement (Self-evaluation and reason at the middle of March 2015)	Achievement (Evaluation by Manager at the end of March 2015)
1. Contribution to Water Supply Services of Solomon Water (Essential)				
1. Contribution to network operations activities for maintenance of leaks, and monitoring of daily water supply	(A) 24 hours water supply B. 21 hours water supply C. 15 hours water supply D. 10 hours water supply	Jul Oct Sep Nov Dec Mar 1. Responsible team to fixing service pipe, mains and valve	➢ 24hours supply to customers, but dues to failure of power or NRW activities	
2. Using of leakage detection machine for any team request for leaks assistant;	A. 5 days/week B. 3 days/week (C.) 2 days/week D. 1 days/week	Jun. Sep. Dec. Mar. 1. Identify of different types of leaks	➢ 2 days/week or survey, measuring and identify of leaks	
2. Contribution to the Project of NRW Reduction (Essential)				
2. Assistance of isolation boundary valves, installation of new valves, and to know pilot areas supply end.	(A) Confident with no supervision B. Confident with supervision C. Less confident D. No confident at	Jul. Sep. Dec. Mar. 1. 2. 1. Identify or confirms exist valves and new valves on pilot sites. 2. Confirm of customers on pilot sites	➢ Confident without supervision.	

3. Assistance of customer registration list on pilot sites, DMA	all (A) Confident with no supervision B. Confident with supervision C. Less confident D. No confident at all	Jul. Sep. Dec. Mar. 1. 1. To identify of customers status, and confirm customer accounts active or not active.	➢ Confident without supervision, I have learn knowledge and skill preferred pilot sites	
4. Assistance of testing meter inaccuracy and from customers request meter fault.	(A) Confident with no supervision. B. Confident with supervision C. Less confident D. No confident at all	Jul. Sep. Dec. Mar. 1. 2. 3. 1. Identify of inaccuracy test of meter fault	➢ Confident without supervision.	

3. Challenging Target (Voluntary)				
1. Completion of pilot sites or DMA, It challenging of old exist lines need to re locate and buried of expose pipe lines.	A. Reduction of NRW by 20% for DMA areas (B.) Reduction of NRW by 30% for DMA areas C. Reduction of NRW by 50% for DMA areas	Jul. Sep. Dec. Mar. 1. 2. 3. 1. Target to NRW reduction team For support.	➢ NRW teams require more support from all teams within operation teams	
2. Collecting of leakage photos or data from pilot sites (DMA) monitoring, to control for maintenance work.	A. Monthly (B.) Weekly C. Once/week D. Twice week	Jul. Sep. Dec. Mar. 1. 2. 3. 1. Monitoring to NRW reduction of DMA sites or areas.	➢ Weekly monitoring achieve, but still on going.	
4. Self-Development or Social Action (Voluntary)				
3. Walk for Life and usual Solomon water activities (sport).	A. every days B. Twice a week (C.) Once a week D. No day at all	Jun. Sep. Dec. Mar. 1. 1. Participate on paly soccer and volley ball.	➢ Physical fitness/health	

Note: Based on Capacity Assessment & Capacity Development Plan, be requested to prepare Individual Action Plan.

S4.7-1 無収水削減活動に係るコスト

Cost on NRW Reduction Activities at **White River - Namo Ruka (No.9)**

Tasks	Details	Amount of personnel (SBD)	Amount of Consumable (SBD)	Amount of Material & Equipment (SBD)
1. Survey of NRW ratio before countermeasures				
1.1 Preparation of network drawing		210	0	0
1.2 Field survey (Valve check, Visual leakage detection, etc)		2,584	64	0
1.3 Preparation of isolation and step test (Valve installation)		3,072	96	4,440
1.4 Preparation of customer list		236	0	0
1.5 On-site public awareness		1,219	31	0
1.6 Distribution of public awareness pamphlet		0	0	0
1.7 Connection identification and verification		3,548	64	0
1.8 Customer meter functioning check		3,548	64	0
1.9 Measurement of visibly-detected leakage		3,548	64	0
1.10 Notification letter to illegal uders		521	31	0
1.11 Customer meter reading of 24 hours consumption		1,774	64	0
1.12 MNF & Pressure measurement		3,548	64	0
1.13 Customer meter inaccuracy test (all meters)		3,548	64	0
1.14 Calculation of NRW ratio		1,608	0	0
Sub-total		**28,964**	**606**	**4,440**
2. Countermeasure				
2.1 Step test		1,774	64	0
2.2 Leakage detection		5,322	96	0
2.3 Pipe repair		7,120	259	1,545
2.4 Legalization of illegal connection		502	31	0
2.5 Disconnection of illegal connection		1,670	215	0
2.6 Customer meter raising (newly-installation/replacement)		17,800	650	16,688
Sub-total		**34,188**	**1,315**	**18,233**
3. After Countermeasure				
3.1 Customer meter reading of 24 hours consumption		1,126	64	0
3.2 MNF & Pressure measurement		3,548	64	0
3.3 Customer meter inaccuracy test (random sampling)		3,378	96	0
3.4 Calculation of NRW ratio		2,010	0	0
Sub-total		**10,062**	**224**	**0**
4. Routine Activities				
4.1 Update of drawings and attributes (GIS database)		1,050	161	0
4.2 Update of customer list		210	0	0
4.3 Update of billing system		236	0	0
Sub-total		**1,496**	**161**	**0**
Total		**74,710**	**2,306**	**22,673**

Note: Depreciation of vehicle, some pieces of equipment such as leakage detectors, pipe detectors, etc. are not included in the cost.

Cost on NRW Reduction Activities at Independence Valley (No.10)

Tasks	Details	Amount of personnel (SBD)	Amount of Consumable (SBD)	Amount of Material & Equipment (SBD)
1. Survey of NRW ratio before countermeasures				
1.1 Preparation of network drawing		210	0	0
1.2 Field survey (Valve check, Visual leakage detection, etc)		2,864	60	0
1.3 Preparation of isolation and step test (Valve installation)		7,160	385	2,664
1.4 Preparation of customer list		236	0	0
1.5 On-site public awareness		0	0	0
1.6 Distribution of public awareness pamphlet		0	0	0
1.7 Connection identification and verification		2,532	60	0
1.8 Customer meter functioning check		2,532	60	0
1.9 Measurement of visibly-detected leakage		2,864	60	0
1.10 Notification letter to illegal uders		511	29	0
1.11 Customer meter reading of 24 hours consumption		1,266	60	0
1.12 MNF & Pressure measurement		2,708	60	0
1.13 Customer meter inaccuracy test (all meters)		3,798	60	0
1.14 Calculation of NRW ratio		3,216	0	0
Sub-total		29,897	834	2,664
2. Countermeasure				
2.1 Step test		1,678	60	0
2.2 Leakage detection		3,356	60	0
2.3 Pipe repair		4,120	122	6,165
2.4 Legalization of illegal connection		0	0	0
2.5 Disconnection of illegal connection		292	29	0
2.6 Customer meter raising (newly-installation/replacement)		25,750	769	24,060
Sub-total		35,196	1,040	30,225
3. After Countermeasure				
3.1 Customer meter reading of 24 hours consumption		1,266	60	0
3.2 MNF & Pressure measurement		2,708	60	0
3.3 Customer meter inaccuracy test (random sampling)		5,064	122	0
3.4 Calculation of NRW ratio		3,618	0	0
Sub-total		12,656	242	0
4. Routine Activities				
4.1 Update of drawings and attributes (GIS database)		630	91	0
4.2 Update of customer list		210	0	0
4.3 Update of billing system		236	0	0
Sub-total		1,076	91	0
Total		78,825	2,207	32,889

Note: Depreciation of vehicle, some pieces of equipment such as leakage detectors, pipe detectors, etc. are not included in the cost.

Cost on NRW Reduction Activities at Lenggakiki (No.13)

Tasks	Details	Amount of personnel (SBD)	Amount of Consumable (SBD)	Amount of Material & Equipment (SBD)
1. Survey of NRW ratio before countermeasures				
1.1 Preparation of network drawing		210	0	9,606
1.2 Field survey (Valve check, Visual leakage detection, etc)		668	20	0
1.3 Preparation of isolation and step test (Valve installation)		5,350	104	0
1.4 Preparation of customer list		236	0	0
1.5 On-site public awareness		0	0	0
1.6 Distribution of public awareness pamphlet		913	20	0
1.7 Connection identification and verification		7,050	104	0
1.8 Customer meter functioning check		7,050	104	0
1.9 Measurement of visibly-detected leakage		5,592	83	0
1.10 Notification letter to illegal uders		414	20	0
1.11 Customer meter reading of 24 hours consumption		1,232	41	0
1.12 MNF & Pressure measurement		2,640	41	0
1.13 Customer meter inaccuracy test (all meters)		4,980	104	0
1.14 Calculation of NRW ratio		2,010	0	0
Sub-total		38,345	641	9,606
2. Countermeasure				
2.1 Step test		1,644	41	0
2.2 Leakage detection		2,796	41	0
2.3 Pipe repair		2,988	63	9,976
2.4 Legalization of illegal connection		0	0	0
2.5 Disconnection of illegal connection		292	20	0
2.6 Customer meter raising (newly-installation/replacement)		0	0	40,228
Sub-total		7,720	165	50,204
3. After Countermeasure				
3.1 Customer meter reading of 24 hours consumption		1,232	41	0
3.2 MNF & Pressure measurement		3,288	41	0
3.3 Customer meter inaccuracy test (random sampling)		996	20	0
3.4 Calculation of NRW ratio		2,010	0	0
Sub-total		7,526	102	0
4. Routine Activities				
4.1 Update of drawings and attributes (GIS database)		1,050	63	0
4.2 Update of customer list		210	0	0
4.3 Update of billing system		236	0	0
Sub-total		1,496	63	0
Total		55,087	971	59,810

Note: Depreciation of vehicle, some pieces of equipment such as leakage detectors, pipe detectors, etc. are not included in the cost.

Cost on NRW Reduction Activities at Mbokonavera-1 (No.5)

Tasks	Details	Amount of personnel (SBD)	Amount of Consumable (SBD)	Amount of Material & Equipment (SBD)
1. Survey of NRW ratio before countermeasures				
1.1 Preparation of network drawing		210	0	0
1.2 Field survey (Valve check, Visual leakage detection, etc)		699	3	0
1.3 Preparation of isolation and step test (Valve installation)		2,098	12	5,496
1.4 Preparation of customer list		236	0	0
1.5 On-site public awareness		0	0	0
1.6 Distribution of public awareness pamphlet		689	3	0
1.7 Connection identification and verification		3,340	12	0
1.8 Customer meter functioning check		3,340	12	0
1.9 Measurement of visibly-detected leakage		3,304	12	0
1.10 Notification letter to illegal uders		453	8	0
1.11 Customer meter reading of 24 hours consumption		2,227	8	0
1.12 MNF & Pressure measurement		2,293	8	0
1.13 Customer meter inaccuracy test (all meters)		2,334	12	0
1.14 Calculation of NRW ratio		1,206	0	0
Sub-total		22,429	90	5,496
2. Countermeasure				
2.1 Step test		1,347	8	0
2.2 Leakage detection		2,203	8	0
2.3 Pipe repair		2,098	36	5,007
2.4 Legalization of illegal connection		210	0	0
2.5 Disconnection of illegal connection		292	3	0
2.6 Customer meter raising (newly-installation/replacement)		12,591	89	21,635
Sub-total		18,741	144	26,642
3. After Countermeasure				
3.1 Customer meter reading of 24 hours consumption		1,871	8	0
3.2 MNF & Pressure measurement		2,047	8	0
3.3 Customer meter inaccuracy test (random sampling)		935	3	0
3.4 Calculation of NRW ratio		1,206	0	0
Sub-total		6,059	19	0
4. Routine Activities				
4.1 Update of drawings and attributes (GIS database)		840	16	0
4.2 Update of customer list		210	0	0
4.3 Update of billing system		236	0	0
Sub-total		1,286	16	0
Total		48,515	269	32,138

Note: Depreciation of vehicle, some pieces of equipment such as leakage detectors, pipe detectors, etc. are not included in the cost.

Cost on NRW Reduction Activities at Tuvaruhu-1 (No.14)

Tasks	Details	Amount of personnel (SBD)	Amount of Consumable (SBD)	Amount of Material & Equipment (SBD)
1. Survey of NRW ratio before countermeasures				
1.1 Preparation of network drawing		210	0	0
1.2 Field survey (Valve check, Visual leakage detection, etc)		1,723	37	0
1.3 Preparation of isolation and step test (Valve installation)		3,446	146	0
1.4 Preparation of customer list		236	0	0
1.5 On-site public awareness		0	0	0
1.6 Distribution of public awareness pamphlet		861	18	0
1.7 Connection identification and verification		1,723	37	0
1.8 Customer meter functioning check		1,723	37	0
1.9 Measurement of visibly-detected leakage		1,723	37	0
1.10 Notification letter to illegal uders		861	18	0
1.11 Customer meter reading of 24 hours consumption		1,097	37	0
1.12 MNF & Pressure measurement		3,019	37	0
1.13 Customer meter inaccuracy test (all meters)		3,292	55	0
1.14 Calculation of NRW ratio		2,010	0	0
Sub-total		21,924	459	0
2. Countermeasure				
2.1 Step test		1,509	37	0
2.2 Leakage detection		1,263	18	0
2.3 Pipe repair		2,584	55	0
2.4 Legalization of illegal connection		0	0	0
2.5 Disconnection of illegal connection		584	37	0
2.6 Customer meter raising (newly-installation/replacement)		7,753	168	0
Sub-total		13,693	315	0
3. After Countermeasure				
3.1 Customer meter reading of 24 hours consumption		1,097	18	0
3.2 MNF & Pressure measurement		2,371	37	0
3.3 Customer meter inaccuracy test (random sampling)		1,097	18	0
3.4 Calculation of NRW ratio		2,010	0	0
Sub-total		6,575	73	0
4. Routine Activities				
4.1 Update of drawings and attributes (GIS database)		420	37	0
4.2 Update of customer list		236	0	0
4.3 Update of billing system		236	0	0
Sub-total		892	37	0
Total		43,084	884	0

Note: Depreciation of vehicle, some pieces of equipment such as leakage detectors, pipe detectors, etc. are not included in the cost.

Cost on NRW Reduction Activities at Tuvaruhu-2 (No.15)

Tasks	Details	Amount of personnel (SBD)	Amount of Consumable (SBD)	Amount of Material & Equipment (SBD)
1. Survey of NRW ratio before countermeasures				
1.1 Preparation of network drawing		210	0	0
1.2 Field survey (Valve check, Visual leakage detection, etc)		1,723	37	0
1.3 Preparation of isolation and step test (Valve installation)		3,446	146	0
1.4 Preparation of customer list		236	0	0
1.5 On-site public awareness		0	0	0
1.6 Distribution of public awareness pamphlet		861	18	0
1.7 Connection identification and verification		1,723	37	0
1.8 Customer meter functioning check		1,723	37	0
1.9 Measurement of visibly-detected leakage		1,723	37	0
1.10 Notification letter to illegal uders		861	18	0
1.11 Customer meter reading of 24 hours consumption		1,097	37	0
1.12 MNF & Pressure measurement		3,019	37	0
1.13 Customer meter inaccuracy test (all meters)		3,292	55	0
1.14 Calculation of NRW ratio		2,010	0	0
Sub-total		21,924	459	0
2. Countermeasure				
2.1 Step test		1,509	37	0
2.2 Leakage detection		1,263	18	0
2.3 Pipe repair		2,584	55	0
2.4 Legalization of illegal connection		0	0	0
2.5 Disconnection of illegal connection		584	37	0
2.6 Customer meter raising (newly-installation/replacement)		10,338	226	0
Sub-total		16,278	373	0
3. After Countermeasure				
3.1 Customer meter reading of 24 hours consumption		1,097	18	0
3.2 MNF & Pressure measurement		2,371	37	0
3.3 Customer meter inaccuracy test (random sampling)		1,097	18	0
3.4 Calculation of NRW ratio		2,010	0	0
Sub-total		6,575	73	0
4. Routine Activities				
4.1 Update of drawings and attributes (GIS database)		420	37	0
4.2 Update of customer list		236	0	0
4.3 Update of billing system		236	0	0
Sub-total		892	37	0
Total		45,669	942	0

Note: Depreciation of vehicle, some pieces of equipment such as leakage detectors, pipe detectors, etc. are not included in the cost.

Area No.	Pilot Project Area	Pipe Distance	Number of Household	Personal Cost	Consumable Cost	Material and Equipment	Total Initial Cost Incurred
		(m)		(SBD)	(SBD)	(SBD)	(SBD)
No.14	Tuvaruhu-1	1,205.88	47	43,084	884	32,769	76,737
No.15	Tuvaruhu-2	1371.31	62	45,669	942	43,438	90,049

DEPARTMENT NAME: NRW Project Team 1 **RECEIVED BY :** Dykes
RECOMMENDED BY: Chris Meriko **ISSUED BY:** George Blamoli
REQUISITION NO: 0282 **DATE ISSUED:** 23/08/2013
JOB DESCRIPTION: Being for Required to replace Gate Valve @ Tuvaruhu pilot project sites.

Date	Materials Description	Quantity	Unit Cost	Total Cost
2013/8/23	2" Gate Valve	5	$ 310.00	$ 1,550.00
2013/8/23	50mm x 2" UPVC male valve Socket	10	$ 36.00	$ 360.00
2013/8/23	40mm Brass Gate Valve	6	$ 350.00	$ 2,100.00
2013/8/23	40mm PVC male Valve Socket	6	$ 25.00	$ 150.00
2013/8/23	40mm PVC Compression Coupling	3	$ 40.00	$ 120.00
2013/8/23	50mm PVC Compression Coupling	6	$ 49.00	$ 294.00
2013/8/23	50mm G.I Tee	4	$ 54.00	$ 216.00
2013/8/23	50mm x 40mm G.I Reduce Bush	2	$ 60.00	$ 120.00
2013/8/23	ThreadTape	30	$ 4.00	$ 120.00
2013/8/23	1" Brass Gate valve	3	$ 190.00	$ 570.00
2013/8/23	1" PVC male Valve Socket	6	$ 18.00	$ 108.00
		Total per Requisition =		**$ 5,708.00**

DEPARTMENT NAME: NRW Project Team 1 **RECEIVED BY :** John Chede
RECOMMENDED BY: Chris Meriko **ISSUED BY:** Paul Seda
REQUISITION NO: 0270 **DATE ISSUED:** 23/08/2013
JOB DESCRIPTION: Being for Replacement of old gate Valve @ Tuvaruhu pilot Project Sites.

Date	Materials Description	Quantity	Unit Cost	Total Cost
2013/8/23	1 length 50mm UPVC Pressure Pipe	1	$ 152.00	$ 152.00
2013/8/23	1 length 40mm PVC Pressure Pipe	1	$ 60.00	$ 60.00
2013/8/23	500 ml non pressure PVC pipe Glue	1	$ 42.00	$ 42.00
		Total per Requisition =		**$ 254.00**

DEPARTMENT NAME: NRW Project Team 1 **RECEIVED BY :** John Chede
RECOMMENDED BY: Silas Talosui **ISSUED BY:** George Blamoli
REQUISITION NO: 0283 **DATE ISSUED:** 24/08/2013
JOB DESCRIPTION: Being for Repair and maintenance @ Tuvaruhu pilot project sites.

Date	Materials Description	Quantity	Unit Cost	Total Cost
2013/8/24	80mm Stainless steel Clamp/Clip	4	$ 440.00	$ 1,760.00
2013/8/24	50mm x 2" male Poly Adaptor	4	$ 36.00	$ 144.00
2013/8/24	50mm Poly Coupling	4	$ 175.00	$ 700.00
2013/8/24	40mm x 1 1/2" poly male adaptor	4	$ 70.00	$ 280.00
2013/8/24	50mm x 40mm Poly Reduce Coupling	4	$ 65.00	$ 260.00
2013/8/24	ThreadTape	30	$ 4.00	$ 120.00
		Total per Requisition =		**$ 3,264.00**

DEPARTMENT NAME: NRW Project Team 1 **RECEIVED BY :** John Teno
RECOMMENDED BY: Silas Talosui **ISSUED BY:** George Blamoli
REQUISITION NO: 0284 **DATE ISSUED:** 25/08/2013
JOB DESCRIPTION: Being for preparation work for Water meter Raising @ Tuvaruhu.

Date	Materials Description	Quantity	Unit Cost	Total Cost
2013/8/25	ThreadTape	30	$ 4.00	$ 120.00
2013/8/25	20 metres 16mm poly pipe	20	$ 10.00	$ 200.00
2013/8/25	15mm Stop Cock	1	$ 41.00	$ 41.00
2013/8/25	80mm Stainless steel Clamp/Clip	3	$ 440.00	$ 1,320.00
2013/8/25	3/4" x 1/2" G.I Reducing Bush	1	$ 9.00	$ 9.00
2013/8/25	1/2" G.I Nipple	5	$ 8.00	$ 40.00
2013/8/25	3" x 3/4" Brass Tapping Saddle	1	$ 257.00	$ 257.00
		Total per Requisition =		**$ 1,987.00**

DEPARTMENT NAME: NRW Project Team 1 **RECEIVED BY :** John Teno
RECOMMENDED BY: Chris Meriko **ISSUED BY:** George Blamoli
REQUISITION NO: 0285 **DATE ISSUED:** 26/08/2013
JOB DESCRIPTION: Being for building Chamber for all Gate Valve replaced & Repaired for maintenanc

Date	Materials Description	Quantity	Unit Cost	Total Cost

2013/8/26	40 KG Bag cement	5	$ 78.00	$ 390.00
2013/8/26	20 metres 16mm poly pipe	20	$ 10.00	$ 200.00
2013/8/26	ThreadTape	10	$ 4.00	$ 40.00
2013/8/26	3 lengths 100mm (4") Pressure Pipe	3	$ 248.00	$ 744.00
		Total per Requisition =		**$ 1,374.00**

DEPARTMENT NAME: NRW Project Team 1 **RECEIVED BY :** John Chede
RECOMMENDED BY: Chris Meriko **ISSUED BY:** George Blamoli
REQUISITION NO: 0286 **DATE ISSUED:** 26/08/2013
JOB DESCRIPTION: Being for Tuvaruhu leakage test and installation of valve for Meter raising.

Date	Materials Description	Quantity	Unit Cost	Total Cost
2013/8/26	1 length 80mm UPVC Pressure Pipe (PN 12)	1	$ 189.00	$ 189.00
2013/8/26	2 litres lubricant	1	$ 319.00	$ 319.00
		Total per Requisition =		**$ 508.00**

DEPARTMENT NAME: NRW Project Team 1 **RECEIVED BY :** Moses Metea
RECOMMENDED BY: Matthaus Bara **ISSUED BY:** Paul Seda
REQUISITION NO: 0287 **DATE ISSUED:** 28/08/2013
JOB DESCRIPTION: Being for continue on Pilot Project @ Tuvaruhu Pilot site.

Date	Materials Description	Quantity	Unit Cost	Total Cost
2013/8/28	1 length 50mm UPVC Pressure Pipe	1	$ 152.00	$ 152.00
2013/8/28	1/2" G.I Nipple	1	$ 8.00	$ 8.00
2013/8/28	15mm Stop Cock	1	$ 40.00	$ 40.00
2013/8/28	2" PVC Tee	1	$ 68.00	$ 68.00
2013/8/28	2" PVC Female Valve Socket	1	$ 90.00	$ 90.00
2013/8/28	2" x 1/2" G.I Reducing Bush	1	$ 35.00	$ 35.00
		Total per Requisition =		**$ 393.00**

DEPARTMENT NAME: NRW Project team 1 **RECEIVED BY :** Dykes
RECOMMENDED BY: Benjimen Billy **ISSUED BY:** Paul Seda
REQUISITION NO: 0288 **DATE ISSUED:** 29/08/2013
JOB DESCRIPTION: Being for Continue on Replacing of Old Gate Valve @ Tuvaruhu Area.

Date	Materials Description	Quantity	Unit Cost	Total Cost
2013/8/29	1 1/4" (32mm) Brass Gate Valve	1	$ 180.00	$ 180.00
2013/8/29	32mm Compression	2	$ 29.00	$ 58.00
2013/8/29	40mm PVC Compression Coupling	3	$ 40.00	$ 120.00
2013/8/29	ThreadTape	10	$ 4.00	$ 40.00
2013/8/29	40 KG Bag cement	5	$ 78.00	$ 390.00
2013/8/29	2" G.I Tee	1	$ 54.00	$ 54.00
2013/8/29	40mm Brass Gate Valve	2	$ 350.00	$ 700.00
2013/8/29	50mm x 2" UPVC male valve Socket	1	$ 36.00	$ 36.00
2013/8/29	40mm x 25mm UPVC reduce Socket	1	$ 25.00	$ 25.00
		Total per Requisition =		**$ 1,603.00**

DEPARTMENT NAME: NRW PROJECT TEAM 1 **RECEIVED BY :** Selina
RECOMMENDED BY: Benjimen Billy **ISSUED BY:** Paul Seda
REQUISITION NO: 0290 **DATE ISSUED:** 29/08/2013
JOB DESCRIPTION: Being for Continue on Replacing & Repairing @ Tuvaruhu Pilot Site.

Date	Materials Description	Quantity	Unit Cost	Total Cost
2013/8/29	50mm PVC Compression Coupling	5	$ 49.00	$ 245.00
2013/8/29	50mm G.I Nipple	2	$ 54.00	$ 108.00
2013/8/29	50mm x 1" G.I Reducing Socket	1	$ 55.00	$ 55.00
2013/8/29	50mm x 3/4" G.I reducing Bush	2	$ 30.00	$ 60.00
2013/8/29	10 metres 20mm Poly Pipe	10	$ 16.00	$ 160.00
2013/8/29	20mm x 3/4" Poly male Adaptor	2	$ 48.00	$ 96.00
2013/8/29	20mm x 3/4" Poly female Adaptor	2	$ 48.00	$ 96.00
2013/8/29	20mm PVC Compression Coupling	2	$ 22.00	$ 44.00
2013/8/29	1" x 3/4" G.I reducing Bush	1	$ 12.00	$ 12.00
		Total per Requisition =		**$ 876.00**

DEPARTMENT NAME: NRW PROJECT TEAM 2 **RECEIVED BY :** Dykes
RECOMMENDED BY: Lawrence Iroi **ISSUED BY:** Paul Seda
REQUISITION NO: 0289 **DATE ISSUED:** 31/08/2013
JOB DESCRIPTION: Being for Continue Repair & replace of Gate Valve @ Tuvaruhu Pilot Project Site

Date	Materials Description	Quantity	Unit Cost	Total Cost
2013/8/31	ThreadTape	30	$ 4.00	$ 120.00
2013/8/31	20 metres 20mm Poly Pipe	20	$ 16.00	$ 320.00
2013/8/31	25mm x 1" Female poly Adaptor	3	$ 48.00	$ 144.00
2013/8/31	10 metres 25mm Poly Pipe	10	$ 18.00	$ 180.00
2013/8/31	3" G.I Tee	1	$ 320.00	$ 320.00
2013/8/31	3" x 2" G.I Reducing Bush	1	$ 92.00	$ 92.00
2013/8/31	40mm PVC Compression Coupling	1	$ 40.00	$ 40.00
		Total per Requisition =		**$ 1,216.00**

DEPARTMENT NAME: NRW PROJECT TEAM 1 **RECEIVED BY: John Chede**
RECOMMENDED BY : Eric Unga **ISSUED BY: Paul Seda**
REQUISITION NO: 0224 **DATE ISSUED: 01/09/2013**
JOB DESCRIPTION: Being for Repair & replace Gate valve Service @ the Pilot Project Site (Tuvaruhu

Date	Materials Description	Quantity	Unit Cost	Total Cost
2013/9/1	40mm PVC male Valve Socket	1	$ 25.00	$ 25.00
2013/9/1	40mm G.I Socket	1	$ 24.00	$ 24.00
2013/9/1	40mm x 1" G.I Reducing Nipple	1	$ 20.00	$ 20.00
2013/9/1	25mm x 1" Female poly Adaptor	1	$ 48.00	$ 48.00
2013/9/1	25mm x 1" PVC male Valve Socket	1	$ 18.00	$ 18.00
2013/9/1	25mm Plain PVC Socket	1	$ 15.00	$ 15.00
2013/9/1	20mm PVC female Adaptor	1	$ 12.00	$ 12.00
2013/9/1	1 metre 40mm PVC pressure Pipe	1	$ 40.00	$ 40.00
2013/9/1	1 metre 20mm PVC pressure Pipe	1	$ 28.00	$ 28.00
		Total per Requisition =		**$ 230.00**

DEPARTMENT NAME: NRW PROJECT TEAM 1 **RECEIVED BY: John Chede**
RECOMMENDED BY : Eric Unga **ISSUED BY: Paul Seda**
REQUISITION NO: 0223 **DATE ISSUED: 01/09/2013**
JOB DESCRIPTION: Being for Repair & replace Gate valve Service @ the Pilot Project Site (Tuvaruhu

Date	Materials Description	Quantity	Unit Cost	Total Cost
2013/9/1	25mm x 1" PVC Female Socket/adaptor	1	$ 18.00	$ 18.00
2013/9/1	25mm x 1" Poly female Adaptor	3	$ 48.00	$ 144.00
2013/9/1	25mm Poly Couping	1	$ 27.00	$ 27.00
2013/9/1	2" x 1" G.I reducing bush	1	$ 50.00	$ 50.00
2013/9/1	50mm (2") female PVC Adaptor	1	$ 90.00	$ 90.00
2013/9/1	50mm x 50mm PVC Tee	1	$ 90.00	$ 90.00
2013/9/1	50mm PVC Compression Coupling	3	$ 49.00	$ 147.00
		Total per Requisition =		**$ 566.00**

DEPARTMENT NAME: NRW PROJECT TEAM 1 **RECEIVED BY: John Chede**
RECOMMENDED BY : Eric Unga **ISSUED BY: Paul Seda**
REQUISITION NO: 0222 **DATE ISSUED: 01/09/2013**
JOB DESCRIPTION: Being for Repair & replace Gate valve and branch Service pipe @ the Pilot Projec

Date	Materials Description	Quantity	Unit Cost	Total Cost
2013/9/1	10 metres 25mm Poly Pipe	10	$ 18.00	$ 180.00
2013/9/1	Thread Tape	30	$ 4.00	$ 120.00
2013/9/1	32mm Male PVC Valve Socket	4	$ 18.00	$ 72.00
2013/9/1	32mm x 20mm G.I Reducing Socket	1	$ 18.00	$ 18.00
2013/9/1	20mm female PVC Valve Socket	1	$ 12.00	$ 12.00
2013/9/1	3/4" G.I nipple	1	$ 12.00	$ 12.00
2013/9/1	40mm PVC Plain Tee	1	$ 35.00	$ 35.00
2013/9/1	40mm PVC Female Valve Socket	3	$ 25.00	$ 75.00
2013/9/1	40mm G.I Socket	1	$ 24.00	$ 24.00
2013/9/1	40mm x 1" G.I reducing Nipple	1	$ 20.00	$ 20.00
		Total per Requisition =		**$ 568.00**

DEPARTMENT NAME: NRW PROJECT TEAM 1 **RECEIVED BY: John Chede**
RECOMMENDED BY : Eric Unga **ISSUED BY: George Blamoli**
REQUISITION NO: 0292 **DATE ISSUED: 02/09/2013**
JOB DESCRIPTION: Being for Repair & replace Gate valve @ the Pilot Project Site (Tuvaruhu) .

Date	Materials Description	Quantity	Unit Cost	Total Cost
2013/9/2	20mm Poly Coupling	2	$ 45.00	$ 90.00
2013/9/2	10 metre 20mm Pipe	10	$ 16.00	$ 160.00
2013/9/2	20mm PVC Compression Coupling	2	$ 22.00	$ 44.00
2013/9/2	1" Brass Gate valve	1	$ 190.00	$ 190.00
2013/9/2	40mm PVC male Valve Socket	3	$ 25.00	$ 75.00
2013/9/2	40mm Brass Gate Valve	1	$ 350.00	$ 350.00
2013/9/2	50mm G.I Socket	1	$ 40.00	$ 40.00
2013/9/2	40mm G.I Socket	1	$ 24.00	$ 24.00
2013/9/2	50mm x 2" UPVC male valve Socket	1	$ 36.00	$ 36.00
2013/9/2	50mm x 25mm Poly Reduce Bush	1	$ 13.00	$ 13.00
2013/9/2	40mm x 20mm Poly Reduce Bush	1	$ 9.00	$ 9.00
		Total per Requisition =		**$ 1,031.00**

DEPARTMENT NAME: NRW PROJECT TEAM 2 **RECEIVED BY: David .A**
RECOMMENDED BY : Eric Unga **ISSUED BY: Paul Seda**
REQUISITION NO: 0233 **DATE ISSUED: 10/09/2013**
JOB DESCRIPTION: Being for continue meter raising @ Tuvaruhu Pilot Site.
Meter LD 13B019404 – 408(5 pieces),13B019509 –513(5 pieces),13B019434 – 438(5 pieces),
Meter LD 13B019444– 448(5 pieces),13B019499 –503(5 pieces),13B019664 – 668(5 pieces),
Meter LD 13B019474 – 478(5pieces),13B019489 – 493(5 pieces),13B019579 – 583 & 13B019429 –

Date	Materials Description	Quantity	Unit Cost	Total Cost
2013/9/10	20mm Water Meter	50	$ 394.00	$ 19,700.00
2013/9/10	20mm Stop Cock	40	$ 65.00	$ 2,600.00
2013/9/10	3/4" G.I nipple	40	$ 12.00	$ 480.00
2013/9/10	15mm G.I elbow	120	$ 12.00	$ 1,440.00
2013/9/10	3/4" x 1/2" G.I Reducing Socket	20	$ 12.00	$ 240.00
2013/9/10	16mm x 1/2" female poly Adaptor	80	$ 45.00	$ 3,600.00
2013/9/10	ThreadTape	20	$ 4.00	$ 80.00
		Total per Requisition =		**$28,140.00**

DEPARTMENT NAME: NRW PROJECT TEAM 1 **RECEIVED BY: Dykes**
RECOMMENDED BY : Natheniel Legu (for Eric) **ISSUED BY: George Blamoli**
REQUISITION NO: 0502 **DATE ISSUED: 12/09/2013**
JOB DESCRIPTION: Being for Measuring flow in Meters/meter testing .
Meter LD 13B019357,13B019358

Date	Materials Description	Quantity	Unit Cost	Total Cost
2013/9/12	20mm Water Meter	2	$ 394.00	$ 788.00
2013/9/12	20mm x 1/2" female Threaded Adaptor	2	$ 13.00	$ 26.00
2013/9/12	20mm x 3/4" Poly female Adaptor	2	$ 48.00	$ 96.00
2013/9/12	16mm Poly Coupling	1	$ 45.00	$ 45.00
2013/9/12	20mm Poly Coupling	1	$ 45.00	$ 45.00
		Total per Requisition =		**$ 1,000.00**

DEPARTMENT NAME: NRW PROJECT TEAM 1 **RECEIVED BY: Celina**
RECOMMENDED BY : Benjimen Billy **ISSUED BY: Paul Seda**
REQUISITION NO: 0117 **DATE ISSUED: 16/09/2013**
JOB DESCRIPTION: Being for Meter raising @ Tuvaruhu Pilot Site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
2013/9/16	ThreadTape	30	$ 4.00	$ 120.00
2013/9/16	10mm Steel Rods	10	$ 68.00	$ 680.00
2013/9/16	Hack Saw blade	3	$ 10.00	$ 30.00
		Total per Requisition =		**$ 830.00**

DEPARTMENT NAME: NRW PROJECT TEAM 1 **RECEIVED BY: Teno**
RECOMMENDED BY : Eric Unga **ISSUED BY: Paul Seda**
REQUISITION NO: 0503 **DATE ISSUED: 20/09/2013**
JOB DESCRIPTION: Being for Meter raising @ Tuvaruhu Pilot Site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
2013/9/20	20mm x 16mm Poly Reduce Coupling	10	$ 56.00	$ 560.00
2013/9/20	16mm Poly Coupling	10	$ 45.00	$ 450.00
2013/9/20	16mm x 1/2" female poly Adaptor	10	$ 45.00	$ 450.00
2013/9/20	16mm x 1/2" male Poly Adaptor	10	$ 45.00	$ 450.00
2013/9/20	30 metres 16mm poly pipe	30	$ 10.00	$ 300.00
2013/9/20	ThreadTape	20	$ 4.00	$ 80.00
2013/9/20	20mm x 1/2" Poly female Adaptor	2	$ 40.00	$ 80.00
		Total per Requisition =		**$ 2,370.00**

DEPARTMENT NAME: NRW PROJECT TEAM 1 **RECEIVED BY: David .A.**
RECOMMENDED BY : Eric Unga **ISSUED BY: Paul Seda**
REQUISITION NO: 0295 **DATE ISSUED: 23/09/2013**
JOB DESCRIPTION: Being for Meter raising @ Tuvaruhu Pilot Site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
2013/9/23	40 KG Bag cement	6	$ 78.00	$ 468.00
2013/9/23	30 metres 16mm poly pipe	30	$ 10.00	$ 300.00
		Total per Requisition =		**$ 768.00**

DEPARTMENT NAME: NRW PROJECT TEAM 1 **RECEIVED BY: J.Teno**
RECOMMENDED BY : M. Bera **ISSUED BY: Paul Seda**
REQUISITION NO: 0294 **DATE ISSUED: 24/09/2013**
JOB DESCRIPTION: Being for Meter raising @ Tuvaruhu Pilot Site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
2013/9/24	40 KG Bag cement	6	$ 78.00	$ 468.00
2013/9/24	30 metres 16mm poly pipe	30	$ 10.00	$ 300.00
		Total per Requisition =		**$ 768.00**

DEPARTMENT NAME: NRW PROJECT TEAM 1 **RECEIVED BY: J.Teno**
RECOMMENDED BY : Eric Unga **ISSUED BY: Paul Seda**
REQUISITION NO: 0296 **DATE ISSUED: 24/09/2013**
JOB DESCRIPTION: Being for Meter raising @ Tuvaruhu Pilot Site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
2013/9/24	50 metres 16mm poly pipe	50	$ 10.00	$ 500.00
2013/9/24	16mm x 1/2" female poly Adaptor	10	$ 45.00	$ 450.00
2013/9/24	16mm x 1/2" male Poly Adaptor	10	$ 45.00	$ 450.00
		Total per Requisition =		**$ 1,400.00**

DEPARTMENT NAME: NRW PROJECT TEAM 1 **RECEIVED BY: David Akoeasi**
RECOMMENDED BY : Eric Unga **ISSUED BY: Paul Seda**
REQUISITION NO: 0504 **DATE ISSUED: 26/09/2013**
JOB DESCRIPTION: Being for preparation of Meter raising @ Tuvaruhu Pilot Site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
2013/9/26	15mm G.I elbow	40	$ 12.00	$ 480.00
2013/9/26	ThreadTape	20	$ 4.00	$ 80.00
2013/9/26	16mm x 1/2" female poly Adaptor	20	$ 45.00	$ 900.00
		Total per Requisition =		**$ 1,460.00**

DEPARTMENT NAME: NRW PROJECT TEAM 1 **RECEIVED BY: Dyes**
RECOMMENDED BY : Benjimen Billy **ISSUED BY: Paul Seda**
REQUISITION NO: 0298 **DATE ISSUED: 26/09/2013**
JOB DESCRIPTION: Being for preparation of Meter raising @ Tuvaruhu Pilot Site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
2013/9/26	50 metre 20mm Pipe	50	$ 16.00	$ 800.00
2013/9/26	30 metres 16mm poly pipe	30	$ 10.00	$ 300.00
2013/9/26	20mm x 1/2" Poly male Adaptor	1	$ 40.00	$ 40.00

Date	Materials Description	Quantity	Unit Cost	Total Cost
2013/9/26	20mm x 16mm Poly Reduce Coupling	1	$ 56.00	$ 56.00
		Total per Requisition =		$ 1,196.00

DEPARTMENT NAME: NRW PROJECT TEAM 1 — **RECEIVED BY:** Teno
RECOMMENDED BY : Benjimen Billy — **ISSUED BY:** Paul Seda
REQUISITION NO: 0299 — **DATE ISSUED:** 27/09/2013
JOB DESCRIPTION: Being for preparation of Meter raising @ Tuvaruhu Pilot Site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
2013/9/27	30 metres 16mm poly pipe	30	$ 10.00	$ 300.00
2013/9/27	40 KG Bag cement	6	$ 78.00	$ 468.00
2013/9/27	16mm x 1/2″ female poly Adaptor	10	$ 45.00	$ 450.00
2013/9/27	16mm x 1/2″ male Poly Adaptor	10	$ 45.00	$ 450.00
2013/9/27	16mm Poly Coupling	10	$ 45.00	$ 450.00
		Total per Requisition =		$ 2,118.00

DEPARTMENT NAME: NRW PROJECT TEAM 1 — **RECEIVED BY:** David Akoeasi
RECOMMENDED BY : Eric Unga — **ISSUED BY:** Paul Seda
REQUISITION NO: 0505 — **DATE ISSUED:** 27/09/2013
JOB DESCRIPTION: Being for preparation of Meter raising @ Tuvaruhu Pilot Site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
2013/9/27	3/4″ G.I nipple	20	$ 12.00	$ 240.00
2013/9/27	20mm Stop Cock	10	$ 168.00	$ 1,680.00
2013/9/27	15mm G.I elbow	20	$ 12.00	$ 240.00
2013/9/27	16mm x 1/2″ female poly Adaptor	20	$ 45.00	$ 900.00
2013/9/27	ThreadTape	20	$ 4.00	$ 80.00
		Total per Requisition =		$ 3,140.00

DEPARTMENT NAME: NRW PROJECT TEAM 1 — **RECEIVED BY:** John Teno
RECOMMENDED BY : Benjimen Billy — **ISSUED BY:** Paul Seda
REQUISITION NO: 0300 — **DATE ISSUED:** 29/09/2013
JOB DESCRIPTION: Being for preparation of Meter raising @ Tuvaruhu Pilot Site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
2013/9/29	40 KG Bag cement	6	$ 78.00	$ 468.00
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2013/9/29	15mm G.I elbow	40	$ 12.00	$ 480.00
2013/9/29	1/2″ G.I Socket	20	$ 10.00	$ 200.00
2013/9/29	40 metres 16mm poly pipe	40	$ 10.00	$ 400.00
2013/9/29	16mm x 1/2″ female poly Adaptor	5	$ 45.00	$ 225.00
2013/9/29	16mm x 1/2″ male Poly Adaptor	5	$ 45.00	$ 225.00
		Total per Requisition =		$ 1,998.00

DEPARTMENT NAME: NRW PROJECT TEAM 1 — **RECEIVED BY:** David Akoeasi
RECOMMENDED BY : Benjimen Billy — **ISSUED BY:** Paul Seda
REQUISITION NO: 0506 — **DATE ISSUED:** 30/09/2013
JOB DESCRIPTION: Being for preparation of Meter raising @ Tuvaruhu 2 Pilot Site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
2013/9/30	10mm Steel Rods	6	$ 68.00	$ 408.00
2013/9/30	ThreadTape	40	$ 4.00	$ 160.00
2013/9/30	20mm Stop Cock	15	$ 168.00	$ 2,520.00
2013/9/30	3/4″ G.I nipple	10	$ 12.00	$ 120.00
2013/9/30	15mm G.I elbow	20	$ 12.00	$ 240.00
2013/9/30	16mm x 1/2″ female poly Adaptor	10	$ 45.00	$ 450.00
		Total per Requisition =		$ 3,898.00

DEPARTMENT NAME: NRW PROJECT TEAM 1 — **RECEIVED BY:** Dykes
RECOMMENDED BY : Eric Unga — **ISSUED BY:** Paul Seda
REQUISITION NO: 0506 — **DATE ISSUED:** 30/09/2013
JOB DESCRIPTION: Being for preparation of Meter raising @ Tuvaruhu 2 Pilot Site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
2013/9/30	50 metres 16mm poly pipe	50	$ 10.00	$ 500.00
2013/9/30	40 KG Bag cement	4	$ 78.00	$ 312.00
2013/9/30	16mm x 1/2″ female poly Adaptor	20	$ 45.00	$ 900.00
2013/9/30	25mm x 3/4″ x 25mm Poly female threaded Te	3	$ 36.00	$ 108.00
2013/9/30	1/2″ Poly Nipple	10	$ 3.00	$ 30.00
2013/9/30	3/4 x 1/2″ Poly Reducing Bush	3	$ 5.50	$ 16.50
		Total per Requisition =		$ 1,866.50

DEPARTMENT NAME: NRW PROJECT TEAM 1 — **RECEIVED BY:** Celina
RECOMMENDED BY : Eric Unga — **ISSUED BY:** Paul Seda
REQUISITION NO: 2452 — **DATE ISSUED:** 30/09/2013
JOB DESCRIPTION: Being for preparation of Meter raising @ Tuvaruhu 2 Pilot Site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
2013/9/30	15mm G.I elbow	20	$ 12.00	$ 240.00
		Total per Requisition =		$ 240.00

DEPARTMENT NAME: NRW PROJECT TEAM 1 — **RECEIVED BY:** John Teno
RECOMMENDED BY : Eric Unga — **ISSUED BY:** Paul Seda
REQUISITION NO: 0507 — **DATE ISSUED:** 04/09/2013
JOB DESCRIPTION: Being for Meter Raising @ the Pilot Project Site (Tuvaruhu) .

Date	Materials Description	Quantity	Unit Cost	Total Cost
2013/10/4	40 metres 20mm Poly Pipe	40	$ 16.00	$ 640.00
2013/10/4	20mm x 1/2″ Poly female Adaptor	20	$ 40.00	$ 800.00
2013/10/4	20mm x 16mm Poly Reduce Coupling	20	$ 56.00	$ 1,120.00
2013/10/4	ThreadTape	10	$ 4.00	$ 40.00
		Total per Requisition =		$ 2,600.00

DEPARTMENT NAME: NRW PROJECT TEAM 1 — **RECEIVED BY:** John Teno
RECOMMENDED BY : Eric Unga — **ISSUED BY:** Paul Seda
REQUISITION NO: 0508 — **DATE ISSUED:** 07/09/2013
JOB DESCRIPTION: Being for Meter Raising @ the Pilot Project Site (Tuvaruhu) .

Date	Materials Description	Quantity	Unit Cost	Total Cost
2013/10/7	25mm x 3/4″ male poly Adaptor	2	$ 48.00	$ 96.00
2013/10/7	25mm x 3/4″ female poly Adaptor	2	$ 48.00	$ 96.00
2013/10/7	3/4″ G.I nipple	1	$ 12.00	$ 12.00
		Total per Requisition =		$ 204.00

#REF!

TOTAL COST FOR VAVAYA RIDGE

	Before Countermeasure		After Countermeasure		
	Before Countermeasure	Countermeasure	After Countermeasure	Routine Activities	Total
Personnel Cost	20,369.93	22,020.00	9,198.30	5,163.75	56,751.98
Consumable	203.04	213.72	42.74	21.37	4,080.88
Material and Equipment	11,020.00	93,796.00	0.00	0.00	104,816.00
Sub Total	31,592.96	116,029.72	9,241.04	5,185.12	165,648.86
TOTAL	147,622.69		14,426.17		

TOTAL MAN DAYS FOR VAVAYA	273

1. Costing Before Countermeasure

Location Vavaya Ridge

per day

Items	Specification	Quantity	Unit	Hourly Rate (SBD)	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
1. Personnel	Grades- Steps								
Staff-3	3.1	0	Person	15.38	115.35				
	3.2	0	Person	15.90	119.25				
	3.3	0	Person	16.41	123.08				
	3.4	0	Person	16.92	126.90				
	3.5	0	Person	17.44	130.80				
Staff-4	4.1	10	Person	19.23	144.23	22.00		3,172.95	
	4.2	20	Person	20.00	150.00	38.00		5,700.00	
	4.3	0	Person	20.77	155.78			0.00	
	4.4	0		21.54	161.55			0.00	
	4.5	0		22.31	167.33			0.00	
Staff-5	5.1	0		24.10	180.75			0.00	
	5.2	0		25.13	188.48			0.00	
	5.3	0		26.15	196.13			0.00	
	5.4	0		27.18	203.85			0.00	
	5.5	9		28.21	211.58	17.00		3,596.78	
Staff-6	6.1	2		31.54	236.55	2.00		473.10	
	6.2	8		32.82	246.15	14.00		3,446.10	
	6.3	0		34.10	255.75			0.00	
	6.4	0		35.38	265.35			0.00	
	6.5	0		36.67	275.03			0.00	
Staff-7	7.1	0		38.46	288.45			0.00	
	7.2	0		39.74	298.05			0.00	
	7.3	0		41.03	307.73			0.00	
	7.4	0		42.31	317.33			0.00	
	7.5	0		43.59	326.93			0.00	
Staff-8	8.1	0		47.95	359.63			0.00	
	8.2	0		49.23	369.23			0.00	
	8.3	0		50.51	378.83			0.00	
	8.4	0		51.79	388.43			0.00	
	8.5	3		53.08	398.10	10.00		3,981.00	
Staff-9	9.1	0		58.21	436.58			0.00	
	9.2	0		59.49	446.18			0.00	
	9.3	0		60.77	455.78			0.00	
	9.4	0		62.05	465.38			0.00	
	9.5	0		63.33	474.98			0.00	
Sub-total						103.00		20,369.93	
2. Consumable				$ Per Liter	L/km		$/km		
Diesel	For Excavator	0	Liter	11.80	0.3620		4.2716	0.00	50km/7km/liter=7.14liter 11liter/hrs (fuel consumption for about 60PS) x 1hr=11liter 11liter +7.1liter=18.1liter/50km
Diesel	For Pick-up	114	Liter	11.80	0.1428	16.2792	1.68504	192.09	50km/7km/liter=7.14liter/50km
Engine Oil	For Excavator	0	Liter	60.00	0.0016		0.096	0.00	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Engine Oil	For Pick-up	114	Liter	60.00	0.0016		0.096	10.94	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Tires		0	Nos	770.00	0.0014		1.078	0.00	50km x 252days=12,600km 12,600km/ 30,000km x 4nos=1.68nos 1.68nos/ 252days=0.07nos/50km
Sub-total								203.04	
3. Material & Equipment									
Sluice/ Gate Valve	25mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	40mm	1	piece		350.00			350.00	Gate Valve
Sluice/ Gate Valve	50mm	2	piece		310.00			620.00	Gate Valve
Sluice/ Gate Valve	80mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	100mm	2	piece		2,423.00			4,846.00	Sluice Valve
Sluice/ Gate Valve	150mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	200mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	250mm		piece					0.00	Sluice Valve225mm AUD1785
Sluice/ Gate Valve	300mm		piece					0.00	
Pipes (Poly)	15mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	20mm		coil					0.00	Length on 1 coil =300m

per day

Items	Specification	Quantity	Unit	Hourly Rate (SBD)	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
Pipes (Poly)	25mm		coil					0.00	Length on 1 coil =200m
Pipes (Poly)	50mm		coil					0.00	Length on 1 coil =150m
Pipes (PVC)	25mm		piece					0.00	
Pipes (PVC)	50mm		piece					0.00	
Pipes (PVC)	80mm		piece					0.00	
Pipes (PVC)	100mm	1	piece		248.00			248.00	
Pipes (PVC)	150mm		piece					0.00	
Pipes (PVC)	200mm		piece					0.00	
Pipes (PVC)	250mm		piece					0.00	
Pipes (PVC)	300mm		piece					0.00	
Water Meter	10mm		piece					0.00	
Water Meter	16mm		piece					0.00	
Water Meter	20mm		piece					0.00	
Water Meter	25mm		piece					0.00	
Water Meter	32mm		piece					0.00	
Water Meter	40mm		piece					0.00	
Other Materials								4,956.00	
Sub-total								11,020.00	
Total								31,592.96	

1AUD=6.534SBD was applied to the above (rate as of 30 September, 2013 of Oanda).

2. Costing for Countermeasure

Location Vavaya Ridge

per day

Items	Specification	Quantity	Unit	Hourly Rate (SBD)	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
1. Personnel	Grades- Steps								
Staff-3	3.1	0	Person	15.38	115.35				
	3.2	0	Person	15.90	119.25				
	3.3	0	Person	16.41	123.08				
	3.4	0	Person	16.92	126.90				
	3.5	0	Person	17.44	130.80				
Staff-4	4.1	4	Person	19.23	144.23	20.00		2,884.50	
	4.2	8	Person	20.00	150.00	40.00		6,000.00	
	4.3	0	Person	20.77	155.78			0.00	
	4.4	0		21.54	161.55			0.00	
	4.5	0		22.31	167.33			0.00	
Staff-5	5.1	0		24.10	180.75			0.00	
	5.2	0		25.13	188.48			0.00	
	5.3	0		26.15	196.13			0.00	
	5.4	0		27.18	203.85			0.00	
	5.5	4		28.21	211.58	20.00		4,231.50	
Staff-6	6.1	0		31.54	236.55			0.00	
	6.2	4		32.82	246.15	20.00		4,923.00	
	6.3	0		34.10	255.75			0.00	
	6.4	0		35.38	265.35			0.00	
	6.5	0		36.67	275.03			0.00	
Staff-7	7.1	0		38.46	288.45			0.00	
	7.2	0		39.74	298.05			0.00	
	7.3	0		41.03	307.73			0.00	
	7.4	0		42.31	317.33			0.00	
	7.5	0		43.59	326.93			0.00	
Staff-8	8.1	0		47.95	359.63			0.00	
	8.2	0		49.23	369.23			0.00	
	8.3	0		50.51	378.83			0.00	
	8.4	0		51.79	388.43			0.00	
	8.5	0		53.08	398.10	10.00		3,981.00	
Staff-9	9.1	0		58.21	436.58			0.00	
	9.2	0		59.49	446.18			0.00	
	9.3	0		60.77	455.78			0.00	
	9.4	0		62.05	465.38			0.00	
	9.5	0		63.33	474.98			0.00	
Sub-total						110.00		22,020.00	
2. Consumable				$ Per Liter	L/km		$/km		
Diesel	For Excavator	0	Liter	11.80	0.3620		4.2716	0.00	50km/7km/liter=7.14liter 11liter/hrs (fuel consumption for about 60PS) x 1hr=11liter 11liter +7.1liter=18.1liter/50km
Diesel	For Pick-up	120	Liter	11.80	0.1428	17.1360	1.68504	202.20	50km/7km/liter=7.14liter/50km
Engine Oil	For Excavator	0	Liter	60.00	0.0016		0.096	0.00	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Engine Oil	For Pick-up	120	Liter	60.00	0.0016		0.096	11.52	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Tires		0	Nos	770.00	0.0014		1.078	0.00	50km x 252days=12,600km 12,600km/ 30,000km x 4nos=1.68nos 1.68nos/ 252days=0.07nos/50km
Sub-total								213.72	
3. Material & Equipment									
Sluice/ Gate Valve	25mm	3	piece		190.00			570.00	Gate Valve
Sluice/ Gate Valve	40mm		piece		350.00			0.00	Gate Valve
Sluice/ Gate Valve	50mm		piece		310.00			0.00	Gate Valve
Sluice/ Gate Valve	80mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	100mm		piece		2,423.00			0.00	Sluice Valve
Sluice/ Gate Valve	150mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	200mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	250mm		piece					0.00	Sluice Valve225mm AUD1785
Sluice/ Gate Valve	300mm		piece					0.00	
Pipes (Poly)	15mm	200	coil		14.50			2,900.00	Length on 1 coil =300m
Pipes (Poly)	20mm	60	coil		16.00			960.00	Length on 1 coil =300m
Pipes (Poly)	25mm	130	coil		18.00	per meter		2,340.00	Length on 1 coil =200m

per day

Items	Specification	Quantity	Unit	Hourly Rate (SBD)	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
Pipes (Poly)	50mm	5	coil		45.00			225.00	Length on 1 coil =150m
Pipes (PVC)	25mm		piece					0.00	
Pipes (PVC)	50mm		piece					0.00	
Pipes (PVC)	80mm		piece					0.00	
Pipes (PVC)	100mm		piece		248.00			0.00	
Pipes (PVC)	150mm		piece					0.00	
Pipes (PVC)	200mm		piece					0.00	
Pipes (PVC)	250mm		piece					0.00	
Pipes (PVC)	300mm		piece					0.00	
Water Meter	10mm		piece					0.00	
Water Meter	16mm		piece					0.00	
Water Meter	20mm	90	piece		394.00			35,460.00	
Water Meter	25mm	3	piece		918.68			2,756.04	
Water Meter	32mm		piece					0.00	
Water Meter	40mm		piece					0.00	
Other Materials								48,584.96	
Sub-total								93,796.00	
Total								116,029.72	

1AUD=6.534SBD was applied to the above (rate as of 30 September, 2013 of Oanda).

3. Costing for After Countermeasure

Location Vavaya Ridge

per day

Items	Specification	Quantity	Unit	Hourly Rate (SBD)	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
1. Personnel	Grades- Steps								
Staff-3	3.1	0	Person	15.38	115.35				
	3.2	0	Person	15.90	119.25				
	3.3	0	Person	16.41	123.08				
	3.4	0	Person	16.92	126.90				
	3.5	0	Person	17.44	130.80				
Staff-4	4.1	3	Person	19.23	144.23	4.00		576.90	
	4.2	6	Person	20.00	150.00	32.00		4,800.00	
	4.3	0	Person	20.77	155.78			0.00	
	4.4	0		21.54	161.55			0.00	
	4.5	0		22.31	167.33			0.00	
Staff-5	5.1	0		24.10	180.75			0.00	
	5.2	0		25.13	188.48			0.00	
	5.3	0		26.15	196.13			0.00	
	5.4	0		27.18	203.85			0.00	
	5.5	3		28.21	211.58	4.00		846.30	
Staff-6	6.1	0		31.54	236.55			0.00	
	6.2	3		32.82	246.15	4.00		984.60	
	6.3	0		34.10	255.75			0.00	
	6.4	0		35.38	265.35			0.00	
	6.5	0		36.67	275.03			0.00	
Staff-7	7.1	0		38.46	288.45			0.00	
	7.2	0		39.74	298.05			0.00	
	7.3	0		41.03	307.73			0.00	
	7.4	0		42.31	317.33			0.00	
	7.5	0		43.59	326.93			0.00	
Staff-8	8.1	0		47.95	359.63			0.00	
	8.2	0		49.23	369.23			0.00	
	8.3	0		50.51	378.83			0.00	
	8.4	0		51.79	388.43			0.00	
	8.5	1		53.08	398.10	5.00		1,990.50	
Staff-9	9.1	0		58.21	436.58			0.00	
	9.2	0		59.49	446.18			0.00	
	9.3	0		60.77	455.78			0.00	
	9.4	0		62.05	465.38			0.00	
	9.5	0		63.33	474.98			0.00	
Sub-total						49.00		9,198.30	
2. Consumable				$ Per Liter	L/km		$/km		
Diesel	For Excavator	0	Liter	11.80	0.3620		4.2716	0.00	50km/7km/liter=7.14liter 11liter/hrs (fuel consumption for about 60PS) x 1hr=11liter 11liter +7.1liter=18.1liter/50km
Diesel	For Pick-up	24	Liter	11.80	0.1428	3.4272	1.68504	40.44	50km/7km/liter=7.14liter/50km
Engine Oil	For Excavator	0	Liter	60.00	0.0016		0.096	0.00	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Engine Oil	For Pick-up	24	Liter	60.00	0.0016		0.096	2.30	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Tires		0	Nos	770.00	0.0014		1.078	0.00	50km x 252days=12,600km 12,600km/ 30,000km x 4nos=1.68nos 1.68nos/ 252days=0.07nos/50km
Sub-total								42.74	
3. Material & Equipment									
Sluice/ Gate Valve	25mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	40mm		piece		350.00			0.00	Gate Valve
Sluice/ Gate Valve	50mm		piece		310.00			0.00	Gate Valve
Sluice/ Gate Valve	80mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	100mm		piece		2,423.00			0.00	Sluice Valve
Sluice/ Gate Valve	150mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	200mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	250mm		piece					0.00	Sluice Valve225mm AUD1785
Sluice/ Gate Valve	300mm		piece					0.00	
Pipes (Poly)	15mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	20mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	25mm		coil					0.00	Length on 1 coil =200m

per day

Items	Specification	Quantity	Unit	Hourly Rate (SBD)	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
Pipes (Poly)	50mm		coil					0.00	Length on 1 coil =150m
Pipes (PVC)	25mm		piece					0.00	
Pipes (PVC)	50mm		piece					0.00	
Pipes (PVC)	80mm		piece					0.00	
Pipes (PVC)	100mm		piece		248.00			0.00	
Pipes (PVC)	150mm		piece					0.00	
Pipes (PVC)	200mm		piece					0.00	
Pipes (PVC)	250mm		piece					0.00	
Pipes (PVC)	300mm		piece					0.00	
Water Meter	10mm		piece					0.00	
Water Meter	16mm		piece					0.00	
Water Meter	20mm		piece					0.00	
Water Meter	25mm		piece					0.00	
Water Meter	32mm		piece					0.00	
Water Meter	40mm		piece					0.00	
Other Materials								0.00	
Sub-total								0.00	
Total								9,241.04	

1AUD=6.534SBD was applied to the above (rate as of 30 September, 2013 of Oanda).

4. Costing for Routine Activities

Location **Vavaya Ridge**

per day

Items	Specification	Quantity	Unit	Hourly Rate (SBD)	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
1. Personnel	Grades- Steps								
Staff-3	3.1	0	Person	15.38	115.35				
	3.2	0	Person	15.90	119.25				
	3.3	0	Person	16.41	123.08				
	3.4	0	Person	16.92	126.90				
	3.5	0	Person	17.44	130.80				
Staff-4	4.1	0	Person	19.23	144.23			0.00	
	4.2	0	Person	20.00	150.00			0.00	
	4.3	0	Person	20.77	155.78			0.00	
	4.4	0		21.54	161.55			0.00	
	4.5	0		22.31	167.33			0.00	
Staff-5	5.1	0		24.10	180.75			0.00	
	5.2	0		25.13	188.48			0.00	
	5.3	0		26.15	196.13			0.00	
	5.4	0		27.18	203.85			0.00	
	5.5	0		28.21	211.58			0.00	
Staff-6	6.1	3		31.54	236.55	5.00		1,182.75	
	6.2	0		32.82	246.15			0.00	
	6.3	0		34.10	255.75			0.00	
	6.4	0		35.38	265.35			0.00	
	6.5	0		36.67	275.03			0.00	
Staff-7	7.1	0		38.46	288.45			0.00	
	7.2	0		39.74	298.05			0.00	
	7.3	0		41.03	307.73			0.00	
	7.4	0		42.31	317.33			0.00	
	7.5	0		43.59	326.93			0.00	
Staff-8	8.1	0		47.95	359.63			0.00	
	8.2	0		49.23	369.23			0.00	
	8.3	0		50.51	378.83			0.00	
	8.4	0		51.79	388.43			0.00	
	8.5	0		53.08	398.10	10.00		3,981.00	
Staff-9	9.1	0		58.21	436.58			0.00	
	9.2	0		59.49	446.18			0.00	
	9.3	0		60.77	455.78			0.00	
	9.4	0		62.05	465.38			0.00	
	9.5	0		63.33	474.98			0.00	
Sub-total						**15.00**		**5,163.75**	
2. Consumable				$ Per Liter	L/km		$/km		
Diesel	For Excavator	0	Liter	11.80	0.3620		4.2716	0.00	50km/7km/liter=7.14liter 11liter/hrs (fuel consumption for about 60PS) x 1hr=11liter 11liter +7.1liter=18.1liter/50km
Diesel	For Pick-up	12	Liter	11.80	0.1428	1.7136	1.68504	20.22	50km/7km/liter=7.14liter/50km
Engine Oil	For Excavator	0	Liter	60.00	0.0016		0.096	0.00	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Engine Oil	For Pick-up	12	Liter	60.00	0.0016		0.096	1.15	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Tires		0	Nos	770.00	0.0014		1.078	0.00	50km x 252days=12,600km 12,600km/ 30,000km x 4nos=1.68nos 1.68nos/ 252days=0.07nos/50km
Sub-total								**21.37**	
3. Material & Equipment									
Sluice/ Gate Valve	25mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	40mm		piece		350.00			0.00	Gate Valve
Sluice/ Gate Valve	50mm		piece		310.00			0.00	Gate Valve
Sluice/ Gate Valve	80mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	100mm		piece		2,423.00			0.00	Sluice Valve
Sluice/ Gate Valve	150mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	200mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	250mm		piece					0.00	Sluice Valve225mm AUD1785
Sluice/ Gate Valve	300mm		piece					0.00	
Pipes (Poly)	15mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	20mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	25mm		coil					0.00	Length on 1 coil =200m

per day

Items	Specification	Quantity	Unit	Hourly Rate (SBD)	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
Pipes (Poly)	50mm		coil					0.00	Length on 1 coil =150m
Pipes (PVC)	25mm		piece					0.00	
Pipes (PVC)	50mm		piece					0.00	
Pipes (PVC)	80mm		piece					0.00	
Pipes (PVC)	100mm		piece		248.00			0.00	
Pipes (PVC)	150mm		piece					0.00	
Pipes (PVC)	200mm		piece					0.00	
Pipes (PVC)	250mm		piece					0.00	
Pipes (PVC)	300mm		piece					0.00	
Water Meter	10mm		piece					0.00	
Water Meter	16mm		piece					0.00	
Water Meter	20mm		piece					0.00	
Water Meter	25mm		piece					0.00	
Water Meter	32mm		piece					0.00	
Water Meter	40mm		piece					0.00	
Other Materials								0.00	
Sub-total								**0.00**	
Total								**5,185.12**	

1AUD=6.534SBD was applied to the above (rate as of 30 September, 2013 of Oanda).

Required Source for NRW Reduction Activities_Vavaya Ridge (No.6)

Activities	1. Personnel							2. Consumable			3. Material & Equipment													
	Grades- Steps	Grades- Steps	Grades- Steps	Grades- Steps	Grades- Steps	Grades- Steps	TOTAL MAN DAYS	Vehicle Total Millage (km)	Excavator Total Milage (km)	Air Valve	Sluice/ Gate Valve	Sluice/ Gate Valve	Sluice/ Gate Valve	Sluice/ Gate Valve	Pipes (PVC)	Pipes (PVC)	Pipes (PVC)	Pipes (PVC)	Pipes (Poly)	Stop Cork	Water meter	Water meter	Water meter
										25-50mm	25-50mm	80-100mm	150-200mm	250-300mm	25-50mm	80-100mm	150-200mm	250-300mm	15-50mm (m)	15mm-50mm	10mm	16mm	20mm
Project Implementation Status																							
Before Countermeasures																							
Preparation of network drawings	6.1							0															
Days Committed	1						1																
Field survey (valve check, visual leakage detection, etc.)	5.5	4.2	4.2	4.1	AP	8.5		18															
Days Committed	3	3	3	3	3	3	18																
Preparation of isolation and step test (valve installation)	8.5	4.2	4.2	4.1	AP			12			3	2				1			5	1			
Days Committed	2	2	2	2	2		10																
Preparation of customer list	6.1							0															
Days Committed	1						1																
On-site public awareness																							
Days Committed																							
Distribution of public awareness pamphlet	5.5	4.2	4.2	4.1	AP	6.2	6	6															
Days Committed	1	1	1	1	1	1																	
Connection idetification and verification	5.5	4.2	4.2	4.1	AP	6.2		24															
Days Committed	4	4	4	4	4	4	24																
Customer meter functioning check	5.5	4.2	4.2	4.1	AP	6.2		6															
Days Committed	1	1	1	1	1	1	6																
Measurement of visibly-detected leakage	5.5	4.2	4.2	4.1	AP	6.2		12															
Days Committed	2	2	2	2	2	2	12																
Notification letter to illegal users	5.5	4.2	4.2	4.1	AP	6.2		0															
Days Committed	0	0	0	0	0	0	0																
Customer meter reading of 24 hours consumption	5.5	4.2	4.2	4.1	AP	6.2		6															
Days Committed	1	1	1	1	1	1	6																
MNF & Pressure measurement	5.5	4.2	4.2	4.1	AP	6.2		12															
Days Committed	2	2	2	2	2	2	12																
Customer meter inaccuracy test (all meters)	5.5	4.2	4.2	4.1	AP	6.2		18															
Days Committed	3	3	3	3	3	3	18																
Calculation of NRW ratio	8.5							0															
Days Committed	5						5																
Countermeasures																							
Step test	5.5	4.2	4.2	4.1	AP	6.2		18															
Days Committed	3	3	3	3	3	3	18																
Leakage detection	5.5	4.2	4.2	4.1	AP	6.2		18															
Days Committed	3	3	3	3	3	3	18																
Pipe repair	5.5	4.2	4.2	4.1	AP	6.2		12															
Days Committed	2	2	2	2	2	2	12																
Legalization of illegal connection																							
Days Committed																							
Disconnection of illegal connection								0															
Days Committed																							
Customer meter raising (newly-installation / replacement)	5.5	4.2	4.2	4.1	AP	6.2		72		1		1				1			425	103			98
Days Committed	12	12	12	12	12	12	72																
After Countermeasures																							
Customer meter reading of 24 hours consumption	5.5	4.2	4.2	4.1	AP	6.2	6	6															
Days Committed	1	1	1	1	1	1																	
MNF & Pressure measurement	5.5	4.2	4.2	4.1	AP	6.2	12	12															
Days Committed	2	2	2	2	2	2																	
Customer meter inaccuracy test (random sampling)	5.5	4.2	4.2	4.1	AP	6.2	6	6															
Days Committed	1	1	1	1	1	1																	
Calculation of NRW ratio	8.5						5	0															
Days Committed	5																						
Routine Activities																							
Update of drawings and attributes (GIS database)	6.1						2	12															
Days Committed	2																						
Update of customer list	6.1						1	0															
Days Committed	1																						
Update of billing system	6.1						2	0															
Days Committed	2																						
							273	270															

Cost for Materials (Vavaya Ridge)

DEPARTMENT NAME: NRW PROJECT TEAM 2 — RECEIVED BY: Mafe
RECOMMENDED BY : Benjimen Billy — ISSUED BY: Paul Seda
REQUISITION NO: 0236 — DATE ISSUED: 16/09/2013
JOB DESCRIPTION: Being for Mbokonavera & Vavaya Ridge .

Date	Materials Description	Quantity	Unit Cost	Total Cost
9/17/2013	100mm Flange Gilbault	2	$ 580.00	$ 1,160.00
9/17/2013	100mm Gilbault Joint	2	$ 413.00	$ 826.00
9/17/2013	1 lengths 100mm (4") UPVC Pressure Pipe	1	$ 248.00	$ 248.00
9/17/2013	100mm Sluice Valve	1	$ 2,423.00	$ 2,423.00
9/17/2013	40 KG Bag cement	3	$ 78.00	$ 234.00
9/17/2013	100mm (4") x 3/4" Brass Tapping Saddle	1	$ 250.00	$ 250.00
9/17/2013	Hack Saw blade	3	$ 10.00	$ 30.00
9/17/2013	1/2" x 3/4" G.I reduce nipple	1	$ 12.00	$ 12.00
9/17/2013	15mm Stop Cock	1	$ 40.00	$ 40.00
9/17/2013	ThreadTape	4	$ 4.00	$ 16.00
		Total per Requisition =		$ 5,239.00

DEPARTMENT NAME: NRW PROJECT TEAM 2 — RECEIVED BY: Liston Tora
RECOMMENDED BY : Nathaniel Lega — ISSUED BY: Paul Seda
REQUISITION NO: 0237 — DATE ISSUED: 24/09/2013
JOB DESCRIPTION: Being for Valve installation @ Vavaya Ridge .

Date	Materials Description	Quantity	Unit Cost	Total Cost
9/24/2013	100mm Sluice Valve	1	$ 2,423.00	$ 2,423.00
9/24/2013	100mm Gilbault Joint	2	$ 413.00	$ 826.00
9/24/2013	100mm Flange Gilbault	1	$ 580.00	$ 580.00
9/24/2013	50mm (2") Brass Gate Valve	1	$ 310.00	$ 310.00
9/24/2013	50mm x 2" male Poly Adaptor	2	$ 36.00	$ 72.00
9/24/2013	15mm G.I elbow	10	$ 12.00	$ 120.00
		Total per Requisition =		$ 4,331.00

DEPARTMENT NAME: NRW PROJECT TEAM 2 — RECEIVED BY: Derick Hoa
RECOMMENDED BY : Nathaniel Lega — ISSUED BY: Paul Seda
REQUISITION NO: 0238 — DATE ISSUED: 24/09/2013
JOB DESCRIPTION: Being for Valve installation @ Vavaya Ridge .

Date	Materials Description	Quantity	Unit Cost	Total Cost
9/24/2013	40mm Brass Gate Valve	1	$ 350.00	$ 350.00
9/24/2013	40mm x 1 1/2" poly male adaptor	2	$ 70.00	$ 140.00
9/24/2013	25mm Poly Couping	1	$ 56.00	$ 56.00
9/24/2013	50mm (2") Brass Gate Valve	1	$ 310.00	$ 310.00
9/24/2013	50mm x 2" male Poly Adaptor	2	$ 36.00	$ 72.00
9/24/2013	100mm (4") x 3/4" Brass Tapping Saddle	1	$ 250.00	$ 250.00
9/24/2013	5 metre 20mm Pipe	5	$ 16.00	$ 80.00
9/24/2013	20mm x 3/4" Poly male Adaptor	1	$ 48.00	$ 48.00
9/24/2013	ThreadTape	6	$ 4.00	$ 24.00
9/24/2013	15mm G.I elbow	10	$ 12.00	$ 120.00
		Total per Requisition =		$ 1,450.00

DEPARTMENT NAME: NRW PROJECT TEAM 2 — RECEIVED BY: David Akoeasi
RECOMMENDED BY : Benjimen Billy — ISSUED BY: Paul Seda
REQUISITION NO: 0239 — DATE ISSUED: 27/09/2013
JOB DESCRIPTION: Being for Materials to be used @ Vavaya Ridge .

Date	Materials Description	Quantity	Unit Cost	Total Cost
9/27/2013	15mm G.I elbow	48	$ 12.00	$ 576.00
9/27/2013	16mm x 1/2" female poly Adaptor	28	$ 45.00	$ 1,260.00
9/27/2013	20mm Stop Cock	12	$ 65.00	$ 780.00
9/27/2013	ThreadTape	20	$ 4.00	$ 80.00
9/27/2013	20mm Water Meter	12	$ 394.00	$ 4,728.00
9/27/2013	1/2" G.I Nipple	12	$ 8.00	$ 96.00
		Total per Requisition =		$ 7,520.00

DEPARTMENT NAME: NRW PROJECT TEAM 1 — RECEIVED BY: David Akwa'asi
RECOMMENDED BY : Benjimen Billy — ISSUED BY: Paul Seda
REQUISITION NO: 0240 — DATE ISSUED: 7/10/2013
JOB DESCRIPTION: Being for Meter Raising @ the Pilot Project Site (Vavaya Ridge) .
Meter ID : 13B0199554 -557 (5 pieces) 13B019349-352 (5 pieces) 13B019574-578 (5 pieces) 13B019459 -463(5 pieces) 13B019399-402 (5 Pieces) 13B019379 - 383 (5 pieces) 13B019359 - 363 (5 Pices) 13B019559 - 563 (5 pieces)

Date	Materials Description	Quantity	Unit Cost	Total Cost
10/7/2013	40 KG Bag cement	10	$ 78.00	$ 780.00
10/7/2013	10mm Steel Rods	5	$ 68.00	$ 340.00
10/7/2013	20mm Water Meter	40	$ 394.00	$ 15,760.00
10/7/2013	20mm Stop Cock	40	$ 168.00	$ 6,720.00
		Total per Requisition =		$ 23,600.00

DEPARTMENT NAME: NRW PROJECT TEAM 1 — RECEIVED BY: David Akwa'asi
RECOMMENDED BY : Eric Unga — ISSUED BY: Paul Seda
REQUISITION NO: 2453 — DATE ISSUED: 8/10/2013
JOB DESCRIPTION: Being for Meter Raising @ the Pilot Project Site (Vavaya Ridge) .
Meter ID : 13B019782 ,13B019495,13B019813,13019621,13B019620,13B019619(6 pieces)

Date	Materials Description	Quantity	Unit Cost	Total Cost
10/8/2013	15mm G.I elbow	24	$ 12.00	$ 288.00
10/8/2013	3/4" x 1/2" G.I reduce Bush	6	$ 18.50	$ 111.00
10/8/2013	3/4" x 1/2" G.I reduce Socket	6	$ 12.50	$ 75.00
10/8/2013	16mm x 1/2" female poly Adaptor	10	$ 45.00	$ 450.00
10/8/2013	20mm Water Meter	6	$ 394.00	$ 2,364.00
10/8/2013	20mm Stop Cock	6	$ 168.00	$ 1,008.00
		Total per Requisition =		$ 4,296.00

DEPARTMENT NAME: NRW PROJECT TEAM 1 — RECEIVED BY: Liston Tora
RECOMMENDED BY : Eric Unga — ISSUED BY: Paul Seda
REQUISITION NO: 0241 — DATE ISSUED: 9/10/2013
JOB DESCRIPTION: Being for Meter Raising @ the Pilot Project Site (Vavaya Ridge) .

Date	Materials Description	Quantity	Unit Cost	Total Cost
10/9/2013	3/4" x 1/2" G.I reduce Socket	12	$ 12.50	$ 150.00
10/9/2013	3/4" x 1/2" G.I reduce Bush	12	$ 18.50	$ 222.00
10/9/2013	15mm G.I elbow	48	$ 12.00	$ 576.00
10/9/2013	16mm x 1/2" female poly Adaptor	24	$ 45.00	$ 1,080.00
10/9/2013	3/4" G.I Tee	1	$ 8.00	$ 8.00
		Total per Requisition =		$ 2,036.00

DEPARTMENT NAME: NRW PROJECT TEAM 1 — RECEIVED BY: Liston Tora
RECOMMENDED BY : Eric Unga — ISSUED BY: Paul Seda
REQUISITION NO: 0242 — DATE ISSUED: 9/10/2013
JOB DESCRIPTION: Being for Additional fittings for Meter Raising @ the Pilot Project Site (Vavaya Ridg

Date	Materials Description	Quantity	Unit Cost	Total Cost
10/9/2013	15mm G.I elbow	28	$ 12.00	$ 336.00
10/9/2013	3/4" x 1/2" G.I reduce Socket	7	$ 12.50	$ 87.50
10/9/2013	3/4" x 1/2" G.I reduce Bush	7	$ 18.50	$ 129.50
10/9/2013	16mm x 1/2" female poly Adaptor	14	$ 45.00	$ 630.00
		Total per Requisition =		$ 1,183.00

DEPARTMENT NAME: NRW PROJECT TEAM 2 — RECEIVED BY: Andrew Kopenao
RECOMMENDED BY : Benjimen Billy — ISSUED BY: Jerry Webo
REQUISITION NO: 0243 — DATE ISSUED: 10/10/2013
JOB DESCRIPTION: Being for the Pilot Project Site @ Vavaya Ridge .

Date	Materials Description	Quantity	Unit Cost	Total Cost
10/10/2013	40mm x 25mm x 40mm Poly Tee	1	$ 66.00	$ 66.00
10/10/2013	25mm x 20mm x 25mm Poly Tee	1	$ 36.00	$ 36.00
10/10/2013	20mm Poly Plain Tee	1	$ 28.00	$ 28.00
10/10/2013	20mm x 16mm Poly Reduce Coupling	2	$ 60.00	$ 120.00
10/10/2013	25mm x 1" Poly female Adaptor	1	$ 48.00	$ 48.00
10/10/2013	25mm G.I Plug	1	$ 16.00	$ 16.00
10/10/2013	25mm G.I Nipple	1	$ 18.00	$ 18.00
10/10/2013	3/4" x 1/2" G.I Reducing Socket	1	$ 12.00	$ 12.00
10/10/2013	1/2" G.I Plug	1	$ 8.00	$ 8.00
10/10/2013	100 metres 25mm Poly Pipe	100	$ 18.00	$ 1,800.00
10/10/2013	ThreadTape	3	$ 4.00	$ 12.00
10/10/2013	30 metres 20mm Poly Pipe	30	$ 16.00	$ 480.00
		Total per Requisition =		$ 2,644.00

DEPARTMENT NAME: NRW PROJECT TEAM 2 — RECEIVED BY: Liston Tora
RECOMMENDED BY : Eric Unga — ISSUED BY: Paul Seda
REQUISITION NO: 0244 — DATE ISSUED: 11/10/2013
JOB DESCRIPTION: Being for the Pilot Project Site @ Vavaya Ridge .

Date	Materials Description	Quantity	Unit Cost	Total Cost
10/11/2013	25mm Poly Plain Tee	2	$ 29.00	$ 58.00
10/11/2013	40mm Poly Plain Coupling	2	$ 40.00	$ 80.00
10/11/2013	5 Metres 40mm Poly Pipe	5	$ 45.00	$ 225.00
10/11/2013	ThreadTape	3	$ 4.00	$ 12.00
		Total per Requisition =		$ 375.00

DEPARTMENT NAME: NRW PROJECT TEAM 2 — RECEIVED BY: Liston Tora
RECOMMENDED BY : Benjimen Billy — ISSUED BY: Jerry Webo
REQUISITION NO: 0246 — DATE ISSUED: 12/10/2013
JOB DESCRIPTION: Being for the Pilot Project Site @ Vavaya Ridge .

Date	Materials Description	Quantity	Unit Cost	Total Cost
10/12/2013	25mm Poly Plain Tee	10	$ 29.00	$ 290.00
10/12/2013	25mm x 16mm poly reduce coupling	5	$ 65.00	$ 325.00
10/12/2013	20mm x 16mm Poly Reduce Coupling	10	$ 60.00	$ 600.00
10/12/2013	ThreadTape	10	$ 4.00	$ 40.00
10/12/2013	Hack Saw Blade	2	$ 21.00	$ 42.00
		Total per Requisition =		$ 1,297.00

DEPARTMENT NAME: NRW PROJECT TEAM 2 — RECEIVED BY: Liston Tora
RECOMMENDED BY : Benjimen Billy — ISSUED BY: Jerry Webo
REQUISITION NO: 0245 — DATE ISSUED: 12/10/2013
JOB DESCRIPTION: Being for the Pilot Project Site @ Vavaya Ridge .

Date	Materials Description	Quantity	Unit Cost	Total Cost
10/12/2013	16mm Poly Coupling	10	$ 45.00	$ 450.00
10/12/2013	20mm x 16mm Poly Reduce Coupling	10	$ 60.00	$ 600.00
10/12/2013	16mm Poly Plain Tee	10	$ 85.00	$ 850.00
10/12/2013	20mm Poly Plain Tee	10	$ 28.00	$ 280.00
10/12/2013	16mm x 1/2" male Poly Adaptor	10	$ 45.00	$ 450.00
10/12/2013	16mm x 1/2" female poly Adaptor	10	$ 45.00	$ 450.00
10/12/2013	20mm Poly Coupling	10	$ 45.00	$ 450.00
10/12/2013	30 metres 20mm Poly Pipe	30	$ 16.00	$ 480.00
10/12/2013	30 metres 25mm Poly Pipe	30	$ 18.00	$ 540.00
10/12/2013	25mm Poly Couping	10	$ 56.00	$ 560.00
		Total per Requisition =		$ 5,110.00

DEPARTMENT NAME: NRW PROJECT TEAM 2 — RECEIVED BY: Derick Hoa
RECOMMENDED BY : Eric Unga — ISSUED BY: Paul Seda
REQUISITION NO: 0248 — DATE ISSUED: 14/10/2013
JOB DESCRIPTION: Being for the Pilot Project Site(Meter Raising) @ Vavaya Ridge .

Date	Materials Description	Quantity	Unit Cost	Total Cost
10/14/2013	3/4" x 1/2" G.I reduce Bush	10	$ 18.50	$ 185.00
10/14/2013	3/4" x 1/2" G.I Reducing Socket	10	$ 12.00	$ 120.00
10/14/2013	16mm x 1/2" female poly Adaptor	20	$ 45.00	$ 900.00
10/14/2013	ThreadTape	20	$ 4.00	$ 80.00
		Total per Requisition =		$ 1,285.00

DEPARTMENT NAME: NRW PROJECT TEAM 2 — RECEIVED BY: Harrison
RECOMMENDED BY : Eric Unga — ISSUED BY: Paul Seda
REQUISITION NO: 0247 — DATE ISSUED: 14/10/2013
JOB DESCRIPTION: Being for the Pilot Project Site(Meter Raising) @ Vavaya Ridge .

Date	Materials Description	Quantity	Unit Cost	Total Cost
10/14/2013	20mm Stop Cock	10	$ 168.00	$ 1,680.00
10/14/2013	3/4" x 1/2" G.I reduce Bush	10	$ 18.50	$ 185.00
10/14/2013	3/4" x 1/2" G.I Reducing Socket	10	$ 12.00	$ 120.00
10/14/2013	ThreadTape	20	$ 4.00	$ 80.00
10/14/2013	Hack Saw Blade	2	$ 21.00	$ 42.00
		Total per Requisition =		$ 2,107.00

DEPARTMENT NAME: NRW PROJECT TEAM 2 — RECEIVED BY: Harrison Malau
RECOMMENDED BY : Eric Unga — ISSUED BY: Paul Seda
REQUISITION NO: 0250 — DATE ISSUED: 16/10/2013
JOB DESCRIPTION: Being for Vavaya Ridge Meter Raising Pilot Project Site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
10/16/2013	20mm Stop Cock	10	$ 168.00	$ 1,680.00
10/16/2013	3/4" x 1/2" G.I Reducing Socket	10	$ 12.00	$ 120.00
10/16/2013	16mm x 1/2" female poly Adaptor	20	$ 45.00	$ 900.00
10/16/2013	ThreadTape (3 Pkts)	30	$ 4.00	$ 120.00
		Total per Requisition =		$ 2,820.00

DEPARTMENT NAME: NRW PROJECT TEAM 2 — RECEIVED BY: Liston Tora
RECOMMENDED BY : Benjimen Billy — ISSUED BY: Paul Seda
REQUISITION NO: 0249 — DATE ISSUED: 16/10/2013
JOB DESCRIPTION: Being for Vavaya Ridge Meter Raising Pilot Project Site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
10/16/2013	20mm Stop Cock	10	$ 168.00	$ 1,680.00
10/16/2013	3/4" x 1/2" G.I Reducing Socket	10	$ 12.00	$ 120.00
10/16/2013	16mm x 1/2" female poly Adaptor	20	$ 45.00	$ 900.00
10/16/2013	ThreadTape (5 Pkts)	50	$ 4.00	$ 200.00
		Total per Requisition =		$ 2,900.00

DEPARTMENT NAME: NRW PROJECT TEAM 2 — RECEIVED BY: Derick Hoa
RECOMMENDED BY : Benjimen Billy — ISSUED BY: Paul Seda
REQUISITION NO: 2301 — DATE ISSUED: 21/10/2013
JOB DESCRIPTION: Materials required for Vavaya Ridge Project Pilot Site .
Meter ID : 12B0866668 - 672(5 pieces) 12B086768 - 772 (5 pieces) 12B086853-857 (5 pieces) 12B086898 - 902 (5 pieces)

Date	Materials Description	Quantity	Unit Cost	Total Cost
10/21/2013	ThreadTape (6 Pkts)	60	$ 4.00	$ 240.00
10/21/2013	10mm Steel Rods	2	$ 68.00	$ 136.00
10/21/2013	3/4" G.I Elbow	20	$ 14.00	$ 280.00
10/21/2013	3/4" G.I Socket	10	$ 12.00	$ 120.00
10/21/2013	20mm Water Meter	20	$ 394.00	$ 7,880.00
10/21/2013	16mm Poly Coupling	20	$ 45.00	$ 900.00
10/21/2013	3/4" x 1/2" G.I reduce Bush	20	$ 18.50	$ 370.00
10/21/2013	3/4" x 1/2" G.I Reducing Socket	20	$ 12.00	$ 240.00
10/21/2013	16mm x 1/2" female poly Adaptor	20	$ 45.00	$ 900.00
		Total per Requisition =		$ 11,066.00

DEPARTMENT NAME: NRW PROJECT TEAM 2 — RECEIVED BY: Derick Hoa
RECOMMENDED BY : Benjimen Billy — ISSUED BY: Paul Seda
REQUISITION NO: 2302 — DATE ISSUED: 22/10/2013
JOB DESCRIPTION: Materials required for Vavaya Ridge Project Pilot Site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
10/22/2013	20mm x 3/4" Poly female Adaptor	20	$ 48.00	$ 960.00
10/22/2013	20mm(3/4") G.I Elbow	20	$ 14.00	$ 280.00
		Total per Requisition =		$ 1,240.00

DEPARTMENT NAME: NRW PROJECT TEAM 2 — RECEIVED BY: Harry
RECOMMENDED BY : Eric Unga — ISSUED BY: Paul Seda
REQUISITION NO: 2303 — DATE ISSUED: 24/10/2013
JOB DESCRIPTION: Materials required for Vavaya Ridge Project Pilot Site for Meter Raising .

Date	Materials Description	Quantity	Unit Cost	Total Cost
10/24/2013	20mm Water Meter	10	$ 394.00	$ 3,940.00
10/24/2013	20mm Stop Cock	5	$ 168.00	$ 840.00
10/24/2013	16mm x 1/2" female poly Adaptor	20	$ 45.00	$ 900.00
10/24/2013	16mm Poly Coupling	10	$ 45.00	$ 450.00
10/24/2013	ThreadTape	13	$ 4.00	$ 52.00
10/24/2013	25mm x 3/4" female poly Adaptor	10	$ 48.00	$ 480.00
10/24/2013	25mm x 16mm poly reduce coupling	10	$ 65.00	$ 650.00
10/24/2013	20mm x 3/4" Poly female Adaptor	10	$ 48.00	$ 480.00
		Total per Requisition =		$ 7,792.00

DEPARTMENT NAME: NRW PROJECT TEAM 1 — RECEIVED BY: Andrew Kopenao
RECOMMENDED BY : Eric Unga — ISSUED BY: Jerry Webo
REQUISITION NO: 2304 — DATE ISSUED: 26/10/2013
JOB DESCRIPTION: Materials required for Repair @ Vavaya Ridge Project Pilot Site for Meter Raising .
Meter ID : 12B011101-105(5 Pieces) 12B0111151-155 (5 pieces)

Date	Materials Description	Quantity	Unit Cost	Total Cost
10/26/2013	40 KG Bag cement	6	$ 78.00	$ 468.00
10/26/2013	200 metres (1 roll) 16mm poly pipe	200	$ 14.50	$ 2,900.00
10/26/2013	20mm Water Meter	10	$ 394.00	$ 3,940.00
		Total per Requisition =		$ 7,308.00

DEPARTMENT NAME: NRW PROJECT TEAM 2 — RECEIVED BY: Derick Hoa
RECOMMENDED BY : Benjimen Billy — ISSUED BY: Paul Seda
REQUISITION NO: 2307 — DATE ISSUED: 13/11/2013
JOB DESCRIPTION: Last Materials Required for Meter raising @ Lower Vavaya Ridge (Rock Heaven)

Date	Materials Description	Quantity	Unit Cost	Total Cost
11/13/2013	25mm (1")G.I Elbow	4	$ 30.00	$ 120.00
11/13/2013	25mm G.I Socket	1	$ 14.00	$ 14.00
11/13/2013	25mm G.I Nipple	1	$ 18.00	$ 18.00
11/13/2013	25mm x 1" Poly female Adaptor	2	$ 48.00	$ 96.00
11/13/2013	3" UPVC Compression Coupling	1	$ 190.00	$ 190.00
11/13/2013	1 metre 80mm UPVC Pressure Pipe	1	$ 140.00	$ 140.00
11/13/2013	8" x 1 1/4" brass Saddle/Tapping band	1	$ 844.00	$ 844.00
		Total per Requisition =		$ 1,422.00

DEPARTMENT NRW Team1 — RECEIVED BY: David Akoasi
RECOMMENDED BY : Chris Meriko — ISSUED BY: Paul Seda
REQUISITION NO: 2317 — DATE ISSUED: 18/11/2013
JOB DESCRIPTION: Materials required for valve installment/step test @ Vavaya Ridge.

Date	Materials Description	Quantity	Unit Cost	Total Cost
11/18/2013	25mm x 1" Poly male Adaptor	2	$ 50.00	$ 100.00
11/18/2013	ThreadTape	1	$ 4.00	$ 4.00
11/18/2013	20mm x 16mm Poly Reduce Coupling	6	$ 56.00	$ 336.00
		Total per Requisition =		$ 440.00

TOTAL MATERIAL COST FOR VAVAYA RIDGE	$ 104,816.04

DEPARTMENT NAME: NRW PROJECT TEAM 1 — RECEIVED BY: Harrison
RECOMMENDED BY : Benjimen Billy — ISSUED BY: Paul Seda
REQUISITION NO: 2305 — DATE ISSUED: 28/10/2013
JOB DESCRIPTION: Materials required for Repair @ Vavaya Ridge Project Pilot Site for Meter Raising .

Date	Materials Description	Quantity	Unit Cost	Total Cost
10/28/2013	20mm Stop Cock	10	$ 168.00	$ 1,680.00
10/28/2013	3/4" x 1/2" G.I Reducing Socket	10	$ 12.00	$ 120.00
10/28/2013	3/4" x 1/2" G.I reduce Bush	10	$ 18.50	$ 185.00
10/28/2013	16mm Poly Coupling	10	$ 45.00	$ 450.00
		Total per Requisition =		$ 2,435.00

DEPARTMENT NAME: NRW PROJECT TEAM 1 — RECEIVED BY: Derick Hoa
RECOMMENDED BY : Benjimen Billy — ISSUED BY: Paul Seda
REQUISITION NO: 2306 — DATE ISSUED: 29/10/2013
JOB DESCRIPTION: Materials required for Repair @ Vavaya Ridge Project Pilot Site for Meter Raising .
METER I.D : 09C002273 &09C002275 , 09C002307

Date	Materials Description	Quantity	Unit Cost	Total Cost
10/29/2013	25mm x 1" Poly female Adaptor	6	$ 48.00	$ 288.00
10/29/2013	25mm (1")G.I Elbow	3	$ 30.00	$ 90.00
10/29/2013	1" Brass Gate valve	3	$ 190.00	$ 570.00
10/29/2013	1" G.I Nipple	3	$ 18.00	$ 54.00
10/29/2013	25mm G.I Socket	4	$ 14.00	$ 56.00
10/29/2013	25mm Water Meter	3	$ 918.68	$ 2,756.04
10/29/2013	1" x 3/4" G.I reduce nipple	1	$ 16.00	$ 16.00
10/29/2013	20mm(3/4") G.I Elbow	1	$ 14.00	$ 14.00
10/29/2013	20mm x 3/4" Poly male Adaptor	1	$ 48.00	$ 48.00
		Total per Requisition =		$ 3,892.04

DEPARTMENT NAME: NRW PROJECT TEAM 1 — RECEIVED BY: Mafe
RECOMMENDED BY : Benjimen Billy — ISSUED BY: Paul Seda
REQUISITION NO: 0774 — DATE ISSUED: 31/10/2013
JOB DESCRIPTION: Materials required for Installation @ Rock Havens .

Date	Materials Description	Quantity	Unit Cost	Total Cost
10/31/2013	25mm Air Valve	1	$ 45.00	$ 45.00
10/31/2013	25mm G.I Socket	1	$ 14.00	$ 14.00
10/31/2013	1" x 3/4" G.I reduce nipple	1	$ 16.00	$ 16.00
		Total per Requisition =		$ 75.00

DEPARTMENT NAME: NRW PROJECT TEAM 2 — RECEIVED BY: Janan Capu
RECOMMENDED BY : Ray Andersen — ISSUED BY: Jerry Webo
REQUISITION NO: 2459 — DATE ISSUED: 28/10/2013
JOB DESCRIPTION: Materials required for Repair @ Vavaya Ridge Project Pilot Site for Meter Raising .

Date	Materials Description	Quantity	Unit Cost	Total Cost
11/2/2013	30 metres 16mm poly pipe	30	$ 14.50	$ 435.00
11/2/2013	20mm Poly Plain Tee	1	$ 28.00	$ 28.00
11/2/2013	20mm x 1/2" Poly male Adaptor	1	$ 40.00	$ 40.00
11/2/2013	16mm x 1/2" female poly Adaptor	5	$ 45.00	$ 225.00
11/2/2013	16mm x 1/2" male Poly Adaptor	5	$ 45.00	$ 225.00
		Total per Requisition =		$ 953.00

TOTAL COST FOR MBOKONA

	Before Countermeasure		After Countermeasure		
	Before Countermeasure	Countermeasure	After Countermeasure	Routine Activities	**Total**
Personnel Cost	33,599.85	48,230.55	8,734.73	896.25	**91,461.38**
Consumable	1,175.49	1,645.68	117.55	78.37	**7,417.08**
Material and Equipment	8,859.24	137,407.27	0.00	0.00	**146,266.51**
Sub Total	**43,634.58**	**187,283.50**	**8,852.27**	**974.62**	**245,144.97**
TOTAL	**230,918.08**		**9,826.89**		

TOTAL MAN DAYS FOR MBOKONA	606

1. Costing Before Countermeasure

Location **Mbokona**

per day

Items	Specification	Quantity	Unit	Hourly Rate (SBD)	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
1. Personnel	Grades- Steps								
Staff-3	3.1	0	Person	15.38	115.35				
	3.2	0	Person	15.90	119.25				
	3.3	0	Person	16.41	123.08				
	3.4	0	Person	16.92	126.90				
	3.5	0	Person	17.44	130.80				
Staff-4	4.1	40	Person	19.23	144.23	116.00		16,730.10	
	4.2	20	Person	20.00	150.00	40.00		6,000.00	
	4.3	0	Person	20.77	155.78			0.00	
	4.4	0		21.54	161.55			0.00	
	4.5	0		22.31	167.33			0.00	
Staff-5	5.1	10		24.10	180.75	20.00		3,615.00	
	5.2	0		25.13	188.48			0.00	
	5.3	0		26.15	196.13			0.00	
	5.4	0		27.18	203.85			0.00	
	5.5	10		28.21	211.58	20.00		4,231.50	
Staff-6	6.1	2		31.54	236.55	1.00		236.55	
	6.2	0		32.82	246.15			0.00	
	6.3	0		34.10	255.75			0.00	
	6.4	0		35.38	265.35			0.00	
	6.5	0		36.67	275.03			0.00	
Staff-7	7.1	0		38.46	288.45			0.00	
	7.2	0		39.74	298.05			0.00	
	7.3	0		41.03	307.73			0.00	
	7.4	0		42.31	317.33			0.00	
	7.5	0		43.59	326.93			0.00	
Staff-8	8.1	0		47.95	359.63			0.00	
	8.2	0		49.23	369.23			0.00	
	8.3	0		50.51	378.83			0.00	
	8.4	0		51.79	388.43			0.00	
	8.5	2		53.08	398.10	7.00		2,786.70	
Staff-9	9.1	0		58.21	436.58			0.00	
	9.2	0		59.49	446.18			0.00	
	9.3	0		60.77	455.78			0.00	
	9.4	0		62.05	465.38			0.00	
	9.5	0		63.33	474.98			0.00	
Sub-total						**204.00**		**33,599.85**	
2. Consumable				$ Per Liter	L/km		$/km		
Diesel	For Excavator	0	Liter	11.80	0.3620		4.2716	0.00	50km/7km/liter=7.14liter 11liter/hrs (fuel consumption for about 60PS) x 1hr=11liter 11liter +7.1liter=18.1liter/50km
Diesel	For Pick-up	660	Liter	11.80	0.1428	94.2480	1.68504	1,112.13	50km/7km/liter=7.14liter/50km
Engine Oil	For Excavator	0	Liter	60.00	0.0016		0.096	0.00	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Engine Oil	For Pick-up	660	Liter	60.00	0.0016		0.096	63.36	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Tires		0	Nos	770.00	0.0014		1.078	0.00	50km x 252days=12,600km 12,600km/ 30,000km x 4nos=1.68nos 1.68nos/ 252days=0.07nos/50km
Sub-total								**1,175.49**	
3. Material & Equipment									
Sluice/ Gate Valve	25mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	40mm		piece		350.00			0.00	Gate Valve
Sluice/ Gate Valve	50mm	1	piece		310.00			310.00	Gate Valve
Sluice/ Gate Valve	80mm	2	piece		1,229.00			2,458.00	Gate Valve
Sluice/ Gate Valve	80mm	1	piece		2,397.12			2,397.12	Sluice Valve
Sluice/ Gate Valve	100mm		piece		2,423.00			0.00	Sluice Valve
Sluice/ Gate Valve	150mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	200mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	250mm		piece					0.00	Sluice Valve225mm AUD1785
Sluice/ Gate Valve	300mm		piece					0.00	
Pipes (Poly)	15mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	20mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	25mm		coil					0.00	Length on 1 coil =200m
Pipes (Poly)	50mm		coil					0.00	Length on 1 coil =150m

per day

Items	Specification	Quantity	Unit	Hourly Rate (SBD)	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
Pipes (PVC)	25mm		piece					0.00	
Pipes (PVC)	50mm	1	piece		154.00			154.00	
Pipes (PVC)	80mm		piece					0.00	
Pipes (PVC)	100mm		piece		248.00			0.00	
Pipes (PVC)	150mm		piece					0.00	
Pipes (PVC)	200mm		piece					0.00	
Pipes (PVC)	250mm		piece					0.00	
Pipes (PVC)	300mm		piece					0.00	
Water Meter	10mm		piece					0.00	
Water Meter	16mm		piece					0.00	
Water Meter	20mm		piece					0.00	
Water Meter	25mm		piece					0.00	
Water Meter	32mm		piece					0.00	
Water Meter	40mm		piece					0.00	
Other Materials								3,540.12	
Sub-total								**8,859.24**	
Total								**43,634.58**	

1AUD=6.534SBD was applied to the above (rate as of 30 September, 2013 of Oanda).

2. Countermeasure

Location **Mbokona**

per day

Items	Specification	Quantity	Unit	Hourly Rate (SBD)	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
1. Personnel	Grades- Steps								
Staff-3	3.1	0	Person	15.38	115.35				
	3.2	0	Person	15.90	119.25				
	3.3	0	Person	16.41	123.08				
	3.4	0	Person	16.92	126.90				
	3.5	0	Person	17.44	130.80				
Staff-4	4.1	16	Person	19.23	144.23	152.00		21,922.20	
	4.2	8	Person	20.00	150.00	76.00		11,400.00	
	4.3	0	Person	20.77	155.78			0.00	
	4.4	0		21.54	161.55			0.00	
	4.5	0		22.31	167.33			0.00	
Staff-5	5.1	3		24.10	180.75	38.00		6,868.50	
	5.2	0		25.13	188.48			0.00	
	5.3	0		26.15	196.13			0.00	
	5.4	0		27.18	203.85			0.00	
	5.5	4		28.21	211.58	38.00		8,039.85	
Staff-6	6.1	0		31.54	236.55			0.00	
	6.2	0		32.82	246.15			0.00	
	6.3	0		34.10	255.75			0.00	
	6.4	0		35.38	265.35			0.00	
	6.5	0		36.67	275.03			0.00	
Staff-7	7.1	0		38.46	288.45			0.00	
	7.2	0		39.74	298.05			0.00	
	7.3	0		41.03	307.73			0.00	
	7.4	0		42.31	317.33			0.00	
	7.5	0		43.59	326.93			0.00	
Staff-8	8.1	0		47.95	359.63			0.00	
	8.2	0		49.23	369.23			0.00	
	8.3	0		50.51	378.83			0.00	
	8.4	0		51.79	388.43			0.00	
	8.5	0		53.08	398.10			0.00	
Staff-9	9.1	0		58.21	436.58			0.00	
	9.2	0		59.49	446.18			0.00	
	9.3	0		60.77	455.78			0.00	
	9.4	0		62.05	465.38			0.00	
	9.5	0		63.33	474.98			0.00	
Sub-total						304.00		48,230.55	
2. Consumable				$ Per Liter	L/km		$/km		
Diesel	For Excavator	0	Liter	11.80	0.3620		4.2716	0.00	50km/7km/liter=7.14liter 11liter/hrs (fuel consumption for about 60PS) x 1hr=11liter 11liter +7.1liter=18.1liter/50km
Diesel	For Pick-up	924	Liter	11.80	0.1428	131.9472	1.68504	1,556.98	50km/7km/liter=7.14liter/50km
Engine Oil	For Excavator	0	Liter	60.00	0.0016		0.096	0.00	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Engine Oil	For Pick-up	924	Liter	60.00	0.0016		0.096	88.70	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Tires		0	Nos	770.00	0.0014		1.078	0.00	50km x 252days=12,600km 12,600km/ 30,000km x 4nos=1.68nos 1.68nos/ 252days=0.07nos/50km
Sub-total								1,645.68	
3. Material & Equipment									
Sluice/ Gate Valve	25mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	40mm		piece		350.00			0.00	Gate Valve
Sluice/ Gate Valve	50mm		piece		310.00			0.00	Gate Valve
Sluice/ Gate Valve	80mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	100mm		piece		2,423.00			0.00	Sluice Valve
Sluice/ Gate Valve	150mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	200mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	250mm		piece					0.00	Sluice Valve225mm AUD1785
Sluice/ Gate Valve	300mm		piece					0.00	
Pipes (Poly)	15mm	200	coil		14.50			2,900.00	Length on 1 coil =300m
Pipes (Poly)	20mm	100	coil		16.00			1,600.00	Length on 1 coil =300m
Pipes (Poly)	25mm		coil					0.00	Length on 1 coil =200m
Pipes (Poly)	50mm		coil					0.00	Length on 1 coil =150m
Pipes (PVC)	25mm		piece					0.00	

per day

Items	Specification	Quantity	Unit	Hourly Rate (SBD)	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
Pipes (PVC)	50mm		piece					0.00	
Pipes (PVC)	80mm		piece					0.00	
Pipes (PVC)	100mm		piece		248.00			0.00	
Pipes (PVC)	150mm		piece					0.00	
Pipes (PVC)	200mm		piece					0.00	
Pipes (PVC)	250mm		piece					0.00	
Pipes (PVC)	300mm		piece					0.00	
Water Meter	10mm		piece					0.00	
Water Meter	16mm		piece					0.00	
Water Meter	20mm	44	piece		394.00			17,336.00	
Water Meter	25mm		piece					0.00	
Water Meter	32mm		piece					0.00	
Water Meter	40mm		piece					0.00	
Other Materials								56,239.04	
Water meter	20mm	24			394.00			9,456.00	Not shown in requisition report for Mbokona
Sub-total								87,531.04	
Total								137,407.27	

1AUD=6.534SBD was applied to the above (rate as of 30 September, 2013 of Oanda).

3. After Countermeasure

Location Mbokona

per day

Items	Specification	Quantity	Unit	Hourly Rate (SBD)	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
1. Personnel	Grades- Steps								
Staff-3	3.1	0	Person	15.38	115.35				
	3.2	0	Person	15.90	119.25				
	3.3	0	Person	16.41	123.08				
	3.4	0	Person	16.92	126.90				
	3.5	0	Person	17.44	130.80				
Staff-4	4.1	12	Person	19.23	144.23	20.00		2,884.50	
	4.2	6	Person	20.00	150.00	10.00		1,500.00	
	4.3	0	Person	20.77	155.78			0.00	
	4.4	0		21.54	161.55			0.00	
	4.5	0		22.31	167.33			0.00	
Staff-5	5.1	3		24.10	180.75	5.00		903.75	
	5.2	0		25.13	188.48			0.00	
	5.3	0		26.15	196.13			0.00	
	5.4	0		27.18	203.85			0.00	
	5.5	3		28.21	211.58	5.00		1,057.88	
Staff-6	6.1	0		31.54	236.55			0.00	
	6.2	0		32.82	246.15			0.00	
	6.3	0		34.10	255.75			0.00	
	6.4	0		35.38	265.35			0.00	
	6.5	0		36.67	275.03			0.00	
Staff-7	7.1	0		38.46	288.45			0.00	
	7.2	0		39.74	298.05			0.00	
	7.3	0		41.03	307.73			0.00	
	7.4	0		42.31	317.33			0.00	
	7.5	0		43.59	326.93			0.00	
Staff-8	8.1	0		47.95	359.63			0.00	
	8.2	0		49.23	369.23			0.00	
	8.3	0		50.51	378.83			0.00	
	8.4	0		51.79	388.43			0.00	
	8.5	2		53.08	398.10	6.00		2,388.60	
Staff-9	9.1	0		58.21	436.58			0.00	
	9.2	0		59.49	446.18			0.00	
	9.3	0		60.77	455.78			0.00	
	9.4	0		62.05	465.38			0.00	
	9.5	0		63.33	474.98			0.00	
Sub-total						46.00		8,734.73	
2. Consumable				$ Per Liter	L/km		$/km		
Diesel	For Excavator	0	Liter	11.80	0.3620		4.2716	0.00	50km/7km/liter=7.14liter 11liter/hrs (fuel consumption for about 60PS) x 1hr=11liter 11liter +7.1liter=18.1liter/50km
Diesel	For Pick-up	66	Liter	11.80	0.1428	9.4248	1.68504	111.21	50km/7km/liter=7.14liter/50km
Engine Oil	For Excavator	0	Liter	60.00	0.0016		0.096	0.00	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Engine Oil	For Pick-up	66	Liter	60.00	0.0016		0.096	6.34	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Tires		0	Nos	770.00	0.0014		1.078	0.00	50km x 252days=12,600km 12,600km/ 30,000km x 4nos=1.68nos 1.68nos/ 252days=0.07nos/50km
Sub-total								**117.55**	
3. Material & Equipment									
Sluice/ Gate Valve	25mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	40mm		piece		350.00			0.00	Gate Valve
Sluice/ Gate Valve	50mm		piece		310.00			0.00	Gate Valve
Sluice/ Gate Valve	80mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	100mm		piece		2,423.00			0.00	Sluice Valve
Sluice/ Gate Valve	150mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	200mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	250mm		piece					0.00	Sluice Valve225mm AUD1785
Sluice/ Gate Valve	300mm		piece					0.00	
Pipes (Poly)	15mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	20mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	25mm		coil					0.00	Length on 1 coil =200m
Pipes (Poly)	50mm		coil					0.00	Length on 1 coil =150m
Pipes (PVC)	25mm		piece					0.00	
Pipes (PVC)	50mm		piece					0.00	
Pipes (PVC)	80mm		piece					0.00	
Pipes (PVC)	100mm		piece		248.00			0.00	
Pipes (PVC)	150mm		piece					0.00	
Pipes (PVC)	200mm		piece					0.00	
Pipes (PVC)	250mm		piece					0.00	
Pipes (PVC)	300mm		piece					0.00	
Water Meter	10mm		piece					0.00	
Water Meter	16mm		piece					0.00	
Water Meter	20mm		piece					0.00	
Water Meter	25mm		piece					0.00	
Water Meter	32mm		piece					0.00	
Water Meter	40mm		piece					0.00	
Other Materials									
Sub-total								**0.00**	
Total								**8,852.27**	

1AUD=6.534SBD was applied to the above (rate as of 30 September, 2013 of Oanda).

4. Costing for Routine Activities

Location Mbokona

per day

Items	Specification	Quantity	Unit	Hourly Rate (SBD)	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
1. Personnel	Grades- Steps								
Staff-3	3.1	0	Person	15.38	115.35				
	3.2	0	Person	15.90	119.25				
	3.3	0	Person	16.41	123.08				
	3.4	0	Person	16.92	126.90				
	3.5	0	Person	17.44	130.80				
Staff-4	4.1	0	Person	19.23	144.23			0.00	
	4.2	0	Person	20.00	150.00			0.00	
	4.3	0	Person	20.77	155.78			0.00	
	4.4	0		21.54	161.55			0.00	
	4.5	0		22.31	167.33			0.00	
Staff-5	5.1	0		24.10	180.75			0.00	
	5.2	0		25.13	188.48			0.00	
	5.3	0		26.15	196.13			0.00	
	5.4	0		27.18	203.85			0.00	
	5.5	1		28.21	211.58	2.00		423.15	
Staff-6	6.1	2		31.54	236.55	2.00		473.10	
	6.2	0		32.82	246.15			0.00	
	6.3	0		34.10	255.75			0.00	
	6.4	0		35.38	265.35			0.00	
	6.5	0		36.67	275.03			0.00	
Staff-7	7.1	0		38.46	288.45			0.00	
	7.2	0		39.74	298.05			0.00	
	7.3	0		41.03	307.73			0.00	
	7.4	0		42.31	317.33			0.00	
	7.5	0		43.59	326.93			0.00	
Staff-8	8.1	0		47.95	359.63			0.00	
	8.2	0		49.23	369.23			0.00	
	8.3	0		50.51	378.83			0.00	
	8.4	0		51.79	388.43			0.00	
	8.5	0		53.08	398.10			0.00	
Staff-9	9.1	0		58.21	436.58			0.00	
	9.2	0		59.49	446.18			0.00	
	9.3	0		60.77	455.78			0.00	
	9.4	0		62.05	465.38			0.00	
	9.5	0		63.33	474.98			0.00	
Sub-total						4.00		896.25	
2. Consumable				$ Per Liter	L/km		$/km		
Diesel	For Excavator	0	Liter	11.80	0.3620		4.2716	0.00	50km/7km/liter=7.14liter 11liter/hrs (fuel consumption for about 60PS) x 1hr=11liter 11liter +7.1liter=18.1liter/50km
Diesel	For Pick-up	44	Liter	11.80	0.1428	6.2832	1.68504	74.14	50km/7km/liter=7.14liter/50km
Engine Oil	For Excavator	0	Liter	60.00	0.0016		0.096	0.00	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Engine Oil	For Pick-up	44	Liter	60.00	0.0016		0.096	4.22	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Tires		0	Nos	770.00	0.0014		1.078	0.00	50km x 252days=12,600km 12,600km/ 30,000km x 4nos=1.68nos 1.68nos/ 252days=0.07nos/50km
Sub-total								78.37	
3. Material & Equipment									
Sluice/ Gate Valve	25mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	40mm		piece		350.00			0.00	Gate Valve
Sluice/ Gate Valve	50mm		piece		310.00			0.00	Gate Valve
Sluice/ Gate Valve	80mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	100mm		piece		2,423.00			0.00	Sluice Valve
Sluice/ Gate Valve	150mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	200mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	250mm		piece					0.00	Sluice Valve225mm AUD1785
Sluice/ Gate Valve	300mm		piece					0.00	
Pipes (Poly)	15mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	20mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	25mm		coil					0.00	Length on 1 coil =200m
Pipes (Poly)	50mm		coil					0.00	Length on 1 coil =150m
Pipes (PVC)	25mm		piece					0.00	
Pipes (PVC)	50mm		piece					0.00	
Pipes (PVC)	80mm		piece					0.00	
Pipes (PVC)	100mm		piece		248.00			0.00	
Pipes (PVC)	150mm		piece					0.00	
Pipes (PVC)	200mm		piece					0.00	
Pipes (PVC)	250mm		piece					0.00	
Pipes (PVC)	300mm		piece					0.00	
Water Meter	10mm		piece					0.00	
Water Meter	16mm		piece					0.00	
Water Meter	20mm		piece					0.00	
Water Meter	25mm		piece					0.00	
Water Meter	32mm		piece					0.00	
Water Meter	40mm		piece					0.00	
Other Materials								0.00	
Sub-total								0.00	
Total								974.62	

1AUD=6.534SBD was applied to the above (rate as of 30 September, 2013 of Oanda).

Cost for Materials (Mbokona)

DEPARTMENT NAME: NRW PROJECT TEAM 1 — RECEIVED BY: J.Teno
RECOMMENDED BY : Eric Unga — ISSUED BY: Jerry Webo
REQUISITION NO: 0126 — DATE ISSUED: 12/10/2013
JOB DESCRIPTION: Being for Mbokona Pilot Project Site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
10/12/2013	80mm (3") Brass Gate Valve	1	$ 1,229.00	$ 1,229.00
10/12/2013	8" x 1 1/4" brass Saddle/Tapping band	1	$ 844.00	$ 844.00
10/12/2013	15mm Stop Cock	1	$ 95.00	$ 95.00
10/12/2013	1/2" G.I Nipple	1	$ 8.00	$ 8.00
10/12/2013	80mm (3") Sluice Valve	1	$ 2,397.12	$ 2,397.12
10/12/2013	80mm (3") Flange Adaptor	2	$ 636.73	$ 1,273.46
10/12/2013	16mm Poly Tee	1	$ 85.00	$ 85.00
10/12/2013	3" Gasket & boits	2	$ 134.83	$ 269.66
		Total per Requisition =		$ 6,201.24

DEPARTMENT NAME: NRW PROJECT TEAM 2 — RECEIVED BY: John Teno
RECOMMENDED BY : Benjimen Billy — ISSUED BY: Paul Seda
REQUISITION NO: 2352 — DATE ISSUED: 14/10/2013
JOB DESCRIPTION: Being for Mbokona Pilot Project Site.

Date	Materials Description	Quantity	Unit Cost	Total Cost
10/14/2013	3" UPVC Compression Coupling	1	$ 180.00	$ 180.00
		Total per Requisition =		$ 180.00

DEPARTMENT NAME: NRW PROJECT TEAM 2 — RECEIVED BY: Dykes
RECOMMENDED BY : Benjimen Billy — ISSUED BY: Paul Seda
REQUISITION NO: 2354 — DATE ISSUED: 15/10/2013
JOB DESCRIPTION: Being for Mbokona Pilot Project Site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
10/15/2013	80mm (3") Brass Gate Valve	1	$ 1,229.00	$ 1,229.00
10/15/2013	50mm UPVC Presure Pipe	1	$ 154.00	$ 154.00
10/15/2013	2" (50mm) Gilbault Joint	1	$ 231.00	$ 231.00
10/15/2013	3" UPVC Compression Coupling	2	$ 180.00	$ 360.00
10/15/2013	80mm (3") UPVC Male threaded Socket	2	$ 77.00	$ 154.00
10/15/2013	ThreadTape	10	$ 4.00	$ 40.00
10/15/2013	50mm (2") Gate Valve	1	$ 310.00	$ 310.00
		Total per Requisition =		$ 2,478.00

DEPARTMENT NAME: NRW PROJECT TEAM 1 — RECEIVED BY: Moses Metea
RECOMMENDED BY : Benjimen Billy — ISSUED BY: Paul Seda
REQUISITION NO: 2355 — DATE ISSUED: 21/10/2013
JOB DESCRIPTION: Materials required for Mbokona Pilot project site .
Meter ID : 12B011266 - 270 (5 Pieces) 12B010941 - 945 (5 pieces)

Date	Materials Description	Quantity	Unit Cost	Total Cost
10/21/2013	ThreadTape (5 Pkts)	50	$ 4.00	$ 200.00
10/21/2013	3/4" x 1/2" G.I Reducing Socket	10	$ 12.00	$ 120.00
10/21/2013	16mm x 1/2" female poly Adaptor	20	$ 45.00	$ 900.00
10/21/2013	3/4" G.I nipple	10	$ 12.00	$ 120.00
10/21/2013	20mm Water Meter	10	$ 394.00	$ 3,940.00
		Total per Requisition =		$ 5,280.00

DEPARTMENT NAME: NRW PROJECT TEAM 1 — RECEIVED BY: Dykes
RECOMMENDED BY : Silas Talosui — ISSUED BY: Paul Seda
REQUISITION NO: 2356 — DATE ISSUED: 21/10/2013
JOB DESCRIPTION: Materials required for Mbokona Pilot project site for Meter Raising .

Date	Materials Description	Quantity	Unit Cost	Total Cost
10/21/2013	3/4" x 1/2" G.I Reducing Socket	20	$ 12.00	$ 240.00
10/21/2013	16mm x 1/2" female poly Adaptor	20	$ 45.00	$ 900.00
10/21/2013	3/4" G.I nipple	10	$ 12.00	$ 120.00
		Total per Requisition =		$ 1,260.00

DEPARTMENT NAME: NRW PROJECT TEAM 1 — RECEIVED BY: John Teno
RECOMMENDED BY : Silas Talosui — ISSUED BY: Paul Seda
REQUISITION NO: 2454 — DATE ISSUED: 23/10/2013
JOB DESCRIPTION: Materials required for Mbokona Pilot project site for Meter Raising .

Date	Materials Description	Quantity	Unit Cost	Total Cost
10/23/2013	40 KG Bag cement	10	$ 78.00	$ 780.00
10/23/2013	50 metres 16mm poly pipe	50	$ 14.50	$ 725.00
10/23/2013	16mm Poly Coupling	10	$ 45.00	$ 450.00
10/23/2013	20mm x 16mm Poly Reduce Coupling	10	$ 56.00	$ 560.00
10/23/2013	16mm x 1/2" female poly Adaptor	10	$ 45.00	$ 450.00
10/23/2013	16mm x 1/2" male Poly Adaptor	10	$ 45.00	$ 450.00
10/23/2013	20mm Poly Coupling	10	$ 45.00	$ 450.00
10/23/2013	20mm Stop Cock	5	$ 168.00	$ 840.00
10/23/2013	15mm Stop Cock	5	$ 95.00	$ 475.00
10/23/2013	ThreadTape	5	$ 4.00	$ 20.00
		Total per Requisition =		$ 5,200.00

DEPARTMENT NAME: NRW PROJECT TEAM 1 — RECEIVED BY: David.Akwa'asi
RECOMMENDED BY : Benjimen Billy — ISSUED BY: Paul Seda
REQUISITION NO: 2455 — DATE ISSUED: 23/10/2013
JOB DESCRIPTION: Being for maintenace of Leakage @ Mbokona Pilot project site for Meter Raising .

Date	Materials Description	Quantity	Unit Cost	Total Cost
10/23/2013	15mm Stop Cock	5	$ 95.00	$ 475.00
10/23/2013	1/2" G.I Nipple	9	$ 8.00	$ 72.00
10/23/2013	1/2" G.I Socket	4	$ 10.00	$ 40.00
10/23/2013	ThreadTape	5	$ 4.00	$ 20.00
10/23/2013	16mm x 1/2" female poly Adaptor	10	$ 45.00	$ 450.00
10/23/2013	16mm Poly Coupling	5	$ 45.00	$ 225.00
		Total per Requisition =		$ 1,282.00

DEPARTMENT NAME: NRW PROJECT TEAM 1 — RECEIVED BY: David Akoeasi
RECOMMENDED BY : Eric Unga — ISSUED BY: Paul Seda
REQUISITION NO: 2456 — DATE ISSUED: 24/10/2013
JOB DESCRIPTION: Materials required for Mbokona Valley Project Pilot Site for Meter Raising .

Date	Materials Description	Quantity	Unit Cost	Total Cost
10/24/2013	50mm Poly Coupling	2	$ 66.00	$ 132.00
		Total per Requisition =		$ 132.00

DEPARTMENT NAME: NRW PROJECT TEAM 1 — RECEIVED BY: David Akoeasi
RECOMMENDED BY : Benjimen Billy — ISSUED BY: Paul Seda
REQUISITION NO: 2457 — DATE ISSUED: 25/10/2013
JOB DESCRIPTION: Materials required for Repair @ Mbokona Valley Project Pilot Site for Meter Raising .

Date	Materials Description	Quantity	Unit Cost	Total Cost
10/25/2013	63mm Poly Plain Coupling	1	$ 99.20	$ 99.20
10/25/2013	63mm x 2" Poly male Adaptor	1	$ 62.40	$ 62.40
10/25/2013	2 metres 32mm poly Pipe	2	$ 30.00	$ 60.00
10/25/2013	2 " x 1 1/4" G.I reduce Socket	1	$ 60.00	$ 60.00
10/25/2013	32mm x 1 1/4" male poly Adaptor	1	$ 55.00	$ 55.00
10/25/2013	32mm poly Coupling	1	$ 70.00	$ 70.00
		Total per Requisition =		$ 406.60

DEPARTMENT NAME: NRW PROJECT TEAM 1 — RECEIVED BY: Moses Meitea
RECOMMENDED BY : Silas Talosui — ISSUED BY: Paul Seda
REQUISITION NO: 2460 — DATE ISSUED: 04/11/2013
JOB DESCRIPTION: Materials required for Project Pilot Site @ Mbokona for Meter raising .
METER I.D : 12B086598 - 602(5 Pies), 12B086843-847(5 pies),12B011041-045(5 pies),12B011226-230(5 pies)

Date	Materials Description	Quantity	Unit Cost	Total Cost
11/4/2013	15mm G.I elbow	80	$ 12.00	$ 960.00
11/4/2013	3/4" x 1/2" G.I reduce Socket	4	$ 12.50	$ 50.00
11/4/2013	20mm Stop Cock	20	$ 180.00	$ 3,600.00
11/4/2013	16mm x 1/2" female poly Adaptor	40	$ 45.00	$ 1,800.00
11/4/2013	3/4" G.I nipple	20	$ 12.00	$ 240.00
11/4/2013	20mm Water Meter	20	$ 394.00	$ 7,880.00
		Total per Requisition =		$ 14,530.00

DEPARTMENT NAME: NRW PROJECT TEAM 1 — RECEIVED BY: Selina
RECOMMENDED BY : M.Bera for Benjimen — ISSUED BY: George Blamoli
REQUISITION NO: 2461 — DATE ISSUED: 07/11/2013
JOB DESCRIPTION: Being for continue work on Meter Raising Pilot Project site @ Mbokona .

Date	Materials Description	Quantity	Unit Cost	Total Cost
11/7/2013	40 KG Bag cement	3	$ 80.00	$ 240.00
		Total per Requisition =		$ 240.00

DEPARTMENT NAME: NRW PROJECT TEAM 1 — RECEIVED BY: Moses Metea
RECOMMENDED BY : Eric Unga — ISSUED BY: Paul Seda
REQUISITION NO: 2462 — DATE ISSUED: 08/11/2013
JOB DESCRIPTION: Being for continue work on Meter Raising Pilot Project site @ Mbokona .

Date	Materials Description	Quantity	Unit Cost	Total Cost
11/8/2013	10mm Steel Rods	5	$ 68.00	$ 340.00
		Total per Requisition =		$ 340.00

DEPARTMENT NAME: NRW PROJECT TEAM 1 — RECEIVED BY: John Teno
RECOMMENDED BY : Eric Unga — ISSUED BY: George Blamoli
REQUISITION NO: 2464 — DATE ISSUED: 13/11/2013
JOB DESCRIPTION: Being for Meter Raising Project @ Mbokona Pilot Site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
11/13/2013	15mm Stop Cock	10	$ 170.00	$ 1,700.00
11/13/2013	20mm Stop Cock	20	$ 180.00	$ 3,600.00
11/13/2013	16mm x 1/2" female poly Adaptor	22	$ 45.00	$ 990.00
11/13/2013	16mm x 3/4 Female Poly Adaptor	24	$ 50.00	$ 1,200.00
11/13/2013	16mm Poly Coupling	14	$ 45.00	$ 630.00
11/13/2013	20mm x 16mm Poly Reduce Coupling	14	$ 56.00	$ 784.00
11/13/2013	1/2" G.I Socket	14	$ 10.00	$ 140.00
11/13/2013	15mm G.I elbow	30	$ 12.00	$ 360.00
11/13/2013	20mm(3/4") G.I Elbow	26	$ 14.00	$ 364.00
11/13/2013	ThreadTape	30	$ 4.00	$ 120.00
11/13/2013	16mm Poly Tee	2	$ 85.00	$ 170.00
11/13/2013	3/4" G.I Socket	20	$ 12.00	$ 240.00
		Total per Requisition =		$ 10,298.00

DEPARTMENT NAME: NRW PROJECT TEAM 1 — RECEIVED BY: Selina
RECOMMENDED BY : Nathaniel Legu (For Eric Unga) — ISSUED BY: George Blamoli
REQUISITION NO: 2465 — DATE ISSUED: 13/11/2013
JOB DESCRIPTION: Being for Meter Raising Project @ Mbokona Pilot Site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
11/13/2013	16mm x 3/4 Female Poly Adaptor	20	$ 50.00	$ 1,000.00
11/13/2013	1/2" G.I Nipple	10	$ 8.00	$ 80.00
11/13/2013	ThreadTape	20	$ 4.00	$ 80.00
11/13/2013	20mm(3/4") G.I Elbow	20	$ 14.00	$ 280.00
		Total per Requisition =		$ 1,440.00

DEPARTMENT NAME: NRW PROJECT TEAM 1 — RECEIVED BY: John Teno
RECOMMENDED BY : Eric Unga — ISSUED BY: George Blamoli
REQUISITION NO: 2466 — DATE ISSUED: 14/11/2013
JOB DESCRIPTION: Being for Meter Raising Project @ Mbokona Pilot Site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
11/14/2013	20mm(3/4") G.I Elbow	26	$ 14.00	$ 364.00
11/14/2013	16mm Poly Coupling	10	$ 45.00	$ 450.00
11/14/2013	20mm x 16mm Poly Reduce Coupling	6	$ 56.00	$ 336.00
11/14/2013	ThreadTape	20	$ 4.00	$ 80.00
11/14/2013	1/2"G I Tee	1	$8.00	$ 8.00
		Total per Requisition =		$ 1,238.00

DEPARTMENT NAME: NRW PROJECT TEAM 1 — RECEIVED BY: Dykes
RECOMMENDED BY : Benjimen Billy — ISSUED BY: George Blamoli
REQUISITION NO: 2467 — DATE ISSUED: 14/11/2013
JOB DESCRIPTION: Being for Meter Raising Project @ Mbokona Pilot Site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
11/14/2013	10mm Steel Rods	5	$ 68.00	$ 340.00
11/14/2013	16mm x 3/4 Female Poly Adaptor	10	$ 50.00	$ 500.00
		Total per Requisition =		$ 840.00

DEPARTMENT NAME: NRW PROJECT TEAM 1 — RECEIVED BY: selina
RECOMMENDED BY : Silas Talosiu — ISSUED BY: Paul Seda
REQUISITION NO: 2468 — DATE ISSUED: 15/11/2013
JOB DESCRIPTION: Materials Required for Mbokona Pilot Project Site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
11/15/2013	20mm x 16mm x 20mm Poly reduce Tee	1	$ 31.00	$ 31.00
11/15/2013	20mm x 16mm Poly Reduce Coupling	4	$ 56.00	$ 224.00
11/15/2013	16mm Poly Coupling	6	$ 45.00	$ 270.00
11/15/2013	16mm x 1/2" male Poly Adaptor	8	$ 45.00	$ 360.00
11/15/2013	16mm x 1/2" female poly Adaptor	8	$ 45.00	$ 360.00
11/15/2013	ThreadTape	20	$ 4.00	$ 80.00
11/15/2013	3/4" x 1/2" G.I reduce Socket	8	$ 12.50	$ 100.00
		Total per Requisition =		$ 1,425.00

DEPARTMEN' NRW Team1 — RECEIVED BY: Selina Fai
RECOMMENDED BY : Benjamin — ISSUED BY: Paul Seda
REQUISITION NO: 2470 — DATE ISSUED: 16/11/2013
JOB DESCRIPTION: Materials required for Raising meters@ Mbokona pilot site.

Date	Materials Description	Quantity	Unit Cost	Total Cost
11/16/2013	16mm x 1/2" female poly Adaptor	15	$ 45.00	$ 675.00
11/16/2013	ThreadTape	10	$ 4.00	$ 40.00
11/16/2013	32mm x 1"Fe male Poly Adaptor	1	$ 55.00	$ 55.00
11/16/2013	1" x 3/4" Poly Reduce Bush	1	$ 7.00	$ 7.00
11/16/2013	16mm x 3/4" Poly Male Adaptor	1	$ 28.00	$ 28.00
		Total per Requisition =		$ 805.00

DEPARTMENT NRW Team1 — RECEIVED BY: John Chede
RECOMMENDED BY : Benjamin — ISSUED BY: Paul Seda
REQUISITION NO: 2469 — DATE ISSUED: 16/11/2013
JOB DESCRIPTION: Materials required for Raising meters@ Mbokona pilot site.

Date	Materials Description	Quantity	Unit Cost	Total Cost
11/16/2013	20 metres 20mm Poly Pipe	20	$ 16.00	$ 320.00
11/16/2013	20mm Poly Coupling	4	$ 45.00	$ 180.00
11/16/2013	16mm x 1/2" male PVC Adaptor	4	$ 5.00	$ 20.00
11/16/2013	16mm x 1/2"Fe male PVC Adaptor	4	$ 5.00	$ 20.00
11/16/2013	ThreadTape	10	$ 4.00	$ 40.00
11/16/2013	Hack Saw Blade	1	$ 21.00	$ 21.00
11/16/2013	1 container 500ml PVC Glue	1	$ 42.22	$ 42.22
		Total per Requisition =		**$ 643.22**

DEPARTMENT NRW Team1 — **RECEIVED BY: John Chede/M. Caulos**
RECOMMENDED BY : Benjamin — **ISSUED BY: Paul Seda**
REQUISITION NO: 2471 — **DATE ISSUED: 16/11/2013**
JOB DESCRIPTION: Materials required for Raising meters@ Mbokona pilot site.

Date	Materials Description	Quantity	Unit Cost	Total Cost
11/16/2013	40 KG Bag cement	6	$ 80.00	$ 480.00
		Total per Requisition =		**$ 1,123.22**

DEPARTMENT NRW Team1 — **RECEIVED BY: Moses Metea**
RECOMMENDED BY : Eric Unga — **ISSUED BY: Paul Seda**
REQUISITION NO: 2472 — **DATE ISSUED: 18/11/2013**
JOB DESCRIPTION: Materials required for Raising meters@ Mbokona pilot site.

Date	Materials Description	Quantity	Unit Cost	Total Cost
11/18/2013	40 KG Bag cement	6	$ 80.00	$ 480.00
11/18/2013	10mm Steel Rods	7	$ 68.00	$ 476.00
11/18/2013	16mm Poly Coupling	5	$ 45.00	$ 225.00
11/18/2013	16mm x 1/2" female poly Adaptor	5	$ 45.00	$ 225.00
11/18/2013	20mm Stop Cock	20	$ 168.00	$ 3,360.00
11/18/2013	20mm(3/4") G.I Elbow	80	$ 14.00	$ 1,120.00
11/18/2013	3/4" G.I Socket	20	$ 12.00	$ 240.00
11/18/2013	ThreadTape	40	$ 4.00	$ 160.00
11/18/2013	20mm x 3/4" Poly female Adaptor	20	$ 48.00	$960.00
11/18/2013	20mm x 16mm Poly Reduce Coupling	20	$ 56.00	$ 1,120.00
		Total per Requisition =		**$ 8,366.00**

DEPARTMENT NAME: NRW PROJECT TEAM 1 — **RECEIVED BY: selina**
RECOMMENDED BY : Vincent — **ISSUED BY: Paul Seda**
REQUISITION NO: 2473 — **DATE ISSUED: 18/11/2013**
JOB DESCRIPTION: Materials Required for Mbokona Pilot Project Site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
11/18/2013	20mm x 3/4" Poly female Adaptor	20	$ 48.00	$ 960.00
11/18/2013	ThreadTape	40	$ 4.00	$ 160.00
		Total per Requisition =		**$ 1,120.00**

DEPARTMENT NAME: NRW Team 1 — **RECEIVED BY : John Teno**
AUTHORISED BY: Benjamin — **ISSUED BY: Paul Seda**
REQUISITION NO: 2474 — **DATE ISSUED: 19/11/2013**
JOB DESCRIPTION: Being for New Service Connection for David Day Pacha @ Mbuburu.
METER I.D : 12B086453-457(5pieces)12B086443-447(5pce)

Date	Materials Description	Quantity	Unit Cost	Total Cost
11/19/2013	20mm Water Meter	10	$ 394.00	$ 3,940.00
11/19/2013	30 metres 16mm poly pipe	30	$ 14.50	$ 435.00
11/19/2013	30 metres 20mm Poly Pipe	30	$ 16.00	$ 480.00
11/19/2013	20mm x 16mm Poly Reduce Coupling	10	$ 56.00	$ 560.00
11/19/2013	20mm Poly Coupling	5	$ 45.00	$ 225.00
11/19/2013	16mm Poly Coupling	5	$ 45.00	$ 225.00
		Total per Requisition =		**$ 5,865.00**

DEPARTMENT NAME: NRW PROJECT TEAM 1 — **RECEIVED BY: John Chede**
RECOMMENDED BY : Silas Talosiu — **ISSUED BY:George Blamoli**
REQUISITION NO: 2473 — **DATE ISSUED: 19/11/2013**
JOB DESCRIPTION: Materials Required for Mbokona Pilot Project Site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
11/19/2013	3/4"G I Tee	1	$10.00	$ 10.00
11/19/2013	16mm x 3/4" Poly Male Adaptor	1	$ 28.00	$ 28.00
		Total per Requisition =		**$ 38.00**

DEPARTMENT NAME: NRW PROJECT TEAM 1 — **RECEIVED BY: John Chede**
RECOMMENDED BY : Nathaniel — **ISSUED BY:George Blamoli**
REQUISITION NO: 2475 — **DATE ISSUED: 20/11/2013**
JOB DESCRIPTION: Materials Required for Mbokona Pilot Project Site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
11/20/2013	3/4" G.I Socket	15	$ 12.00	$ 180.00
11/20/2013	ThreadTape	15	$ 4.00	$ 60.00
11/20/2013	20mm(3/4") G.I Elbow	20	$ 14.00	$ 280.00
11/20/2013	20mm Stop Cock	20	$ 168.00	$ 3,360.00
11/20/2013	20mm x 3/4" Poly female Adaptor	20	$ 48.00	$ 960.00
11/20/2013	30 metres 20mm Poly Pipe	30	$ 16.00	$ 480.00
11/20/2013	30 metres 16mm poly pipe	30	$ 14.50	$ 435.00
11/20/2013	16mm Poly Coupling	10	$ 45.00	$ 450.00
11/20/2013	20mm x 16mm Poly Reduce Coupling	10	$ 56.00	$ 560.00
		Total per Requisition =		**$ 6,765.00**

DEPARTMENT NAME: NRW PROJECT TEAM 1 — **RECEIVED BY: John Chede**
RECOMMENDED BY : Eric Unga — **ISSUED BY: Paul Seda**
REQUISITION NO: 2476 — **DATE ISSUED: 2 4/11/2013**
JOB DESCRIPTION: List of Materials for raising water meters@ Mbokona pilot site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
11/24/2013	40 KG Bag cement	5	$ 80.00	$ 400.00
11/24/2013	15mm (1/2") G.I Tee	1	$ 5.00	$ 5.00
		Total per Requisition =		**$ 405.00**

DEPARTMENT NAME: NRW PROJECT TEAM 1 — **RECEIVED BY: John Teno**
RECOMMENDED BY : Bejamin — **ISSUED BY: Paul Seda**
REQUISITION NO: 2319 — **DATE ISSUED: 2 5/11/2013**
JOB DESCRIPTION: List of Materials for raising water meters@ Mbokona pilot site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
11/25/2013	40 KG Bag cement	6	$ 80.00	$ 480.00
		Total per Requisition =		**$ 480.00**

DEPARTMENT NAME: NRW PROJECT TEAM 1 — **RECEIVED BY: John Teno**
RECOMMENDED BY : Eric Unga — **ISSUED BY: Paul Seda**
REQUISITION NO: 2477 — **DATE ISSUED: 2 6/11/2013**
JOB DESCRIPTION: List of Materials for raising water meters@ Mbokona pilot site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
11/26/2013	40 KG Bag cement	4	$ 80.00	$ 320.00
11/26/2013	20mm Water Meter	1	$ 394.00	$ 394.00
11/26/2013	10mm Steel Rods	3	$ 68.00	$ 204.00
		Total per Requisition =		**$ 918.00**

DEPARTMENT NAME: NRW PROJECT TEAM 1 — **RECEIVED BY: John Chede**
RECOMMENDED BY : Nathaniel — **ISSUED BY: George Blamoli**
REQUISITION NO: 2320 — **DATE ISSUED: 2 8/11/2013**
JOB DESCRIPTION: List of Materials for raising water meters@ Mbokona pilot site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
11/26/2013	40 KG Bag cement	6	$ 80.00	$ 480.00
		Total per Requisition =		**$ 480.00**

DEPARTMENT NAME: NRW PROJECT TEAM 1 — **RECEIVED BY: John Chede**
RECOMMENDED BY : Nathaniel — **ISSUED BY: George Blamoli**
REQUISITION NO: 2320 — **DATE ISSUED: 2 9/11/2013**
JOB DESCRIPTION: List of Materials for raising water meters@ Mbokona pilot site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
11/29/2013	40 KG Bag cement	7	$ 80.00	$ 560.00
		Total per Requisition =		**$ 560.00**

DEPARTMENT NAME: NRW PROJECT TEAM 1 — **RECEIVED BY: Dykes**
RECOMMENDED BY : Eric Unga — **ISSUED BY: George Blamoli**
REQUISITION NO: 2359 — **DATE ISSUED: 02/12/2013**
JOB DESCRIPTION: Being for Mbokona Pilot Site .
METER I.D

Date	Materials Description	Quantity	Unit Cost	Total Cost
12/2/2013	40 KG Bag cement	12	$ 80.00	$ 960.00
		Total per Requisition =		**$ 960.00**

DEPARTMENT NAME: NRW PROJECT TEAM 1 — **RECEIVED BY: John Teno**
RECOMMENDED BY : Ray Andersen — **ISSUED BY: George Blamoli**
REQUISITION NO: 2480 — **DATE ISSUED: 05/12/2013**
JOB DESCRIPTION: List of Materials required for Mbokona Pilot Site for Meter Raising Project .
METER I.D 12B072442 & 12B072443

Date	Materials Description	Quantity	Unit Cost	Total Cost
12/5/2013	20mm Water Meter	2	$ 394.00	$ 788.00
12/5/2013	16mm Poly Coupling	6	$ 45.00	$ 270.00
12/5/2013	20 metres 16mm poly pipe	20	$ 14.50	$ 290.00
12/5/2013	ThreadTape	40	$ 4.00	$ 160.00
		Total per Requisition =		**$ 1,508.00**

DEPARTMENT NAME: NRW PROJECT TEAM 1 — **RECEIVED BY: John Chede**
RECOMMENDED BY : Eric Unga — **ISSUED BY: George Blamoli**
REQUISITION NO: 2482 — **DATE ISSUED: 09/12/2013**
JOB DESCRIPTION: List of Materials required for Mbokona Pilot Project Site .
METER I.D 12B172501

Date	Materials Description	Quantity	Unit Cost	Total Cost
12/9/2013	16mm Poly Tee	2	$ 85.00	$ 170.00
12/9/2013	20mm Water Meter	1	$ 394.00	$ 394.00
12/9/2013	ThreadTape	5	$ 4.00	$ 20.00
12/9/2013	20mm x 3/4" Poly female Adaptor	2	$ 48.00	$96.00
12/9/2013	3/4" G.I Socket	1	$ 12.00	$ 12.00
12/9/2013	16mm Poly Coupling	10	$ 45.00	$ 450.00
12/9/2013	20mm x 1/2" Poly male Adaptor	1	$ 48.00	$ 48.00
12/9/2013	16mm x 1/2" male Poly Adaptor	2	$ 45.00	$ 90.00
		Total per Requisition =		**$ 1,280.00**

DEPARTMENT NAME: NRW PROJECT TEAM 1 — **RECEIVED BY: John Teno**
RECOMMENDED BY : Benjimen Billy — **ISSUED BY: George Blamoli**
REQUISITION NO: 2481 — **DATE ISSUED: 09/12/2013**
JOB DESCRIPTION: List of Materials required for Mbokona Pilot Project Site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
12/9/2013	50 metres 16mm poly pipe	50	$ 14.50	$ 725.00
12/9/2013	20 metres 20mm Poly Pipe	20	$ 16.00	$ 320.00
12/9/2013	25mm x 1/2" x 25mm Poly female threaded	1	$ 35.00	$ 35.00
12/9/2013	16mm x 1/2" male Poly Adaptor	1	$ 45.00	$ 45.00
		Total per Requisition =		**$ 1,125.00**

DEPARTMENT NAME: NRW PROJECT TEAM 1 — **RECEIVED BY: Francis Hiri**
RECOMMENDED BY : Silas Talosui — **ISSUED BY: George Blamoli**
REQUISITION NO: 2360 — **DATE ISSUED: 10/12/2013**
JOB DESCRIPTION: List of Materials required for Mbokona Pilot Project Site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
12/10/2013	32mm Poly Coupling	5	$ 70.00	$ 350.00
12/10/2013	16mm Poly Coupling	10	$ 45.00	$ 450.00
12/10/2013	20 metres 16mm poly pipe	20	$ 14.50	$ 290.00
12/10/2013	ThreadTape	3	$ 4.00	$ 12.00
		Total per Requisition =		**$ 1,102.00**

DEPARTMENT NAME: NRW PROJECT TEAM 1 — **RECEIVED BY: John Chede**
RECOMMENDED BY : Eric Unga — **ISSUED BY: George Blamoli**
REQUISITION NO: 2311 — **DATE ISSUED: 12/12/2013**
JOB DESCRIPTION: List of Materials required for Mbokona Pilot Project Site for Meter raising .

Date	Materials Description	Quantity	Unit Cost	Total Cost
12/12/2013	16mm Poly Coupling	4	$ 45.00	$ 180.00
12/12/2013	20mm x 16mm Poly Reduce Coupling	4	$ 60.00	$ 240.00
12/12/2013	16mm x 3/4" female Poly Adaptor	4	$ 50.00	$ 200.00
		Total per Requisition =		**$ 620.00**

Total Material Coat for Mbokona — **$ 86,934.28**

TOTAL COST FOR MBARANAMBA

	Before Countermeasure		After Countermeasure		
	Before Countermeasure	Countermeasure	After Countermeasure	Routine Activities	Total
Personnel Cost	19,481.40	13,235.10	5,598.30	1,182.75	39,497.55
Consumable	1,131.74	565.87	239.41	21.76	5,958.79
Material and Equipment	9,669.26	23,423.00	0.00	0.00	33,092.26
Sub total	30,282.40	37,223.97	5,837.71	1,204.51	78,548.60
TOTAL	67,506.38		7,042.22		

TOTAL MAN DAYS	261

1. Costing Before Countermeasure

Location Mbaranamba

per day

Items	Specification	Quantity	Unit	Hourly Rate (SBD)	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
1. Personnel	Grades- Steps								
Staff-3	3.1	0	Person	15.38	115.35				
	3.2	0	Person	15.90	119.25				
	3.3	0	Person	16.41	123.08				
	3.4	0	Person	16.92	126.90				
	3.5	0	Person	17.44	130.80				
Staff-4	4.1	10	Person	19.23	144.23	19.00		2,740.28	
	4.2	20	Person	20.00	150.00	38.00		5,700.00	
	4.3	0	Person	20.77	155.78			0.00	
	4.4	0		21.54	161.55			0.00	
	4.5	0		22.31	167.33			0.00	
Staff-5	5.1	0		24.10	180.75			0.00	
	5.2	0		25.13	188.48			0.00	
	5.3	0		26.15	196.13			0.00	
	5.4	0		27.18	203.85			0.00	
	5.5	9		28.21	211.58	17.00		3,596.78	
Staff-6	6.1	2		31.54	236.55	2.00		473.10	
	6.2	9		32.82	246.15	17.00		4,184.55	
	6.3	0		34.10	255.75			0.00	
	6.4	0		35.38	265.35			0.00	
	6.5	0		36.67	275.03			0.00	
Staff-7	7.1	0		38.46	288.45			0.00	
	7.2	0		39.74	298.05			0.00	
	7.3	0		41.03	307.73			0.00	
	7.4	0		42.31	317.33			0.00	
	7.5	0		43.59	326.93			0.00	
Staff-8	8.1	0		47.95	359.63			0.00	
	8.2	0		49.23	369.23			0.00	
	8.3	0		50.51	378.83			0.00	
	8.4	0		51.79	388.43			0.00	
	8.5	2		53.08	398.10	7.00		2,786.70	
Staff-9	9.1	0		58.21	436.58			0.00	
	9.2	0		59.49	446.18			0.00	
	9.3	0		60.77	455.78			0.00	
	9.4	0		62.05	465.38			0.00	
	9.5	0		63.33	474.98			0.00	
Sub-total						100.00		19,481.40	
2. Consumable				$ Per Liter	L/km		$/km		
Diesel	For Excavator	0	Liter	11.80	0.3620		4.2716	0.00	50km/7km/liter=7.14liter 11liter/hrs (fuel consumption for about 60PS) x 1hr=11liter 11liter +7.1liter=18.1liter/50km
Diesel	For Pick-up	635.44	Liter	11.80	0.1428	90.7408	1.68504	1,070.74	50km/7km/liter=7.14liter/50km
Engine Oil	For Excavator	0	Liter	60.00	0.0016		0.096	0.00	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Engine Oil	For Pick-up	635.44	Liter	60.00	0.0016		0.096	61.00	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Tires		0	Nos	770.00	0.0014		1.078	0.00	50km x 252days=12,600km 12,600km/ 30,000km x 4nos=1.68nos 1.68nos/ 252days=0.07nos/50km
Sub-total								1,131.74	
3. Material & Equipment									
Sluice/ Gate Valve	25mm	2	piece		190.00			380.00	Gate Valve
Sluice/ Gate Valve	40mm	1	piece		350.00			350.00	Gate Valve
Sluice/ Gate Valve	50mm	1	piece		310.00			310.00	Gate Valve
Sluice/ Gate Valve	80mm	3	piece		2,397.12			7,191.36	Sluice Valve
Sluice/ Gate Valve	100mm		piece		2,423.00			0.00	Sluice Valve
Sluice/ Gate Valve	150mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	200mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	250mm		piece					0.00	Sluice Valve225mm AUD1785
Sluice/ Gate Valve	300mm		piece					0.00	
Pipes (Poly)	15mm	5	coil		14.50			72.50	Length on 1 coil =300m
Pipes (Poly)	20mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	25mm		coil					0.00	Length on 1 coil =200m
Pipes (Poly)	50mm		coil					0.00	Length on 1 coil =150m
Pipes (Poly)	32mm	7			30.00			210.00	Length on 1 coil =100m
Pipes (PVC)	25mm		piece					0.00	

per day

Items	Specification	Quantity	Unit	Hourly Rate (SBD)	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
Pipes (PVC)	50mm	1	piece		154.00			154.00	
Pipes (PVC)	80mm	1	piece		189.00			189.00	
Pipes (PVC)	100mm		piece		248.00			0.00	
Pipes (PVC)	150mm		piece					0.00	
Pipes (PVC)	200mm	1	piece		812.40			812.40	
Pipes (PVC)	250mm		piece					0.00	
Pipes (PVC)	300mm		piece					0.00	
Water Meter	10mm		piece					0.00	
Water Meter	16mm		piece					0.00	
Water Meter	20mm		piece					0.00	
Water Meter	25mm		piece					0.00	
Water Meter	32mm		piece					0.00	
Water Meter	40mm		piece					0.00	
Other Materials									
Sub-total								9,669.26	
Total								30,282.40	

1AUD=6.534SBD was applied to the above (rate as of 30 September, 2013 of Oanda).

2. Countermeasure

Location Mbaranamba

per day

Items	Specification	Quantity	Unit	Hourly Rate (SBD)	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
1. Personnel	Grades- Steps								
Staff-3	3.1	0	Person	15.38	115.35				
	3.2	0	Person	15.90	119.25				
	3.3	0	Person	16.41	123.08				
	3.4	0	Person	16.92	126.90				
	3.5	0	Person	17.44	130.80				
Staff-4	4.1	4	Person	19.23	144.23	18.00		2,596.05	
	4.2	8	Person	20.00	150.00	16.00		2,400.00	
	4.3	0	Person	20.77	155.78			0.00	
	4.4	0	Person	21.54	161.55			0.00	
	4.5	0	Person	22.31	167.33			0.00	
Staff-5	5.1	0	Person	24.10	180.75			0.00	
	5.2	0	Person	25.13	188.48			0.00	
	5.3	0	Person	26.15	196.13			0.00	
	5.4	0	Person	27.18	203.85			0.00	
	5.5	4	Person	28.21	211.58	18.00		3,808.35	
Staff-6	6.1	0	Person	31.54	236.55			0.00	
	6.2	4	Person	32.82	246.15	18.00		4,430.70	
	6.3	0	Person	34.10	255.75			0.00	
	6.4	0	Person	35.38	265.35			0.00	
	6.5	0	Person	36.67	275.03			0.00	
Staff-7	7.1	0	Person	38.46	288.45			0.00	
	7.2	0	Person	39.74	298.05			0.00	
	7.3	0	Person	41.03	307.73			0.00	
	7.4	0	Person	42.31	317.33			0.00	
	7.5	0	Person	43.59	326.93			0.00	
Staff-8	8.1	0	Person	47.95	359.63			0.00	
	8.2	0	Person	49.23	369.23			0.00	
	8.3	0	Person	50.51	378.83			0.00	
	8.4	0	Person	51.79	388.43			0.00	
	8.5	0	Person	53.08	398.10			0.00	
Staff-9	9.1	0	Person	58.21	436.58			0.00	
	9.2	0	Person	59.49	446.18			0.00	
	9.3	0	Person	60.77	455.78			0.00	
	9.4	0	Person	62.05	465.38			0.00	
	9.5	0	Person	63.33	474.98			0.00	
Sub-total		**20**				**70.00**		**13,235.10**	
2. Consumable				$ Per Liter	L/km		$/km		
Diesel	For Excavator	0	Liter	11.80	0.3620		4.2716	0.00	50km/7km/liter=7.14liter 11liter/hrs (fuel consumption for about 60PS) x 1hr=11liter 11liter +7.1liter=18.1liter/50km
Diesel	For Pick-up	317.72	Liter	11.80	0.1428	45.3704	1.68504	535.37	50km/7km/liter=7.14liter/50km
Engine Oil	For Excavator	0	Liter	60.00	0.0016		0.096	0.00	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Engine Oil	For Pick-up	317.72	Liter	60.00	0.0016		0.096	30.50	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Tires		0	Nos	770.00	0.0014		1.078	0.00	50km x 252days=12,600km 12,600km/ 30,000km x 4nos=1.68nos 1.68nos/ 252days=0.07nos/50km
Sub-total								**565.87**	
3. Material & Equipment									
Sluice/ Gate Valve	25mm		piece		190.00			0.00	Gate Valve
Sluice/ Gate Valve	40mm		piece		350.00			0.00	Gate Valve
Sluice/ Gate Valve	50mm		piece		310.00			0.00	Gate Valve
Sluice/ Gate Valve	80mm		piece		2,397.12			0.00	Sluice Valve
Sluice/ Gate Valve	100mm		piece		2,423.00			0.00	Sluice Valve
Sluice/ Gate Valve	150mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	200mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	250mm		piece					0.00	Sluice Valve225mm AUD1785
Sluice/ Gate Valve	300mm		piece					0.00	
Pipes (Poly)	15mm		coil		14.50			0.00	Length on 1 coil =300m
Pipes (Poly)	20mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	25mm		coil					0.00	Length on 1 coil =200m
Pipes (Poly)	50mm		coil					0.00	Length on 1 coil =150m
Pipes (Poly)	32mm				30.00			0.00	Length on 1 coil =100m

per day

Items	Specification	Quantity	Unit	Hourly Rate (SBD)	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
Pipes (PVC)	25mm		piece					0.00	
Pipes (PVC)	50mm		piece		154.00			0.00	
Pipes (PVC)	80mm		piece		189.00			0.00	
Pipes (PVC)	100mm		piece		248.00			0.00	
Pipes (PVC)	150mm		piece					0.00	
Pipes (PVC)	200mm		piece		812.40			0.00	
Pipes (PVC)	250mm		piece					0.00	
Pipes (PVC)	300mm		piece					0.00	
Water Meter	10mm		piece					0.00	
Water Meter	16mm		piece					0.00	
Water Meter	20mm	45	piece		394.00			17,730.00	
Water Meter	25mm		piece					0.00	
Water Meter	32mm		piece					0.00	
Water Meter	40mm		piece					0.00	
Other Materials								5,693.00	
Sub-total								**23,423.00**	
Total								**37,223.97**	

1AUD=6.534SBD was applied to the above (rate as of 30 September, 2013 of Oanda).

3. Costing Before Countermeasure

Location Mbaranamba

per day

Items	Specification	Quantity	Unit	Hourly Rate (SBD)	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
1. Personnel	Grades- Steps								
Staff-3	3.1	0	Person	15.38	115.35				
	3.2	0	Person	15.90	119.25				
	3.3	0	Person	16.41	123.08				
	3.4	0	Person	16.92	126.90				
	3.5	0	Person	17.44	130.80				
Staff-4	4.1	3	Person	19.23	144.23	4.00		576.90	
	4.2	6	Person	20.00	150.00	8.00		1,200.00	
	4.3	0	Person	20.77	155.78			0.00	
	4.4	0		21.54	161.55			0.00	
	4.5	0		22.31	167.33			0.00	
Staff-5	5.1	0		24.10	180.75			0.00	
	5.2	0		25.13	188.48			0.00	
	5.3	0		26.15	196.13			0.00	
	5.4	0		27.18	203.85			0.00	
	5.5	3		28.21	211.58	4.00		846.30	
Staff-6	6.1	0		31.54	236.55			0.00	
	6.2	3		32.82	246.15	4.00		984.60	
	6.3	0		34.10	255.75			0.00	
	6.4	0		35.38	265.35			0.00	
	6.5	0		36.67	275.03			0.00	
Staff-7	7.1	0		38.46	288.45			0.00	
	7.2	0		39.74	298.05			0.00	
	7.3	0		41.03	307.73			0.00	
	7.4	0		42.31	317.33			0.00	
	7.5	0		43.59	326.93			0.00	
Staff-8	8.1	0		47.95	359.63			0.00	
	8.2	0		49.23	369.23			0.00	
	8.3	0		50.51	378.83			0.00	
	8.4	0		51.79	388.43			0.00	
	8.5	1		53.08	398.10	5.00		1,990.50	
Staff-9	9.1	0		58.21	436.58			0.00	
	9.2	0		59.49	446.18			0.00	
	9.3	0		60.77	455.78			0.00	
	9.4	0		62.05	465.38			0.00	
	9.5	0		63.33	474.98			0.00	
Sub-total						25.00		5,598.30	
2. Consumable				$ Per Liter	L/km		$/km		
Diesel	For Excavator	0	Liter	11.80	0.3620		4.2716	0.00	50km/7km/liter=7.14liter 11liter/hrs (fuel consumption for about 60PS) x 1hr=11liter 11liter +7.1liter=18.1liter/50km
Diesel	For Pick-up	134.42	Liter	11.80	0.1428	19.1952	1.68504	226.50	50km/7km/liter=7.14liter/50km
Engine Oil	For Excavator	0	Liter	60.00	0.0016		0.096	0.00	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Engine Oil	For Pick-up	134.42	Liter	60.00	0.0016		0.096	12.90	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Tires		0	Nos	770.00	0.0014		1.078	0.00	50km x 252days=12,600km 12,600km/ 30,000km x 4nos=1.68nos 1.68nos/ 252days=0.07nos/50km
Sub-total								239.41	
3. Material & Equipment									
Sluice/ Gate Valve	25mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	40mm		piece		350.00			0.00	Gate Valve
Sluice/ Gate Valve	50mm		piece		310.00			0.00	Gate Valve
Sluice/ Gate Valve	80mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	100mm		piece		2,423.00			0.00	Sluice Valve
Sluice/ Gate Valve	150mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	200mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	250mm		piece					0.00	Sluice Valve225mm AUD1785
Sluice/ Gate Valve	300mm		piece					0.00	
Pipes (Poly)	15mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	20mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	25mm		coil					0.00	Length on 1 coil =200m
Pipes (Poly)	50mm		coil					0.00	Length on 1 coil =150m
Pipes (PVC)	25mm		piece					0.00	

per day

Items	Specification	Quantity	Unit	Hourly Rate (SBD)	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
Pipes (PVC)	50mm		piece					0.00	
Pipes (PVC)	80mm		piece					0.00	
Pipes (PVC)	100mm		piece		248.00			0.00	
Pipes (PVC)	150mm		piece					0.00	
Pipes (PVC)	200mm		piece					0.00	
Pipes (PVC)	250mm		piece					0.00	
Pipes (PVC)	300mm		piece					0.00	
Water Meter	10mm		piece					0.00	
Water Meter	16mm		piece					0.00	
Water Meter	20mm		piece					0.00	
Water Meter	25mm		piece					0.00	
Water Meter	32mm		piece					0.00	
Water Meter	40mm		piece					0.00	
Other Materials									
Sub-total								0.00	
Total								5,837.71	

1AUD=6.534SBD was applied to the above (rate as of 30 September, 2013 of Oanda).

4. Costing Before Countermeasure

Location Mbaranamba

per day

Items	Specification	Quantity	Unit	Hourly Rate (SBD)	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
1. Personnel	Grades- Steps								
Staff-3	3.1	0	Person	15.38	115.35				
	3.2	0	Person	15.90	119.25				
	3.3	0	Person	16.41	123.08				
	3.4	0	Person	16.92	126.90				
	3.5	0	Person	17.44	130.80				
Staff-4	4.1	0	Person	19.23	144.23			0.00	
	4.2	0	Person	20.00	150.00			0.00	
	4.3	0	Person	20.77	155.78			0.00	
	4.4	0		21.54	161.55			0.00	
	4.5	0		22.31	167.33			0.00	
Staff-5	5.1	0		24.10	180.75			0.00	
	5.2	0		25.13	188.48			0.00	
	5.3	0		26.15	196.13			0.00	
	5.4	0		27.18	203.85			0.00	
	5.5	0		28.21	211.58			0.00	
Staff-6	6.1	3		31.54	236.55	5.00		1,182.75	
	6.2	0		32.82	246.15			0.00	
	6.3	0		34.10	255.75			0.00	
	6.4	0		35.38	265.35			0.00	
	6.5	0		36.67	275.03			0.00	
Staff-7	7.1	0		38.46	288.45			0.00	
	7.2	0		39.74	298.05			0.00	
	7.3	0		41.03	307.73			0.00	
	7.4	0		42.31	317.33			0.00	
	7.5	0		43.59	326.93			0.00	
Staff-8	8.1	0		47.95	359.63			0.00	
	8.2	0		49.23	369.23			0.00	
	8.3	0		50.51	378.83			0.00	
	8.4	0		51.79	388.43			0.00	
	8.5	0		53.08	398.10			0.00	
Staff-9	9.1	0		58.21	436.58			0.00	
	9.2	0		59.49	446.18			0.00	
	9.3	0		60.77	455.78			0.00	
	9.4	0		62.05	465.38			0.00	
	9.5	0		63.33	474.98			0.00	
Sub-total								1,182.75	
2. Consumable				$ Per Liter	L/km		$/km		
Diesel	For Excavator	0	Liter	11.80	0.3620		4.2716	0.00	50km/7km/liter=7.14liter 11liter/hrs (fuel consumption for about 60PS) x 1hr=11liter 11liter +7.1liter=18.1liter/50km
Diesel	For Pick-up	12.22	Liter	11.80	0.1428	1.7450	1.68504	20.59	50km/7km/liter=7.14liter/50km
Engine Oil	For Excavator	0	Liter	60.00	0.0016		0.096	0.00	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Engine Oil	For Pick-up	12.22	Liter	60.00	0.0016		0.096	1.17	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Tires		0	Nos	770.00	0.0014		1.078	0.00	50km x 252days=12,600km 12,600km/ 30,000km x 4nos=1.68nos 1.68nos/ 252days=0.07nos/50km
Sub-total								21.76	
3. Material & Equipment									
Sluice/ Gate Valve	25mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	40mm		piece		350.00			0.00	Gate Valve
Sluice/ Gate Valve	50mm		piece		310.00			0.00	Gate Valve
Sluice/ Gate Valve	80mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	100mm		piece		2,423.00			0.00	Sluice Valve
Sluice/ Gate Valve	150mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	200mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	250mm		piece					0.00	Sluice Valve225mm AUD1785
Sluice/ Gate Valve	300mm		piece					0.00	
Pipes (Poly)	15mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	20mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	25mm		coil					0.00	Length on 1 coil =200m
Pipes (Poly)	50mm		coil					0.00	Length on 1 coil =150m
Pipes (PVC)	25mm		piece					0.00	

per day

Items	Specification	Quantity	Unit	Hourly Rate (SBD)	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
Pipes (PVC)	50mm		piece					0.00	
Pipes (PVC)	80mm		piece					0.00	
Pipes (PVC)	100mm		piece		248.00			0.00	
Pipes (PVC)	150mm		piece					0.00	
Pipes (PVC)	200mm		piece					0.00	
Pipes (PVC)	250mm		piece					0.00	
Pipes (PVC)	300mm		piece					0.00	
Water Meter	10mm		piece					0.00	
Water Meter	16mm		piece					0.00	
Water Meter	20mm		piece					0.00	
Water Meter	25mm		piece					0.00	
Water Meter	32mm		piece					0.00	
Water Meter	40mm		piece					0.00	
Other Materials									
Sub-total								0.00	
Total								1,204.51	

1AUD=6.534SBD was applied to the above (rate as of 30 September, 2013 of Oanda).

Cost for Materials (Mbaranamba)

DEPARTMENT NAME: NRW PROJECT TEAM 2 **RECEIVED BY: Andrew Kopenao**
RECOMMENDED BY : Eric Unga **ISSUED BY: George Blamoli**
REQUISITION NO: 2309 **DATE ISSUED: 09/11/2013**
JOB DESCRIPTION: Being for preparation of materials for Mbaranamba Valley Pilot Site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
11/9/2013	32mm (1 1/4") PVC male Valve Socket	1	$ 22.00	$ 22.00
11/9/2013	1 1/2" x 1 1/4" Poly reduce Bush	1	$ 28.00	$ 28.00
11/9/2013	40mm Brass Gate Valve	1	$ 350.00	$ 350.00
11/9/2013	1 1/4 G.I Nipple	2	$ 18.00	$ 36.00
11/9/2013	50mm (2") Gate Valve	1	$ 310.00	$ 310.00
11/9/2013	50mm G.I Nipple	1	$ 54.00	$ 54.00
11/9/2013	40mm PVC male Valve Socket	3	$ 25.00	$ 75.00
11/9/2013	50mm x 2" UPVC male valve Socket	2	$ 36.00	$ 72.00
11/9/2013	40mm PVC Compression Coupling	2	$ 40.00	$ 80.00
11/9/2013	32mm PVC Compression Coupling	1	$ 38.00	$ 38.00
11/9/2013	1" Brass Gate valve	1	$ 190.00	$190.00
11/9/2013	25mm x 1" Poly male Adaptor	2	$ 50.00	$100.00
11/9/2013	1 length 50mm UPVC Presure Pipe	1	$ 154.00	$ 154.00
		Total per Requisition =		**$ 1,509.00**

DEPARTMENT NAME: NRW PROJECT TEAM 2 **RECEIVED BY: Andrew Kopenao**
RECOMMENDED BY : Benjimen Billy **ISSUED BY: George Blamoli**
REQUISITION NO: 2310 **DATE ISSUED: 09/11/2013**
JOB DESCRIPTION: Being for preparation of materials for Mbaranamba Valley Pilot Site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
11/9/2013	80mm (3") Sluice Valve (Jica order)	1	$ 2,397.12	$ 2,397.12
11/9/2013	80mm (3") Flange Adaptor (Jica Order)	2	$ 636.73	$ 1,273.46
11/9/2013	3" Gasket & boits (Jica Order)	2	$ 134.83	$ 269.66
11/9/2013	3" UPVC Compression Coupling	1	$ 190.00	$ 190.00
11/9/2013	8" x 1 1/4" brass Saddle/Tapping band	1	$ 844.00	$ 844.00
11/9/2013	1 length 80mm UPVC Pressure Pipe (PN 12)	1	$ 189.00	$ 189.00
11/9/2013	5 metres 16mm poly pipe	5	$ 14.50	$ 72.50
11/9/2013	1 1/4 G.I Nipple	1	$ 18.00	$ 18.00
11/9/2013	1 1/4" x 1" G.I Reduce Bush	1	$ 22.00	$ 22.00
11/9/2013	20mm x 16mm Poly Reduce Coupling	1	$ 56.00	$ 56.00
11/9/2013	16mm x 3/4" Poly Male Adaptor	1	$ 28.00	$ 28.00
		Total per Requisition =		**$ 5,359.74**

DEPARTMENT NAME: NRW PROJECT TEAM 2 **RECEIVED BY: Derick Hoa**
RECOMMENDED BY : Benjimen Billy **ISSUED BY: George Blamoli**
REQUISITION NO: 2458 **DATE ISSUED: 12/11/2013**
JOB DESCRIPTION: Materials Required for Mbaranamba Pilot Project Site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
11/12/2013	40mm PVC Compression Coupling	1	$ 40.00	$ 40.00
11/12/2013	Hack Saw Blade	1	$ 21.00	$ 21.00
11/12/2013	1 1/4" gate valve	1	$ 180.00	$ 180.00
11/12/2013	50mm x 25mm x 50mm Poly reduce Tee	1	$ 95.30	$ 95.30
11/12/2013	32mm x 1 1/4" male poly Adaptor	2	$ 55.00	$ 110.00
11/12/2013	1 Length 8" (200mm) Pressure Pipe	1	$ 812.40	$ 812.40
11/12/2013	ThreadTape	20	$ 4.00	$ 80.00
		Total per Requisition =		**$ 1,338.70**

DEPARTMENT NAME: NRW PROJECT TEAM 2 **RECEIVED BY: Derick Hoa**
RECOMMENDED BY : Benjimen Billy **ISSUED BY: George Blamoli**
REQUISITION NO: 2312 **DATE ISSUED: 12/11/2013**
JOB DESCRIPTION: Materials Required for Mbaranamba Pilot Project Site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
11/12/2013	80mm (3") Sluice Valve (Jica Order)	1	$ 2,397.12	$ 2,397.12
11/12/2013	80mm (3") Flange Adaptor (Jica Order)	1	$ 636.73	$ 636.73
11/12/2013	3" Gasket & boits (Jica Order)	2	$ 134.83	$ 269.66
11/12/2013	50mm (2") female PVC Adaptor	1	$ 90.00	$ 90.00
		Total per Requisition =		**$ 3,393.51**

DEPARTMENT NAME: NRW PROJECT TEAM 1 **RECEIVED BY: Harrison**
RECOMMENDED BY : Eric Unga **ISSUED BY: Paul Seda**
REQUISITION NO: 2314 **DATE ISSUED: 14/11/2013**
JOB DESCRIPTION: Being for Mbaranamba Pilot Site for Valve installation & Maintenance .

Date	Materials Description	Quantity	Unit Cost	Total Cost
11/14/2013	50mm PVC Coupling	2	$ 180.00	$ 360.00
11/14/2013	32mm x 1" male Poly Adaptor	1	$ 70.00	$ 70.00
11/14/2013	7 metres 32mm poly Pipe	7	$ 30.00	$ 210.00
		Total per Requisition =		**$ 640.00**

DEPARTMENT NAME: NRW PROJECT TEAM 2 **RECEIVED BY: Andrew Kopenao**
RECOMMENDED BY : Silas Talosiu **ISSUED BY: George Blamoli**
REQUISITION NO: 2313 **DATE ISSUED: 13/11/2013**
JOB DESCRIPTION: Materials Required for Mbaranamba Pilot Project Site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
11/13/2013	3" Sluice Valve	1	$ 2,397.12	$ 2,397.12
11/13/2013	80mm (3") Flange Adaptor (Jica Order)	1	$ 636.73	$ 636.73
11/13/2013	40mmx25mmx40mm Poly R/Tee	1	$ 66.00	$ 66.00
		Total per Requisition =		**$ 3,099.85**

DEPARTMENT NAME: NRW PROJECT TEAM 2 **RECEIVED BY: Derick Hoa**
RECOMMENDED BY : Eric Unga **ISSUED BY: George Blamoli**
REQUISITION NO: 2321 **DATE ISSUED: 02/12/2013**
JOB DESCRIPTION: List of Materials required for Mbaranamba Pilot Site for Meter Raising Project .
METER I.D 12B086583 - 587 (5pieces) 12B086798 - 802 (5 Pieces) 12B086838 - 842 (5 Pieces) 12B086778 - 782 (5)

Date	Materials Description	Quantity	Unit Cost	Total Cost
12/2/2013	20mm Water Meter	20	$ 394.00	$ 3,940.00
		Total per Requisition =		**$ 3,940.00**

DEPARTMENT NAME: NRW PROJECT TEAM 2 **RECEIVED BY: Derick Hoa**
RECOMMENDED BY : Silas Talosui **ISSUED BY: George Blamoli**
REQUISITION NO: 2322 **DATE ISSUED: 03/12/2013**
JOB DESCRIPTION: List of Materials required for Nbaranamba Pilot Site for Meter Raising Project .
METER I.D

Date	Materials Description	Quantity	Unit Cost	Total Cost
12/3/2013	3/4" x 1/2" Poly Reducing Nipple	10	$ 5.00	$ 50.00
12/3/2013	16mm Poly Tee	20	$ 85.00	$ 1,700.00
12/3/2013	16mm Poly Coupling	10	$ 45.00	$ 450.00
12/3/2013	20mm x 3/4" Poly female Adaptor	10	$ 48.00	$480.00
12/3/2013	1/2" G.I Socket	14	$ 10.00	$ 140.00
12/3/2013	16mm x 1/2" female poly Adaptor	10	$ 45.00	$ 450.00
12/3/2013	ThreadTape	40	$ 4.00	$ 160.00
		Total per Requisition =		**$ 3,430.00**

DEPARTMENT NAME: NRW PROJECT TEAM 2 **RECEIVED BY: Liston Tora**
RECOMMENDED BY : Eric Unga **ISSUED BY: George Blamoli**
REQUISITION NO: 2323 **DATE ISSUED: 04/12/2013**
JOB DESCRIPTION: List of Materials required for Nbaranamba Pilot Site for Meter Raising Project .

Date	Materials Description	Quantity	Unit Cost	Total Cost
12/4/2013	1/2" G.I Socket	6	$ 10.00	$ 60.00
12/4/2013	16mm x 1/2" female poly Adaptor	10	$ 45.00	$ 450.00
12/4/2013	15mm (1/2") G.I Tee	1	$ 5.00	$ 5.00
		Total per Requisition =		**$ 515.00**

DEPARTMENT NAME: NRW PROJECT TEAM 1 **RECEIVED BY: Selyna Fai**
RECOMMENDED BY : Benjimen Billy **ISSUED BY: George Blamoli**
REQUISITION NO: 2479 **DATE ISSUED: 04/12/2013**
JOB DESCRIPTION: List of Materials required for Nbaranamba Pilot Site for Meter Raising Project .

Date	Materials Description	Quantity	Unit Cost	Total Cost
12/4/2013	10mm Steel Rods	2	$ 68.00	$ 136.00
		Total per Requisition =		**$ 136.00**

DEPARTMENT NAME: NRW PROJECT TEAM 2 **RECEIVED BY: Derick Hoa**
RECOMMENDED BY : Benjimen Billy **ISSUED BY: George Blamoli**
REQUISITION NO: 2324 **DATE ISSUED: 09/12/2013**
JOB DESCRIPTION: List of Materials required for Nbaranamba & Ohi ola Project Area .

Date	Materials Description	Quantity	Unit Cost	Total Cost
12/9/2013	1/2" G.I Socket	3	$ 10.00	$ 30.00
12/9/2013	15mm Stop Cock	10	$ 170.00	$ 1,700.00
12/9/2013	ThreadTape	45	$ 4.00	$ 180.00
12/9/2013	15mm G.I elbow	20	$ 12.00	$ 240.00
12/9/2013	16mm Poly Coupling	10	$ 45.00	$ 450.00
		Total per Requisition =		**$ 2,600.00**

DEPARTMENT NAME: NRW PROJECT TEAM 2 **RECEIVED BY: Harrison Malai**
RECOMMENDED BY : Eric Unga **ISSUED BY: George Blamoli**
REQUISITION NO: 2325 **DATE ISSUED: 10/12/2013**
JOB DESCRIPTION: List of Materials required for meter raising @ Mbaranamba Valley pilot project site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
12/10/2013	20mm Water Meter	25	$ 394.00	$ 9,850.00
		Total per Requisition =		**$ 9,850.00**

DEPARTMENT NAME: NRW PROJECT TEAM 2 **RECEIVED BY: Derick Hoa**
RECOMMENDED BY : Silas Talosui **ISSUED BY: George Blamoli**
REQUISITION NO: 2326 **DATE ISSUED: 11/12/2013**
JOB DESCRIPTION: List of Materials required for Mbaranamba & Oi'hola Pilot Project Site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
12/11/2013	16mm x 1/2" female poly Adaptor	18	$ 45.00	$ 810.00
12/11/2013	ThreadTape	10	$ 4.00	$ 40.00
		Total per Requisition =		**$ 850.00**

DEPARTMENT NAME: NRW PROJECT TEAM 2 **RECEIVED BY: Mafe**
RECOMMENDED BY : Benjimen Billy **ISSUED BY: George Blamoli**
REQUISITION NO: 2327 **DATE ISSUED: 12/12/2013**
JOB DESCRIPTION: List of Materials required for Mbaranamba & Oi'hola Pilot Project Site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
12/12/2013	ThreadTape	30	$ 4.00	$ 120.00
12/12/2013	20mm x 1/2" Poly female Adaptor	4	$ 40.00	$ 160.00
12/12/2013	25mm x 1/2" Poly Female Adaptor	3	$ 48.00	$ 144.00
12/12/2013	16mm Poly Coupling	6	$ 45.00	$ 270.00
		Total per Requisition =		**$ 694.00**

DEPARTMENT NAME: NRW PROJECT TEAM 2 — **RECEIVED BY: Harrison**
RECOMMENDED BY : Benjimen Billy — **ISSUED BY: George Blamoli**
REQUISITION NO: 2328 — **DATE ISSUED: 13/12/2013**
JOB DESCRIPTION: List of Materials required for Mbaranamba & Oi'hola Pilot Project Site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
12/12/2013	40 KG Bag cement	6	$ 80.00	$ 480.00
		Total per Requisition =		**$ 480.00**

DEPARTMENT NAME: NRW PROJECT TEAM 2 — **RECEIVED BY: Derick**
RECOMMENDED BY : Benjimen Billy — **ISSUED BY: George Blamoli**
REQUISITION NO: 2329 — **DATE ISSUED: 17/12/2013**
JOB DESCRIPTION: List of Materials required for Mbaranamba & Oi'hola Pilot Project Site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
12/17/2013	40 KG Bag cement	6	$ 80.00	$ 480.00
		Total per Requisition =		**$ 480.00**

DEPARTMENT NAME: NRW PROJECT TEAM 2 — **RECEIVED BY: Derick Hoa**
RECOMMENDED BY : Eric Unga — **ISSUED BY: George Blamoli**
REQUISITION NO: 2330 — **DATE ISSUED: 18/12/2013**
JOB DESCRIPTION: List of Materials required for Mbaranamba & Oi'hola Pilot Project Site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
12/18/2013	40 KG Bag cement	4	$ 80.00	$ 320.00
		Total per Requisition =		**$ 320.00**

DEPARTMENT NAME: NRW PROJECT TEAM 1 — **RECEIVED BY: Liston Tora**
RECOMMENDED BY : Eric Unga — **ISSUED BY: George Blamoli**
REQUISITION NO: 2331 — **DATE ISSUED: 19/12/2013**
JOB DESCRIPTION: being for Meter Raising @ the project site(Mbaranamba) .

Date	Materials Description	Quantity	Unit Cost	Total Cost
12/19/2013	25mm x 3/4" Poly female Adaptor	2	$ 48.00	$ 96.00
12/19/2013	1/2" G.I Plug	1	$ 8.00	$ 8.00
12/19/2013	3/4" G.I Socket	2	$ 12.00	$ 24.00
		Total per Requisition =		**$ 128.00**

TOTAL MATERIAL COST FOR MBARANAMBA — **$ 38,763.80**

Area No.	Pilot Project Area	Pipe Distance	Number of Household	Personal Cost	Consumable Cost	Material and Equipment	Total Initial Cost Incurred
		(m)		(SBD)	(SBD)	(SBD)	(SBD)
No.14	Tuvaruhu-1	1,205.88	47	43,084	884	32,769	76,737
No.15	Tuvaruhu-2	1371.31	62	45,669	942	43,438	90,049

DEPARTMENT NAME: NRW Project Team 1 — **RECEIVED BY :** Dykes
RECOMMENDED BY: Chris Meriko — **ISSUED BY:** George Blamoli
REQUISITION NO: 0282 — **DATE ISSUED:** 23/08/2013
JOB DESCRIPTION: Being for Required to replace Gate Valve @ Tuvaruhu pilot project sites.

Date	Materials Description	Quantity	Unit Cost	Total Cost
2013/8/23	2" Gate Valve	5	$ 310.00	$ 1,550.00
2013/8/23	50mm x 2" UPVC male valve Socket	10	$ 36.00	$ 360.00
2013/8/23	40mm Brass Gate Valve	6	$ 350.00	$ 2,100.00
2013/8/23	40mm PVC male Valve Socket	6	$ 25.00	$ 150.00
2013/8/23	40mm PVC Compression Coupling	3	$ 40.00	$ 120.00
2013/8/23	50mm PVC Compression Coupling	6	$ 49.00	$ 294.00
2013/8/23	50mm G.I Tee	4	$ 54.00	$ 216.00
2013/8/23	50mm x 40mm G.I Reduce Bush	2	$ 60.00	$ 120.00
2013/8/23	ThreadTape	30	$ 4.00	$ 120.00
2013/8/23	1" Brass Gate valve	3	$ 190.00	$ 570.00
2013/8/23	1" PVC male Valve Socket	6	$ 18.00	$ 108.00
		Total per Requisition =		**$ 5,708.00**

DEPARTMENT NAME: NRW Project Team 1 — **RECEIVED BY :** John Chede
RECOMMENDED BY: Chris Meriko — **ISSUED BY:** Paul Seda
REQUISITION NO: 0270 — **DATE ISSUED:** 23/08/2013
JOB DESCRIPTION: Being for Replacement of old gate Valve @ Tuvaruhu pilot Project Sites.

Date	Materials Description	Quantity	Unit Cost	Total Cost
2013/8/23	1 length 50mm UPVC Pressure Pipe	1	$ 152.00	$ 152.00
2013/8/23	1 length 40mm PVC Pressure Pipe	1	$ 60.00	$ 60.00
2013/8/23	500 ml non pressure PVC pipe Glue	1	$ 42.00	$ 42.00
		Total per Requisition =		**$ 254.00**

DEPARTMENT NAME: NRW Project Team 1 — **RECEIVED BY :** John Chede
RECOMMENDED BY: Silas Talosui — **ISSUED BY:** George Blamoli
REQUISITION NO: 0283 — **DATE ISSUED:** 24/08/2013
JOB DESCRIPTION: Being for Repair and maintenance @ Tuvaruhu pilot project sites.

Date	Materials Description	Quantity	Unit Cost	Total Cost
2013/8/24	80mm Stainless steel Clamp/Clip	4	$ 440.00	$ 1,760.00
2013/8/24	50mm x 2" male Poly Adaptor	4	$ 36.00	$ 144.00
2013/8/24	50mm Poly Coupling	4	$ 175.00	$ 700.00
2013/8/24	40mm x 1 1/2" poly male adaptor	4	$ 70.00	$ 280.00
2013/8/24	50mm x 40mm Poly Reduce Coupling	4	$ 65.00	$ 260.00
2013/8/24	ThreadTape	30	$ 4.00	$ 120.00
		Total per Requisition =		**$ 3,264.00**

DEPARTMENT NAME: NRW Project Team 1 — **RECEIVED BY :** John Teno
RECOMMENDED BY: Silas Talosui — **ISSUED BY:** George Blamoli
REQUISITION NO: 0284 — **DATE ISSUED:** 25/08/2013
JOB DESCRIPTION: Being for preparation work for Water meter Raising @ Tuvaruhu.

Date	Materials Description	Quantity	Unit Cost	Total Cost
2013/8/25	ThreadTape	30	$ 4.00	$ 120.00
2013/8/25	20 metres 16mm poly pipe	20	$ 10.00	$ 200.00
2013/8/25	15mm Stop Cock	1	$ 41.00	$ 41.00
2013/8/25	80mm Stainless steel Clamp/Clip	3	$ 440.00	$ 1,320.00
2013/8/25	3/4" x 1/2" G.I Reducing Bush	1	$ 9.00	$ 9.00
2013/8/25	1/2" G.I Nipple	5	$ 8.00	$ 40.00
2013/8/25	3" x 3/4" Brass Tapping Saddle	1	$ 257.00	$ 257.00
		Total per Requisition =		**$ 1,987.00**

DEPARTMENT NAME: NRW Project Team 1 — **RECEIVED BY :** John Teno
RECOMMENDED BY: Chris Meriko — **ISSUED BY:** George Blamoli
REQUISITION NO: 0285 — **DATE ISSUED:** 26/08/2013
JOB DESCRIPTION: Being for building Chamber for all Gate Valve replaced & Repaired for maintenanc

Date	Materials Description	Quantity	Unit Cost	Total Cost
2013/8/26	40 KG Bag cement	5	$ 78.00	$ 390.00
2013/8/26	20 metres 16mm poly pipe	20	$ 10.00	$ 200.00
2013/8/26	ThreadTape	10	$ 4.00	$ 40.00
2013/8/26	3 lengths 100mm (4") Pressure Pipe	3	$ 248.00	$ 744.00
		Total per Requisition =		**$ 1,374.00**

DEPARTMENT NAME: NRW Project Team 1 — **RECEIVED BY :** John Chede
RECOMMENDED BY: Chris Meriko — **ISSUED BY:** George Blamoli
REQUISITION NO: 0286 — **DATE ISSUED:** 26/08/2013
JOB DESCRIPTION: Being for Tuvaruhu leakage test and installation of valve for Meter raising.

Date	Materials Description	Quantity	Unit Cost	Total Cost
2013/8/26	1 length 80mm UPVC Pressure Pipe (PN 12)	1	$ 189.00	$ 189.00
2013/8/26	2 litres lubricant	1	$ 319.00	$ 319.00
		Total per Requisition =		**$ 508.00**

DEPARTMENT NAME: NRW Project Team 1 — **RECEIVED BY :** Moses Metea
RECOMMENDED BY: Matthaus Bara — **ISSUED BY:** Paul Seda
REQUISITION NO: 0287 — **DATE ISSUED:** 28/08/2013
JOB DESCRIPTION: Being for continue on Pilot Project @ Tuvaruhu Pilot site.

Date	Materials Description	Quantity	Unit Cost	Total Cost
2013/8/28	1 length 50mm UPVC Pressure Pipe	1	$ 152.00	$ 152.00
2013/8/28	1/2" G.I Nipple	1	$ 8.00	$ 8.00
2013/8/28	15mm Stop Cock	1	$ 40.00	$ 40.00
2013/8/28	2" PVC Tee	1	$ 68.00	$ 68.00
2013/8/28	2" PVC Female Valve Socket	1	$ 90.00	$ 90.00
2013/8/28	2" x 1/2" G.I Reducing Bush	1	$ 35.00	$ 35.00
		Total per Requisition =		**$ 393.00**

DEPARTMENT NAME: NRW Project team 1 — **RECEIVED BY :** Dykes
RECOMMENDED BY: Benjimen Billy — **ISSUED BY:** Paul Seda
REQUISITION NO: 0288 — **DATE ISSUED:** 29/08/2013
JOB DESCRIPTION: Being for Continue on Replacing of Old Gate Valve @ Tuvaruhu Area.

Date	Materials Description	Quantity	Unit Cost	Total Cost
2013/8/29	1 1/4" (32mm) Brass Gate Valve	1	$ 180.00	$ 180.00
2013/8/29	32mm Compression	2	$ 29.00	$ 58.00
2013/8/29	40mm PVC Compression Coupling	3	$ 40.00	$ 120.00
2013/8/29	ThreadTape	10	$ 4.00	$ 40.00
2013/8/29	40 KG Bag cement	5	$ 78.00	$ 390.00
2013/8/29	2" G.I Tee	1	$ 54.00	$ 54.00
2013/8/29	40mm Brass Gate Valve	2	$ 350.00	$ 700.00
2013/8/29	50mm x 2" UPVC male valve Socket	1	$ 36.00	$ 36.00
2013/8/29	40mm x 25mm UPVC reduce Socket	1	$ 25.00	$ 25.00
		Total per Requisition =		**$ 1,603.00**

DEPARTMENT NAME: NRW PROJECT TEAM 1 — **RECEIVED BY :** Selina
RECOMMENDED BY: Benjimen Billy — **ISSUED BY:** Paul Seda
REQUISITION NO: 0290 — **DATE ISSUED:** 29/08/2013
JOB DESCRIPTION: Being for Continue on Replacing & Repairing @ Tuvaruhn Pilot Site.

Date	Materials Description	Quantity	Unit Cost	Total Cost
2013/8/29	50mm PVC Compression Coupling	5	$ 49.00	$ 245.00
2013/8/29	50mm G.I Nipple	2	$ 54.00	$ 108.00
2013/8/29	50mm x 1" G.I Reducing Socket	1	$ 55.00	$ 55.00
2013/8/29	50mm x 3/4" G.I reducing Bush	2	$ 30.00	$ 60.00
2013/8/29	10 metres 20mm Poly Pipe	10	$ 16.00	$ 160.00
2013/8/29	20mm x 3/4" Poly male Adaptor	2	$ 48.00	$ 96.00
2013/8/29	20mm x 3/4" Poly female Adaptor	2	$ 48.00	$ 96.00
2013/8/29	20mm PVC Compression Coupling	2	$ 22.00	$ 44.00
2013/8/29	1" x 3/4" G.I reducing Bush	1	$ 12.00	$ 12.00
		Total per Requisition =		**$ 876.00**

DEPARTMENT NAME: NRW PROJECT TEAM 2 **RECEIVED BY :** Dykes
RECOMMENDED BY: Lawrence Iroi **ISSUED BY:** Paul Seda
REQUISITION NO: 0289 **DATE ISSUED:** 31/08/2013
JOB DESCRIPTION: Being for Continue Repair & replace of Gate Valve @ Tuvaruhu Pilot Project Site

Date	Materials Description	Quantity	Unit Cost	Total Cost
2013/8/31	ThreadTape	30	$ 4.00	$ 120.00
2013/8/31	20 metres 20mm Poly Pipe	20	$ 16.00	$ 320.00
2013/8/31	25mm x 1" Female poly Adaptor	3	$ 48.00	$ 144.00
2013/8/31	10 metres 25mm Poly Pipe	10	$ 18.00	$ 180.00
2013/8/31	3" G.I Tee	1	$ 320.00	$ 320.00
2013/8/31	3" x 2" G.I Reducing Bush	1	$ 92.00	$ 92.00
2013/8/31	40mm PVC Compression Coupling	1	$ 40.00	$ 40.00
		Total per Requisition =		$ 1,216.00

DEPARTMENT NAME: NRW PROJECT TEAM 1 **RECEIVED BY: John Chede**
RECOMMENDED BY : Eric Unga **ISSUED BY: Paul Seda**
REQUISITION NO: 0224 **DATE ISSUED: 01/09/2013**
JOB DESCRIPTION: Being for Repair & replace Gate valve Service @ the Pilot Project Site (Tuvaruhu

Date	Materials Description	Quantity	Unit Cost	Total Cost
2013/9/1	40mm PVC male Valve Socket	1	$ 25.00	$ 25.00
2013/9/1	40mm G.I Socket	1	$ 24.00	$ 24.00
2013/9/1	40mm x 1" G.I Reducing Nipple	1	$ 20.00	$ 20.00
2013/9/1	25mm x 1" Female poly Adaptor	1	$ 48.00	$ 48.00
2013/9/1	25mm x 1" PVC male Valve Socket	1	$ 18.00	$ 18.00
2013/9/1	25mm Plain PVC Socket	1	$ 15.00	$ 15.00
2013/9/1	20mm PVC female Adaptor	1	$ 12.00	$ 12.00
2013/9/1	1 metre 40mm PVC pressure Pipe	1	$ 40.00	$ 40.00
2013/9/1	1 metre 20mm PVC pressure Pipe	1	$ 28.00	$ 28.00
		Total per Requisition =		$ 230.00

DEPARTMENT NAME: NRW PROJECT TEAM 1 **RECEIVED BY: John Chede**
RECOMMENDED BY : Eric Unga **ISSUED BY: Paul Seda**
REQUISITION NO: 0223 **DATE ISSUED: 01/09/2013**
JOB DESCRIPTION: Being for Repair & replace Gate valve Service @ the Pilot Project Site (Tuvaruhu

Date	Materials Description	Quantity	Unit Cost	Total Cost
2013/9/1	25mm x 1" PVC Female Socket/adaptor	1	$ 18.00	$ 18.00
2013/9/1	25mm x 1" Poly female Adaptor	3	$ 48.00	$ 144.00
2013/9/1	25mm Poly Couping	1	$ 27.00	$ 27.00
2013/9/1	2" x 1" G.I reducing bush	1	$ 50.00	$ 50.00
2013/9/1	50mm (2") female PVC Adaptor	1	$ 90.00	$ 90.00
2013/9/1	50mm x 50mm PVC Tee	1	$ 90.00	$ 90.00
2013/9/1	50mm PVC Compression Coupling	3	$ 49.00	$ 147.00
		Total per Requisition =		$ 566.00

DEPARTMENT NAME: NRW PROJECT TEAM 1 **RECEIVED BY: John Chede**
RECOMMENDED BY : Eric Unga **ISSUED BY: Paul Seda**
REQUISITION NO: 0222 **DATE ISSUED: 01/09/2013**
JOB DESCRIPTION: Being for Repair & replace Gate valve and branch Service pipe @ the Pilot Projec

Date	Materials Description	Quantity	Unit Cost	Total Cost
2013/9/1	10 metres 25mm Poly Pipe	10	$ 18.00	$ 180.00
2013/9/1	Thread Tape	30	$ 4.00	$ 120.00
2013/9/1	32mm Male PVC Valve Socket	4	$ 18.00	$ 72.00
2013/9/1	32mm x 20mm G.I Reducing Socket	1	$ 18.00	$ 18.00
2013/9/1	20mm female PVC Valve Socket	1	$ 12.00	$ 12.00
2013/9/1	3/4" G.I nipple	1	$ 12.00	$ 12.00
2013/9/1	40mm PVC Plain Tee	1	$ 35.00	$ 35.00
2013/9/1	40mm PVC Female Valve Socket	3	$ 25.00	$ 75.00
2013/9/1	40mm G.I Socket	1	$ 24.00	$ 24.00
2013/9/1	40mm x 1" G.I reducing Nipple	1	$ 20.00	$ 20.00
		Total per Requisition =		$ 568.00

DEPARTMENT NAME: NRW PROJECT TEAM 1 **RECEIVED BY: Teno**
RECOMMENDED BY : Eric Unga **ISSUED BY: Paul Seda**
REQUISITION NO: 0503 **DATE ISSUED: 20/09/2013**
JOB DESCRIPTION: Being for Meter raising @ Tuvaruhu Pilot Site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
2013/9/20	20mm x 16mm Poly Reduce Coupling	10	$ 56.00	$ 560.00
2013/9/20	16mm Poly Coupling	10	$ 45.00	$ 450.00
2013/9/20	16mm x 1/2" female poly Adaptor	10	$ 45.00	$ 450.00
2013/9/20	16mm x 1/2" male Poly Adaptor	10	$ 45.00	$ 450.00
2013/9/20	30 metres 16mm poly pipe	30	$ 10.00	$ 300.00
2013/9/20	ThreadTape	20	$ 4.00	$ 80.00
2013/9/20	20mm x 1/2" Poly female Adaptor	2	$ 40.00	$ 80.00
		Total per Requisition =		$ 2,370.00

DEPARTMENT NAME: NRW PROJECT TEAM 1 **RECEIVED BY: David .A.**
RECOMMENDED BY : Eric Unga **ISSUED BY: Paul Seda**
REQUISITION NO: 0295 **DATE ISSUED: 23/09/2013**
JOB DESCRIPTION: Being for Meter raising @ Tuvaruhu Pilot Site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
2013/9/23	40 KG Bag cement	6	$ 78.00	$ 468.00
2013/9/23	30 metres 16mm poly pipe	30	$ 10.00	$ 300.00
		Total per Requisition =		$ 768.00

DEPARTMENT NAME: NRW PROJECT TEAM 1 **RECEIVED BY: J.Teno**
RECOMMENDED BY : M. Bera **ISSUED BY: Paul Seda**
REQUISITION NO: 0294 **DATE ISSUED: 24/09/2013**
JOB DESCRIPTION: Being for Meter raising @ Tuvaruhu Pilot Site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
2013/9/24	40 KG Bag cement	6	$ 78.00	$ 468.00
2013/9/24	30 metres 16mm poly pipe	30	$ 10.00	$ 300.00
		Total per Requisition =		$ 768.00

DEPARTMENT NAME: NRW PROJECT TEAM 1 **RECEIVED BY: J.Teno**
RECOMMENDED BY : Eric Unga **ISSUED BY: Paul Seda**
REQUISITION NO: 0296 **DATE ISSUED: 24/09/2013**
JOB DESCRIPTION: Being for Meter raising @ Tuvaruhu Pilot Site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
2013/9/24	50 metres 16mm poly pipe	50	$ 10.00	$ 500.00
2013/9/24	16mm x 1/2" female poly Adaptor	10	$ 45.00	$ 450.00
2013/9/24	16mm x 1/2" male Poly Adaptor	10	$ 45.00	$ 450.00
		Total per Requisition =		$ 1,400.00

DEPARTMENT NAME: NRW PROJECT TEAM 1 **RECEIVED BY: David Akoeasi**
RECOMMENDED BY : Eric Unga **ISSUED BY: Paul Seda**
REQUISITION NO: 0504 **DATE ISSUED: 26/09/2013**
JOB DESCRIPTION: Being for preparation of Meter raising @ Tuvaruhu Pilot Site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
2013/9/26	15mm G.I elbow	40	$ 12.00	$ 480.00
2013/9/26	ThreadTape	20	$ 4.00	$ 80.00
2013/9/26	16mm x 1/2" female poly Adaptor	20	$ 45.00	$ 900.00
		Total per Requisition =		$ 1,460.00

DEPARTMENT NAME: NRW PROJECT TEAM 1 **RECEIVED BY: Dyes**
RECOMMENDED BY : Benjimen Billy **ISSUED BY: Paul Seda**
REQUISITION NO: 0298 **DATE ISSUED: 26/09/2013**
JOB DESCRIPTION: Being for preparation of Meter raising @ Tuvaruhu Pilot Site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
2013/9/26	50 metre 20mm Pipe	50	$ 16.00	$ 800.00
2013/9/26	30 metres 16mm poly pipe	30	$ 10.00	$ 300.00
2013/9/26	20mm x 1/2" Poly male Adaptor	1	$ 40.00	$ 40.00

DEPARTMENT NAME: NRW PROJECT TEAM 1 **RECEIVED BY: John Chede**
RECOMMENDED BY : Eric Unga **ISSUED BY: George Blamoli**
REQUISITION NO: 0292 **DATE ISSUED: 02/09/2013**
JOB DESCRIPTION: Being for Repair & replace Gate valve @ the Pilot Project Site (Tuvaruhu) .

Date	Materials Description	Quantity	Unit Cost	Total Cost
2013/9/2	20mm Poly Coupling	2	$ 45.00	$ 90.00
2013/9/2	10 metre 20mm Pipe	10	$ 16.00	$ 160.00
2013/9/2	20mm PVC Compression Coupling	2	$ 22.00	$ 44.00
2013/9/2	1" Brass Gate valve	1	$ 190.00	$ 190.00
2013/9/2	40mm PVC male Valve Socket	3	$ 25.00	$ 75.00
2013/9/2	40mm Brass Gate Valve	1	$ 350.00	$ 350.00
2013/9/2	50mm G.I Socket	1	$ 40.00	$ 40.00
2013/9/2	40mm G.I Socket	1	$ 24.00	$ 24.00
2013/9/2	50mm x 2" UPVC male valve Socket	1	$ 36.00	$ 36.00
2013/9/2	50mm x 25mm Poly Reduce Bush	1	$ 13.00	$ 13.00
2013/9/2	40mm x 20mm Poly Reduce Bush	1	$ 9.00	$ 9.00
		Total per Requisition =		$ 1,031.00

DEPARTMENT NAME: NRW PROJECT TEAM 2 **RECEIVED BY: David .A**
RECOMMENDED BY : Eric Unga **ISSUED BY: Paul Seda**
REQUISITION NO: 0233 **DATE ISSUED: 10/09/2013**
JOB DESCRIPTION: Being for continue meter raising @ Tuvaruhu Pilot Site.
Meter LD 13B019404 – 408(5 pieces),13B019509 –513(5 pieces),13B019434 – 438(5 pieces),
Meter LD 13B019444– 448(5 pieces),13B019499 –503(5 pieces),13B019664 – 668(5 pieces),
Meter LD 13B019474 – 478(5pieces),13B019489 – 493(5 pieces),13B019579 – 583 & 13B019429 –

Date	Materials Description	Quantity	Unit Cost	Total Cost
2013/9/10	20mm Water Meter	50	$ 394.00	$ 19,700.00
2013/9/10	20mm Stop Cock	40	$ 65.00	$ 2,600.00
2013/9/10	3/4" G.I nipple	40	$ 12.00	$ 480.00
2013/9/10	15mm G.I elbow	120	$ 12.00	$ 1,440.00
2013/9/10	3/4" x 1/2" G.I Reducing Socket	20	$ 12.00	$ 240.00
2013/9/10	16mm x 1/2" female poly Adaptor	80	$ 45.00	$ 3,600.00
2013/9/10	ThreadTape	20	$ 4.00	$ 80.00
		Total per Requisition =		$28,140.00

DEPARTMENT NAME: NRW PROJECT TEAM 1 **RECEIVED BY: Dykes**
RECOMMENDED BY : Natheniel Legu (for Eric) **ISSUED BY: George Blamoli**
REQUISITION NO: 0502 **DATE ISSUED: 12/09/2013**
JOB DESCRIPTION: Being for Measuring flow in Meters/meter testing .
Meter LD 13B019357,13B019358

Date	Materials Description	Quantity	Unit Cost	Total Cost
2013/9/12	20mm Water Meter	2	$ 394.00	$ 788.00
2013/9/12	20mm x 1/2" female Threaded Adaptor	2	$ 13.00	$ 26.00
2013/9/12	20mm x 3/4" Poly female Adaptor	2	$ 48.00	$ 96.00
2013/9/12	16mm Poly Coupling	1	$ 45.00	$ 45.00
2013/9/12	20mm Poly Coupling	1	$ 45.00	$ 45.00
		Total per Requisition =		$ 1,000.00

DEPARTMENT NAME: NRW PROJECT TEAM 1 **RECEIVED BY: Celina**
RECOMMENDED BY : Benjimen Billy **ISSUED BY: Paul Seda**
REQUISITION NO: 0117 **DATE ISSUED: 16/09/2013**
JOB DESCRIPTION: Being for Meter raising @ Tuvaruhu Pilot Site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
2013/9/16	ThreadTape	30	$ 4.00	$ 120.00
2013/9/16	10mm Steel Rods	10	$ 68.00	$ 680.00
2013/9/16	Hack Saw blade	3	$ 10.00	$ 30.00
		Total per Requisition =		$ 830.00

2013/9/26	20mm x 16mm Poly Reduce Coupling	1	$ 56.00	$ 56.00
		Total per Requisition =		$ 1,196.00

DEPARTMENT NAME: NRW PROJECT TEAM 1 **RECEIVED BY: Teno**
RECOMMENDED BY : Benjimen Billy **ISSUED BY: Paul Seda**
REQUISITION NO: 0299 **DATE ISSUED: 27/09/2013**
JOB DESCRIPTION: Being for preparation of Meter raising @ Tuvaruhu Pilot Site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
2013/9/27	30 metres 16mm poly pipe	30	$ 10.00	$ 300.00
2013/9/27	40 KG Bag cement	6	$ 78.00	$ 468.00
2013/9/27	16mm x 1/2" female poly Adaptor	10	$ 45.00	$ 450.00
2013/9/27	16mm x 1/2" male Poly Adaptor	10	$ 45.00	$ 450.00
2013/9/27	16mm Poly Coupling	10	$ 45.00	$ 450.00
		Total per Requisition =		$ 2,118.00

DEPARTMENT NAME: NRW PROJECT TEAM 1 **RECEIVED BY: David Akoeasi**
RECOMMENDED BY : Eric Unga **ISSUED BY: Paul Seda**
REQUISITION NO: 0505 **DATE ISSUED: 27/09/2013**
JOB DESCRIPTION: Being for preparation of Meter raising @ Tuvaruhu Pilot Site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
2013/9/27	3/4" G.I nipple	20	$ 12.00	$ 240.00
2013/9/27	20mm Stop Cock	10	$ 168.00	$ 1,680.00
2013/9/27	15mm G.I elbow	20	$ 12.00	$ 240.00
2013/9/27	16mm x 1/2" female poly Adaptor	20	$ 45.00	$ 900.00
2013/9/27	ThreadTape	20	$ 4.00	$ 80.00
		Total per Requisition =		$ 3,140.00

DEPARTMENT NAME: NRW PROJECT TEAM 1 **RECEIVED BY: John Teno**
RECOMMENDED BY : Benjimen Billy **ISSUED BY: Paul Seda**
REQUISITION NO: 0300 **DATE ISSUED: 29/09/2013**
JOB DESCRIPTION: Being for preparation of Meter raising @ Tuvaruhu Pilot Site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
2013/9/29	40 KG Bag cement	6	$ 78.00	$ 468.00
	Continued next page			
2013/9/29	15mm G.I elbow	40	$ 12.00	$ 480.00
2013/9/29	1/2" G.I Socket	20	$ 10.00	$ 200.00
2013/9/29	40 metres 16mm poly pipe	40	$ 10.00	$ 400.00
2013/9/29	16mm x 1/2" female poly Adaptor	5	$ 45.00	$ 225.00
2013/9/29	16mm x 1/2" male Poly Adaptor	5	$ 45.00	$ 225.00
		Total per Requisition =		$ 1,998.00

DEPARTMENT NAME: NRW PROJECT TEAM 1 **RECEIVED BY: David Akoeasi**
RECOMMENDED BY : Benjimen Billy **ISSUED BY: Paul Seda**
REQUISITION NO: 0506 **DATE ISSUED: 30/09/2013**
JOB DESCRIPTION: Being for preparation of Meter raising @ Tuvaruhu 2 Pilot Site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
2013/9/30	10mm Steel Rods	6	$ 68.00	$ 408.00
2013/9/30	ThreadTape	40	$ 4.00	$ 160.00
2013/9/30	20mm Stop Cock	15	$ 168.00	$ 2,520.00
2013/9/30	3/4" G.I nipple	10	$ 12.00	$ 120.00
2013/9/30	15mm G.I elbow	20	$ 12.00	$ 240.00
2013/9/30	16mm x 1/2" female poly Adaptor	10	$ 45.00	$ 450.00
		Total per Requisition =		$ 3,898.00

DEPARTMENT NAME: NRW PROJECT TEAM 1 **RECEIVED BY: Dykes**
RECOMMENDED BY : Eric Unga **ISSUED BY: Paul Seda**
REQUISITION NO: 0506 **DATE ISSUED: 30/09/2013**
JOB DESCRIPTION: Being for preparation of Meter raising @ Tuvaruhu 2 Pilot Site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
2013/9/30	50 metres 16mm poly pipe	50	$ 10.00	$ 500.00

2013/9/30	40 KG Bag cement	4	$ 78.00	$ 312.00
2013/9/30	16mm x 1/2" female poly Adaptor	20	$ 45.00	$ 900.00
2013/9/30	25mm x 3/4" x 25mm Poly female threaded Te	3	$ 36.00	$ 108.00
2013/9/30	1/2" Poly Nipple	10	$ 3.00	$ 30.00
2013/9/30	3/4 x 1/2" Poly Reducing Bush	3	$ 5.50	$ 16.50
		Total per Requisition =		$ 1,866.50

DEPARTMENT NAME: NRW PROJECT TEAM 1 — **RECEIVED BY: Celina**
RECOMMENDED BY : Eric Unga — **ISSUED BY: Paul Seda**
REQUISITION NO: 2452 — **DATE ISSUED: 30/09/2013**
JOB DESCRIPTION: Being for preparation of Meter raising @ Tuvaruhu 2 Pilot Site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
2013/9/30	15mm G.I elbow	20	$ 12.00	$ 240.00
		Total per Requisition =		$ 240.00

DEPARTMENT NAME: NRW PROJECT TEAM 1 — **RECEIVED BY: John Teno**
RECOMMENDED BY : Eric Unga — **ISSUED BY: Paul Seda**
REQUISITION NO: 0507 — **DATE ISSUED: 04/09/2013**
JOB DESCRIPTION: Being for Meter Raising @ the Pilot Project Site (Tuvaruhu) .

Date	Materials Description	Quantity	Unit Cost	Total Cost
2013/10/4	40 metres 20mm Poly Pipe	40	$ 16.00	$ 640.00
2013/10/4	20mm x 1/2" Poly female Adaptor	20	$ 40.00	$ 800.00
2013/10/4	20mm x 16mm Poly Reduce Coupling	20	$ 56.00	$ 1,120.00
2013/10/4	ThreadTape	10	$ 4.00	$ 40.00
		Total per Requisition =		$ 2,600.00

DEPARTMENT NAME: NRW PROJECT TEAM 1 — **RECEIVED BY: John Teno**
RECOMMENDED BY : Eric Unga — **ISSUED BY: Paul Seda**
REQUISITION NO: 0508 — **DATE ISSUED: 07/09/2013**
JOB DESCRIPTION: Being for Meter Raising @ the Pilot Project Site (Tuvaruhu) .

Date	Materials Description	Quantity	Unit Cost	Total Cost
2013/10/7	25mm x 3/4" male poly Adaptor	2	$ 48.00	$ 96.00
2013/10/7	25mm x 3/4" female poly Adaptor	2	$ 48.00	$ 96.00
2013/10/7	3/4" G.I nipple	1	$ 12.00	$ 12.00
		Total per Requisition =		$ 204.00

#REF!

TOTAL COST FOR VAVAYA RIDGE

	Before Countermeasure	Countermeasure	After Countermeasure	Routine Activities	Total
Personnel Cost	20,369.93	22,020.00	9,190.30	5,163.75	56,751.98
Consumable	203.04	213.72	42.74	21.37	4,080.88
Material and Equipment	11,020.00	93,796.00	0.00	0.00	104,816.00
Sub Total	31,592.96	116,029.72	9,241.04	5,185.12	165,648.86
TOTAL	147,622.69		14,426.17		

TOTAL MAN DAYS FOR VAVAYA	273

1. Costing Before Countermeasure

Location: Vavaya Ridge

per day

Items	Specification	Quantity	Unit	Hourly Rate (SBD)	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
1. Personnel	Grades- Steps								
Staff-3	3.1	0	Person	15.38	115.35				
	3.2	0	Person	15.90	119.25				
	3.3	0	Person	16.41	123.08				
	3.4	0	Person	16.92	126.90				
	3.5	0	Person	17.44	130.80				
Staff-4	4.1	10	Person	19.23	144.23	22.00		3,172.95	
	4.2	20	Person	20.00	150.00	38.00		5,700.00	
	4.3	0	Person	20.77	155.78			0.00	
	4.4	0		21.54	161.55			0.00	
	4.5	0		22.31	167.33			0.00	
Staff-5	5.1	0		24.10	180.75			0.00	
	5.2	0		25.13	188.48			0.00	
	5.3	0		26.15	196.13			0.00	
	5.4	0		27.18	203.85			0.00	
	5.5	9		28.21	211.58	17.00		3,596.78	
Staff-6	6.1	2		31.54	236.55	2.00		473.10	
	6.2	8		32.82	246.15	14.00		3,446.10	
	6.3	0		34.10	255.75			0.00	
	6.4	0		35.38	265.35			0.00	
	6.5	0		36.67	275.03			0.00	
Staff-7	7.1	0		38.46	288.45			0.00	
	7.2	0		39.74	298.05			0.00	
	7.3	0		41.03	307.73			0.00	
	7.4	0		42.31	317.33			0.00	
	7.5	0		43.59	326.93			0.00	
Staff-8	8.1	0		47.95	359.63			0.00	
	8.2	0		49.23	369.23			0.00	
	8.3	0		50.51	378.83			0.00	
	8.4	0		51.79	388.43			0.00	
	8.5	3		53.08	398.10	10.00		3,981.00	
Staff-9	9.1	0		58.21	436.58			0.00	
	9.2	0		59.49	446.18			0.00	
	9.3	0		60.77	455.78			0.00	
	9.4	0		62.05	465.38			0.00	
	9.5	0		63.33	474.98			0.00	
Sub-total						103.00		20,369.93	
2. Consumable				$ Per Liter	L/km		$/km		
Diesel	For Excavator	0	Liter	11.80	0.3620		4.2716	0.00	50km/7km/liter=7.14liter 11liter/hrs (fuel consumption for about 60PS) x 1hr=11liter 11liter +7.1liter=18.1liter/50km
Diesel	For Pick-up	114	Liter	11.80	0.1428	16.2792	1.68504	192.09	50km/7km/liter=7.14liter/50km
Engine Oil	For Excavator	0	Liter	60.00	0.0016		0.096	0.00	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Engine Oil	For Pick-up	114	Liter	60.00	0.0016		0.096	10.94	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Tires		0	Nos	770.00	0.0014		1.078	0.00	50km x 252days=12,600km 12,600km/ 30,000km x 4nos=1.68nos 1.68nos/ 252days=0.07nos/50km
Sub-total								203.04	
3. Material & Equipment									
Sluice/ Gate Valve	25mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	40mm	1	piece		350.00			350.00	Gate Valve
Sluice/ Gate Valve	50mm	2	piece		310.00			620.00	Gate Valve
Sluice/ Gate Valve	80mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	100mm	2	piece		2,423.00			4,846.00	Sluice Valve
Sluice/ Gate Valve	150mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	200mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	250mm		piece					0.00	Sluice Valve225mm AUD1785
Sluice/ Gate Valve	300mm		piece					0.00	
Pipes (Poly)	15mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	20mm		coil					0.00	Length on 1 coil =300m

per day

Items	Specification	Quantity	Unit	Hourly Rate (SBD)	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
Pipes (Poly)	25mm		coil					0.00	Length on 1 coil =200m
Pipes (Poly)	50mm		coil					0.00	Length on 1 coil =150m
Pipes (PVC)	25mm		piece					0.00	
Pipes (PVC)	50mm		piece					0.00	
Pipes (PVC)	80mm		piece					0.00	
Pipes (PVC)	100mm	1	piece		248.00			248.00	
Pipes (PVC)	150mm		piece					0.00	
Pipes (PVC)	200mm		piece					0.00	
Pipes (PVC)	250mm		piece					0.00	
Pipes (PVC)	300mm		piece					0.00	
Water Meter	10mm		piece					0.00	
Water Meter	16mm		piece					0.00	
Water Meter	20mm		piece					0.00	
Water Meter	25mm		piece					0.00	
Water Meter	32mm		piece					0.00	
Water Meter	40mm		piece					0.00	
Other Materials								4,956.00	
Sub-total								11,020.00	
Total								31,592.96	

1AUD=6.534SBD was applied to the above (rate as of 30 September, 2013 of Oanda).

2. Costing for Countermeasure

Location **Vavaya Ridge**

per day

Items	Specification	Quantity	Unit	Hourly Rate (SBD)	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
1. Personnel	Grades- Steps								
Staff-3	3.1	0	Person	15.38	115.35				
	3.2	0	Person	15.90	119.25				
	3.3	0	Person	16.41	123.08				
	3.4	0	Person	16.92	126.90				
	3.5	0	Person	17.44	130.80				
Staff-4	4.1	4	Person	19.23	144.23	20.00		2,884.50	
	4.2	8	Person	20.00	150.00	40.00		6,000.00	
	4.3	0	Person	20.77	155.78			0.00	
	4.4	0		21.54	161.55			0.00	
	4.5	0		22.31	167.33			0.00	
Staff-5	5.1	0		24.10	180.75			0.00	
	5.2	0		25.13	188.48			0.00	
	5.3	0		26.15	196.13			0.00	
	5.4	0		27.18	203.85			0.00	
	5.5	4		28.21	211.58	20.00		4,231.50	
Staff-6	6.1	0		31.54	236.55			0.00	
	6.2	4		32.82	246.15	20.00		4,923.00	
	6.3	0		34.10	255.75			0.00	
	6.4	0		35.38	265.35			0.00	
	6.5	0		36.67	275.03			0.00	
Staff-7	7.1	0		38.46	288.45			0.00	
	7.2	0		39.74	298.05			0.00	
	7.3	0		41.03	307.73			0.00	
	7.4	0		42.31	317.33			0.00	
	7.5	0		43.59	326.93			0.00	
Staff-8	8.1	0		47.95	359.63			0.00	
	8.2	0		49.23	369.23			0.00	
	8.3	0		50.51	378.83			0.00	
	8.4	0		51.79	388.43			0.00	
	8.5	0		53.08	398.10	10.00		3,981.00	
Staff-9	9.1	0		58.21	436.58			0.00	
	9.2	0		59.49	446.18			0.00	
	9.3	0		60.77	455.78			0.00	
	9.4	0		62.05	465.38			0.00	
	9.5	0		63.33	474.98			0.00	
Sub-total						**110.00**		**22,020.00**	
2. Consumable				$ Per Liter	L/km		$/km		
Diesel	For Excavator	0	Liter	11.80	0.3620		4.2716	0.00	50km/7km/liter=7.14liter 11liter/hrs (fuel consumption for about 60PS) x 1hr=11liter 11liter +7.1liter=18.1liter/50km
Diesel	For Pick-up	120	Liter	11.80	0.1428	17.1360	1.68504	202.20	50km/7km/liter=7.14liter/50km
Engine Oil	For Excavator	0	Liter	60.00	0.0016		0.096	0.00	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Engine Oil	For Pick-up	120	Liter	60.00	0.0016		0.096	11.52	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Tires		0	Nos	770.00	0.0014		1.078	0.00	50km x 252days=12,600km 12,600km/ 30,000km x 4nos=1.68nos 1.68nos/ 252days=0.07nos/50km
Sub-total								**213.72**	
3. Material & Equipment									
Sluice/ Gate Valve	25mm	3	piece		190.00			570.00	Gate Valve
Sluice/ Gate Valve	40mm		piece		350.00			0.00	Gate Valve
Sluice/ Gate Valve	50mm		piece		310.00			0.00	Gate Valve
Sluice/ Gate Valve	80mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	100mm		piece		2,423.00			0.00	Sluice Valve
Sluice/ Gate Valve	150mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	200mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	250mm		piece					0.00	Sluice Valve225mm AUD1785
Sluice/ Gate Valve	300mm		piece					0.00	
Pipes (Poly)	15mm	200	coil		14.50			2,900.00	Length on 1 coil =300m
Pipes (Poly)	20mm	60	coil		16.00			960.00	Length on 1 coil =300m
Pipes (Poly)	25mm	130	coil		18.00	per meter		2,340.00	Length on 1 coil =200m

per day

Items	Specification	Quantity	Unit	Hourly Rate (SBD)	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
Pipes (Poly)	50mm	5	coil		45.00			225.00	Length on 1 coil =150m
Pipes (PVC)	25mm		piece					0.00	
Pipes (PVC)	50mm		piece					0.00	
Pipes (PVC)	80mm		piece					0.00	
Pipes (PVC)	100mm		piece		248.00			0.00	
Pipes (PVC)	150mm		piece					0.00	
Pipes (PVC)	200mm		piece					0.00	
Pipes (PVC)	250mm		piece					0.00	
Pipes (PVC)	300mm		piece					0.00	
Water Meter	10mm		piece					0.00	
Water Meter	16mm		piece					0.00	
Water Meter	20mm	90	piece		394.00			35,460.00	
Water Meter	25mm	3	piece		918.68			2,756.04	
Water Meter	32mm		piece					0.00	
Water Meter	40mm		piece					0.00	
Other Materials								48,584.96	
Sub-total								**93,796.00**	
Total								**116,029.72**	

1AUD=6.534SBD was applied to the above (rate as of 30 September, 2013 of Oanda).

3. Costing for After Countermeasure

Location Vavaya Ridge

per day

Items	Specification	Quantity	Unit	Hourly Rate (SBD)	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
1. Personnel	Grades- Steps								
Staff-3	3.1	0	Person	15.38	115.35				
	3.2	0	Person	15.90	119.25				
	3.3	0	Person	16.41	123.08				
	3.4	0	Person	16.92	126.90				
	3.5	0	Person	17.44	130.80				
Staff-4	4.1	3	Person	19.23	144.23	4.00		576.90	
	4.2	6	Person	20.00	150.00	32.00		4,800.00	
	4.3	0	Person	20.77	155.78			0.00	
	4.4	0		21.54	161.55			0.00	
	4.5	0		22.31	167.33			0.00	
Staff-5	5.1	0		24.10	180.75			0.00	
	5.2	0		25.13	188.48			0.00	
	5.3	0		26.15	196.13			0.00	
	5.4	0		27.18	203.85			0.00	
	5.5	3		28.21	211.58	4.00		846.30	
Staff-6	6.1	0		31.54	236.55			0.00	
	6.2	3		32.82	246.15	4.00		984.60	
	6.3	0		34.10	255.75			0.00	
	6.4	0		35.38	265.35			0.00	
	6.5	0		36.67	275.03			0.00	
Staff-7	7.1	0		38.46	288.45			0.00	
	7.2	0		39.74	298.05			0.00	
	7.3	0		41.03	307.73			0.00	
	7.4	0		42.31	317.33			0.00	
	7.5	0		43.59	326.93			0.00	
Staff-8	8.1	0		47.95	359.63			0.00	
	8.2	0		49.23	369.23			0.00	
	8.3	0		50.51	378.83			0.00	
	8.4	0		51.79	388.43			0.00	
	8.5	1		53.08	398.10	5.00		1,990.50	
Staff-9	9.1	0		58.21	436.58			0.00	
	9.2	0		59.49	446.18			0.00	
	9.3	0		60.77	455.78			0.00	
	9.4	0		62.05	465.38			0.00	
	9.5	0		63.33	474.98			0.00	
Sub-total						49.00		9,198.30	
2. Consumable				$ Per Liter	L/km		$/km		
Diesel	For Excavator	0	Liter	11.80	0.3620		4.2716	0.00	50km/7km/liter=7.14liter 11liter/hrs (fuel consumption for about 60PS) x 1hr=11liter 11liter +7.1liter=18.1liter/50km
Diesel	For Pick-up	24	Liter	11.80	0.1428	3.4272	1.68504	40.44	50km/7km/liter=7.14liter/50km
Engine Oil	For Excavator	0	Liter	60.00	0.0016		0.096	0.00	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Engine Oil	For Pick-up	24	Liter	60.00	0.0016		0.096	2.30	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Tires		0	Nos	770.00	0.0014		1.078	0.00	50km x 252days=12,600km 12,600km/ 30,000km x 4nos=1.68nos 1.68nos/ 252days=0.07nos/50km
Sub-total								42.74	
3. Material & Equipment									
Sluice/ Gate Valve	25mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	40mm		piece		350.00			0.00	Gate Valve
Sluice/ Gate Valve	50mm		piece		310.00			0.00	Gate Valve
Sluice/ Gate Valve	80mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	100mm		piece		2,423.00			0.00	Sluice Valve
Sluice/ Gate Valve	150mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	200mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	250mm		piece					0.00	Sluice Valve225mm AUD1785
Sluice/ Gate Valve	300mm		piece					0.00	
Pipes (Poly)	15mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	20mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	25mm		coil					0.00	Length on 1 coil =200m

per day

Items	Specification	Quantity	Unit	Hourly Rate (SBD)	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
Pipes (Poly)	50mm		coil					0.00	Length on 1 coil =150m
Pipes (PVC)	25mm		piece					0.00	
Pipes (PVC)	50mm		piece					0.00	
Pipes (PVC)	80mm		piece					0.00	
Pipes (PVC)	100mm		piece		248.00			0.00	
Pipes (PVC)	150mm		piece					0.00	
Pipes (PVC)	200mm		piece					0.00	
Pipes (PVC)	250mm		piece					0.00	
Pipes (PVC)	300mm		piece					0.00	
Water Meter	10mm		piece					0.00	
Water Meter	16mm		piece					0.00	
Water Meter	20mm		piece					0.00	
Water Meter	25mm		piece					0.00	
Water Meter	32mm		piece					0.00	
Water Meter	40mm		piece					0.00	
Other Materials								0.00	
Sub-total								0.00	
Total								9,241.04	

1AUD=6.534SBD was applied to the above (rate as of 30 September, 2013 of Oanda).

4. Costing for Routine Activities

Location Vavaya Ridge

per day

Items	Specification	Quantity	Unit	Hourly Rate (SBD)	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
1. Personnel	Grades- Steps								
Staff-3	3.1	0	Person	15.38	115.35				
	3.2	0	Person	15.90	119.25				
	3.3	0	Person	16.41	123.08				
	3.4	0	Person	16.92	126.90				
	3.5	0	Person	17.44	130.80				
Staff-4	4.1	0	Person	19.23	144.23			0.00	
	4.2	0	Person	20.00	150.00			0.00	
	4.3	0	Person	20.77	155.78			0.00	
	4.4	0		21.54	161.55			0.00	
	4.5	0		22.31	167.33			0.00	
Staff-5	5.1	0		24.10	180.75			0.00	
	5.2	0		25.13	188.48			0.00	
	5.3	0		26.15	196.13			0.00	
	5.4	0		27.18	203.85			0.00	
	5.5	0		28.21	211.58			0.00	
Staff-6	6.1	3		31.54	236.55	5.00		1,182.75	
	6.2	0		32.82	246.15			0.00	
	6.3	0		34.10	255.75			0.00	
	6.4	0		35.38	265.35			0.00	
	6.5	0		36.67	275.03			0.00	
Staff-7	7.1	0		38.46	288.45			0.00	
	7.2	0		39.74	298.05			0.00	
	7.3	0		41.03	307.73			0.00	
	7.4	0		42.31	317.33			0.00	
	7.5	0		43.59	326.93			0.00	
Staff-8	8.1	0		47.95	359.63			0.00	
	8.2	0		49.23	369.23			0.00	
	8.3	0		50.51	378.83			0.00	
	8.4	0		51.79	388.43			0.00	
	8.5	0		53.08	398.10	10.00		3,981.00	
Staff-9	9.1	0		58.21	436.58			0.00	
	9.2	0		59.49	446.18			0.00	
	9.3	0		60.77	455.78			0.00	
	9.4	0		62.05	465.38			0.00	
	9.5	0		63.33	474.98			0.00	
Sub-total						15.00		5,163.75	
2. Consumable				$ Per Liter	L/km		$/km		
Diesel	For Excavator	0	Liter	11.80	0.3620		4.2716	0.00	50km/7km/liter=7.14liter 11liter/hrs (fuel consumption for about 60PS) x 1hr=11liter 11liter +7.1liter=18.1liter/50km
Diesel	For Pick-up	12	Liter	11.80	0.1428	1.7136	1.68504	20.22	50km/7km/liter=7.14liter/50km
Engine Oil	For Excavator	0	Liter	60.00	0.0016		0.096	0.00	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Engine Oil	For Pick-up	12	Liter	60.00	0.0016		0.096	1.15	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Tires		0	Nos	770.00	0.0014		1.078	0.00	50km x 252days=12,600km 12,600km/ 30,000km x 4nos=1.68nos 1.68nos/ 252days=0.07nos/50km
Sub-total								21.37	
3. Material & Equipment									
Sluice/ Gate Valve	25mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	40mm		piece		350.00			0.00	Gate Valve
Sluice/ Gate Valve	50mm		piece		310.00			0.00	Gate Valve
Sluice/ Gate Valve	80mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	100mm		piece		2,423.00			0.00	Sluice Valve
Sluice/ Gate Valve	150mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	200mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	250mm		piece					0.00	Sluice Valve225mm AUD1785
Sluice/ Gate Valve	300mm		piece					0.00	
Pipes (Poly)	15mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	20mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	25mm		coil					0.00	Length on 1 coil =200m

per day

Items	Specification	Quantity	Unit	Hourly Rate (SBD)	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
Pipes (Poly)	50mm		coil					0.00	Length on 1 coil =150m
Pipes (PVC)	25mm		piece					0.00	
Pipes (PVC)	50mm		piece					0.00	
Pipes (PVC)	80mm		piece					0.00	
Pipes (PVC)	100mm		piece		248.00			0.00	
Pipes (PVC)	150mm		piece					0.00	
Pipes (PVC)	200mm		piece					0.00	
Pipes (PVC)	250mm		piece					0.00	
Pipes (PVC)	300mm		piece					0.00	
Water Meter	10mm		piece					0.00	
Water Meter	16mm		piece					0.00	
Water Meter	20mm		piece					0.00	
Water Meter	25mm		piece					0.00	
Water Meter	32mm		piece					0.00	
Water Meter	40mm		piece					0.00	
Other Materials								0.00	
Sub-total								0.00	
Total								5,185.12	

1AUD=6.534SBD was applied to the above (rate as of 30 September, 2013 of Oanda).

Cost for Materials (Vavaya Ridge)

DEPARTMENT NAME: NRW PROJECT TEAM 2 RECEIVED BY: Mafe
RECOMMENDED BY : Benjimen Billy ISSUED BY: Paul Seda
REQUISITION NO: 0236 DATE ISSUED: 16/09/2013
JOB DESCRIPTION: Being for Mbokonavera & Vavaya Ridge .

Date	Materials Description	Quantity	Unit Cost	Total Cost
9/17/2013	100mm Flange Gilbault	2	$ 580.00	$ 1,160.00
9/17/2013	100mm Gilbault Joint	2	$ 413.00	$ 826.00
9/17/2013	1 lengths 100mm (4") UPVC Pressure Pipe	1	$ 248.00	$ 248.00
9/17/2013	100mm Sluice Valve	1	$ 2,423.00	$ 2,423.00
9/17/2013	40 KG Bag cement	3	$ 78.00	$ 234.00
9/17/2013	100mm (4") x 3/4" Brass Tapping Saddle	1	$ 250.00	$ 250.00
9/17/2013	Hack Saw blade	3	$ 10.00	$ 30.00
9/17/2013	1/2" x 3/4" G.I reduce nipple	1	$ 12.00	$ 12.00
9/17/2013	15mm Stop Cock	1	$ 40.00	$ 40.00
9/17/2013	ThreadTape	4	$ 4.00	$ 16.00
		Total per Requisition =		**$ 5,239.00**

DEPARTMENT NAME: NRW PROJECT TEAM 2 **RECEIVED BY: Liston Tora**
RECOMMENDED BY : Nathaniel Lega **ISSUED BY: Paul Seda**
REQUISITION NO: 0237 **DATE ISSUED: 24/09/2013**
JOB DESCRIPTION: Being for Valve installation @ Vavaya Ridge .

Date	Materials Description	Quantity	Unit Cost	Total Cost
9/24/2013	100mm Sluice Valve	1	$ 2,423.00	$ 2,423.00
9/24/2013	100mm Gilbault Joint	2	$ 413.00	$ 826.00
9/24/2013	100mm Flange Gilbault	1	$ 580.00	$ 580.00
9/24/2013	50mm (2") Brass Gate Valve	1	$ 310.00	$ 310.00
9/24/2013	50mm x 2" male Poly Adaptor	2	$ 36.00	$ 72.00
9/24/2013	15mm G.I elbow	10	$ 12.00	$ 120.00
		Total per Requisition =		**$ 4,331.00**

DEPARTMENT NAME: NRW PROJECT TEAM 2 **RECEIVED BY: Derick Hoa**
RECOMMENDED BY : Nathaniel Lega **ISSUED BY: Paul Seda**
REQUISITION NO: 0238 **DATE ISSUED: 24/09/2013**
JOB DESCRIPTION: Being for Valve installation @ Vavaya Ridge .

Date	Materials Description	Quantity	Unit Cost	Total Cost
9/24/2013	40mm Brass Gate Valve	1	$ 350.00	$ 350.00
9/24/2013	40mm x 1 1/2" poly male adaptor	2	$ 70.00	$ 140.00
9/24/2013	25mm Poly Couping	1	$ 56.00	$ 56.00
9/24/2013	50mm (2") Brass Gate Valve	1	$ 310.00	$ 310.00
9/24/2013	50mm x 2" male Poly Adaptor	2	$ 36.00	$ 72.00
9/24/2013	100mm (4") x 3/4" Brass Tapping Saddle	1	$ 250.00	$ 250.00
9/24/2013	5 metre 20mm Pipe	5	$ 16.00	$ 80.00
9/24/2013	20mm x 3/4" Poly male Adaptor	1	$ 48.00	$ 48.00
9/24/2013	ThreadTape	6	$ 4.00	$ 24.00
9/24/2013	15mm G.I elbow	10	$ 12.00	$ 120.00
		Total per Requisition =		**$ 1,450.00**

DEPARTMENT NAME: NRW PROJECT TEAM 2 **RECEIVED BY: David Akoeasi**
RECOMMENDED BY : Benjimen Billy **ISSUED BY: Paul Seda**
REQUISITION NO: 0239 **DATE ISSUED: 27/09/2013**
JOB DESCRIPTION: Being for Materials to be used @ Vavaya Ridge .

Date	Materials Description	Quantity	Unit Cost	Total Cost
9/27/2013	15mm G.I elbow	48	$ 12.00	$ 576.00
9/27/2013	16mm x 1/2" female poly Adaptor	28	$ 45.00	$ 1,260.00
9/27/2013	20mm Stop Cock	12	$ 65.00	$ 780.00
9/27/2013	ThreadTape	20	$ 4.00	$ 80.00
9/27/2013	20mm Water Meter	12	$ 394.00	$ 4,728.00
9/27/2013	1/2" G.I Nipple	12	$ 8.00	$ 96.00
		Total per Requisition =		**$ 7,520.00**

DEPARTMENT NAME: NRW PROJECT TEAM 1 **RECEIVED BY: David Akwa'asi**
RECOMMENDED BY : Benjimen Billy **ISSUED BY: Paul Seda**
REQUISITION NO: 0240 **DATE ISSUED: 7/10/2013**
JOB DESCRIPTION: Being for Meter Raising @ the Pilot Project Site (Vavaya Ridge) .
Meter ID : 13B0199554 -557 (5 pieces) 13B019349-352 (5 pieces) 13B019574-578 (5 pieces) 13B019459 -463(5 pieces) 13B019399-402 (5 Pieces) 13B019379 - 383 (5 pieces) 13B019359 - 363 (5 Pices) 13B019559 - 563 (5 pieces)

Date	Materials Description	Quantity	Unit Cost	Total Cost
10/7/2013	40 KG Bag cement	10	$ 78.00	$ 780.00
10/7/2013	10mm Steel Rods	5	$ 68.00	$ 340.00
10/7/2013	20mm Water Meter	40	$ 394.00	$ 15,760.00
10/7/2013	20mm Stop Cock	40	$ 168.00	$ 6,720.00
		Total per Requisition =		**$ 23,600.00**

DEPARTMENT NAME: NRW PROJECT TEAM 1 **RECEIVED BY: David Akwa'asi**
RECOMMENDED BY : Eric Unga **ISSUED BY: Paul Seda**
REQUISITION NO: 2453 **DATE ISSUED: 8/10/2013**
JOB DESCRIPTION: Being for Meter Raising @ the Pilot Project Site (Vavaya Ridge) .
Meter ID : 13B019782 ,13B019495,13B019813,13019621,13B019620,13B019619(6 pieces)

Date	Materials Description	Quantity	Unit Cost	Total Cost
10/8/2013	15mm G.I elbow	24	$ 12.00	$ 288.00
10/8/2013	3/4" x 1/2" G.I reduce Bush	6	$ 18.50	$ 111.00
10/8/2013	3/4" x 1/2" G.I reduce Socket	6	$ 12.50	$ 75.00
10/8/2013	16mm x 1/2" female poly Adaptor	10	$ 45.00	$ 450.00
10/8/2013	20mm Water Meter	6	$ 394.00	$ 2,364.00
10/8/2013	20mm Stop Cock	6	$ 168.00	$ 1,008.00
		Total per Requisition =		**$ 4,296.00**

DEPARTMENT NAME: NRW PROJECT TEAM 1 **RECEIVED BY: Liston Tora**
RECOMMENDED BY : Eric Unga **ISSUED BY: Paul Seda**
REQUISITION NO: 0241 **DATE ISSUED: 9/10/2013**
JOB DESCRIPTION: Being for Meter Raising @ the Pilot Project Site (Vavaya Ridge) .

Date	Materials Description	Quantity	Unit Cost	Total Cost
10/9/2013	3/4" x 1/2" G.I reduce Socket	12	$ 12.50	$ 150.00
10/9/2013	3/4" x 1/2" G.I reduce Bush	12	$ 18.50	$ 222.00
10/9/2013	15mm G.I elbow	48	$ 12.00	$ 576.00
10/9/2013	16mm x 1/2" female poly Adaptor	24	$ 45.00	$ 1,080.00
10/9/2013	3/4" G.I Tee	1	$ 8.00	$ 8.00
		Total per Requisition =		**$ 2,036.00**

DEPARTMENT NAME: NRW PROJECT TEAM 1 **RECEIVED BY: Liston Tora**
RECOMMENDED BY : Eric Unga **ISSUED BY: Paul Seda**
REQUISITION NO: 0242 **DATE ISSUED: 9/10/2013**
JOB DESCRIPTION: Being for Additional fittings for Meter Raising @ the Pilot Project Site (Vavaya Ridg

Date	Materials Description	Quantity	Unit Cost	Total Cost
10/9/2013	15mm G.I elbow	28	$ 12.00	$ 336.00
10/9/2013	3/4" x 1/2" G.I reduce Socket	7	$ 12.50	$ 87.50
10/9/2013	3/4" x 1/2" G.I reduce Bush	7	$ 18.50	$ 129.50
10/9/2013	16mm x 1/2" female poly Adaptor	14	$ 45.00	$ 630.00
		Total per Requisition =		**$ 1,183.00**

DEPARTMENT NAME: NRW PROJECT TEAM 2 **RECEIVED BY: Andrew Kopenao**
RECOMMENDED BY : Benjimen Billy **ISSUED BY: Jerry Webo**
REQUISITION NO: 0243 **DATE ISSUED: 10/10/2013**
JOB DESCRIPTION: Being for the Pilot Project Site @ Vavaya Ridge .

Date	Materials Description	Quantity	Unit Cost	Total Cost
10/10/2013	40mm x 25mm x 40mm Poly Tee	1	$ 66.00	$ 66.00
10/10/2013	25mm x 20mm x 25mm Poly Tee	1	$ 36.00	$ 36.00
10/10/2013	20mm Poly Plain Tee	1	$ 28.00	$ 28.00
10/10/2013	20mm x 16mm Poly Reduce Coupling	2	$ 60.00	$ 120.00
10/10/2013	25mm x 1" Poly female Adaptor	1	$ 48.00	$ 48.00
10/10/2013	25mm G.I Plug	1	$ 16.00	$ 16.00
10/10/2013	25mm G.I Nipple	1	$ 18.00	$ 18.00
10/10/2013	3/4" x 1/2" G.I Reducing Socket	1	$ 12.00	$ 12.00
10/10/2013	1/2" G.I Plug	1	$ 8.00	$ 8.00
10/10/2013	100 metres 25mm Poly Pipe	100	$ 18.00	$ 1,800.00
10/10/2013	ThreadTape	3	$ 4.00	$ 12.00
10/10/2013	30 metres 20mm Poly Pipe	30	$ 16.00	$ 480.00
		Total per Requisition =		**$ 2,644.00**

DEPARTMENT NAME: NRW PROJECT TEAM 2 **RECEIVED BY: Liston Tora**
RECOMMENDED BY : Eric Unga **ISSUED BY: Paul Seda**
REQUISITION NO: 0244 **DATE ISSUED: 11/10/2013**
JOB DESCRIPTION: Being for the Pilot Project Site @ Vavaya Ridge .

Date	Materials Description	Quantity	Unit Cost	Total Cost
10/11/2013	25mm Poly Plain Tee	2	$ 29.00	$ 58.00
10/11/2013	40mm Poly Plain Coupling	2	$ 40.00	$ 80.00
10/11/2013	5 Metres 40mm Poly Pipe	5	$ 45.00	$ 225.00
10/11/2013	ThreadTape	3	$ 4.00	$ 12.00
		Total per Requisition =		**$ 375.00**

DEPARTMENT NAME: NRW PROJECT TEAM 2 **RECEIVED BY: Liston Tora**
RECOMMENDED BY : Benjimen Billy **ISSUED BY: Jerry Webo**
REQUISITION NO: 0246 **DATE ISSUED: 12/10/2013**
JOB DESCRIPTION: Being for the Pilot Project Site @ Vavaya Ridge .

Date	Materials Description	Quantity	Unit Cost	Total Cost
10/12/2013	25mm Poly Plain Tee	10	$ 29.00	$ 290.00
10/12/2013	25mm x 16mm poly reduce coupling	5	$ 65.00	$ 325.00
10/12/2013	20mm x 16mm Poly Reduce Coupling	10	$ 60.00	$ 600.00
10/12/2013	ThreadTape	10	$ 4.00	$ 40.00
10/12/2013	Hack Saw Blade	2	$ 21.00	$ 42.00
		Total per Requisition =		**$ 1,297.00**

DEPARTMENT NAME: NRW PROJECT TEAM 2 **RECEIVED BY: Liston Tora**
RECOMMENDED BY : Benjimen Billy **ISSUED BY: Jerry Webo**
REQUISITION NO: 0245 **DATE ISSUED: 12/10/2013**
JOB DESCRIPTION: Being for the Pilot Project Site @ Vavaya Ridge .

Date	Materials Description	Quantity	Unit Cost	Total Cost
10/12/2013	16mm Poly Coupling	10	$ 45.00	$ 450.00
10/12/2013	20mm x 16mm Poly Reduce Coupling	10	$ 60.00	$ 600.00
10/12/2013	16mm Poly Plain Tee	10	$ 85.00	$ 850.00
10/12/2013	20mm Poly Plain Tee	10	$ 28.00	$ 280.00
10/12/2013	16mm x 1/2" male Poly Adaptor	10	$ 45.00	$ 450.00
10/12/2013	16mm x 1/2" female poly Adaptor	10	$ 45.00	$ 450.00
10/12/2013	20mm Poly Coupling	10	$ 45.00	$ 450.00
10/12/2013	30 metres 20mm Poly Pipe	30	$ 16.00	$ 480.00
10/12/2013	30 metres 25mm Poly Pipe	30	$ 18.00	$ 540.00
10/12/2013	25mm Poly Couping	10	$ 56.00	$ 560.00
		Total per Requisition =		**$ 5,110.00**

DEPARTMENT NAME: NRW PROJECT TEAM 2 **RECEIVED BY: Derick Hoa**
RECOMMENDED BY : Eric Unga **ISSUED BY: Paul Seda**
REQUISITION NO: 0248 **DATE ISSUED: 14/10/2013**
JOB DESCRIPTION: Being for the Pilot Project Site(Meter Raising) @ Vavaya Ridge .

Date	Materials Description	Quantity	Unit Cost	Total Cost
10/14/2013	3/4" x 1/2" G.I reduce Bush	10	$ 18.50	$ 185.00
10/14/2013	3/4" x 1/2" G.I Reducing Socket	10	$ 12.00	$ 120.00
10/14/2013	16mm x 1/2" female poly Adaptor	20	$ 45.00	$ 900.00
10/14/2013	ThreadTape	20	$ 4.00	$ 80.00
		Total per Requisition =		**$ 1,285.00**

DEPARTMENT NAME: NRW PROJECT TEAM 2 **RECEIVED BY: Harrison**
RECOMMENDED BY : Eric Unga **ISSUED BY: Paul Seda**
REQUISITION NO: 0247 **DATE ISSUED: 14/10/2013**
JOB DESCRIPTION: Being for the Pilot Project Site(Meter Raising) @ Vavaya Ridge .

Date	Materials Description	Quantity	Unit Cost	Total Cost
10/14/2013	20mm Stop Cock	10	$ 168.00	$ 1,680.00
10/14/2013	3/4" x 1/2" G.I reduce Bush	10	$ 18.50	$ 185.00
10/14/2013	3/4" x 1/2" G.I Reducing Socket	10	$ 12.00	$ 120.00
10/14/2013	ThreadTape	20	$ 4.00	$ 80.00
10/14/2013	Hack Saw Blade	2	$ 21.00	$ 42.00
		Total per Requisition =		**$ 2,107.00**

DEPARTMENT NAME: NRW PROJECT TEAM 2 **RECEIVED BY: Harrison Malau**
RECOMMENDED BY : Eric Unga **ISSUED BY: Paul Seda**
REQUISITION NO: 0250 **DATE ISSUED: 16/10/2013**
JOB DESCRIPTION: Being for Vavaya Ridge Meter Raising Pilot Project Site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
10/16/2013	20mm Stop Cock	10	$ 168.00	$ 1,680.00
10/16/2013	3/4" x 1/2" G.I Reducing Socket	10	$ 12.00	$ 120.00
10/16/2013	16mm x 1/2" female poly Adaptor	20	$ 45.00	$ 900.00
10/16/2013	ThreadTape (3 Pkts)	30	$ 4.00	$ 120.00
		Total per Requisition =		**$ 2,820.00**

DEPARTMENT NAME: NRW PROJECT TEAM 2 **RECEIVED BY: Liston Tora**
RECOMMENDED BY : Benjimen Billy **ISSUED BY: Paul Seda**
REQUISITION NO: 0249 **DATE ISSUED: 16/10/2013**
JOB DESCRIPTION: Being for Vavaya Ridge Meter Raising Pilot Project Site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
10/16/2013	20mm Stop Cock	10	$ 168.00	$ 1,680.00
10/16/2013	3/4" x 1/2" G.I Reducing Socket	10	$ 12.00	$ 120.00
10/16/2013	16mm x 1/2" female poly Adaptor	20	$ 45.00	$ 900.00
10/16/2013	ThreadTape (5 Pkts)	50	$ 4.00	$ 200.00
		Total per Requisition =		**$ 2,900.00**

DEPARTMENT NAME: NRW PROJECT TEAM 2 **RECEIVED BY: Derick Hoa**
RECOMMENDED BY : Benjimen Billy **ISSUED BY: Paul Seda**
REQUISITION NO: 2301 **DATE ISSUED: 21/10/2013**
JOB DESCRIPTION: Materials required for Vavaya Ridge Project Pilot Site .
Meter ID : 12B0866668 - 672(5 pieces) 12B086768 - 772 (5 pieces) 12B086853-857 (5 pieces) 12B086898 - 902 (5 pieces)

Date	Materials Description	Quantity	Unit Cost	Total Cost
10/21/2013	ThreadTape (6 Pkts)	60	$ 4.00	$ 240.00
10/21/2013	10mm Steel Rods	2	$ 68.00	$ 136.00
10/21/2013	3/4" G.I Elbow	20	$ 14.00	$ 280.00
10/21/2013	3/4" G.I Socket	10	$ 12.00	$ 120.00
10/21/2013	20mm Water Meter	20	$ 394.00	$ 7,880.00
10/21/2013	16mm Poly Coupling	20	$ 45.00	$ 900.00
10/21/2013	3/4" x 1/2" G.I reduce Bush	20	$ 18.50	$ 370.00
10/21/2013	3/4" x 1/2" G.I Reducing Socket	20	$ 12.00	$ 240.00
10/21/2013	16mm x 1/2" female poly Adaptor	20	$ 45.00	$ 900.00
		Total per Requisition =		**$ 11,066.00**

DEPARTMENT NAME: NRW PROJECT TEAM 2 **RECEIVED BY: Derick Hoa**
RECOMMENDED BY : Benjimen Billy **ISSUED BY: Paul Seda**
REQUISITION NO: 2302 **DATE ISSUED: 22/10/2013**
JOB DESCRIPTION: Materials required for Vavaya Ridge Project Pilot Site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
10/22/2013	20mm x 3/4" Poly female Adaptor	20	$ 48.00	$ 960.00
10/22/2013	20mm(3/4") G.I Elbow	20	$ 14.00	$ 280.00
		Total per Requisition =		**$ 1,240.00**

DEPARTMENT NAME: NRW PROJECT TEAM 2 **RECEIVED BY: Harry**
RECOMMENDED BY : Eric Unga **ISSUED BY: Paul Seda**
REQUISITION NO: 2303 **DATE ISSUED: 24/10/2013**
JOB DESCRIPTION: Materials required for Vavaya Ridge Project Pilot Site for Meter Raising .

Date	Materials Description	Quantity	Unit Cost	Total Cost
10/24/2013	20mm Water Meter	10	$ 394.00	$ 3,940.00
10/24/2013	20mm Stop Cock	5	$ 168.00	$ 840.00
10/24/2013	16mm x 1/2" female poly Adaptor	20	$ 45.00	$ 900.00
10/24/2013	16mm Poly Coupling	10	$ 45.00	$ 450.00
10/24/2013	ThreadTape	13	$ 4.00	$ 52.00
10/24/2013	25mm x 3/4" female poly Adaptor	10	$ 48.00	$ 480.00
10/24/2013	25mm x 16mm poly reduce coupling	10	$ 65.00	$ 650.00
10/24/2013	20mm x 3/4" Poly female Adaptor	10	$ 48.00	$ 480.00
		Total per Requisition =		**$ 7,792.00**

DEPARTMENT NAME: NRW PROJECT TEAM 1 **RECEIVED BY: Andrew Kopenao**
RECOMMENDED BY : Eric Unga **ISSUED BY: Jerry Webo**
REQUISITION NO: 2304 **DATE ISSUED: 26/10/2013**
JOB DESCRIPTION: Materials required for Repair @ Vavaya Ridge Project Pilot Site for Meter Raising .
Meter ID : 12B011101-105(5 Pieces) 12B0111151-155 (5 pieces)

Date	Materials Description	Quantity	Unit Cost	Total Cost
10/26/2013	40 KG Bag cement	6	$ 78.00	$ 468.00
10/26/2013	200 metres (1 roll) 16mm poly pipe	200	$ 14.50	$ 2,900.00
10/26/2013	20mm Water Meter	10	$ 394.00	$ 3,940.00
		Total per Requisition =		**$ 7,308.00**

DEPARTMENT NAME: NRW PROJECT TEAM 1 **RECEIVED BY: Harrison**
RECOMMENDED BY : Benjimen Billy **ISSUED BY: Paul Seda**
REQUISITION NO: 2305 **DATE ISSUED: 28/10/2013**
JOB DESCRIPTION: Materials required for Repair @ Vavaya Ridge Project Pilot Site for Meter Raising .

Date	Materials Description	Quantity	Unit Cost	Total Cost
10/28/2013	20mm Stop Cock	10	$ 168.00	$ 1,680.00
10/28/2013	3/4" x 1/2" G.I Reducing Socket	10	$ 12.00	$ 120.00
10/28/2013	3/4" x 1/2" G.I reduce Bush	10	$ 18.50	$ 185.00
10/28/2013	16mm Poly Coupling	10	$ 45.00	$ 450.00
		Total per Requisition =		**$ 2,435.00**

DEPARTMENT NAME: NRW PROJECT TEAM 1 **RECEIVED BY: Derick Hoa**
RECOMMENDED BY : Benjimen Billy **ISSUED BY: Paul Seda**
REQUISITION NO: 2306 **DATE ISSUED: 29/10/2013**
JOB DESCRIPTION: Materials required for Repair @ Vavaya Ridge Project Pilot Site for Meter Raising .
METER I.D : 09C002273 &09C002275 , 09C002307

Date	Materials Description	Quantity	Unit Cost	Total Cost
10/29/2013	25mm x 1" Poly female Adaptor	6	$ 48.00	$ 288.00
10/29/2013	25mm (1")G.I Elbow	3	$ 30.00	$ 90.00
10/29/2013	1" Brass Gate valve	3	$ 190.00	$ 570.00
10/29/2013	1" G.I Nipple	3	$ 18.00	$ 54.00
10/29/2013	25mm G.I Socket	4	$ 14.00	$ 56.00
10/29/2013	25mm Water Meter	3	$ 918.68	$ 2,756.04
10/29/2013	1" x 3/4" G.I reduce nipple	1	$ 16.00	$ 16.00
10/29/2013	20mm(3/4") G.I Elbow	1	$ 14.00	$ 14.00
10/29/2013	20mm x 3/4" Poly male Adaptor	1	$ 48.00	$ 48.00
		Total per Requisition =		**$ 3,892.04**

DEPARTMENT NAME: NRW PROJECT TEAM 1 **RECEIVED BY: Mafe**
RECOMMENDED BY : Benjimen Billy **ISSUED BY: Paul Seda**
REQUISITION NO: 0774 **DATE ISSUED: 31/10/2013**
JOB DESCRIPTION: Materials required for Installation @ Rock Havens .

Date	Materials Description	Quantity	Unit Cost	Total Cost
10/31/2013	25mm Air Valve	1	$ 45.00	$ 45.00
10/31/2013	25mm G.I Socket	1	$ 14.00	$ 14.00
10/31/2013	1" x 3/4" G.I reduce nipple	1	$ 16.00	$ 16.00
		Total per Requisition =		**$ 75.00**

DEPARTMENT NAME: NRW PROJECT TEAM 2 **RECEIVED BY: Janan Capu**
RECOMMENDED BY : Ray Andersen **ISSUED BY: Jerry Webo**
REQUISITION NO: 2459 **DATE ISSUED: 28/10/2013**
JOB DESCRIPTION: Materials required for Repair @ Vavaya Ridge Project Pilot Site for Meter Raising .

Date	Materials Description	Quantity	Unit Cost	Total Cost
11/2/2013	30 metres 16mm poly pipe	30	$ 14.50	$ 435.00
11/2/2013	20mm Poly Plain Tee	1	$ 28.00	$ 28.00
11/2/2013	20mm x 1/2" Poly male Adaptor	1	$ 40.00	$ 40.00
11/2/2013	16mm x 1/2" female poly Adaptor	5	$ 45.00	$ 225.00
11/2/2013	16mm x 1/2" male Poly Adaptor	5	$ 45.00	$ 225.00
		Total per Requisition =		**$ 953.00**

DEPARTMENT NAME: NRW PROJECT TEAM 2 — **RECEIVED BY: Derick Hoa**
RECOMMENDED BY : Benjimen Billy — **ISSUED BY: Paul Seda**
REQUISITION NO: 2307 — **DATE ISSUED: 13/11/2013**
JOB DESCRIPTION: Last Materials Required for Meter raising @ Lower Vavaya Ridge (Rock Heaven)

Date	Materials Description	Quantity	Unit Cost	Total Cost
11/13/2013	25mm (1")G.I Elbow	4	$ 30.00	$ 120.00
11/13/2013	25mm G.I Socket	1	$ 14.00	$ 14.00
11/13/2013	25mm G.I Nipple	1	$ 18.00	$ 18.00
11/13/2013	25mm x 1" Poly female Adaptor	2	$ 48.00	$ 96.00
11/13/2013	3" UPVC Compression Coupling	1	$ 190.00	$ 190.00
11/13/2013	1 metre 80mm UPVC Pressure Pipe	1	$ 140.00	$ 140.00
11/13/2013	8" x 1 1/4" brass Saddle/Tapping band	1	$ 844.00	$ 844.00
		Total per Requisition =		**$ 1,422.00**

DEPARTMENT NRW Team1 — **RECEIVED BY: David Akoasi**
RECOMMENDED BY : Chris Meriko — **ISSUED BY: Paul Seda**
REQUISITION NO: 2317 — **DATE ISSUED: 18/11/2013**
JOB DESCRIPTION: Materials required for valve installment/step test @ Vavaya Ridge.

Date	Materials Description	Quantity	Unit Cost	Total Cost
11/18/2013	25mm x 1" Poly male Adaptor	2	$ 50.00	$ 100.00
11/18/2013	ThreadTape	1	$ 4.00	$ 4.00
11/18/2013	20mm x 16mm Poly Reduce Coupling	6	$ 56.00	$ 336.00
		Total per Requisition =		**$ 440.00**

TOTAL MATERIAL COST FOR VAVAYA RIDGE **$ 104,816.04**

TOTAL COST FOR MBOKONA

	Before Countermeasure		After Countermeasure		
	Before Countermeasure	Countermeasure	After Countermeasure	Routine Activities	**Total**
Personnel Cost	33,599.85	48,230.55	8,734.73	896.25	**91,461.38**
Consumable	1,175.49	1,645.68	117.55	78.37	**7,417.08**
Material and Equipment	8,859.24	137,407.27	0.00	0.00	**146,266.51**
Sub Total	**43,634.58**	**187,283.50**	**8,852.27**	**974.62**	**245,144.97**
TOTAL	**230,918.08**		**9,826.89**		

TOTAL MAN DAYS FOR MBOKONA **608**

1. Costing Before Countermeasure

Location **Mbokona**

per day

Items	Specification	Quantity	Unit	Hourly Rate (SBD)	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
1. Personnel	Grades- Steps								
Staff-3	3.1	0	Person	15.38	115.35				
	3.2	0	Person	15.90	119.25				
	3.3	0	Person	16.41	123.08				
	3.4	0	Person	16.92	126.90				
	3.5	0	Person	17.44	130.80				
Staff-4	4.1	40	Person	19.23	144.23	116.00		16,730.10	
	4.2	20	Person	20.00	150.00	40.00		6,000.00	
	4.3	0	Person	20.77	155.78			0.00	
	4.4	0		21.54	161.55			0.00	
	4.5	0		22.31	167.33			0.00	
Staff-5	5.1	10		24.10	180.75	20.00		3,615.00	
	5.2	0		25.13	188.48			0.00	
	5.3	0		26.15	196.13			0.00	
	5.4	0		27.18	203.85			0.00	
	5.5	10		28.21	211.58	20.00		4,231.50	
Staff-6	6.1	2		31.54	236.55	1.00		236.55	
	6.2	0		32.82	246.15			0.00	
	6.3	0		34.10	255.75			0.00	
	6.4	0		35.38	265.35			0.00	
	6.5	0		36.67	275.03			0.00	
Staff-7	7.1	0		38.46	288.45			0.00	
	7.2	0		39.74	298.05			0.00	
	7.3	0		41.03	307.73			0.00	
	7.4	0		42.31	317.33			0.00	
	7.5	0		43.59	326.93			0.00	
Staff-8	8.1	0		47.95	359.63			0.00	
	8.2	0		49.23	369.23			0.00	
	8.3	0		50.51	378.83			0.00	
	8.4	0		51.79	388.43			0.00	
	8.5	2		53.08	398.10	7.00		2,786.70	
Staff-9	9.1	0		58.21	436.58			0.00	
	9.2	0		59.49	446.18			0.00	
	9.3	0		60.77	455.78			0.00	
	9.4	0		62.05	465.38			0.00	
	9.5	0		63.33	474.98			0.00	
Sub-total						204.00		33,599.85	
2. Consumable				$ Per Liter	L/km		$/km		
Diesel	For Excavator	0	Liter	11.80	0.3620		4.2716	0.00	50km/7km/liter=7.14liter 11liter/hrs (fuel consumption for about 60PS) x 1hr=11liter 11liter +7.1liter=18.1liter/50km
Diesel	For Pick-up	660	Liter	11.80	0.1428	94.2480	1.68504	1,112.13	50km/7km/liter=7.14liter/50km
Engine Oil	For Excavator	0	Liter	60.00	0.0016		0.096	0.00	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Engine Oil	For Pick-up	660	Liter	60.00	0.0016		0.096	63.36	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Tires		0	Nos	770.00	0.0014		1.078	0.00	50km x 252days=12,600km 12,600km/ 30,000km x 4nos=1.68nos 1.68nos/ 252days=0.07nos/50km
Sub-total								1,175.49	
3. Material & Equipment									
Sluice/ Gate Valve	25mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	40mm		piece		350.00			0.00	Gate Valve
Sluice/ Gate Valve	50mm	1	piece		310.00			310.00	Gate Valve
Sluice/ Gate Valve	80mm	2	piece		1,229.00			2,458.00	Gate Valve
Sluice/ Gate Valve	80mm	1	piece		2,397.12			2,397.12	Sluice Valve
Sluice/ Gate Valve	100mm		piece		2,423.00			0.00	Sluice Valve
Sluice/ Gate Valve	150mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	200mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	250mm		piece					0.00	Sluice Valve225mm AUD1785
Sluice/ Gate Valve	300mm		piece					0.00	
Pipes (Poly)	15mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	20mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	25mm		coil					0.00	Length on 1 coil =200m
Pipes (Poly)	50mm		coil					0.00	Length on 1 coil =150m

per day

Items	Specification	Quantity	Unit	Hourly Rate (SBD)	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
Pipes (PVC)	25mm		piece					0.00	
Pipes (PVC)	50mm	1	piece		154.00			154.00	
Pipes (PVC)	80mm		piece					0.00	
Pipes (PVC)	100mm		piece		248.00			0.00	
Pipes (PVC)	150mm		piece					0.00	
Pipes (PVC)	200mm		piece					0.00	
Pipes (PVC)	250mm		piece					0.00	
Pipes (PVC)	300mm		piece					0.00	
Water Meter	10mm		piece					0.00	
Water Meter	16mm		piece					0.00	
Water Meter	20mm		piece					0.00	
Water Meter	25mm		piece					0.00	
Water Meter	32mm		piece					0.00	
Water Meter	40mm		piece					0.00	
Other Materials								3,540.12	
Sub-total								8,859.24	
Total								43,634.58	

1AUD=6.534SBD was applied to the above (rate as of 30 September, 2013 of Oanda).

2. Countermeasure

Location **Mbokona**

per day

Items	Specification	Quantity	Unit	Hourly Rate (SBD)	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
1. Personnel	Grades- Steps								
Staff-3	3.1	0	Person	15.38	115.35				
	3.2	0	Person	15.90	119.25				
	3.3	0	Person	16.41	123.08				
	3.4	0	Person	16.92	126.90				
	3.5	0	Person	17.44	130.80				
Staff-4	4.1	16	Person	19.23	144.23	152.00		21,922.20	
	4.2	8	Person	20.00	150.00	76.00		11,400.00	
	4.3	0	Person	20.77	155.78			0.00	
	4.4	0		21.54	161.55			0.00	
	4.5	0		22.31	167.33			0.00	
Staff-5	5.1	3		24.10	180.75	38.00		6,868.50	
	5.2	0		25.13	188.48			0.00	
	5.3	0		26.15	196.13			0.00	
	5.4	0		27.18	203.85			0.00	
	5.5	4		28.21	211.58	38.00		8,039.85	
Staff-6	6.1	0		31.54	236.55			0.00	
	6.2	0		32.82	246.15			0.00	
	6.3	0		34.10	255.75			0.00	
	6.4	0		35.38	265.35			0.00	
	6.5	0		36.67	275.03			0.00	
Staff-7	7.1	0		38.46	288.45			0.00	
	7.2	0		39.74	298.05			0.00	
	7.3	0		41.03	307.73			0.00	
	7.4	0		42.31	317.33			0.00	
	7.5	0		43.59	326.93			0.00	
Staff-8	8.1	0		47.95	359.63			0.00	
	8.2	0		49.23	369.23			0.00	
	8.3	0		50.51	378.83			0.00	
	8.4	0		51.79	388.43			0.00	
	8.5	0		53.08	398.10			0.00	
Staff-9	9.1	0		58.21	436.58			0.00	
	9.2	0		59.49	446.18			0.00	
	9.3	0		60.77	455.78			0.00	
	9.4	0		62.05	465.38			0.00	
	9.5	0		63.33	474.98			0.00	
Sub-total						**304.00**		**48,230.55**	
2. Consumable				$ Per Liter	L/km		$/km		
Diesel	For Excavator	0	Liter	11.80	0.3620		4.2716	0.00	50km/7km/liter=7.14liter 11liter/hrs (fuel consumption for about 60PS) x 1hr=11liter 11liter +7.1liter=18.1liter/50km
Diesel	For Pick-up	924	Liter	11.80	0.1428	131.9472	1.68504	1,556.98	50km/7km/liter=7.14liter/50km
Engine Oil	For Excavator	0	Liter	60.00	0.0016		0.096	0.00	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Engine Oil	For Pick-up	924	Liter	60.00	0.0016		0.096	88.70	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Tires		0	Nos	770.00	0.0014		1.078	0.00	50km x 252days=12,600km 12,600km/ 30,000km x 4nos=1.68nos 1.68nos/ 252days=0.07nos/50km
Sub-total								**1,645.68**	
3. Material & Equipment									
Sluice/ Gate Valve	25mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	40mm		piece		350.00			0.00	Gate Valve
Sluice/ Gate Valve	50mm		piece		310.00			0.00	Gate Valve
Sluice/ Gate Valve	80mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	100mm		piece		2,423.00			0.00	Sluice Valve
Sluice/ Gate Valve	150mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	200mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	250mm		piece					0.00	Sluice Valve225mm AUD1785
Sluice/ Gate Valve	300mm		piece					0.00	
Pipes (Poly)	15mm	200	coil		14.50			2,900.00	Length on 1 coil =300m
Pipes (Poly)	20mm	100	coil		16.00			1,600.00	Length on 1 coil =300m
Pipes (Poly)	25mm		coil					0.00	Length on 1 coil =200m
Pipes (Poly)	50mm		coil					0.00	Length on 1 coil =150m
Pipes (PVC)	25mm		piece					0.00	

per day

Items	Specification	Quantity	Unit	Hourly Rate (SBD)	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
Pipes (PVC)	50mm		piece					0.00	
Pipes (PVC)	80mm		piece					0.00	
Pipes (PVC)	100mm		piece		248.00			0.00	
Pipes (PVC)	150mm		piece					0.00	
Pipes (PVC)	200mm		piece					0.00	
Pipes (PVC)	250mm		piece					0.00	
Pipes (PVC)	300mm		piece					0.00	
Water Meter	10mm		piece					0.00	
Water Meter	16mm		piece					0.00	
Water Meter	20mm	44	piece		394.00			17,336.00	
Water Meter	25mm		piece					0.00	
Water Meter	32mm		piece					0.00	
Water Meter	40mm		piece					0.00	
Other Materials								56,239.04	
Water meter	20mm	24			394.00			9,456.00	Not shown in requisition report for Mbokona
Sub-total								**87,531.04**	
Total								**137,407.27**	

1AUD=6.534SBD was applied to the above (rate as of 30 September, 2013 of Oanda).

3. After Countermeasure

Location Mbokona

per day

Items	Specification	Quantity	Unit	Hourly Rate (SBD)	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
1. Personnel	Grades- Steps								
Staff-3	3.1	0	Person	15.38	115.35				
	3.2	0	Person	15.90	119.25				
	3.3	0	Person	16.41	123.08				
	3.4	0	Person	16.92	126.90				
	3.5	0	Person	17.44	130.80				
Staff-4	4.1	12	Person	19.23	144.23	20.00		2,884.50	
	4.2	6	Person	20.00	150.00	10.00		1,500.00	
	4.3	0	Person	20.77	155.78			0.00	
	4.4	0		21.54	161.55			0.00	
	4.5	0		22.31	167.33			0.00	
Staff-5	5.1	3		24.10	180.75	5.00		903.75	
	5.2	0		25.13	188.48			0.00	
	5.3	0		26.15	196.13			0.00	
	5.4	0		27.18	203.85			0.00	
	5.5	3		28.21	211.58	5.00		1,057.88	
Staff-6	6.1	0		31.54	236.55			0.00	
	6.2	0		32.82	246.15			0.00	
	6.3	0		34.10	255.75			0.00	
	6.4	0		35.38	265.35			0.00	
	6.5	0		36.67	275.03			0.00	
Staff-7	7.1	0		38.46	288.45			0.00	
	7.2	0		39.74	298.05			0.00	
	7.3	0		41.03	307.73			0.00	
	7.4	0		42.31	317.33			0.00	
	7.5	0		43.59	326.93			0.00	
Staff-8	8.1	0		47.95	359.63			0.00	
	8.2	0		49.23	369.23			0.00	
	8.3	0		50.51	378.83			0.00	
	8.4	0		51.79	388.43			0.00	
	8.5	2		53.08	398.10	6.00		2,388.60	
Staff-9	9.1	0		58.21	436.58			0.00	
	9.2	0		59.49	446.18			0.00	
	9.3	0		60.77	455.78			0.00	
	9.4	0		62.05	465.38			0.00	
	9.5	0		63.33	474.98			0.00	
Sub-total						46.00		8,734.73	
2. Consumable				$ Per Liter	L/km		$/km		
Diesel	For Excavator	0	Liter	11.80	0.3620		4.2716	0.00	50km/7km/liter=7.14liter 11liter/hrs (fuel consumption for about 60PS) x 1hr=11liter 11liter +7.1liter=18.1liter/50km
Diesel	For Pick-up	66	Liter	11.80	0.1428	9.4248	1.68504	111.21	50km/7km/liter=7.14liter/50km
Engine Oil	For Excavator	0	Liter	60.00	0.0016		0.096	0.00	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Engine Oil	For Pick-up	66	Liter	60.00	0.0016		0.096	6.34	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Tires		0	Nos	770.00	0.0014		1.078	0.00	50km x 252days=12,600km 12,600km/ 30,000km x 4nos=1.68nos 1.68nos/ 252days=0.07nos/50km
Sub-total								117.55	
3. Material & Equipment									
Sluice/ Gate Valve	25mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	40mm		piece		350.00			0.00	Gate Valve
Sluice/ Gate Valve	50mm		piece		310.00			0.00	Gate Valve
Sluice/ Gate Valve	80mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	100mm		piece		2,423.00			0.00	Sluice Valve
Sluice/ Gate Valve	150mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	200mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	250mm		piece					0.00	Sluice Valve225mm AUD1785
Sluice/ Gate Valve	300mm		piece					0.00	
Pipes (Poly)	15mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	20mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	25mm		coil					0.00	Length on 1 coil =200m
Pipes (Poly)	50mm		coil					0.00	Length on 1 coil =150m
Pipes (PVC)	25mm		piece					0.00	

per day

Items	Specification	Quantity	Unit	Hourly Rate (SBD)	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
Pipes (PVC)	50mm		piece					0.00	
Pipes (PVC)	80mm		piece					0.00	
Pipes (PVC)	100mm		piece		248.00			0.00	
Pipes (PVC)	150mm		piece					0.00	
Pipes (PVC)	200mm		piece					0.00	
Pipes (PVC)	250mm		piece					0.00	
Pipes (PVC)	300mm		piece					0.00	
Water Meter	10mm		piece					0.00	
Water Meter	16mm		piece					0.00	
Water Meter	20mm		piece					0.00	
Water Meter	25mm		piece					0.00	
Water Meter	32mm		piece					0.00	
Water Meter	40mm		piece					0.00	
Other Materials									
Sub-total								0.00	
Total								8,852.27	

1AUD=6.534SBD was applied to the above (rate as of 30 September, 2013 of Oanda).

4. Costing for Routine Activities

Location: Mbokona

per day

Items	Specification	Quantity	Unit	Hourly Rate (SBD)	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
1. Personnel	Grades- Steps								
Staff-3	3.1	0	Person	15.38	115.35				
	3.2	0	Person	15.90	119.25				
	3.3	0	Person	16.41	123.08				
	3.4	0	Person	16.92	126.90				
	3.5	0	Person	17.44	130.80				
Staff-4	4.1	0	Person	19.23	144.23			0.00	
	4.2	0	Person	20.00	150.00			0.00	
	4.3	0	Person	20.77	155.78			0.00	
	4.4	0		21.54	161.55			0.00	
	4.5	0		22.31	167.33			0.00	
Staff-5	5.1	0		24.10	180.75			0.00	
	5.2	0		25.13	188.48			0.00	
	5.3	0		26.15	196.13			0.00	
	5.4	0		27.18	203.85			0.00	
	5.5	1		28.21	211.58	2.00		423.15	
Staff-6	6.1	2		31.54	236.55	2.00		473.10	
	6.2	0		32.82	246.15			0.00	
	6.3	0		34.10	255.75			0.00	
	6.4	0		35.38	265.35			0.00	
	6.5	0		36.67	275.03			0.00	
Staff-7	7.1	0		38.46	288.45			0.00	
	7.2	0		39.74	298.05			0.00	
	7.3	0		41.03	307.73			0.00	
	7.4	0		42.31	317.33			0.00	
	7.5	0		43.59	326.93			0.00	
Staff-8	8.1	0		47.95	359.63			0.00	
	8.2	0		49.23	369.23			0.00	
	8.3	0		50.51	378.83			0.00	
	8.4	0		51.79	388.43			0.00	
	8.5	0		53.08	398.10			0.00	
Staff-9	9.1	0		58.21	436.58			0.00	
	9.2	0		59.49	446.18			0.00	
	9.3	0		60.77	455.78			0.00	
	9.4	0		62.05	465.38			0.00	
	9.5	0		63.33	474.98			0.00	
Sub-total						4.00		896.25	
2. Consumable				$ Per Liter	L/km		$/km		
Diesel	For Excavator	0	Liter	11.80	0.3620		4.2716	0.00	50km/7km/liter=7.14liter 11liter/hrs (fuel consumption for about 60PS) x 1hr=11liter 11liter +7.1liter=18.1liter/50km
Diesel	For Pick-up	44	Liter	11.80	0.1428	6.2832	1.68504	74.14	50km/7km/liter=7.14liter/50km
Engine Oil	For Excavator	0	Liter	60.00	0.0016		0.096	0.00	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Engine Oil	For Pick-up	44	Liter	60.00	0.0016		0.096	4.22	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Tires		0	Nos	770.00	0.0014		1.078	0.00	50km x 252days=12,600km 12,600km/ 30,000km x 4nos=1.68nos 1.68nos/ 252days=0.07nos/50km
Sub-total								78.37	
3. Material & Equipment									
Sluice/ Gate Valve	25mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	40mm		piece		350.00			0.00	Gate Valve
Sluice/ Gate Valve	50mm		piece		310.00			0.00	Gate Valve
Sluice/ Gate Valve	80mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	100mm		piece		2,423.00			0.00	Sluice Valve
Sluice/ Gate Valve	150mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	200mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	250mm		piece					0.00	Sluice Valve225mm AUD1785
Sluice/ Gate Valve	300mm		piece					0.00	
Pipes (Poly)	15mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	20mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	25mm		coil					0.00	Length on 1 coil =200m
Pipes (Poly)	50mm		coil					0.00	Length on 1 coil =150m
Pipes (PVC)	25mm		piece					0.00	
Pipes (PVC)	50mm		piece					0.00	
Pipes (PVC)	80mm		piece					0.00	
Pipes (PVC)	100mm		piece		248.00			0.00	
Pipes (PVC)	150mm		piece					0.00	
Pipes (PVC)	200mm		piece					0.00	
Pipes (PVC)	250mm		piece					0.00	
Pipes (PVC)	300mm		piece					0.00	
Water Meter	10mm		piece					0.00	
Water Meter	16mm		piece					0.00	
Water Meter	20mm		piece					0.00	
Water Meter	25mm		piece					0.00	
Water Meter	32mm		piece					0.00	
Water Meter	40mm		piece					0.00	
Other Materials								0.00	
Sub-total								0.00	
Total								974.62	

1AUD=6.534SBD was applied to the above (rate as of 30 September, 2013 of Oanda).

Cost for Materials (Mbokona)

DEPARTMENT NAME: NRW PROJECT TEAM 1 — **RECEIVED BY: J.Teno**
RECOMMENDED BY : Eric Unga — **ISSUED BY: Jerry Webo**
REQUISITION NO: 0126 — **DATE ISSUED: 12/10/2013**
JOB DESCRIPTION: Being for Mbokona Pilot Project Site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
10/12/2013	80mm (3") Brass Gate Valve	1	$ 1,229.00	$ 1,229.00
10/12/2013	8" x 1 1/4" brass Saddle/Tapping band	1	$ 844.00	$ 844.00
10/12/2013	15mm Stop Cock	1	$ 95.00	$ 95.00
10/12/2013	1/2" G.I Nipple	1	$ 8.00	$ 8.00
10/12/2013	80mm (3") Sluice Valve	1	$ 2,397.12	$ 2,397.12
10/12/2013	80mm (3") Flange Adaptor	2	$ 636.73	$ 1,273.46
10/12/2013	16mm Poly Tee	1	$ 85.00	$ 85.00
10/12/2013	3" Gasket & boits	2	$ 134.83	$ 269.66
		Total per Requisition =		**$ 6,201.24**

DEPARTMENT NAME: NRW PROJECT TEAM 2 — **RECEIVED BY: John Teno**
RECOMMENDED BY : Benjimen Billy — **ISSUED BY: Paul Seda**
REQUISITION NO: 2352 — **DATE ISSUED: 14/10/2013**
JOB DESCRIPTION: Being for Mbokona Pilot Project Site.

Date	Materials Description	Quantity	Unit Cost	Total Cost
10/14/2013	3" UPVC Compression Coupling	1	$ 180.00	$ 180.00
		Total per Requisition =		**$ 180.00**

DEPARTMENT NAME: NRW PROJECT TEAM 2 — **RECEIVED BY: Dykes**
RECOMMENDED BY : Benjimen Billy — **ISSUED BY: Paul Seda**
REQUISITION NO: 2354 — **DATE ISSUED: 15/10/2013**
JOB DESCRIPTION: Being for Mbokona Pilot Project Site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
10/15/2013	80mm (3") Brass Gate Valve	1	$ 1,229.00	$ 1,229.00
10/15/2013	50mm UPVC Presure Pipe	1	$ 154.00	$ 154.00
10/15/2013	2" (50mm) Gilbault Joint	1	$ 231.00	$ 231.00
10/15/2013	3" UPVC Compression Coupling	2	$ 180.00	$ 360.00
10/15/2013	80mm (3") UPVC Male threaded Socket	2	$ 77.00	$ 154.00
10/15/2013	ThreadTape	10	$ 4.00	$ 40.00
10/15/2013	50mm (2") Gate Valve	1	$ 310.00	$ 310.00
		Total per Requisition =		**$ 2,478.00**

DEPARTMENT NAME: NRW PROJECT TEAM 1 — **RECEIVED BY: Moses Metea**
RECOMMENDED BY : Benjimen Billy — **ISSUED BY: Paul Seda**
REQUISITION NO: 2355 — **DATE ISSUED: 21/10/2013**
JOB DESCRIPTION: Materials required for Mbokona Pilot project site .
Meter ID : 12B011266 - 270 (5 Pieces) 12B010941 - 945 (5 pieces)

Date	Materials Description	Quantity	Unit Cost	Total Cost
10/21/2013	ThreadTape (5 Pkts)	50	$ 4.00	$ 200.00
10/21/2013	3/4" x 1/2" G.I Reducing Socket	10	$ 12.00	$ 120.00
10/21/2013	16mm x 1/2" female poly Adaptor	20	$ 45.00	$ 900.00
10/21/2013	3/4" G.I nipple	10	$ 12.00	$ 120.00
10/21/2013	20mm Water Meter	10	$ 394.00	$ 3,940.00
		Total per Requisition =		**$ 5,280.00**

DEPARTMENT NAME: NRW PROJECT TEAM 1 — **RECEIVED BY: Dykes**
RECOMMENDED BY : Silas Talosui — **ISSUED BY: Paul Seda**
REQUISITION NO: 2356 — **DATE ISSUED: 21/10/2013**
JOB DESCRIPTION: Materials required for Mbokona Pilot project site for Meter Raising .

Date	Materials Description	Quantity	Unit Cost	Total Cost
10/21/2013	3/4" x 1/2" G.I Reducing Socket	20	$ 12.00	$ 240.00
10/21/2013	16mm x 1/2" female poly Adaptor	20	$ 45.00	$ 900.00
10/21/2013	3/4" G.I nipple	10	$ 12.00	$ 120.00
		Total per Requisition =		**$ 1,260.00**

DEPARTMENT NAME: NRW PROJECT TEAM 1 — **RECEIVED BY: John Teno**
RECOMMENDED BY : Silas Talosui — **ISSUED BY: Paul Seda**
REQUISITION NO: 2454 — **DATE ISSUED: 23/10/2013**
JOB DESCRIPTION: Materials required for Mbokona Pilot project site for Meter Raising .

Date	Materials Description	Quantity	Unit Cost	Total Cost
10/23/2013	40 KG Bag cement	10	$ 78.00	$ 780.00
10/23/2013	50 metres 16mm poly pipe	50	$ 14.50	$ 725.00
10/23/2013	16mm Poly Coupling	10	$ 45.00	$ 450.00
10/23/2013	20mm x 16mm Poly Reduce Coupling	10	$ 56.00	$ 560.00
10/23/2013	16mm x 1/2" female poly Adaptor	10	$ 45.00	$ 450.00
10/23/2013	16mm x 1/2" male Poly Adaptor	10	$ 45.00	$ 450.00
10/23/2013	20mm Poly Coupling	10	$ 45.00	$ 450.00
10/23/2013	20mm Stop Cock	5	$ 168.00	$ 840.00
10/23/2013	15mm Stop Cock	5	$ 95.00	$ 475.00
10/23/2013	ThreadTape	5	$ 4.00	$ 20.00
		Total per Requisition =		**$ 5,200.00**

DEPARTMENT NAME: NRW PROJECT TEAM 1 — **RECEIVED BY: David.Akwa'asi**
RECOMMENDED BY : Benjimen Billy — **ISSUED BY: Paul Seda**
REQUISITION NO: 2455 — **DATE ISSUED: 23/10/2013**
JOB DESCRIPTION: Being for maintenace of Leakage @ Mbokona Pilot project site for Meter Raising .

Date	Materials Description	Quantity	Unit Cost	Total Cost
10/23/2013	15mm Stop Cock	5	$ 95.00	$ 475.00
10/23/2013	1/2" G.I Nipple	9	$ 8.00	$ 72.00
10/23/2013	1/2" G.I Socket	4	$ 10.00	$ 40.00
10/23/2013	ThreadTape	5	$ 4.00	$ 20.00
10/23/2013	16mm x 1/2" female poly Adaptor	10	$ 45.00	$ 450.00
10/23/2013	16mm Poly Coupling	5	$ 45.00	$ 225.00
		Total per Requisition =		**$ 1,282.00**

DEPARTMENT NAME: NRW PROJECT TEAM 1 — **RECEIVED BY: David Akoeasi**
RECOMMENDED BY : Eric Unga — **ISSUED BY: Paul Seda**
REQUISITION NO: 2456 — **DATE ISSUED: 24/10/2013**
JOB DESCRIPTION: Materials required for Mbokona Valley Project Pilot Site for Meter Raising .

Date	Materials Description	Quantity	Unit Cost	Total Cost
10/24/2013	50mm Poly Coupling	2	$ 66.00	$ 132.00
		Total per Requisition =		**$ 132.00**

DEPARTMENT NAME: NRW PROJECT TEAM 1 — **RECEIVED BY: David Akoeasi**
RECOMMENDED BY : Benjimen Billy — **ISSUED BY: Paul Seda**
REQUISITION NO: 2457 — **DATE ISSUED: 25/10/2013**
JOB DESCRIPTION: Materials required for Repair @ Mbokona Valley Project Pilot Site for Meter Raising .

Date	Materials Description	Quantity	Unit Cost	Total Cost
10/25/2013	63mm Poly Plain Coupling	1	$ 99.20	$ 99.20
10/25/2013	63mm x 2" Poly male Adaptor	1	$ 62.40	$ 62.40
10/25/2013	2 metres 32mm poly Pipe	2	$ 30.00	$ 60.00
10/25/2013	2 " x 1 1/4" G.I reduce Socket	1	$ 60.00	$ 60.00
10/25/2013	32mm x 1 1/4" male poly Adaptor	1	$ 55.00	$ 55.00
10/25/2013	32mm poly Coupling	1	$ 70.00	$ 70.00
		Total per Requisition =		**$ 406.60**

DEPARTMENT NAME: NRW PROJECT TEAM 1 **RECEIVED BY: Moses Meitea**
RECOMMENDED BY : Silas Talosui **ISSUED BY: Paul Seda**
REQUISITION NO: 2460 **DATE ISSUED: 04/11/2013**
JOB DESCRIPTION: Materials required for Project Pilot Site @ Mbokona for Meter raising .
METER I.D : 12B086598 - 602(5 Pies), 12B086843-847(5 pies),12B011041-045(5 pies),12B011226-230(5 pies)

Date	Materials Description	Quantity	Unit Cost	Total Cost
11/4/2013	15mm G.I elbow	80	$ 12.00	$ 960.00
11/4/2013	3/4" x 1/2" G.I reduce Socket	4	$ 12.50	$ 50.00
11/4/2013	20mm Stop Cock	20	$ 180.00	$ 3,600.00
11/4/2013	16mm x 1/2" female poly Adaptor	40	$ 45.00	$ 1,800.00
11/4/2013	3/4" G.I nipple	20	$ 12.00	$ 240.00
11/4/2013	20mm Water Meter	20	$ 394.00	$ 7,880.00
		Total per Requisition =		**$ 14,530.00**

DEPARTMENT NAME: NRW PROJECT TEAM 1 **RECEIVED BY: Selina**
RECOMMENDED BY : M.Bera for Benjimen **ISSUED BY: George Blamoli**
REQUISITION NO: 2461 **DATE ISSUED: 07/11/2013**
JOB DESCRIPTION: Being for continue work on Meter Raising Pilot Project site @ Mbokona .

Date	Materials Description	Quantity	Unit Cost	Total Cost
11/7/2013	40 KG Bag cement	3	$ 80.00	$ 240.00
		Total per Requisition =		**$ 240.00**

DEPARTMENT NAME: NRW PROJECT TEAM 1 **RECEIVED BY: Moses Metea**
RECOMMENDED BY : Eric Unga **ISSUED BY: Paul Seda**
REQUISITION NO: 2462 **DATE ISSUED: 08/11/2013**
JOB DESCRIPTION: Being for continue work on Meter Raising Pilot Project site @ Mbokona .

Date	Materials Description	Quantity	Unit Cost	Total Cost
11/8/2013	10mm Steel Rods	5	$ 68.00	$ 340.00
		Total per Requisition =		**$ 340.00**

DEPARTMENT NAME: NRW PROJECT TEAM 1 **RECEIVED BY: John Teno**
RECOMMENDED BY : Eric Unga **ISSUED BY: George Blamoli**
REQUISITION NO: 2464 **DATE ISSUED: 13/11/2013**
JOB DESCRIPTION: Being for Meter Raising Project @ Mbokona Pilot Site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
11/13/2013	15mm Stop Cock	10	$ 170.00	$ 1,700.00
11/13/2013	20mm Stop Cock	20	$ 180.00	$ 3,600.00
11/13/2013	16mm x 1/2" female poly Adaptor	22	$ 45.00	$ 990.00
11/13/2013	16mm x 3/4 Female Poly Adaptor	24	$ 50.00	$ 1,200.00
11/13/2013	16mm Poly Coupling	14	$ 45.00	$ 630.00
11/13/2013	20mm x 16mm Poly Reduce Coupling	14	$ 56.00	$ 784.00
11/13/2013	1/2" G.I Socket	14	$ 10.00	$ 140.00
11/13/2013	15mm G.I elbow	30	$ 12.00	$ 360.00
11/13/2013	20mm(3/4") G.I Elbow	26	$ 14.00	$ 364.00
11/13/2013	ThreadTape	30	$ 4.00	$ 120.00
11/13/2013	16mm Poly Tee	2	$ 85.00	$ 170.00
11/13/2013	3/4" G.I Socket	20	$ 12.00	$ 240.00
		Total per Requisition =		**$ 10,298.00**

DEPARTMENT NAME: NRW PROJECT TEAM 1 **RECEIVED BY: Selina**
RECOMMENDED BY : Nathaniel Legu (For Eric Unga) **ISSUED BY: George Blamoli**
REQUISITION NO: 2465 **DATE ISSUED: 13/11/2013**
JOB DESCRIPTION: Being for Meter Raising Project @ Mbokona Pilot Site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
11/13/2013	16mm x 3/4 Female Poly Adaptor	20	$ 50.00	$ 1,000.00
11/13/2013	1/2" G.I Nipple	10	$ 8.00	$ 80.00
11/13/2013	ThreadTape	20	$ 4.00	$ 80.00
11/13/2013	20mm(3/4") G.I Elbow	20	$ 14.00	$ 280.00
		Total per Requisition =		**$ 1,440.00**

DEPARTMENT NAME: NRW PROJECT TEAM 1 **RECEIVED BY: John Teno**
RECOMMENDED BY : Eric Unga **ISSUED BY: George Blamoli**
REQUISITION NO: 2466 **DATE ISSUED: 14/11/2013**
JOB DESCRIPTION: Being for Meter Raising Project @ Mbokona Pilot Site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
11/14/2013	20mm(3/4") G.I Elbow	26	$ 14.00	$ 364.00
11/14/2013	16mm Poly Coupling	10	$ 45.00	$ 450.00
11/14/2013	20mm x 16mm Poly Reduce Coupling	6	$ 56.00	$ 336.00
11/14/2013	ThreadTape	20	$ 4.00	$ 80.00
11/14/2013	1/2"G I Tee	1	$8.00	$ 8.00
		Total per Requisition =		**$ 1,238.00**

DEPARTMENT NAME: NRW PROJECT TEAM 1 **RECEIVED BY: Dykes**
RECOMMENDED BY : Benjimen Billy **ISSUED BY: George Blamoli**
REQUISITION NO: 2467 **DATE ISSUED: 14/11/2013**
JOB DESCRIPTION: Being for Meter Raising Project @ Mbokona Pilot Site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
11/14/2013	10mm Steel Rods	5	$ 68.00	$ 340.00
11/14/2013	16mm x 3/4 Female Poly Adaptor	10	$ 50.00	$ 500.00
		Total per Requisition =		**$ 840.00**

DEPARTMENT NAME: NRW PROJECT TEAM 1 **RECEIVED BY: selina**
RECOMMENDED BY : Silas Talosiu **ISSUED BY: Paul Seda**
REQUISITION NO: 2468 **DATE ISSUED: 15/11/2013**
JOB DESCRIPTION: Materials Required for Mbokona Pilot Project Site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
11/15/2013	20mm x 16mm x 20mm Poly reduce Tee	1	$ 31.00	$ 31.00
11/15/2013	20mm x 16mm Poly Reduce Coupling	4	$ 56.00	$ 224.00
11/15/2013	16mm Poly Coupling	6	$ 45.00	$ 270.00
11/15/2013	16mm x 1/2" male Poly Adaptor	8	$ 45.00	$ 360.00
11/15/2013	16mm x 1/2" female poly Adaptor	8	$ 45.00	$ 360.00
11/15/2013	ThreadTape	20	$ 4.00	$ 80.00
11/15/2013	3/4" x 1/2" G.I reduce Socket	8	$ 12.50	$ 100.00
		Total per Requisition =		**$ 1,425.00**

DEPARTMENT NRW Team1 **RECEIVED BY: Selina Fai**
RECOMMENDED BY : Benjamin **ISSUED BY: Paul Seda**
REQUISITION NO: 2470 **DATE ISSUED: 16/11/2013**
JOB DESCRIPTION: Materials required for Raising meters@ Mbokona pilot site.

Date	Materials Description	Quantity	Unit Cost	Total Cost
11/16/2013	16mm x 1/2" female poly Adaptor	15	$ 45.00	$ 675.00
11/16/2013	ThreadTape	10	$ 4.00	$ 40.00
11/16/2013	32mm x 1"Fe male Poly Adaptor	1	$ 55.00	$ 55.00
11/16/2013	1" x 3/4" Poly Reduce Bush	1	$ 7.00	$ 7.00
11/16/2013	16mm x 3/4" Poly Male Adaptor	1	$ 28.00	$ 28.00
		Total per Requisition =		**$ 805.00**

DEPARTMENT NRW Team1 **RECEIVED BY: John Chede**
RECOMMENDED BY : Benjamin **ISSUED BY: Paul Seda**
REQUISITION NO: 2469 **DATE ISSUED: 16/11/2013**
JOB DESCRIPTION: Materials required for Raising meters@ Mbokona pilot site.

Date	Materials Description	Quantity	Unit Cost	Total Cost
11/16/2013	20 metres 20mm Poly Pipe	20	$ 16.00	$ 320.00
11/16/2013	20mm Poly Coupling	4	$ 45.00	$ 180.00
11/16/2013	16mm x 1/2" male PVC Adaptor	4	$ 5.00	$ 20.00
11/16/2013	16mm x 1/2"Fe male PVC Adaptor	4	$ 5.00	$ 20.00
11/16/2013	ThreadTape	10	$ 4.00	$ 40.00
11/16/2013	Hack Saw Blade	1	$ 21.00	$ 21.00
11/16/2013	1 container 500ml PVC Glue	1	$ 42.22	$ 42.22
		Total per Requisition =		**$ 643.22**

DEPARTMENT NRW Team1 **RECEIVED BY: John Chede/M. Caulos**
RECOMMENDED BY : Benjamin **ISSUED BY: Paul Seda**
REQUISITION NO: 2471 **DATE ISSUED: 16/11/2013**
JOB DESCRIPTION: Materials required for Raising meters@ Mbokona pilot site.

Date	Materials Description	Quantity	Unit Cost	Total Cost
11/16/2013	40 KG Bag cement	6	$ 80.00	$ 480.00
		Total per Requisition =		**$ 1,123.22**

DEPARTMENT NRW Team1 **RECEIVED BY: Moses Metea**
RECOMMENDED BY : Eric Unga **ISSUED BY: Paul Seda**
REQUISITION NO: 2472 **DATE ISSUED: 18/11/2013**
JOB DESCRIPTION: Materials required for Raising meters@ Mbokona pilot site.

Date	Materials Description	Quantity	Unit Cost	Total Cost
11/18/2013	40 KG Bag cement	6	$ 80.00	$ 480.00
11/18/2013	10mm Steel Rods	7	$ 68.00	$ 476.00
11/18/2013	16mm Poly Coupling	5	$ 45.00	$ 225.00
11/18/2013	16mm x 1/2" female poly Adaptor	5	$ 45.00	$ 225.00
11/18/2013	20mm Stop Cock	20	$ 168.00	$ 3,360.00
11/18/2013	20mm(3/4") G.I Elbow	80	$ 14.00	$ 1,120.00
11/18/2013	3/4" G.I Socket	20	$ 12.00	$ 240.00
11/18/2013	ThreadTape	40	$ 4.00	$ 160.00
11/18/2013	20mm x 3/4" Poly female Adaptor	20	$ 48.00	$960.00
11/18/2013	20mm x 16mm Poly Reduce Coupling	20	$ 56.00	$ 1,120.00
		Total per Requisition =		**$ 8,366.00**

DEPARTMENT NAME: NRW PROJECT TEAM 1 **RECEIVED BY: selina**
RECOMMENDED BY : Vincent **ISSUED BY: Paul Seda**
REQUISITION NO: 2473 **DATE ISSUED: 18/11/2013**
JOB DESCRIPTION: Materials Required for Mbokona Pilot Project Site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
11/18/2013	20mm x 3/4" Poly female Adaptor	20	$ 48.00	$ 960.00
11/18/2013	ThreadTape	40	$ 4.00	$ 160.00
		Total per Requisition =		**$ 1,120.00**

DEPARTMENT NAME: NRW Team 1 **RECEIVED BY : John Teno**
AUTHORISED BY: Benjamin **ISSUED BY: Paul Seda**
REQUISITION NO: 2474 **DATE ISSUED: 19/11/2013**
JOB DESCRIPTION: Being for New Service Connection for David Day Pacha @ Mbuburu.
METER I.D : 12B086453-457(5pieces)12B086443-447(5pce)

Date	Materials Description	Quantity	Unit Cost	Total Cost
11/19/2013	20mm Water Meter	10	$ 394.00	$ 3,940.00
11/19/2013	30 metres 16mm poly pipe	30	$ 14.50	$ 435.00
11/19/2013	30 metres 20mm Poly Pipe	30	$ 16.00	$ 480.00
11/19/2013	20mm x 16mm Poly Reduce Coupling	10	$ 56.00	$ 560.00
11/19/2013	20mm Poly Coupling	5	$ 45.00	$ 225.00
11/19/2013	16mm Poly Coupling	5	$ 45.00	$ 225.00
		Total per Requisition =		**$ 5,865.00**

DEPARTMENT NAME: NRW PROJECT TEAM 1 **RECEIVED BY: John Chede**
RECOMMENDED BY : Silas Talosiu **ISSUED BY:George Blamoli**
REQUISITION NO: 2473 **DATE ISSUED: 19/11/2013**
JOB DESCRIPTION: Materials Required for Mbokona Pilot Project Site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
11/19/2013	3/4"G I Tee	1	$10.00	$ 10.00
11/19/2013	16mm x 3/4" Poly Male Adaptor	1	$ 28.00	$ 28.00
		Total per Requisition =		**$ 38.00**

DEPARTMENT NAME: NRW PROJECT TEAM 1 **RECEIVED BY: John Chede**
RECOMMENDED BY : Nathaniel **ISSUED BY:George Blamoli**
REQUISITION NO: 2475 **DATE ISSUED: 20/11/2013**
JOB DESCRIPTION: Materials Required for Mbokona Pilot Project Site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
11/20/2013	3/4" G.I Socket	15	$ 12.00	$ 180.00
11/20/2013	ThreadTape	15	$ 4.00	$ 60.00
11/20/2013	20mm(3/4") G.I Elbow	20	$ 14.00	$ 280.00
11/20/2013	20mm Stop Cock	20	$ 168.00	$ 3,360.00
11/20/2013	20mm x 3/4" Poly female Adaptor	20	$ 48.00	$ 960.00
11/20/2013	30 metres 20mm Poly Pipe	30	$ 16.00	$ 480.00
11/20/2013	30 metres 16mm poly pipe	30	$ 14.50	$ 435.00
11/20/2013	16mm Poly Coupling	10	$ 45.00	$ 450.00
11/20/2013	20mm x 16mm Poly Reduce Coupling	10	$ 56.00	$ 560.00
		Total per Requisition =		**$ 6,765.00**

DEPARTMENT NAME: NRW PROJECT TEAM 1 **RECEIVED BY: John Chede**
RECOMMENDED BY : Eric Unga **ISSUED BY: Paul Seda**
REQUISITION NO: 2476 **DATE ISSUED: 2 4/11/2013**
JOB DESCRIPTION: List of Materials for raising water meters@ Mbokona pilot site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
11/24/2013	40 KG Bag cement	5	$ 80.00	$ 400.00
11/24/2013	15mm (1/2") G.I Tee	1	$ 5.00	$ 5.00
		Total per Requisition =		**$ 405.00**

DEPARTMENT NAME: NRW PROJECT TEAM 1 **RECEIVED BY: John Teno**
RECOMMENDED BY : Bejamin **ISSUED BY: Paul Seda**
REQUISITION NO: 2319 **DATE ISSUED: 2 5/11/2013**
JOB DESCRIPTION: List of Materials for raising water meters@ Mbokona pilot site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
11/25/2013	40 KG Bag cement	6	$ 80.00	$ 480.00
		Total per Requisition =		**$ 480.00**

DEPARTMENT NAME: NRW PROJECT TEAM 1 **RECEIVED BY: John Teno**
RECOMMENDED BY : Eric Unga **ISSUED BY: Paul Seda**
REQUISITION NO: 2477 **DATE ISSUED: 2 6/11/2013**
JOB DESCRIPTION: List of Materials for raising water meters@ Mbokona pilot site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
11/26/2013	40 KG Bag cement	4	$ 80.00	$ 320.00
11/26/2013	20mm Water Meter	1	$ 394.00	$ 394.00
11/26/2013	10mm Steel Rods	3	$ 68.00	$ 204.00
		Total per Requisition =		**$ 918.00**

DEPARTMENT NAME: NRW PROJECT TEAM 1 **RECEIVED BY: John Chede**
RECOMMENDED BY : Nathaniel **ISSUED BY: George Blamoli**
REQUISITION NO: 2320 **DATE ISSUED: 2 8/11/2013**
JOB DESCRIPTION: List of Materials for raising water meters@ Mbokona pilot site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
11/26/2013	40 KG Bag cement	6	$ 80.00	$ 480.00
		Total per Requisition =		**$ 480.00**

DEPARTMENT NAME: NRW PROJECT TEAM 1 **RECEIVED BY: John Chede**
RECOMMENDED BY : Nathaniel **ISSUED BY: George Blamoli**
REQUISITION NO: 2320 **DATE ISSUED: 2 9/11/2013**
JOB DESCRIPTION: List of Materials for raising water meters@ Mbokona pilot site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
11/29/2013	40 KG Bag cement	7	$ 80.00	$ 560.00
		Total per Requisition =		**$ 560.00**

DEPARTMENT NAME: NRW PROJECT TEAM 1 **RECEIVED BY: Dykes**
RECOMMENDED BY : Eric Unga **ISSUED BY: George Blamoli**
REQUISITION NO: 2359 **DATE ISSUED: 02/12/2013**
JOB DESCRIPTION: Being for Mbokona Pilot Site .
METER I.D

Date	Materials Description	Quantity	Unit Cost	Total Cost
12/2/2013	40 KG Bag cement	12	$ 80.00	$ 960.00
		Total per Requisition =		**$ 960.00**

DEPARTMENT NAME: NRW PROJECT TEAM 1 **RECEIVED BY: John Teno**
RECOMMENDED BY : Ray Andersen **ISSUED BY: George Blamoli**
REQUISITION NO: 2480 **DATE ISSUED: 05/12/2013**
JOB DESCRIPTION: List of Materials required for Mbokona Pilot Site for Meter Raising Project .
METER I.D 12B072442 & 12B072443

Date	Materials Description	Quantity	Unit Cost	Total Cost
12/5/2013	20mm Water Meter	2	$ 394.00	$ 788.00
12/5/2013	16mm Poly Coupling	6	$ 45.00	$ 270.00
12/5/2013	20 metres 16mm poly pipe	20	$ 14.50	$ 290.00
12/5/2013	ThreadTape	40	$ 4.00	$ 160.00
		Total per Requisition =		**$ 1,508.00**

DEPARTMENT NAME: NRW PROJECT TEAM 1 **RECEIVED BY: John Chede**
RECOMMENDED BY : Eric Unga **ISSUED BY: George Blamoli**
REQUISITION NO: 2482 **DATE ISSUED: 09/12/2013**
JOB DESCRIPTION: List of Materials required for Mbokona Pilot Project Site .
METER I.D 12B172501

Date	Materials Description	Quantity	Unit Cost	Total Cost
12/9/2013	16mm Poly Tee	2	$ 85.00	$ 170.00
12/9/2013	20mm Water Meter	1	$ 394.00	$ 394.00
12/9/2013	ThreadTape	5	$ 4.00	$ 20.00
12/9/2013	20mm x 3/4" Poly female Adaptor	2	$ 48.00	$96.00
12/9/2013	3/4" G.I Socket	1	$ 12.00	$ 12.00
12/9/2013	16mm Poly Coupling	10	$ 45.00	$ 450.00
12/9/2013	20mm x 1/2" Poly male Adaptor	1	$ 48.00	$ 48.00
12/9/2013	16mm x 1/2" male Poly Adaptor	2	$ 45.00	$ 90.00
		Total per Requisition =		**$ 1,280.00**

DEPARTMENT NAME: NRW PROJECT TEAM 1 **RECEIVED BY: John Teno**
RECOMMENDED BY : Benjimen Billy **ISSUED BY: George Blamoli**
REQUISITION NO: 2481 **DATE ISSUED: 09/12/2013**
JOB DESCRIPTION: List of Materials required for Mbokona Pilot Project Site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
12/9/2013	50 metres 16mm poly pipe	50	$ 14.50	$ 725.00
12/9/2013	20 metres 20mm Poly Pipe	20	$ 16.00	$ 320.00
12/9/2013	25mm x 1/2" x 25mm Poly female threaded	1	$ 35.00	$ 35.00
12/9/2013	16mm x 1/2" male Poly Adaptor	1	$ 45.00	$ 45.00
		Total per Requisition =		**$ 1,125.00**

DEPARTMENT NAME: NRW PROJECT TEAM 1 **RECEIVED BY: Francis Hiri**
RECOMMENDED BY : Silas Talosui **ISSUED BY: George Blamoli**
REQUISITION NO: 2360 **DATE ISSUED: 10/12/2013**
JOB DESCRIPTION: List of Materials required for Mbokona Pilot Project Site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
12/10/2013	32mm Poly Coupling	5	$ 70.00	$ 350.00
12/10/2013	16mm Poly Coupling	10	$ 45.00	$ 450.00
12/10/2013	20 metres 16mm poly pipe	20	$ 14.50	$ 290.00
12/10/2013	ThreadTape	3	$ 4.00	$ 12.00
		Total per Requisition =		**$ 1,102.00**

DEPARTMENT NAME: NRW PROJECT TEAM 1 **RECEIVED BY: John Chede**
RECOMMENDED BY : Eric Unga **ISSUED BY: George Blamoli**
REQUISITION NO: 2311 **DATE ISSUED: 12/12/2013**
JOB DESCRIPTION: List of Materials required for Mbokona Pilot Project Site for Meter raising .

Date	Materials Description	Quantity	Unit Cost	Total Cost
12/12/2013	16mm Poly Coupling	4	$ 45.00	$ 180.00
12/12/2013	20mm x 16mm Poly Reduce Coupling	4	$ 60.00	$ 240.00
12/12/2013	16mm x 3/4" female Poly Adaptor	4	$ 50.00	$ 200.00
		Total per Requisition =		**$ 620.00**

Total Material Coat for Mbokona	**$ 86,934.28**

TOTAL COST FOR MBARANAMBA

	Before Countermeasure		After Countermeasure		
	Before Countermeasure	Countermeasure	After Countermeasure	Routine Activities	Total
Personnel Cost	19,481.40	13,235.10	5,598.30	1,182.75	39,497.55
Consumable	1,131.74	565.87	239.41	21.76	5,958.79
Material and Equipment	9,669.26	23,423.00	0.00	0.00	33,092.26
Sub total	30,282.40	37,223.97	5,837.71	1,204.51	78,548.60
TOTAL	67,506.38		7,042.22		

TOTAL MAN DAYS	261

1. Costing Before Countermeasure

Location Mbaranamba

per day

Items	Specification	Quantity	Unit	Hourly Rate (SBD)	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
1. Personnel	Grades- Steps								
Staff-3	3.1	0	Person	15.38	115.35				
	3.2	0	Person	15.90	119.25				
	3.3	0	Person	16.41	123.08				
	3.4	0	Person	16.92	126.90				
	3.5	0	Person	17.44	130.80				
Staff-4	4.1	10	Person	19.23	144.23	19.00		2,740.28	
	4.2	20	Person	20.00	150.00	38.00		5,700.00	
	4.3	0	Person	20.77	155.78			0.00	
	4.4	0		21.54	161.55			0.00	
	4.5	0		22.31	167.33			0.00	
Staff-5	5.1	0		24.10	180.75			0.00	
	5.2	0		25.13	188.48			0.00	
	5.3	0		26.15	196.13			0.00	
	5.4	0		27.18	203.85			0.00	
	5.5	9		28.21	211.58	17.00		3,596.78	
Staff-6	6.1	2		31.54	236.55	2.00		473.10	
	6.2	9		32.82	246.15	17.00		4,184.55	
	6.3	0		34.10	255.75			0.00	
	6.4	0		35.38	265.35			0.00	
	6.5	0		36.67	275.03			0.00	
Staff-7	7.1	0		38.46	288.45			0.00	
	7.2	0		39.74	298.05			0.00	
	7.3	0		41.03	307.73			0.00	
	7.4	0		42.31	317.33			0.00	
	7.5	0		43.59	326.93			0.00	
Staff-8	8.1	0		47.95	359.63			0.00	
	8.2	0		49.23	369.23			0.00	
	8.3	0		50.51	378.83			0.00	
	8.4	0		51.79	388.43			0.00	
	8.5	2		53.08	398.10	7.00		2,786.70	
Staff-9	9.1	0		58.21	436.58			0.00	
	9.2	0		59.49	446.18			0.00	
	9.3	0		60.77	455.78			0.00	
	9.4	0		62.05	465.38			0.00	
	9.5	0		63.33	474.98			0.00	
Sub-total						100.00		19,481.40	
2. Consumable				$ Per Liter	L/km		$/km		
Diesel	For Excavator	0	Liter	11.80	0.3620		4.2716	0.00	50km/7km/liter=7.14liter 11liter/hrs (fuel consumption for about 60PS) x 1hr=11liter 11liter +7.11liter=18.1liter/50km
Diesel	For Pick-up	635.44	Liter	11.80	0.1428	90.7408	1.68504	1,070.74	50km/7km/liter=7.14liter/50km
Engine Oil	For Excavator	0	Liter	60.00	0.0016		0.096	0.00	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Engine Oil	For Pick-up	635.44	Liter	60.00	0.0016		0.096	61.00	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Tires		0	Nos	770.00	0.0014		1.078	0.00	50km x 252days=12,600km 12,600km/ 30,000km x 4nos=1.68nos 1.68nos/ 252days=0.07nos/50km
Sub-total								1,131.74	
3. Material & Equipment									
Sluice/ Gate Valve	25mm	2	piece		190.00			380.00	Gate Valve
Sluice/ Gate Valve	40mm	1	piece		350.00			350.00	Gate Valve
Sluice/ Gate Valve	50mm	1	piece		310.00			310.00	Gate Valve
Sluice/ Gate Valve	80mm	3	piece		2,397.12			7,191.36	Sluice Valve
Sluice/ Gate Valve	100mm		piece		2,423.00			0.00	Sluice Valve
Sluice/ Gate Valve	150mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	200mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	250mm		piece					0.00	Sluice Valve225mm AUD1785
Sluice/ Gate Valve	300mm		piece					0.00	
Pipes (Poly)	15mm	5	coil		14.50			72.50	Length on 1 coil =300m
Pipes (Poly)	20mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	25mm		coil					0.00	Length on 1 coil =200m
Pipes (Poly)	50mm		coil					0.00	Length on 1 coil =150m
Pipes (Poly)	32mm	7			30.00			210.00	Length on 1 coil =100m
Pipes (PVC)	25mm		piece					0.00	

per day

Items	Specification	Quantity	Unit	Hourly Rate (SBD)	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
Pipes (PVC)	50mm	1	piece		154.00			154.00	
Pipes (PVC)	80mm	1	piece		189.00			189.00	
Pipes (PVC)	100mm		piece		248.00			0.00	
Pipes (PVC)	150mm		piece					0.00	
Pipes (PVC)	200mm	1	piece		812.40			812.40	
Pipes (PVC)	250mm		piece					0.00	
Pipes (PVC)	300mm		piece					0.00	
Water Meter	10mm		piece					0.00	
Water Meter	16mm		piece					0.00	
Water Meter	20mm		piece					0.00	
Water Meter	25mm		piece					0.00	
Water Meter	32mm		piece					0.00	
Water Meter	40mm		piece					0.00	
Other Materials									
Sub-total								9,669.26	
Total								30,282.40	

1AUD=6.534SBD was applied to the above (rate as of 30 September, 2013 of Oanda).

2. Countermeasure

Location Mbaranamba

per day

Items	Specification	Quantity	Unit	Hourly Rate (SBD)	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
1. Personnel	Grades- Steps								
Staff-3	3.1	0	Person	15.38	115.35				
	3.2	0	Person	15.90	119.25				
	3.3	0	Person	16.41	123.08				
	3.4	0	Person	16.92	126.90				
	3.5	0	Person	17.44	130.80				
Staff-4	4.1	4	Person	19.23	144.23	18.00		2,596.05	
	4.2	8	Person	20.00	150.00	16.00		2,400.00	
	4.3	0	Person	20.77	155.78			0.00	
	4.4	0	Person	21.54	161.55			0.00	
	4.5	0	Person	22.31	167.33			0.00	
Staff-5	5.1	0	Person	24.10	180.75			0.00	
	5.2	0	Person	25.13	188.48			0.00	
	5.3	0	Person	26.15	196.13			0.00	
	5.4	0	Person	27.18	203.85			0.00	
	5.5	4	Person	28.21	211.58	18.00		3,808.35	
Staff-6	6.1	0	Person	31.54	236.55			0.00	
	6.2	4	Person	32.82	246.15	18.00		4,430.70	
	6.3	0	Person	34.10	255.75			0.00	
	6.4	0	Person	35.38	265.35			0.00	
	6.5	0	Person	36.67	275.03			0.00	
Staff-7	7.1	0	Person	38.46	288.45			0.00	
	7.2	0	Person	39.74	298.05			0.00	
	7.3	0	Person	41.03	307.73			0.00	
	7.4	0	Person	42.31	317.33			0.00	
	7.5	0	Person	43.59	326.93			0.00	
Staff-8	8.1	0	Person	47.95	359.63			0.00	
	8.2	0	Person	49.23	369.23			0.00	
	8.3	0	Person	50.51	378.83			0.00	
	8.4	0	Person	51.79	388.43			0.00	
	8.5	0	Person	53.08	398.10			0.00	
Staff-9	9.1	0	Person	58.21	436.58			0.00	
	9.2	0	Person	59.49	446.18			0.00	
	9.3	0	Person	60.77	455.78			0.00	
	9.4	0	Person	62.05	465.38			0.00	
	9.5	0	Person	63.33	474.98			0.00	
Sub-total		**20**				**70.00**		**13,235.10**	
2. Consumable				$ Per Liter	L/km		$/km		
Diesel	For Excavator	0	Liter	11.80	0.3620		4.2716	0.00	50km/7km/liter=7.14liter 11liter/hrs (fuel consumption for about 60PS) x 1hr=11liter 11liter +7.1liter=18.1liter/50km
Diesel	For Pick-up	317.72	Liter	11.80	0.1428	45.3704	1.68504	535.37	50km/7km/liter=7.14liter/50km
Engine Oil	For Excavator	0	Liter	60.00	0.0016		0.096	0.00	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Engine Oil	For Pick-up	317.72	Liter	60.00	0.0016		0.096	30.50	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Tires		0	Nos	770.00	0.0014		1.078	0.00	50km x 252days=12,600km 12,600km/ 30,000km x 4nos=1.68nos 1.68nos/ 252days=0.07nos/50km
Sub-total								**565.87**	
3. Material & Equipment									
Sluice/ Gate Valve	25mm		piece		190.00			0.00	Gate Valve
Sluice/ Gate Valve	40mm		piece		350.00			0.00	Gate Valve
Sluice/ Gate Valve	50mm		piece		310.00			0.00	Gate Valve
Sluice/ Gate Valve	80mm		piece		2,397.12			0.00	Sluice Valve
Sluice/ Gate Valve	100mm		piece		2,423.00			0.00	Sluice Valve
Sluice/ Gate Valve	150mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	200mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	250mm		piece					0.00	Sluice Valve225mm AUD1785
Sluice/ Gate Valve	300mm		piece					0.00	
Pipes (Poly)	15mm		coil		14.50			0.00	Length on 1 coil =300m
Pipes (Poly)	20mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	25mm		coil					0.00	Length on 1 coil =200m
Pipes (Poly)	50mm		coil					0.00	Length on 1 coil =150m
Pipes (Poly)	32mm				30.00			0.00	Length on 1 coil =100m

per day

Items	Specification	Quantity	Unit	Hourly Rate (SBD)	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
Pipes (PVC)	25mm		piece					0.00	
Pipes (PVC)	50mm		piece		154.00			0.00	
Pipes (PVC)	80mm		piece		189.00			0.00	
Pipes (PVC)	100mm		piece		248.00			0.00	
Pipes (PVC)	150mm		piece					0.00	
Pipes (PVC)	200mm		piece		812.40			0.00	
Pipes (PVC)	250mm		piece					0.00	
Pipes (PVC)	300mm		piece					0.00	
Water Meter	10mm		piece					0.00	
Water Meter	16mm		piece					0.00	
Water Meter	20mm	45	piece		394.00			17,730.00	
Water Meter	25mm		piece					0.00	
Water Meter	32mm		piece					0.00	
Water Meter	40mm		piece					0.00	
Other Materials								5,693.00	
Sub-total								**23,423.00**	
Total								**37,223.97**	

1AUD=6.534SBD was applied to the above (rate as of 30 September, 2013 of Oanda).

3. Costing Before Countermeasure

Location Mbaranamba

per day

Items	Specification	Quantity	Unit	Hourly Rate (SBD)	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
1. Personnel	Grades- Steps								
Staff-3	3.1	0	Person	15.38	115.35				
	3.2	0	Person	15.90	119.25				
	3.3	0	Person	16.41	123.08				
	3.4	0	Person	16.92	126.90				
	3.5	0	Person	17.44	130.80				
Staff-4	4.1	3	Person	19.23	144.23	4.00		576.90	
	4.2	6	Person	20.00	150.00	8.00		1,200.00	
	4.3	0	Person	20.77	155.78			0.00	
	4.4	0		21.54	161.55			0.00	
	4.5	0		22.31	167.33			0.00	
Staff-5	5.1	0		24.10	180.75			0.00	
	5.2	0		25.13	188.48			0.00	
	5.3	0		26.15	196.13			0.00	
	5.4	0		27.18	203.85			0.00	
	5.5	3		28.21	211.58	4.00		846.30	
Staff-6	6.1	0		31.54	236.55			0.00	
	6.2	3		32.82	246.15	4.00		984.60	
	6.3	0		34.10	255.75			0.00	
	6.4	0		35.38	265.35			0.00	
	6.5	0		36.67	275.03			0.00	
Staff-7	7.1	0		38.46	288.45			0.00	
	7.2	0		39.74	298.05			0.00	
	7.3	0		41.03	307.73			0.00	
	7.4	0		42.31	317.33			0.00	
	7.5	0		43.59	326.93			0.00	
Staff-8	8.1	0		47.95	359.63			0.00	
	8.2	0		49.23	369.23			0.00	
	8.3	0		50.51	378.83			0.00	
	8.4	0		51.79	388.43			0.00	
	8.5	1		53.08	398.10	5.00		1,990.50	
Staff-9	9.1	0		58.21	436.58			0.00	
	9.2	0		59.49	446.18			0.00	
	9.3	0		60.77	455.78			0.00	
	9.4	0		62.05	465.38			0.00	
	9.5	0		63.33	474.98			0.00	
Sub-total						25.00		5,598.30	
2. Consumable				$ Per Liter	L/km		$/km		
Diesel	For Excavator	0	Liter	11.80	0.3620		4.2716	0.00	50km/7km/liter=7.14liter 11liter/hrs (fuel consumption for about 60PS) x 1hr=11liter 11liter +7.1liter=18.1liter/50km
Diesel	For Pick-up	134.42	Liter	11.80	0.1428	19.1952	1.68504	226.50	50km/7km/liter=7.14liter/50km
Engine Oil	For Excavator	0	Liter	60.00	0.0016		0.096	0.00	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Engine Oil	For Pick-up	134.42	Liter	60.00	0.0016		0.096	12.90	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Tires		0	Nos	770.00	0.0014		1.078	0.00	50km x 252days=12,600km 12,600km/ 30,000km x 4nos=1.68nos 1.68nos/ 252days=0.07nos/50km
Sub-total								239.41	
3. Material & Equipment									
Sluice/ Gate Valve	25mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	40mm		piece		350.00			0.00	Gate Valve
Sluice/ Gate Valve	50mm		piece		310.00			0.00	Gate Valve
Sluice/ Gate Valve	80mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	100mm		piece		2,423.00			0.00	Sluice Valve
Sluice/ Gate Valve	150mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	200mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	250mm		piece					0.00	Sluice Valve225mm AUD1785
Sluice/ Gate Valve	300mm		piece					0.00	
Pipes (Poly)	15mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	20mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	25mm		coil					0.00	Length on 1 coil =200m
Pipes (Poly)	50mm		coil					0.00	Length on 1 coil =150m
Pipes (PVC)	25mm		piece					0.00	

per day

Items	Specification	Quantity	Unit	Hourly Rate (SBD)	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
Pipes (PVC)	50mm		piece					0.00	
Pipes (PVC)	80mm		piece					0.00	
Pipes (PVC)	100mm		piece		248.00			0.00	
Pipes (PVC)	150mm		piece					0.00	
Pipes (PVC)	200mm		piece					0.00	
Pipes (PVC)	250mm		piece					0.00	
Pipes (PVC)	300mm		piece					0.00	
Water Meter	10mm		piece					0.00	
Water Meter	16mm		piece					0.00	
Water Meter	20mm		piece					0.00	
Water Meter	25mm		piece					0.00	
Water Meter	32mm		piece					0.00	
Water Meter	40mm		piece					0.00	
Other Materials									
Sub-total								0.00	
Total								5,837.71	

1AUD=6.534SBD was applied to the above (rate as of 30 September, 2013 of Oanda).

4. Costing Before Countermeasure

Location Mbaranamba

per day

Items	Specification	Quantity	Unit	Hourly Rate (SBD)	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
1. Personnel	Grades- Steps								
Staff-3	3.1	0	Person	15.38	115.35				
	3.2	0	Person	15.90	119.25				
	3.3	0	Person	16.41	123.08				
	3.4	0	Person	16.92	126.90				
	3.5	0	Person	17.44	130.80				
Staff-4	4.1	0	Person	19.23	144.23			0.00	
	4.2	0	Person	20.00	150.00			0.00	
	4.3	0	Person	20.77	155.78			0.00	
	4.4	0		21.54	161.55			0.00	
	4.5	0		22.31	167.33			0.00	
Staff-5	5.1	0		24.10	180.75			0.00	
	5.2	0		25.13	188.48			0.00	
	5.3	0		26.15	196.13			0.00	
	5.4	0		27.18	203.85			0.00	
	5.5	0		28.21	211.58			0.00	
Staff-6	6.1	3		31.54	236.55	5.00		1,182.75	
	6.2	0		32.82	246.15			0.00	
	6.3	0		34.10	255.75			0.00	
	6.4	0		35.38	265.35			0.00	
	6.5	0		36.67	275.03			0.00	
Staff-7	7.1	0		38.46	288.45			0.00	
	7.2	0		39.74	298.05			0.00	
	7.3	0		41.03	307.73			0.00	
	7.4	0		42.31	317.33			0.00	
	7.5	0		43.59	326.93			0.00	
Staff-8	8.1	0		47.95	359.63			0.00	
	8.2	0		49.23	369.23			0.00	
	8.3	0		50.51	378.83			0.00	
	8.4	0		51.79	388.43			0.00	
	8.5	0		53.08	398.10			0.00	
Staff-9	9.1	0		58.21	436.58			0.00	
	9.2	0		59.49	446.18			0.00	
	9.3	0		60.77	455.78			0.00	
	9.4	0		62.05	465.38			0.00	
	9.5	0		63.33	474.98			0.00	
Sub-total								1,182.75	
2. Consumable				$ Per Liter	L/km		$/km		
Diesel	For Excavator	0	Liter	11.80	0.3620		4.2716	0.00	50km/7km/liter=7.14liter 11liter/hrs (fuel consumption for about 60PS) x 1hr=11liter 11liter +7.1liter=18.1liter/50km
Diesel	For Pick-up	12.22	Liter	11.80	0.1428	1.7450	1.68504	20.59	50km/7km/liter=7.14liter/50km
Engine Oil	For Excavator	0	Liter	60.00	0.0016		0.096	0.00	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/dav/50km
Engine Oil	For Pick-up	12.22	Liter	60.00	0.0016		0.096	1.17	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/dav/50km
Tires		0	Nos	770.00	0.0014		1.078	0.00	50km x 252days=12,600km 12,600km/ 30,000km x 4nos=1.68nos 1.68nos/ 252days=0.07nos/50km
Sub-total								21.76	
3. Material & Equipment									
Sluice/ Gate Valve	25mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	40mm		piece		350.00			0.00	Gate Valve
Sluice/ Gate Valve	50mm		piece		310.00			0.00	Gate Valve
Sluice/ Gate Valve	80mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	100mm		piece		2,423.00			0.00	Sluice Valve
Sluice/ Gate Valve	150mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	200mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	250mm		piece					0.00	Sluice Valve225mm AUD1785
Sluice/ Gate Valve	300mm		piece					0.00	
Pipes (Poly)	15mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	20mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	25mm		coil					0.00	Length on 1 coil =200m
Pipes (Poly)	50mm		coil					0.00	Length on 1 coil =150m
Pipes (PVC)	25mm		piece					0.00	

per day

Items	Specification	Quantity	Unit	Hourly Rate (SBD)	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
Pipes (PVC)	50mm		piece					0.00	
Pipes (PVC)	80mm		piece					0.00	
Pipes (PVC)	100mm		piece		248.00			0.00	
Pipes (PVC)	150mm		piece					0.00	
Pipes (PVC)	200mm		piece					0.00	
Pipes (PVC)	250mm		piece					0.00	
Pipes (PVC)	300mm		piece					0.00	
Water Meter	10mm		piece					0.00	
Water Meter	16mm		piece					0.00	
Water Meter	20mm		piece					0.00	
Water Meter	25mm		piece					0.00	
Water Meter	32mm		piece					0.00	
Water Meter	40mm		piece					0.00	
Other Materials									
Sub-total								0.00	
Total								1,204.51	

1AUD=6.534SBD was applied to the above (rate as of 30 September, 2013 of Oanda).

Cost for Materials (Mbaranamba)

DEPARTMENT NAME: NRW PROJECT TEAM 2 **RECEIVED BY: Andrew Kopenao**
RECOMMENDED BY : Eric Unga **ISSUED BY: George Blamoli**
REQUISITION NO: 2309 **DATE ISSUED: 09/11/2013**
JOB DESCRIPTION: Being for preparation of materials for Mbaranamba Valley Pilot Site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
11/9/2013	32mm (1 1/4") PVC male Valve Socket	1	$ 22.00	$ 22.00
11/9/2013	1 1/2" x 1 1/4" Poly reduce Bush	1	$ 28.00	$ 28.00
11/9/2013	40mm Brass Gate Valve	1	$ 350.00	$ 350.00
11/9/2013	1 1/4 G.I Nipple	2	$ 18.00	$ 36.00
11/9/2013	50mm (2") Gate Valve	1	$ 310.00	$ 310.00
11/9/2013	50mm G.I Nipple	1	$ 54.00	$ 54.00
11/9/2013	40mm PVC male Valve Socket	3	$ 25.00	$ 75.00
11/9/2013	50mm x 2" UPVC male valve Socket	2	$ 36.00	$ 72.00
11/9/2013	40mm PVC Compression Coupling	2	$ 40.00	$ 80.00
11/9/2013	32mm PVC Compression Coupling	1	$ 38.00	$ 38.00
11/9/2013	1" Brass Gate valve	1	$ 190.00	$190.00
11/9/2013	25mm x 1" Poly male Adaptor	2	$ 50.00	$100.00
11/9/2013	1 length 50mm UPVC Presure Pipe	1	$ 154.00	$ 154.00
		Total per Requisition =		**$ 1,509.00**

DEPARTMENT NAME: NRW PROJECT TEAM 2 **RECEIVED BY: Andrew Kopenao**
RECOMMENDED BY : Benjimen Billy **ISSUED BY: George Blamoli**
REQUISITION NO: 2310 **DATE ISSUED: 09/11/2013**
JOB DESCRIPTION: Being for preparation of materials for Mbaranamba Valley Pilot Site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
11/9/2013	80mm (3") Sluice Valve (Jica order)	1	$ 2,397.12	$ 2,397.12
11/9/2013	80mm (3") Flange Adaptor (Jica Order)	2	$ 636.73	$ 1,273.46
11/9/2013	3" Gasket & boits (Jica Order)	2	$ 134.83	$ 269.66
11/9/2013	3" UPVC Compression Coupling	1	$ 190.00	$ 190.00
11/9/2013	8" x 1 1/4" brass Saddle/Tapping band	1	$ 844.00	$ 844.00
11/9/2013	1 length 80mm UPVC Pressure Pipe (PN 12)	1	$ 189.00	$ 189.00
11/9/2013	5 metres 16mm poly pipe	5	$ 14.50	$ 72.50
11/9/2013	1 1/4 G.I Nipple	1	$ 18.00	$ 18.00
11/9/2013	1 1/4" x 1" G.I Reduce Bush	1	$ 22.00	$ 22.00
11/9/2013	20mm x 16mm Poly Reduce Coupling	1	$ 56.00	$ 56.00
11/9/2013	16mm x 3/4" Poly Male Adaptor	1	$ 28.00	$ 28.00
		Total per Requisition =		**$ 5,359.74**

DEPARTMENT NAME: NRW PROJECT TEAM 2 **RECEIVED BY: Derick Hoa**
RECOMMENDED BY : Benjimen Billy **ISSUED BY: George Blamoli**
REQUISITION NO: 2458 **DATE ISSUED: 12/11/2013**
JOB DESCRIPTION: Materials Required for Mbaranamba Pilot Project Site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
11/12/2013	40mm PVC Compression Coupling	1	$ 40.00	$ 40.00
11/12/2013	Hack Saw Blade	1	$ 21.00	$ 21.00
11/12/2013	1 1/4" gate valve	1	$ 180.00	$ 180.00
11/12/2013	50mm x 25mm x 50mm Poly reduce Tee	1	$ 95.30	$ 95.30
11/12/2013	32mm x 1 1/4" male poly Adaptor	2	$ 55.00	$ 110.00
11/12/2013	1 Length 8" (200mm) Pressure Pipe	1	$ 812.40	$ 812.40
11/12/2013	ThreadTape	20	$ 4.00	$ 80.00
		Total per Requisition =		**$ 1,338.70**

DEPARTMENT NAME: NRW PROJECT TEAM 2 **RECEIVED BY: Derick Hoa**
RECOMMENDED BY : Benjimen Billy **ISSUED BY: George Blamoli**
REQUISITION NO: 2312 **DATE ISSUED: 12/11/2013**
JOB DESCRIPTION: Materials Required for Mbaranamba Pilot Project Site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
11/12/2013	80mm (3") Sluice Valve (Jica Order)	1	$ 2,397.12	$ 2,397.12
11/12/2013	80mm (3") Flange Adaptor (Jica Order)	1	$ 636.73	$ 636.73
11/12/2013	3" Gasket & boits (Jica Order)	2	$ 134.83	$ 269.66
11/12/2013	50mm (2") female PVC Adaptor	1	$ 90.00	$ 90.00
		Total per Requisition =		**$ 3,393.51**

DEPARTMENT NAME: NRW PROJECT TEAM 1 **RECEIVED BY: Harrison**
RECOMMENDED BY : Eric Unga **ISSUED BY: Paul Seda**
REQUISITION NO: 2314 **DATE ISSUED: 14/11/2013**
JOB DESCRIPTION: Being for Mbaranamba Pilot Site for Valve installation & Maintenance .

Date	Materials Description	Quantity	Unit Cost	Total Cost
11/14/2013	50mm PVC Coupling	2	$ 180.00	$ 360.00
11/14/2013	32mm x 1" male Poly Adaptor	1	$ 70.00	$ 70.00
11/14/2013	7 metres 32mm poly Pipe	7	$ 30.00	$ 210.00
		Total per Requisition =		**$ 640.00**

DEPARTMENT NAME: NRW PROJECT TEAM 2 **RECEIVED BY: Andrew Kopenao**
RECOMMENDED BY : Silas Talosiu **ISSUED BY: George Blamoli**
REQUISITION NO: 2313 **DATE ISSUED: 13/11/2013**
JOB DESCRIPTION: Materials Required for Mbaranamba Pilot Project Site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
11/13/2013	3" Sluice Valve	1	$ 2,397.12	$ 2,397.12
11/13/2013	80mm (3") Flange Adaptor (Jica Order)	1	$ 636.73	$ 636.73
11/13/2013	40mmx25mmx40mm Poly R/Tee	1	$ 66.00	$ 66.00
		Total per Requisition =		**$ 3,099.85**

DEPARTMENT NAME: NRW PROJECT TEAM 2 **RECEIVED BY: Derick Hoa**
RECOMMENDED BY : Eric Unga **ISSUED BY: George Blamoli**
REQUISITION NO: 2321 **DATE ISSUED: 02/12/2013**
JOB DESCRIPTION: List of Materials required for Mbaranamba Pilot Site for Meter Raising Project .
METER I.D 12B086583 - 587 (5pieces) 12B086798 - 802 (5 Pieces) 12B086838 - 842 (5 Pieces) 12B086778 - 782 (5)

Date	Materials Description	Quantity	Unit Cost	Total Cost
12/2/2013	20mm Water Meter	20	$ 394.00	$ 3,940.00
		Total per Requisition =		**$ 3,940.00**

DEPARTMENT NAME: NRW PROJECT TEAM 2 **RECEIVED BY: Derick Hoa**
RECOMMENDED BY : Silas Talosui **ISSUED BY: George Blamoli**
REQUISITION NO: 2322 **DATE ISSUED: 03/12/2013**
JOB DESCRIPTION: List of Materials required for Nbaranamba Pilot Site for Meter Raising Project .
METER I.D

Date	Materials Description	Quantity	Unit Cost	Total Cost
12/3/2013	3/4" x 1/2" Poly Reducing Nipple	10	$ 5.00	$ 50.00
12/3/2013	16mm Poly Tee	20	$ 85.00	$ 1,700.00
12/3/2013	16mm Poly Coupling	10	$ 45.00	$ 450.00
12/3/2013	20mm x 3/4" Poly female Adaptor	10	$ 48.00	$480.00
12/3/2013	1/2" G.I Socket	14	$ 10.00	$ 140.00
12/3/2013	16mm x 1/2" female poly Adaptor	10	$ 45.00	$ 450.00
12/3/2013	ThreadTape	40	$ 4.00	$ 160.00
		Total per Requisition =		**$ 3,430.00**

DEPARTMENT NAME: NRW PROJECT TEAM 2 **RECEIVED BY: Liston Tora**
RECOMMENDED BY : Eric Unga **ISSUED BY: George Blamoli**
REQUISITION NO: 2323 **DATE ISSUED: 04/12/2013**
JOB DESCRIPTION: List of Materials required for Nbaranamba Pilot Site for Meter Raising Project .

Date	Materials Description	Quantity	Unit Cost	Total Cost
12/4/2013	1/2" G.I Socket	6	$ 10.00	$ 60.00
12/4/2013	16mm x 1/2" female poly Adaptor	10	$ 45.00	$ 450.00
12/4/2013	15mm (1/2") G.I Tee	1	$ 5.00	$ 5.00
		Total per Requisition =		**$ 515.00**

DEPARTMENT NAME: NRW PROJECT TEAM 1 **RECEIVED BY: Selyna Fai**
RECOMMENDED BY : Benjimen Billy **ISSUED BY: George Blamoli**
REQUISITION NO: 2479 **DATE ISSUED: 04/12/2013**
JOB DESCRIPTION: List of Materials required for Nbaranamba Pilot Site for Meter Raising Project .

Date	Materials Description	Quantity	Unit Cost	Total Cost
12/4/2013	10mm Steel Rods	2	$ 68.00	$ 136.00
		Total per Requisition =		**$ 136.00**

DEPARTMENT NAME: NRW PROJECT TEAM 2 **RECEIVED BY: Derick Hoa**
RECOMMENDED BY : Benjimen Billy **ISSUED BY: George Blamoli**
REQUISITION NO: 2324 **DATE ISSUED: 09/12/2013**
JOB DESCRIPTION: List of Materials required for Nbaranamba & Ohi ola Project Area .

Date	Materials Description	Quantity	Unit Cost	Total Cost
12/9/2013	1/2" G.I Socket	3	$ 10.00	$ 30.00
12/9/2013	15mm Stop Cock	10	$ 170.00	$ 1,700.00
12/9/2013	ThreadTape	45	$ 4.00	$ 180.00
12/9/2013	15mm G.I elbow	20	$ 12.00	$ 240.00
12/9/2013	16mm Poly Coupling	10	$ 45.00	$ 450.00
		Total per Requisition =		**$ 2,600.00**

DEPARTMENT NAME: NRW PROJECT TEAM 2 **RECEIVED BY: Harrison Malai**
RECOMMENDED BY : Eric Unga **ISSUED BY: George Blamoli**
REQUISITION NO: 2325 **DATE ISSUED: 10/12/2013**
JOB DESCRIPTION: List of Materials required for meter raising @ Mbaranamba Valley pilot project site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
12/10/2013	20mm Water Meter	25	$ 394.00	$ 9,850.00
		Total per Requisition =		**$ 9,850.00**

DEPARTMENT NAME: NRW PROJECT TEAM 2 **RECEIVED BY: Derick Hoa**
RECOMMENDED BY : Silas Talosui **ISSUED BY: George Blamoli**
REQUISITION NO: 2326 **DATE ISSUED: 11/12/2013**
JOB DESCRIPTION: List of Materials required for Mbaranamba & Oi'hola Pilot Project Site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
12/11/2013	16mm x 1/2" female poly Adaptor	18	$ 45.00	$ 810.00
12/11/2013	ThreadTape	10	$ 4.00	$ 40.00
		Total per Requisition =		**$ 850.00**

DEPARTMENT NAME: NRW PROJECT TEAM 2 **RECEIVED BY: Mafe**
RECOMMENDED BY : Benjimen Billy **ISSUED BY: George Blamoli**
REQUISITION NO: 2327 **DATE ISSUED: 12/12/2013**
JOB DESCRIPTION: List of Materials required for Mbaranamba & Oi'hola Pilot Project Site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
12/12/2013	ThreadTape	30	$ 4.00	$ 120.00
12/12/2013	20mm x 1/2" Poly female Adaptor	4	$ 40.00	$ 160.00
12/12/2013	25mm x 1/2" Poly Female Adaptor	3	$ 48.00	$ 144.00
12/12/2013	16mm Poly Coupling	6	$ 45.00	$ 270.00
		Total per Requisition =		**$ 694.00**

DEPARTMENT NAME: NRW PROJECT TEAM 2 **RECEIVED BY: Harrison**
RECOMMENDED BY : Benjimen Billy **ISSUED BY: George Blamoli**
REQUISITION NO: 2328 **DATE ISSUED: 13/12/2013**
JOB DESCRIPTION: List of Materials required for Mbaranamba & Oi'hola Pilot Project Site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
12/12/2013	40 KG Bag cement	6	$ 80.00	$ 480.00
		Total per Requisition =		**$ 480.00**

DEPARTMENT NAME: NRW PROJECT TEAM 2 **RECEIVED BY: Derick**
RECOMMENDED BY : Benjimen Billy **ISSUED BY: George Blamoli**
REQUISITION NO: 2329 **DATE ISSUED: 17/12/2013**
JOB DESCRIPTION: List of Materials required for Mbaranamba & Oi'hola Pilot Project Site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
12/17/2013	40 KG Bag cement	6	$ 80.00	$ 480.00
		Total per Requisition =		**$ 480.00**

DEPARTMENT NAME: NRW PROJECT TEAM 2 **RECEIVED BY: Derick Hoa**
RECOMMENDED BY : Eric Unga **ISSUED BY: George Blamoli**
REQUISITION NO: 2330 **DATE ISSUED: 18/12/2013**
JOB DESCRIPTION: List of Materials required for Mbaranamba & Oi'hola Pilot Project Site .

Date	Materials Description	Quantity	Unit Cost	Total Cost
12/18/2013	40 KG Bag cement	4	$ 80.00	$ 320.00
		Total per Requisition =		**$ 320.00**

DEPARTMENT NAME: NRW PROJECT TEAM 1 **RECEIVED BY: Liston Tora**
RECOMMENDED BY : Eric Unga **ISSUED BY: George Blamoli**
REQUISITION NO: 2331 **DATE ISSUED: 19/12/2013**
JOB DESCRIPTION: being for Meter Raising @ the project site(Mbaranamba) .

Date	Materials Description	Quantity	Unit Cost	Total Cost
12/19/2013	25mm x 3/4" Poly female Adaptor	2	$ 48.00	$ 96.00
12/19/2013	1/2" G.I Plug	1	$ 8.00	$ 8.00
12/19/2013	3/4" G.I Socket	2	$ 12.00	$ 24.00
		Total per Requisition =		**$ 128.00**

TOTAL MATERIAL COST FOR MBARANAMBA	**$ 38,763.80**

TOTAL COST FOR MBUA VALLEY PILOT

	Before Countermeasure		After Countermeasure		
	Before Countermeasure	Countermeasure	After Countermeasure	Routine Activities	Total
Personnel Cost	74,940.83	35,873.78	13,995.38	896.28	**125,706.27**
Consumable	660.72	299.21	62.34	78.37	**1,100.65**
Material and Equipment	4,973.85	163,535.84	7,346.29	0.00	**176,855.07**
Sub Total	**80,575.40**	**199,708.83**	**21,403.99**	**974.65**	**308,262.03**
TOTAL	**280,284.32**		**22,378.61**		

TOTAL MAN DAYS FOR MBUA VALLEY PILOT	**887**

1. Costing Before Countermeasure

Location **Mbua Valley**

per day

Items	Specification	Quantity	Unit	Hourly Rate (SBD)	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
1. Personnel	Grades- Steps								
Staff-3	3.1	0	Person	15.85	118.88				
	3.2	0	Person	16.37	122.78				
	3.3	0	Person	16.90	126.75				
	3.4	0	Person	17.43	130.73				
	3.5	0	Person	17.96	134.70				
Staff-4	4.1	50	Person	19.81	148.58	144.00		21,394.80	
	4.2	20	Person	20.60	154.50	56.00		8,652.00	
	4.3	0	Person	21.39	160.43			0.00	
	4.4	0	Person	22.18	166.35			0.00	
	4.5	10	Person	22.98	172.35	29.00		4,998.15	
Staff-5	5.1	10	Person	24.83	186.23	26.00		4,841.85	
	5.2	0	Person	25.88	194.10			0.00	
	5.3	0	Person	26.94	202.05			0.00	
	5.4	0	Person	27.99	209.93			0.00	
	5.5	10	Person	29.05	217.88	29.00		6,318.38	
Staff-6	6.1	1	Person	32.48	243.60	2.00		487.20	
	6.2	1	Person	33.81	253.58	1.00		253.58	
	6.3	0	Person	35.13	263.48			0.00	
	6.4	0	Person	36.45	273.38			0.00	
	6.5	0	Person	37.77	283.28			0.00	
Staff-7	7.1	8	Person	39.62	297.15	23.00		6,834.45	
	7.2	0	Person	40.94	307.05			0.00	
	7.3	0	Person	42.26	316.95			0.00	
	7.4	0	Person	43.58	326.85			0.00	
	7.5	0	Person	44.90	336.75			0.00	
Staff-8	8.1	0	Person	49.39	370.43			0.00	
	8.2	0	Person	50.71	380.33			0.00	
	8.3	0	Person	52.03	390.23			0.00	
	8.4	0	Person	53.35	400.13			0.00	
	8.5	7	Person	54.67	410.03	22.00		9,020.55	
Staff-9	9.1	8	Person	59.95	449.63	27.00		12,139.88	
	9.2	0	Person	61.27	459.53			0.00	
	9.3	0	Person	62.59	469.43			0.00	
	9.4	0	Person	63.91	479.33			0.00	
	9.5	0	Person	65.23	489.23			0.00	
Sub-total						**359.00**		**74,940.83**	
2. Consumable				$ Per Liter	L/km		$/km		
Diesel	For Excavator	17.5	Liter	11.80	0.3620		4.2716	74.75	50km/7km/liter=7.14liter 11liter/hrs (fuel consumption for about 60PS) x 1hr=11liter 11liter +7.1liter=18.1liter/50km
Diesel	For Pick-up	329	Liter	11.80	0.1428	46.9812	1.68504	554.38	50km/7km/liter=7.14liter/5
Engine Oil	For Excavator	0	Liter	60.00	0.0016		0.096	0.00	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/
Engine Oil	For Pick-up	329	Liter	60.00	0.0016		0.096	31.58	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/
Tires		0	Nos	770.00	0.0014		1.078	0.00	50km x 252days=12,600km 12,600km/ 30,000km x 4nos=1.68nos 1.68nos/
Sub-total								**660.72**	
3. Material & Equipment									
Sluice/ Gate Valve	25mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	40mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	50mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	80mm		piece		2,432.00			0.00	Sluice Valve
Sluice/ Gate Valve	100mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	150mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	200mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	250mm		piece					0.00	Sluice Valve225mm
Sluice/ Gate Valve	300mm		piece					0.00	
Pipes (Poly)	15mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	20mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	25mm		coil					0.00	Length on 1 coil =200m
Pipes (Poly)	50mm		coil					0.00	Length on 1 coil =150m
Pipes (PVC)	25mm		piece					0.00	
Pipes (PVC)	50mm		piece					0.00	
Pipes (PVC)	80mm		piece					0.00	
Pipes (PVC)	100mm		piece					0.00	
Pipes (PVC)	150mm		piece					0.00	
Pipes (PVC)	200mm		piece					0.00	
Pipes (PVC)	250mm		piece					0.00	
Pipes (PVC)	300mm		piece					0.00	
Water Meter	10mm		piece					0.00	
Water Meter	16mm		piece					0.00	
Water Meter	20mm		piece					0.00	
Water Meter	25mm		piece					0.00	
Water Meter	32mm		piece					0.00	
Water Meter	40mm		piece					0.00	
All Materials for Countermeasures								4,973.95	
Sub-total								**4,973.95**	
Total								**80,575.49**	

1AUD=6.534SBD was applied to the above (rate as of 30 September, 2013 of Oanda).

2. Costing Countermeasure

Location **Mbua Valley**

per day

Items	Specification	Quantity	Unit	Hourly Rate	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
1. Personnel	Grades- Steps								
Staff-3	3.1	0	Person	15.85	118.88				
	3.2	0	Person	16.37	122.78				
	3.3	0	Person	16.90	126.75				
	3.4	0	Person	17.43	130.73				
	3.5	0	Person	17.96	134.70				
Staff-4	4.1	17	Person	19.81	148.58	68.00		10,103.10	
	4.2	7	Person	20.60	154.50	18.00		2,781.00	
	4.3	0	Person	21.39	160.43			0.00	
	4.4	0	Person	22.18	166.35			0.00	
	4.5	3	Person	22.98	172.35	8.00		1,378.80	
Staff-5	5.1	4	Person	24.83	186.23	22.00		4,096.95	
	5.2	0	Person	25.88	194.10			0.00	
	5.3	0	Person	26.94	202.05			0.00	
	5.4	0	Person	27.99	209.93			0.00	
	5.5	4	Person	29.05	217.88	9.00		1,960.88	
Staff-6	6.1	1	Person	32.48	243.60	1.00		243.60	
	6.2	0	Person	33.81	253.58	1.00		253.58	
	6.3	0	Person	35.13	263.48			0.00	
	6.4	0	Person	36.45	273.38			0.00	
	6.5	0	Person	37.77	283.28			0.00	
Staff-7	7.1	2	Person	39.62	297.15	5.00		1,485.75	
	7.2	0	Person	40.94	307.05			0.00	
	7.3	0	Person	42.26	316.95			0.00	
	7.4	0	Person	43.58	326.85			0.00	
	7.5	0	Person	44.90	336.75			0.00	
Staff-8	8.1	0	Person	49.39	370.43			0.00	
	8.2	0	Person	50.71	380.33			0.00	
	8.3	0	Person	52.03	390.23			0.00	
	8.4	0	Person	53.35	400.13			0.00	
	8.5	2	Person	54.67	410.03	5.00		2,050.13	
Staff-9	9.1	0	Person	59.95	449.63			0.00	
	9.2	0	Person	61.27	459.53			0.00	
	9.3	0	Person	62.59	469.43			0.00	
	9.4	0	Person	63.91	479.33			0.00	
	9.5	0	Person	65.23	489.23			0.00	
Contractors								$11,520.00	
Sub-total						**137.00**		**35,873.78**	
2. Consumable				$ Per Liter	L/km		$/km		
Diesel	For Excavator	0	Liter	11.80	0.3620		4.2716	0.00	50km/7km/liter=7.14liter 11liter/hrs (fuel consumption for about 60PS) x 1hr=11liter 11liter
Diesel	For Pick-up	168	Liter	11.80	0.1428	23.9904	1.68504	283.09	50km/7km/liter=7.14liter/50km
Engine Oil	For Excavator	0	Liter	60.00	0.0016		0.096	0.00	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/5
Engine Oil	For Pick-up	168	Liter	60.00	0.0016		0.096	16.13	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/5
Tires		0	Nos	770.00	0.0014		1.078	0.00	50km x 252days=12,600km 12,600km/ 30,000km x 4nos=1.68nos 1.68nos/
Sub-total								**299.21**	
3. Material & Equipment									
Sluice/ Gate Valve	25mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	40mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	50mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	80mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	100mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	150mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	200mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	250mm		piece					0.00	Sluice Valve225mm AUD1785
Sluice/ Gate Valve	300mm		piece					0.00	
Pipes (Poly)	15mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	20mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	25mm		coil					0.00	Length on 1 coil =200m
Pipes (Poly)	50mm		coil					0.00	Length on 1 coil =150m
Pipes (PVC)	25mm		piece					0.00	
Pipes (PVC)	50mm		piece					0.00	
Pipes (PVC)	80mm		piece					0.00	
Pipes (PVC)	100mm		piece					0.00	
Pipes (PVC)	150mm		piece					0.00	
Pipes (PVC)	200mm		piece					0.00	
Pipes (PVC)	250mm		piece					0.00	
Pipes (PVC)	300mm		piece					0.00	
Water Meter	10mm		piece					0.00	
Water Meter	16mm		piece					0.00	
Water Meter	20mm		piece					0.00	
Water Meter	25mm		piece					0.00	
Water Meter	32mm		piece					0.00	
Water Meter	40mm		piece					0.00	
All Materials for Countermeasures								163,535.84	
Sub-total								**163,535.84**	
Total								**199,708.83**	

1AUD=6.534SBD was applied to the above (rate as of 30 September, 2013 of Oanda).

3. Costing After Countermeasure

Location **Mbua Valley**

per day

Items	Specification	Quantity	Unit	Hourly Rate (SBD)	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
1. Personnel	Grades- Steps								
Staff-3	3.1	0	Person	15.85	118.88				
	3.2	0	Person	16.37	122.78				
	3.3	0	Person	16.90	126.75				
	3.4	0	Person	17.43	130.73				
	3.5	0	Person	17.96	134.70				
Staff-4	4.1	15	Person	19.81	148.58	23.00		3,417.23	
	4.2	6	Person	20.60	154.50	9.00		1,390.50	
	4.3	0	Person	21.39	160.43			0.00	
	4.4	0	Person	22.18	166.35			0.00	
	4.5	3	Person	22.98	172.35	5.00		861.75	
Staff-5	5.1	3	Person	24.83	186.23	22.00		4,096.95	
	5.2	0	Person	25.88	194.10			0.00	
	5.3	0	Person	26.94	202.05			0.00	
	5.4	0	Person	27.99	209.93			0.00	
	5.5	3	Person	29.05	217.88	5.00		1,089.38	
Staff-6	6.1	0	Person	32.48	243.60			0.00	
	6.2	0	Person	33.81	253.58			0.00	
	6.3	0	Person	35.13	263.48			0.00	
	6.4	0	Person	36.45	273.38			0.00	
	6.5	0	Person	37.77	283.28			0.00	
Staff-7	7.1	1	Person	39.62	297.15	3.00		891.45	
	7.2	0	Person	40.94	307.05			0.00	
	7.3	0	Person	42.26	316.95			0.00	
	7.4	0	Person	43.58	326.85			0.00	
	7.5	0	Person	44.90	336.75			0.00	
Staff-8	8.1	0	Person	49.39	370.43			0.00	
	8.2	0	Person	50.71	380.33			0.00	
	8.3	0	Person	52.03	390.23			0.00	
	8.4	0	Person	53.35	400.13			0.00	
	8.5	0	Person	54.67	410.03			0.00	
Staff-9	9.1	1	Person	59.95	449.63	5.00		2,248.13	
	9.2	0	Person	61.27	459.53			0.00	
	9.3	0	Person	62.59	469.43			0.00	
	9.4	0	Person	63.91	479.33			0.00	
	9.5	0	Person	65.23	489.23			0.00	
Sub-total						**72.00**		**13,995.38**	
2. Consumable				$ Per Liter	L/km		$/km		
Diesel	For Excavator	0	Liter	11.80	0.3620		4.2716	0.00	50km/7km/liter=7.14liter 11liter/hrs (fuel consumption for about 60PS) x 1hr=11liter 11liter x7.1liter=18.1liter/50km
Diesel	For Pick-up	35	Liter	11.80	0.1428	4.9980	1.68504	58.98	50km/7km/liter=7.14liter/50 km
Engine Oil	For Excavator	0	Liter	60.00	0.0016		0.096	0.00	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Engine Oil	For Pick-up	35	Liter	60.00	0.0016		0.096	3.36	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Tires		0	Nos	770.00	0.0014		1.078	0.00	50km x 252days=12,600km 12,600km/ 30,000km x 4nos=1.68nos 1.68nos/ 252days=0.07nos/50km
Sub-total								**62.34**	

Items	Specification	Quantity	Unit	Hourly Rate (SBD)	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
3. Material & Equipment									
Sluice/ Gate Valve	25mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	40mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	50mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	80mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	100mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	150mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	200mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	250mm		piece					0.00	Sluice Valve225mm
Sluice/ Gate Valve	300mm		piece					0.00	
Pipes (Poly)	15mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	20mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	25mm		coil					0.00	Length on 1 coil =200m
Pipes (Poly)	50mm		coil					0.00	Length on 1 coil =150m
Pipes (PVC)	25mm		piece					0.00	
Pipes (PVC)	50mm		piece					0.00	
Pipes (PVC)	80mm		piece					0.00	
Pipes (PVC)	100mm		piece					0.00	
Pipes (PVC)	150mm		piece					0.00	
Pipes (PVC)	200mm		piece					0.00	
Pipes (PVC)	250mm		piece					0.00	
Pipes (PVC)	300mm		piece					0.00	
Water Meter	10mm		piece					0.00	
Water Meter	16mm		piece					0.00	
Water Meter	20mm		piece					0.00	
Water Meter	25mm		piece					0.00	
Water Meter	32mm		piece					0.00	
Water Meter	40mm		piece					0.00	
All Materials for Countermeasures								7,346.28	
Sub-total								**7,346.28**	
Total								**21,403.99**	

1AUD=6.534SBD was applied to the above (rate as of 30 September, 2013 of Oanda).

4. Routine Activities

Location **Mbua Valley**

per day

Items	Specification	Quantity	Unit	Hourly Rate (SBD)	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
1. Personnel	Grades- Steps								
Staff-3	3.1	0	Person	15.85	118.88				
	3.2	0	Person	16.37	122.78				
	3.3	0	Person	16.90	126.75				
	3.4	0	Person	17.43	130.73				
	3.5	0	Person	17.96	134.70				
Staff-4	4.1	0	Person	19.81	148.58			0.00	
	4.2	0	Person	20.60	154.50			0.00	
	4.3	0	Person	21.39	160.43			0.00	
	4.4	0	Person	22.18	166.35			0.00	
	4.5	0	Person	22.98	172.35			0.00	
Staff-5	5.1	0	Person	24.83	186.23			0.00	
	5.2	0	Person	25.88	194.10			0.00	
	5.3	0	Person	26.94	202.05			0.00	
	5.4	0	Person	27.99	209.93			0.00	
	5.5	0	Person	29.05	217.88			0.00	
Staff-6	6.1	3	Person	32.48	243.60	9.00		2,192.40	
	6.2	0	Person	33.81	253.58			0.00	
	6.3	0	Person	35.13	263.48			0.00	
	6.4	0	Person	36.45	273.38			0.00	
	6.5	0	Person	37.77	283.28			0.00	
Staff-7	7.1	0	Person	39.62	297.15			0.00	
	7.2	0	Person	40.94	307.05			0.00	
	7.3	0	Person	42.26	316.95			0.00	
	7.4	0	Person	43.58	326.85			0.00	
	7.5	0	Person	44.90	336.75			0.00	
Staff-8	8.1	0	Person	49.39	370.43			0.00	
	8.2	0	Person	50.71	380.33			0.00	
	8.3	0	Person	52.03	390.23			0.00	
	8.4	0	Person	53.35	400.13			0.00	
	8.5	0	Person	54.67	410.03			0.00	
Staff-9	9.1	0	Person	59.95	449.63			0.00	
	9.2	0	Person	61.27	459.53			0.00	
	9.3	0	Person	62.59	469.43			0.00	
	9.4	0	Person	63.91	479.33			0.00	
	9.5	0	Person	65.23	489.23			0.00	
Sub-total						**9.00**		**2,192.40**	
2. Consumable				$ Per Liter	L/km		$/km		
Diesel	For Excavator	0	Liter	11.80	0.3620		4.2716	0.00	50km/7km/liter=7.14liter 11liter/hrs (fuel consumption for about 60PS) x 1hr=11liter 11liter x7.1liter=18.1liter/50km
Diesel	For Pick-up	7	Liter	11.80	0.1428	0.9996	1.68504	11.80	50km/7km/liter=7.14liter/50km
Engine Oil	For Excavator	0	Liter	60.00	0.0016		0.096	0.00	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Engine Oil	For Pick-up	7	Liter	60.00	0.0016		0.096	0.67	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Tires		0	Nos	770.00	0.0014		1.078	0.00	50km x 252days=12,600km 12,600km/ 30,000km x 4nos=1.68nos 1.68nos/ 252days=0.07nos/50km
Sub-total								**12.47**	
3. Material &									
Sluice/ Gate Valve	25mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	40mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	50mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	80mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	100mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	150mm		piece					0.00	Sluice Valve

Items	Specification	Quantity	Unit	Hourly Rate (SBD)	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
Sluice/ Gate Valve	200mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	250mm		piece					0.00	Sluice Valve225mm AUD1785
Sluice/ Gate Valve	300mm		piece					0.00	
Pipes (Poly)	15mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	20mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	25mm		coil					0.00	Length on 1 coil =200m
Pipes (Poly)	50mm		coil					0.00	Length on 1 coil =150m
Pipes (PVC)	25mm		piece					0.00	
Pipes (PVC)	50mm		piece					0.00	
Pipes (PVC)	80mm		piece					0.00	
Pipes (PVC)	100mm		piece					0.00	
Pipes (PVC)	150mm		piece					0.00	
Pipes (PVC)	200mm		piece					0.00	
Pipes (PVC)	250mm		piece					0.00	
Pipes (PVC)	300mm		piece					0.00	
Water Meter	10mm		piece					0.00	
Water Meter	16mm		piece					0.00	
Water Meter	20mm		piece					0.00	
Water Meter	25mm		piece					0.00	
Water Meter	32mm		piece					0.00	
Water Meter	40mm		piece					0.00	
All Materials for Countermeasures								0.00	
Sub-total								**0.00**	
Total								**2,204.87**	

1AUD=6.534SBD was applied to the above (rate as of 30 September, 2013 of Oanda).

TOTAL COST FOR BAHAI KUKUM PILOT

	Before Countermeasure	After Countermeasure			
	Before Countermeasure	Countermeasure	After Countermeasure	Routine Activities	Total
Personnel Cost	50,028.68	31,706.18	12,436.58	896.25	**95,067.69**
Consumable	361.16	256.47	53.43	78.97	**6,348.49**
Material and Equipment	4,973.95	168,624.15	7,346.28	0.00	**180,944.38**
Sub Total	**55,303.79**	**200,586.79**	**19,836.29**	**974.02**	**282,361.48**
TOTAL	**255,890.58**		**20,810.90**		

TOTAL MAN DAYS FOR BAHAI KUKUM PILOT	**897**

1. Costing Before Countermeasure

Location **Bahai Kukum**

per day

Items	Specification	Quantity	Unit	Hourly Rate (SBD)	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
1. Personnel	Grades- Steps								
Staff-3	3.1	0	Person	15.85	118.88				
	3.2	0	Person	16.37	122.78				
	3.3	0	Person	16.90	126.75				
	3.4	0	Person	17.43	130.73				
	3.5	0	Person	17.96	134.70				
Staff-4	4.1	40	Person	19.81	148.58	116.00		17,234.70	
	4.2	10	Person	20.60	154.50	29.00		4,480.50	
	4.3	0	Person	21.39	160.43			0.00	
	4.4	0	Person	22.18	166.35			0.00	
	4.5	10	Person	22.98	172.35	29.00		4,998.15	
Staff-5	5.1	10	Person	24.83	186.23	26.00		4,841.85	
	5.2	0	Person	25.88	194.10			0.00	
	5.3	0	Person	26.94	202.05			0.00	
	5.4	0	Person	27.99	209.93			0.00	
	5.5	0	Person	29.05	217.88	0.00		0.00	
Staff-6	6.1	1	Person	32.48	243.60	2.00		487.20	
	6.2	1	Person	33.81	253.58	1.00		253.58	
	6.3	0	Person	35.13	263.48			0.00	
	6.4	0	Person	36.45	273.38			0.00	
	6.5	0	Person	37.77	283.28			0.00	
Staff-7	7.1	9	Person	39.62	297.15	23.00		6,834.45	
	7.2	0	Person	40.94	307.05			0.00	
	7.3	0	Person	42.26	316.95			0.00	
	7.4	0	Person	43.58	326.85			0.00	
	7.5	0	Person	44.90	336.75			0.00	
Staff-8	8.1	0	Person	49.39	370.43			0.00	
	8.2	0	Person	50.71	380.33			0.00	
	8.3	0	Person	52.03	390.23			0.00	
	8.4	0	Person	53.35	400.13			0.00	
	8.5	7	Person	54.67	410.03	20.00		8,200.50	
Staff-9	9.1	2	Person	59.95	449.63	6.00		2,697.75	
	9.2	0	Person	61.27	459.53			0.00	
	9.3	0	Person	62.59	469.43			0.00	
	9.4	0	Person	63.91	479.33			0.00	
	9.5	0	Person	65.23	489.23			0.00	
Sub-total						**252.00**		**50,028.68**	
2. Consumable				$ Per Liter	L/km		$/km		
Diesel	For Excavator	12	Liter	11.80	0.3620		4.2716	51.26	50km/7km/liter=7.14liter 11liter/hrs (fuel consumption for about 60PS) x 1hr=11liter 11liter
Diesel	For Pick-up	174	Liter	11.80	0.1428	24.8472	1.68504	293.20	50km/7km/liter=7.14liter/50km
Engine Oil	For Excavator	0	Liter	60.00	0.0016		0.096	0.00	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/ 50km
Engine Oil	For Pick-up	174	Liter	60.00	0.0016		0.096	16.70	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/ 50km
Tires		0	Nos	770.00	0.0014		1.078	0.00	50km x 252days=12,600km 12,600km/ 30,000km x 4nos=1.68nos 1.68nos/ 252days=0.07nos/50k
Sub-total								**361.16**	
3. Material & Equipment									
Sluice/ Gate Valve	25mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	40mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	50mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	80mm		piece		2,432.00			0.00	Sluice Valve

Items	Specification	Quantity	Unit	Hourly Rate (SBD)	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
Sluice/ Gate Valve	100mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	150mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	200mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	250mm		piece					0.00	Sluice Valve225mm AUD1785
Sluice/ Gate Valve	300mm		piece					0.00	
Pipes (Poly)	15mm		coil					0.00	Length on 1 coil
Pipes (Poly)	20mm		coil					0.00	Length on 1 coil
Pipes (Poly)	25mm		coil					0.00	Length on 1 coil
Pipes (Poly)	50mm		coil					0.00	Length on 1 coil
Pipes (PVC)	25mm		piece					0.00	
Pipes (PVC)	50mm		piece					0.00	
Pipes (PVC)	80mm		piece					0.00	
Pipes (PVC)	100mm		piece					0.00	
Pipes (PVC)	150mm		piece					0.00	
Pipes (PVC)	200mm		piece					0.00	
Pipes (PVC)	250mm		piece					0.00	
Pipes (PVC)	300mm		piece					0.00	
Water Meter	10mm		piece					0.00	
Water Meter	16mm		piece					0.00	
Water Meter	20mm		piece					0.00	
Water Meter	25mm		piece					0.00	
Water Meter	32mm		piece					0.00	
Water Meter	40mm		piece					0.00	
All Materials for Countermeasures								4,973.95	
Sub-total								**4,973.95**	
Total								**55,363.79**	

1AUD=6.534SBD was applied to the above (rate as of 30 September, 2013 of Oanda).

2. Costing Countermeasure

Location **Bahai Kukum**

per day

Items	Specification	Quantity	Unit	Hourly Rate	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
1. Personnel	Grades- Steps								
Staff-3	3.1	0	Person	15.85	118.88				
	3.2	0	Person	16.37	122.78				
	3.3	0	Person	16.90	126.75				
	3.4	0	Person	17.43	130.73				
	3.5	0	Person	17.96	134.70				
Staff-4	4.1	14	Person	19.81	148.58	60.00		8,914.50	
	4.2	4	Person	20.60	154.50	10.00		1,545.00	
	4.3	0	Person	21.39	160.43			0.00	
	4.4	0	Person	22.18	166.35			0.00	
	4.5	3	Person	22.98	172.35	8.00		1,378.80	
Staff-5	5.1	4	Person	24.83	186.23	22.00		4,096.95	
	5.2	0	Person	25.88	194.10			0.00	
	5.3	0	Person	26.94	202.05			0.00	
	5.4	0	Person	27.99	209.93			0.00	
	5.5	1	Person	29.05	217.88	1.00		217.88	
Staff-6	6.1	1	Person	32.48	243.60	1.00		243.60	
	6.2	0	Person	33.81	253.58	1.00		253.58	
	6.3	0	Person	35.13	263.48			0.00	
	6.4	0	Person	36.45	273.38			0.00	
	6.5	0	Person	37.77	283.28			0.00	
Staff-7	7.1	2	Person	39.62	297.15	5.00		1,485.75	
	7.2	0	Person	40.94	307.05			0.00	
	7.3	0	Person	42.26	316.95			0.00	
	7.4	0	Person	43.58	326.85			0.00	
	7.5	0	Person	44.90	336.75			0.00	
Staff-8	8.1	0	Person	49.39	370.43			0.00	
	8.2	0	Person	50.71	380.33			0.00	
	8.3	0	Person	52.03	390.23			0.00	
	8.4	0	Person	53.35	400.13			0.00	
	8.5	2	Person	54.67	410.03	5.00		2,050.13	
Staff-9	9.1	0	Person	59.95	449.63			0.00	
	9.2	0	Person	61.27	459.53			0.00	
	9.3	0	Person	62.59	469.43			0.00	
	9.4	0	Person	63.91	479.33			0.00	
	9.5	0	Person	65.23	489.23			0.00	
Contractors								$ 11,520.00	
Sub-total						**113.00**		**31,706.18**	
2. Consumable				$ Per Liter	L/km		$/km		
Diesel	For Excavator	0	Liter	11.80	0.3620		4.2716	0.00	50km/7km/liter=7.14liter 11liter/hrs (fuel consumption for about 60PS) x 1hr=11liter 11liter +7.1liter=18.1liter/50km
Diesel	For Pick-up	144	Liter	11.80	0.1428	20.5632	1.68504	242.65	50km/7km/liter=7.14liter/50km
Engine Oil	For Excavator	0	Liter	60.00	0.0016		0.096	0.00	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50k
Engine Oil	For Pick-up	144	Liter	60.00	0.0016		0.096	13.82	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50k
Tires		0	Nos	770.00	0.0014		1.078	0.00	50km x 252days=12,600km 12,600km/ 30,000km x 4nos=1.68nos 1.68nos/ 252days=0.07nos/50km
Sub-total								**256.47**	
3. Material & Equipment									
Sluice/ Gate Valve	25mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	40mm		piece					0.00	Gate Valve

Items	Specification	Quantity	Unit	Hourly Rate	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
Sluice/ Gate Valve	50mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	80mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	100mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	150mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	200mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	250mm		piece					0.00	Sluice Valve225mm AUD1785
Sluice/ Gate Valve	300mm		piece					0.00	
Pipes (Poly)	15mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	20mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	25mm		coil					0.00	Length on 1 coil =200m
Pipes (Poly)	50mm		coil					0.00	Length on 1 coil =150m
Pipes (PVC)	25mm		piece					0.00	
Pipes (PVC)	50mm		piece					0.00	
Pipes (PVC)	80mm		piece					0.00	
Pipes (PVC)	100mm		piece					0.00	
Pipes (PVC)	150mm		piece					0.00	
Pipes (PVC)	200mm		piece					0.00	
Pipes (PVC)	250mm		piece					0.00	
Pipes (PVC)	300mm		piece					0.00	
Water Meter	10mm		piece					0.00	
Water Meter	16mm		piece					0.00	
Water Meter	20mm		piece					0.00	
Water Meter	25mm		piece					0.00	
Water Meter	32mm		piece					0.00	
Water Meter	40mm		piece					0.00	
All Materials for Countermeasures								168,624.15	
Sub-total								**168,624.15**	
Total								**200,586.79**	

1AUD=6.534SBD was applied to the above (rate as of 30 September, 2013 of Oanda).

3. Costing After Countermeasure

Location **Bahai Kukum**

per day

Items	Specification	Quantity	Unit	Hourly Rate	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
1. Personnel	Grades- Steps								
Staff-3	3.1	0	Person	15.85	118.88				
	3.2	0	Person	16.37	122.78				
	3.3	0	Person	16.90	126.75				
	3.4	0	Person	17.43	130.73				
	3.5	0	Person	17.96	134.70				
Staff-4	4.1	12	Person	19.81	148.58	24.00		3,565.80	
	4.2	3	Person	20.60	154.50	5.00		772.50	
	4.3	0	Person	21.39	160.43			0.00	
	4.4	0	Person	22.18	166.35			0.00	
	4.5	3	Person	22.98	172.35	5.00		861.75	
Staff-5	5.1	3	Person	24.83	186.23	22.00		4,096.95	
	5.2	0	Person	25.88	194.10			0.00	
	5.3	0	Person	26.94	202.05			0.00	
	5.4	0	Person	27.99	209.93			0.00	
	5.5	0	Person	29.05	217.88	0.00		0.00	
Staff-6	6.1	0	Person	32.48	243.60			0.00	
	6.2	0	Person	33.81	253.58			0.00	
	6.3	0	Person	35.13	263.48			0.00	
	6.4	0	Person	36.45	273.38			0.00	
	6.5	0	Person	37.77	283.28			0.00	
Staff-7	7.1	3	Person	39.62	297.15	3.00		891.45	
	7.2	0	Person	40.94	307.05			0.00	
	7.3	0	Person	42.26	316.95			0.00	
	7.4	0	Person	43.58	326.85			0.00	
	7.5	0	Person	44.90	336.75			0.00	
Staff-8	8.1	0	Person	49.39	370.43			0.00	
	8.2	0	Person	50.71	380.33			0.00	
	8.3	0	Person	52.03	390.23			0.00	
	8.4	0	Person	53.35	400.13			0.00	
	8.5	2	Person	54.67	410.03			0.00	
Staff-9	9.1	1	Person	59.95	449.63	5.00		2,248.13	
	9.2	0	Person	61.27	459.53			0.00	
	9.3	0	Person	62.59	469.43			0.00	
	9.4	0	Person	63.91	479.33			0.00	
	9.5	0	Person	65.23	489.23			0.00	
Sub-total						**64.00**		**12,436.58**	
2. Consumable				$ Per Liter	L/km		$/km		
Diesel	For Excavator	0	Liter	11.80	0.3620		4.2716	0.00	50km/7km/liter=7.14liter 11liter/hrs (fuel consumption for about 60PS) x 1hr=11liter 11liter
Diesel	For Pick-up	30	Liter	11.80	0.1428	4.2840	1.68504	50.55	50km/7km/liter=7.14liter/50km
Engine Oil	For Excavator	0	Liter	60.00	0.0016		0.096	0.00	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50k
Engine Oil	For Pick-up	30	Liter	60.00	0.0016		0.096	2.88	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50k
Tires		0	Nos	770.00	0.0014		1.078	0.00	50km x 252days=12,600km 12,600km/ 30,000km x 4nos=1.68nos 1.68nos/ 252days=0.07nos/50km
Sub-total								**53.43**	
3. Material &									
Sluice/ Gate Valve	25mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	40mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	50mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	80mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	100mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	150mm		piece					0.00	Sluice Valve

Items	Specification	Quantity	Unit	Hourly Rate	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
Sluice/ Gate Valve	200mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	250mm		piece					0.00	Sluice Valve225mm
Sluice/ Gate Valve	300mm		piece					0.00	
Pipes (Poly)	15mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	20mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	25mm		coil					0.00	Length on 1 coil =200m
Pipes (Poly)	50mm		coil					0.00	Length on 1 coil =150m
Pipes (PVC)	25mm		piece					0.00	
Pipes (PVC)	50mm		piece					0.00	
Pipes (PVC)	80mm		piece					0.00	
Pipes (PVC)	100mm		piece					0.00	
Pipes (PVC)	150mm		piece					0.00	
Pipes (PVC)	200mm		piece					0.00	
Pipes (PVC)	250mm		piece					0.00	
Pipes (PVC)	300mm		piece					0.00	
Water Meter	10mm		piece					0.00	
Water Meter	16mm		piece					0.00	
Water Meter	20mm		piece					0.00	
Water Meter	25mm		piece					0.00	
Water Meter	32mm		piece					0.00	
Water Meter	40mm		piece					0.00	
All Materials for Countermeasures								7,346.28	
Sub-total								**7,346.28**	
Total								**19,836.29**	

1AUD=6.534SBD was applied to the above (rate as of 30 September, 2013 of Oanda).

4. Routine Activities

Location **Bahai Kukum**

per day

Items	Specification	Quantity	Unit	Hourly Rate	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
1. Personnel	Grades- Steps								
Staff-3	3.1	0	Person	15.85	118.88				
	3.2	0	Person	16.37	122.78				
	3.3	0	Person	16.90	126.75				
	3.4	0	Person	17.43	130.73				
	3.5	0	Person	17.96	134.70				
Staff-4	4.1	0	Person	19.81	148.58			0.00	
	4.2	0	Person	20.60	154.50			0.00	
	4.3	0	Person	21.39	160.43			0.00	
	4.4	0	Person	22.18	166.35			0.00	
	4.5	0	Person	22.98	172.35			0.00	
Staff-5	5.1	0	Person	24.83	186.23			0.00	
	5.2	0	Person	25.88	194.10			0.00	
	5.3	0	Person	26.94	202.05			0.00	
	5.4	0	Person	27.99	209.93			0.00	
	5.5	0	Person	29.05	217.88			0.00	
Staff-6	6.1	3	Person	32.48	243.60	9.00		2,192.40	
	6.2	0	Person	33.81	253.58			0.00	
	6.3	0	Person	35.13	263.48			0.00	
	6.4	0	Person	36.45	273.38			0.00	
	6.5	0	Person	37.77	283.28			0.00	
Staff-7	7.1	0	Person	39.62	297.15			0.00	
	7.2	0	Person	40.94	307.05			0.00	
	7.3	0	Person	42.26	316.95			0.00	
	7.4	0	Person	43.58	326.85			0.00	
	7.5	0	Person	44.90	336.75			0.00	
Staff-8	8.1	0	Person	49.39	370.43			0.00	
	8.2	0	Person	50.71	380.33			0.00	
	8.3	0	Person	52.03	390.23			0.00	
	8.4	0	Person	53.35	400.13			0.00	
	8.5	0	Person	54.67	410.03			0.00	
Staff-9	9.1	0	Person	59.95	449.63			0.00	
	9.2	0	Person	61.27	459.53			0.00	
	9.3	0	Person	62.59	469.43			0.00	
	9.4	0	Person	63.91	479.33			0.00	
	9.5	0	Person	65.23	489.23			0.00	
Sub-total						**9.00**		**2,192.40**	
2. Consumable				$ Per Liter	L/km		$/km		
Diesel	For Excavator	0	Liter	11.80	0.3620		4.2716	0.00	50km/7km/liter=7.14liter 11liter/hrs (fuel consumption for about 60PS) x 1hr=11liter 11liter +7.1liter=18.1liter/50km
Diesel	For Pick-up	12	Liter	11.80	0.1428	1.7136	1.68504	20.22	50km/7km/liter=7.14liter/50km
Engine Oil	For Excavator	0	Liter	60.00	0.0016		0.096	0.00	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Engine Oil	For Pick-up	12	Liter	60.00	0.0016		0.096	1.15	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Tires		0	Nos	770.00	0.0014		1.078	0.00	50km x 252days=12,600km 12,600km/ 30,000km x 4nos=1.68nos 1.68nos/ 252days=0.07nos/50km
Sub-total								**21.37**	
3. Material & Equipment									
Sluice/ Gate Valve	25mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	40mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	50mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	80mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	100mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	150mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	200mm		piece					0.00	Sluice Valve

		ORDER	ISSUED			BALANCE	COUNTED
1	1/2" G.I Elbow (NRW Stock)	428	240	$ 10.00	$ 2,400.00	247	247
2	1/2" G.I Socket (NRW Stock)	105	60	$ 10.00	$ 600.00	18	18
3	15mm Kent Stop Cock/Tap New Zealend Ltd		60	$ 45.25	$ 2,715.00	274	274
4	16mm x 1/2" Poly female Adaptor (NRW stock)	LKP	120	$ 54.00	$ 6,480.00	167	167
5	Threaded Tape (NRW Stock)	636	80	$ 10.00	$ 800.00	340	340
6	500mm x 1/2" threaded Galvanised pipe		240	$ 71.00	$ 17,040.00	148	148
7	200mm x 1/2" threaded Galvanised pipe		120	$ 53.60	$ 6,432.00	122	122
		Total per Requisition =			$ 36,467.00		

DEPARTMENT NAME: NRW PROJECT TEAM **RECEIVED BY :** Selina Fai
AUTHORIZED BY : Ray Andersen **ISSUED BY :** Paul Seda
REQUISITION NO: 1655 **DATE ISSUED:** 07/05/2014
JOB DESCRIPTION: Being for Metre Raising Stand for Kukum and Bahai Pilot Project Site .

ITEM	Materials Description	NEW ST ORDER	Quantity ISSUED	Unit Cost	Total Cost	BIN CARD BALANCE	STOCK COUNTED
1	3/4" G.I Elbow (NRW Stock) (LKP)	428	40	$ 22.00	$ 880.00	484	484
2	3/4" G.I Socket (NRW Stock) (LKP)	105	10	$ 20.00	$ 200.00	95	95
3	20mm Kent Stop Cock/Tap New Zealend Ltd		10	$ 65.22	$ 652.20	291	291
4	20mm x 3/4" Female poly Adaptor (NRW stock	105	20	$ 68.00	$ 1,360.00	140	140
5	500mm x 1/2" threaded Galvanised pipe (LKP)	428	40	$ 71.00	$ 2,840.00	148	148
6	200mm x 1/2" threaded Galvanised pipe (LKP	212	20	$ 53.60	$ 1,072.00	122	122
7	Threaded Tape (NRW Stock) (LKP)	636	60	$ 10.00	$ 600.00	340	340
		Total per Requisition =			$ 7,604.20		

DEPARTMENT NAME: NRW PROJECT TEAM **RECEIVED BY :** David Akwa'asi
AUTHORIZED BY : Benjimen Billy **ISSUED BY :** Paul Seda
REQUISITION NO: 1656 **DATE ISSUED:** 08/05/2014
JOB DESCRIPTION: Being for Metre Raising Stand for Kukum and Bahai Pilot Project Site .

ITEM	Materials Description	NEW ST ORDER	Quantity ISSUED	Unit Cost	Total Cost	BIN CARD BALANCE	STOCK COUNTED
1	500mm x 3/4" threaded Galvanised pipe (LKP	428	160	$ 74.50	$ 11,920.00	228	228
2	200mm x 3/4" threaded Galvanised pipe (LKP	212	80	$ 55.70	$ 4,456.00	122	122
3	3/4" G.I Elbow (NRW Stock) (LKP)	428	160	$ 22.00	$ 3,520.00	688	688
4	20mm Kent Stop Cock/Tap New Zealend Ltd		40	$ 65.22	$ 2,608.80	233	233
5	20mm x 3/4" Female poly Adaptor (NRW stock	105	80	$ 68.00	$ 5,440.00	60	60
6	3/4" G.I Socket (NRW Stock) (LKP)	105	40	$ 20.00	$ 800.00	55	55
7	500mm x 1/2" threaded Galvanised pipe (LKP)	428	120	$ 71.00	$ 8,520.00	28	28
8	200mm x 1/2" threaded Galvanised pipe (LKP	212	60	$ 53.60	$ 3,216.00	62	62
9	1/2" G.I Elbow (NRW Stock)	428	120	$ 10.00	$ 1,200.00	127	127
10	15mm Kent Stop Cock/Tap New Zealend Ltd		30	$ 45.25	$ 1,357.50	274	274
11	16mm x 1/2" Poly female Adaptor (NRW stock)	LKP	60	$ 54.00	$ 3,240.00	167	167
		Total per Requisition =			$ 46,278.30		

DEPARTMENT NAME: NRW PROJECT TEAM **RECEIVED BY :** David Akwa'asi
AUTHORIZED BY : Benjimen Billy **ISSUED BY :** Paul Seda
REQUISITION NO: 1657 **DATE ISSUED:** 08/05/2014
JOB DESCRIPTION: Being for Metre Raising Stand for Kukum and Bahai Pilot Project Site .

ITEM	Materials Description	NEW ST ORDER	Quantity ISSUED	Unit Cost	Total Cost	BIN CARD BALANCE	STOCK COUNTED
1	1/2" G.I Socket (NRW Stock)	105	30	$ 10.00	$ 300.00	18	18

Items	Specification	Quantity	Unit	Hourly Rate	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
Sluice/ Gate Valve	250mm		piece					0.00	Sluice Valve225mm AUD1785
Sluice/ Gate Valve	300mm		piece					0.00	
Pipes (Poly)	15mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	20mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	25mm		coil					0.00	Length on 1 coil =200m
Pipes (Poly)	50mm		coil					0.00	Length on 1 coil =150m
Pipes (PVC)	25mm		piece					0.00	
Pipes (PVC)	50mm		piece					0.00	
Pipes (PVC)	80mm		piece					0.00	
Pipes (PVC)	100mm		piece					0.00	
Pipes (PVC)	150mm		piece					0.00	
Pipes (PVC)	200mm		piece					0.00	
Pipes (PVC)	250mm		piece					0.00	
Pipes (PVC)	300mm		piece					0.00	
Water Meter	10mm		piece					0.00	
Water Meter	16mm		piece					0.00	
Water Meter	20mm		piece					0.00	
Water Meter	25mm		piece					0.00	
Water Meter	32mm		piece					0.00	
Water Meter	40mm		piece					0.00	
All Materials for Countermeasures								0.00	
Sub-total								**0.00**	
Total								**2,213.77**	

1AUD=6.534SBD was applied to the above (rate as of 30 September, 2013 of Oanda).

S4.7-1-34

DEPARTMENT NAME: NRW PROJECT TEAM **RECEIVED BY :** Liston Tora
RECOMMENDED BY : Eric Unga **ISSUED BY:** Paul Seda
REQUISITION NO: 2333 **DATE ISSUED:** 03/02/2014
JOB DESCRIPTION: Being for Test Site preparation @ Kukum

ITEM	Materials Description	NEW ST ORDER	Quantity ISSUED	Unit Cost	Total Cost	BIN CARD BALANCE	STOCK COUNTED
1	100mm Sluice Valve		1	$ 2,508.00	$ 2,508.00	4	4
2	100mm Gibault Fangce Socket (Jica Order)		1	$ 454.62	$ 454.62	9	9
3	100mm Brass tapping Band/Saddle		1	$ 234.00	$ 234.00	183	183
4	1/2" G.I Nipple		1	$ 10.00	$ 10.00	148	148
5	1/2" Stop Tap		1	$ 95.00	$ 95.00	654	654
6	ThreadTape		2	$ 4.00	$ 8.00	432	432
7	HacK Saw Blade		1	$ 21.00	$ 21.00	5	5
8	1/2" G. Plug		1	$ 8.00	$ 8.00	106	106
9	3/4" x 1/2" G.I reduce Bush		1	$ 9.00	$ 9.00	42	42
10	100mm Gibault Joint		2	$ 413.00	$ 826.00	20	20
			Total per Requisition =		$ 4,173.62		

DEPARTMENT NAME: NRW PROJECT TEAM **RECEIVED BY :** Mafe
RECOMMENDED BY : Benjimen Billy **ISSUED BY:** George Blamoli
REQUISITION NO: 1729 **DATE ISSUED:** 23/03/2014
JOB DESCRIPTION: Materials used for Pilot Project site @ Kukum

ITEM	Materials Description	NEW ST ORDER	Quantity ISSUED	Unit Cost	Total Cost	BIN CARD BALANCE	STOCK COUNTED
1	40mm Brass Gate Valve (KITANO stock)		2	$ 180.00	$ 360.00	0	0
2	36 metre 16mm Poly Pipe(LKP Order)	3 Roll	36	$ 9.93	$ 357.48	1317m	1317m
3	20mm x 16mm Poly Reduce Coupling		1	$ 60.00	$ 60.00	68	68
4	40mm x 1 1/2" UPVC Male Adaptor		2	$ 25.00	$ 50.00	61	61
5	16mm x 1/2" Poly Male Adaptor (NRW stock)		3	$ 45.00	$ 95.00	31	31
6	15mm Kent Stop Cock/Tap New Zealend Ltd		1	$ 45.25	$ 45.25	493	493
7	16mm x 1/2" Poly female Adaptor (NRW stock)		1	$ 45.00	$ 95.00	29	29
		Total per Requisition =			$ 1,062.73		

DEPARTMENT NAME: NRW PROJECT TEAM **RECEIVED BY :** M.Mafe
AUTHORIZED BY : Ray Andersen **ISSUED BY :** Paul Seda
REQUISITION NO: 0788 **DATE ISSUED: 03** /05/2014
JOB DESCRIPTION: Being for Valve Replacement @ Kukum Hot Bread Store .

ITEM	Materials Description	NEW ST ORDER	Quantity ISSUED	Unit Cost	Total Cost	BIN CARD BALANCE	STOCK COUNTED
1	4" Gaskets & Bolts & Nuts (JICA Stock)		6	$146.07	876.42	3	3
		Total per Requisition =			$ 876.42		

DEPARTMENT NAME: NRW PROJECT TEAM **RECEIVED BY :** Mafe
AUTHORIZED BY : Eric Unga **ISSUED BY :** Paul Seda
REQUISITION NO: 1654 **DATE ISSUED:** 07/05/2014
JOB DESCRIPTION: Being for Metre Raising Stand for Kukum and Bahai Pilot Project Site .

ITEM	Materials Description	NEW ST	Quantity	Unit Cost	Total Cost	BIN CARD	STOCK

ITEM	Materials Description	NEW ST ORDER	Quantity ISSUED	Unit Cost	Total Cost	BIN CARD BALANCE	STOCK COUNTED
1	3/4" G.I Tee		6	$ 14.00	$ 84.00	35	35
2	3/4" G.I Nipple		5	$ 12.00	$ 60.00	40	40
3	3/4" G.I Elbow (NRW Stock) (LKP)	428	4	$ 22.00	$ 88.00	601	601
4	3/4" G.I Socket (NRW Stock) (LKP)	105	4	$ 20.00	$ 80.00	26	26
5	20mm x 3/4 " poly male Adaptor (NRW)		6	$ 68.00	$ 408.00	18	18
6	15mm Kent Water meter New Zealend Ltd		5	$ 318.84	$ 1,594.20	295	295
			Total per Requisition =		$ 2,314.20		

DEPARTMENT NAME: NRW PROJECT TEAM 2 — **RECEIVED BY :** John Teno
AUTHORIZED BY : Mattaus Bera for Benjimen Billy — **ISSUED BY :** George Blamoli
REQUISITION NO: 1681 — **DATE ISSUED:** 28/05/2014
JOB DESCRIPTION: Being for Meter Raising @ Kukum & Bahai Pilot Project Site.
METER I.D : S13B00377,S13B00372,S13B00371.

ITEM	Materials Description	NEW ST ORDER	Quantity ISSUED	Unit Cost	Total Cost	BIN CARD BALANCE	STOCK COUNTED
1	20mm Kent Water meter New Zealend Ltd		3	$ 329.38	$ 988.14	141	141
			Total per Requisition =		$ 988.14		

DEPARTMENT NAME: NRW PROJECT TEAM 1 — **RECEIVED BY :** Mathias Dykes
AUTHORIZED BY : Frank for Unga — **ISSUED BY :** George Blamoli
REQUISITION NO: 1682 — **DATE ISSUED:** 29/05/2014
JOB DESCRIPTION: Being for Meter Raising @ Kukum & Bahai Pilot Project Site.
METER I.D : S13B00391-398

ITEM	Materials Description	NEW ST ORDER	Quantity ISSUED	Unit Cost	Total Cost	BIN CARD BALANCE	STOCK COUNTED
1	25mm PVC compression Coupling		2	$ 28.00	$ 56.00	22	22
2	1" x 3/4" poly reduce bush		1	$ 7.29	$ 7.29	18	18
3	30 metre 20mm Poly Pipe		30	$ 15.15	$ 454.50	599	599
4	48 Metres 16mm Poly Pipe (LKP)		48	$ 9.93	$ 476.64	932	932
5	16mm Poly Coupling (LKP)		7	$ 76.00	$ 532.00	49	49
6	20mm Poly Coupling (LKP)		3	$ 78.00	$ 234.00	22	22
7	20mm Kent Water meter New Zealend Ltd		8	$ 329.38	$ 2,635.04	122	122
8	40kg bag Cement (Advance Tech)	100	2	$ 80.00	$ 160.00	94	94
9	3/4" G.I Tee		1	$ 14.00	$ 14.00	94	94
10	16mm x 3/4" Poly female Adaptor (tongs order	100	1	$ 50.00	$ 50.00	68	68
11	25mm x 20mm x 25mm Poly reduce Tee		4	$ 37.00	$ 148.00	223	223
12	60 metres 25mm Poly Pipe		60	$ 17.00	$ 1,020.00	292	292
13	25mm x 16mm Poly Reduce Coupling		1	$ 60.00	$ 60.00	14	14
			Total per Requisition =		$ 5,847.47		

DEPARTMENT NAME: NRW PROJECT TEAM 1 — **RECEIVED BY :** Mathias Dykes
AUTHORIZED BY : Frank for Eric Unga — **ISSUED BY :** Paul Seda
REQUISITION NO: 1683 — **DATE ISSUED:** 29/05/2014
JOB DESCRIPTION: Being for Meter Raising @ Kukum & Bahai Pilot Project Site.
METER I.D :

ITEM	Materials Description	NEW ST ORDER	Quantity ISSUED	Unit Cost	Total Cost	BIN CARD BALANCE	STOCK COUNTED
1	20 metre 20mm Poly Pipe		20	$ 15.15	$ 303.00	579	579
2	3/4" G.I Tee		4	$ 14.00	$ 56.00	31	31
3	3/4" G.I Nipple		4	$ 12.00	$ 48.00	36	36
4	3/4" G.I Elbow (NRW Stock) (LKP)	428	4	$ 22.00	$ 88.00	597	597
5	20mm x 1/2" female poly Adaptor (LKP)		4	$ 40.00	$ 160.00	170	170
6	1/2" G.I Nipple (LKP)		4	$ 10.00	$ 40.00	14	14
7	20mm x 20mm Poly Plain Tee		2	$ 90.00	$ 180.00	21	21
8	25mm x 3/4" Poly Male Adaptor		1	$ 48.00	$ 48.00	102	102
9	20mm x 16mm Poly reduce Coupling (LKP)		6	$ 74.00	$ 444.00	17	17
			Total per Requisition =		$ 1,367.00		

DEPARTMENT NAME: NRW PROJECT TEAM 2 — **RECEIVED BY :** Matthew Mafe
AUTHORIZED BY : Benjimen Billy — **ISSUED BY :** Paul Seda
REQUISITION NO: 1688 — **DATE ISSUED:** 30/05/2014
JOB DESCRIPTION: Being for Meter Raising @ Kukum & Bahai pilot project site.
METER I.D :

ITEM	Materials Description	NEW ST ORDER	Quantity ISSUED	Unit Cost	Total Cost	BIN CARD BALANCE	STOCK COUNTED
1	15mm Lockable Valve		5	$ 87.68	$ 438.40	594	594
2	20mm Lockable Valve		5	$ 104.54	$ 522.70	394	394
3	40kg bag Cement (Advance Tech)	100	1	$ 80.00	$ 80.00	93	93
4	32mm x 1" poly female Adaptor		1	$ 55.00	$ 55.00	8	8
5	1" x 3/4" poly reduce bush		1	$ 5.00	$ 5.00	6	6
6	16mm x 3/4" Poly male Adaptor (TONGS Order)		1	$ 28.00	$ 28.00	34	34
			Total per Requisition =		$ 1,129.10		

Summary of May

TOTAL COST	$ 116,080.19

Month of June requisition report

DEPARTMENT NAME: NRW PROJECT TEAM — **RECEIVED BY :** Dykes
AUTHORIZED BY : Benjimen Billy — **ISSUED BY :** Paul Seda
REQUISITION NO: 1691 — **DATE ISSUED: 02** /06/2014
JOB DESCRIPTION: Being for Pilot Project Site @ Kukum & Bahai site .
METER I.D :

ITEM	Materials Description	NEW ST ORDER	Quantity ISSUED	Unit Cost	Total Cost	BIN CARD BALANCE	STOCK COUNTED
1	25mm Poly Coupling (NRW)		1	$ 75.00	$ 75.00	0	0
2	25mm x 1/2" x 25mm Poly Tee		1	$ 37.00	$ 37.00	40	40
3	16mm Poly Coupling (LKP)		3	$ 76.00	$ 228.00	40	40
4	40 Metres 16mm Poly Pipe (LKP)		40	$ 9.93	$ 397.20	847m	847m
5	16mm x 1/2" male Poly Adaptor (LKP Order)	100	1	$ 54.00	$ 54.00	54	54
6	3/4" G.I Tee		6	$ 14.00	$ 84.00	25	25
7	3/4" G.I Nipple		6	$ 12.00	$ 72.00	29	29
8	20mm x 3/4" Female poly Adaptor (NRW stock	105	6	$ 68.00	$ 408.00	6	6
9	20mm x 16mm Poly reduce Coupling		6	$ 74.00	$ 444.00	9	9
12	5 metres 25mm Poly Pipe		5	$ 17.00	$ 85.00	283	283
13	20 metre 20mm Poly Pipe		20	$ 15.15	$ 303.00	558m	558m
14	40kg bag Cement (Advance Tech)	100	3	$ 80.00	$ 240.00	86	86
15	Threaded Tape (NRW Stock) (LKP)	980	5	$ 10.00	$ 50.00	1,315	1,315
			Total per Requisition =		$ 2,477.20		

DEPARTMENT NAME: NRW PROJECT TEAM — **RECEIVED BY :** John Teno

METER I.D : S13B00101 - S13B0010 (10 pics)

ITEM	Materials Description	NEW ST ORDER	Quantity ISSUED	Unit Cost	Total Cost	BIN CARD BALANCE	STOCK COUNTED
1	1/2" G.I Socket (NRW Kukum Bahai Stock)	160	4	$ 10.00	$ 40.00	150	150
2	1 metre 20mm Poly Pipe		1	$ 15.15	$ 15.15	799	799
3	32mm x 25mm Poly reduce coupling		1	$ 90.00	$ 90.00	42	42
4	25mm x 20mm x 25mm Poly reduce Tee		3	$ 37.00	$ 111.00	7	7
5	20mm x 16mm Poly reduce Coupling		3	$ 74.00	$ 222.00	36	36
6	20mm Kent Water meter New Zealend Ltd		10	$ 329.38	$ 3,293.80	157	157
7	40kg bag Cement		5	$ 80.00	$ 400.00	10	10
8	10 Metres 16mm Poly Pipe (LKP)		10	$ 9.93	$ 99.30	1150m	1150m
9	16mm x 1/2" male Poly Adaptor (LKP Order)	100	2	$ 54.00	$ 108.00	330	330
10	Threaded Tape (NRW Stock) (LKP)	980	10	$ 10.00	$ 100.00	1,339	1,339
11	32mmx 25mm x 32mm Poly reduce Tee		1	$ 47.00	$ 47.00	1	1
12	2 metres 25mm Poly Pipe		2	$ 17.00	$ 34.00	382	382
			Total per Requisition =		$ 4,560.25		

DEPARTMENT NAME: NRW PROJECT TEAM 2 — **RECEIVED BY :** Dykes
AUTHORIZED BY : Eric Unga — **ISSUED BY :** George Blamoli
REQUISITION NO: 1673 — **DATE ISSUED:** 25/05/2014
JOB DESCRIPTION: Being for Meter Raising @ Kukum & Bahai Pilot Project Site.
METER I.D : S13A00259,S13A00249,S13A00245,S13A00250,S13A00255,S13A00260,S13A00244

ITEM	Materials Description	NEW ST ORDER	Quantity ISSUED	Unit Cost	Total Cost	BIN CARD BALANCE	STOCK COUNTED
1	15mm Kent Water meter New Zealend Ltd		7	$ 318.84	$ 2,231.88	7	7
2	16mm x 1/2" male Poly Adaptor (LKP Order)	100	12	$ 54.00	$ 648.00	12	12
3	30 Metres 16mm Poly Pipe (LKP)		30	$ 9.93	$ 297.90	1120	1120
4	20mm x 16mm Poly reduce Coupling (LKP)		3	$ 74.00	$ 222.00	23	23
5	16mm Poly Coupling (LKP)		5	$ 76.00	$ 380.00	56	56
6	1/2" G.I Socket (NRW Kukum Bahai Stock)	160	6	$ 10.00	$ 60.00	109	109
			Total per Requisition =		$ 3,839.78		

DEPARTMENT NAME: NRW PROJECT TEAM 2 — **RECEIVED BY :** John Teno
AUTHORIZED BY : Benjimen Billy — **ISSUED BY :** George Blamoli
REQUISITION NO: 2370 — **DATE ISSUED:** 26/05/2014
JOB DESCRIPTION: Being for Meter Raising @ Kukum & Bahai Pilot Project Site.
METER I.D :

ITEM	Materials Description	NEW ST ORDER	Quantity ISSUED	Unit Cost	Total Cost	BIN CARD BALANCE	STOCK COUNTED
1	16mm x 1/2" male Poly Adaptor (LKP Order)	100	25	$ 54.00	$ 1,350.00	61	61
2	16mm x 16mm poly plain Tee (Tongs)		5	$ 85.00	$ 425.00	14	14
3	20 Metres 16mm Poly Pipe (LKP)		20	$ 9.93	$ 198.60	1100m	1100m
4	20 metre 20mm Poly Pipe		20	$ 15.15	$ 303.00	749m	749m
5	1/2" G.I Socket (NRW Kukum Bahai Stock)	160	5	$ 10.00	$ 50.00	145	145
6	40kg bag Cement (Advance Tech)	100	5	$ 80.00	$ 400.00	7	7
			Total per Requisition =		$ 2,726.60		

DEPARTMENT NAME: NRW PROJECT TEAM 2 — **RECEIVED BY :** Mafe
AUTHORIZED BY : Benjimen Billy — **ISSUED BY :** Paul Seda
REQUISITION NO: 1676 — **DATE ISSUED:** 27/05/2014
JOB DESCRIPTION: Being for Meter Raising @ Kukum & Bahai Pilot Project Site.
METER I.D :

ITEM	Materials Description	NEW ST ORDER	Quantity ISSUED	Unit Cost	Total Cost	BIN CARD BALANCE	STOCK COUNTED
1	30 Metres 16mm Poly Pipe (LKP)		30	$ 9.93	$ 297.90	1070m	1070m
2	3/4" G.I Socket (NRW Stock) (LKP)	105	3	$ 20.00	$ 60.00	30	30
3	3/4" G.I Elbow (NRW Stock) (LKP)	428	3	$ 22.00	$ 66.00	605	605
4	3/4" G.I Nipple		3	$ 12.00	$ 36.00	47	47
5	40kg bag Cement (Advance Tech)	100	1	$ 80.00	$ 80.00	104	104
			Total per Requisition =		$ 539.90		

DEPARTMENT NAME: NRW PROJECT TEAM 1 — **RECEIVED BY :** Selina Fai
AUTHORIZED BY : Eric Unga — **ISSUED BY :** Paul Seda
REQUISITION NO: 2371 — **DATE ISSUED:** 27/05/2014
JOB DESCRIPTION: Being for Meter Raising @ Kukum & Bahai Pilot Project Site.
METER I.D :

ITEM	Materials Description	NEW ST ORDER	Quantity ISSUED	Unit Cost	Total Cost	BIN CARD BALANCE	STOCK COUNTED
1	3/4" G.I Tee		2	$ 14.00	$ 28.00	41	41
2	20mm Poly Coupling (LKP)		2	$ 78.00	$ 156.00	26	26
3	3/4" G.I Nipple		2	$ 12.00	$ 24.00	45	45
4	Hacksaw Blade (ITA)	100	2	$ 21.00	$ 42.00	103	103
5	60 metre 20mm Poly Pipe		60	$ 15.15	$ 909.00	689m	689m
			Total per Requisition =		$ 1,159.00		

DEPARTMENT NAME: NRW PROJECT TEAM 1 — **RECEIVED BY :** Francis Hiri
AUTHORIZED BY : Frank Daukalia for Eric Unga — **ISSUED BY :** Paul Seda
REQUISITION NO: 1677 — **DATE ISSUED:** 27/05/2014
JOB DESCRIPTION: Being for Meter Raising @ Kukum & Bahai Pilot Project Site.
METER I.D : S13A00441,S13A00444 & S13B00277,S13B00376.

ITEM	Materials Description	NEW ST ORDER	Quantity ISSUED	Unit Cost	Total Cost	BIN CARD BALANCE	STOCK COUNTED
1	60 metre 20mm Poly Pipe		60	$ 15.15	$ 909.00	629m	629m
2	20mm Poly Coupling (LKP)		2	$ 78.00	$ 156.00	25	25
3	15mm Kent Water meter New Zealend Ltd		2	$ 318.84	$ 637.68	296	296
4	30 Metres 16mm Poly Pipe (LKP)		30	$ 9.93	$ 297.90	1040m	1040m
5	40kg bag Cement		5	$ 80.00	$ 400.00	102	102
6	20mm Kent Water meter New Zealend Ltd		10	$ 329.38	$ 3,293.80	145	145
			Total per Requisition =		$ 5,694.38		

DEPARTMENT NAME: NRW PROJECT TEAM 2 — **RECEIVED BY :** David .A
AUTHORIZED BY : Benjimen Billy — **ISSUED BY :** Paul Seda
REQUISITION NO: 1680 — **DATE ISSUED:** 28/05/2014
JOB DESCRIPTION: Being for Meter Raising @ Kukum & Bahai Pilot Project Site.
METER I.D : S13A00251,S13A00258,S13A00243,S13A00254,S13A00442.

S47-1-135

TOTAL COST FOR PANATINA VALLEY PILOT

	Before Countermeasure		After Countermeasure		
	Before Countermeasure	Countermeasure	After Countermeasure	Routine Activities	**Total**
Personnel Cost	45,801.45	23,301.68	11,505.15	2,192.40	**82,800.68**
Consumable	841.87	598.43	106.86	85.49	**6,032.65**
Material and Equipment	7,216.18	33,880.76	0.00	0.00	**41,096.94**
Sub Total	**53,859.50**	**57,780.86**	**11,612.01**	**2,277.89**	**129,930.26**
TOTAL	111,640.36		13,889.90		

TOTAL MAN DAYS FOR PANATINA VALLEY PILOT	**509**

AUTHORIZED BY : Benjimen Billy **ISSUED BY :** Paul Seda
REQUISITION NO: 2375 **DATE ISSUED:** 03/06/2014
JOB DESCRIPTION: Being for Meter Raising @ Kukum & Bahai Pilot Project Site.
METER I.D : .

ITEM	Materials Description	NEW ST ORDER	Quantity ISSUED	Unit Cost	Total Cost	BIN CARD BALANCE	STOCK COUNTED
1	20mm Kent Water meter New Zealend Ltd		6	$ 329.38	$ 1,976.28	109	109
2	40kg bag Cement		2	$ 80.00	$ 160.00	79	79
3	20mm Poly Coupling (LKP)		4	$ 78.00	$ 312.00	18	18
4	20 metre 20mm Poly Pipe		20	$ 15.15	$ 303.00	530m	530m
5	20 Metres 16mm Poly Pipe (LKP)		20	$ 9.93	$ 198.60	767m	767m
6	16mm Poly Coupling (LKP)		6	$ 76.00	$ 456.00	24	24
7	16mm x 1/2″ male Poly Adaptor (LKP Order)	100	36	$ 54.00	$ 1,944.00	304	304
8	15mm Galvanised Socket		3	$ 10.00	$ 30.00	106	106
		Total per Requisition =			**$ 5,379.88**		

DEPARTMENT NAME: NRW PROJECT TEAM **RECEIVED BY :** Dykes
AUTHORIZED BY : Benjimen Billy **ISSUED BY :** Paul Seda
REQUISITION NO: 1699 **DATE ISSUED:** 04/06/2014
JOB DESCRIPTION: Being for Meter Raising Pilot Project Site @ Kukum & Bahai
METER I.D : S13B00051,S13B00381,S13B00386,S13B00057,S13B00056,S13A00322,S13A00316,S13A00317,S13A00323,S13A00321 S13A00311.

ITEM	Materials Description	NEW ST ORDER	Quantity ISSUED	Unit Cost	Total Cost	BIN CARD BALANCE	STOCK COUNTED
1	15mm Kent Water meter New Zealend Ltd		5	$ 318.84	$ 1,594.20	250	250
2	20mm Kent Water meter New Zealend Ltd		6	$ 329.38	$ 1,976.28	102	102
3	1/2″ G.I Elbow (NRW Stock)	460	8	$ 10.00	$ 80.00	8	8
4	1/2″ G.I Nipple (LKP)		8	$ 10.00	$ 80.00	6	6
5	20mm x 3/4″ Poly male Adaptor (TONGs orde	100	6	$ 35.00	$ 210.00	85	85
6	20 metre 20mm Poly Pipe		20	$ 15.15	$ 303.00	507m	507m
7	20 Metres 16mm Poly Pipe (LKP)		20	$ 9.93	$ 198.60	647m	647m
8	40kg bag Cement		1	$ 80.00	$ 80.00	78	78
9	20mm Poly Coupling (LKP)		4	$ 78.00	$ 312.00	14	14
10	20mm x 16mm Poly reduce Coupling (LKP NRW)		4	$ 74.00	$ 296.00	20	20
11	16mm Poly Coupling (LKP)		4	$ 76.00	$ 304.00	10	10
		Total per Requisition =			**$ 5,434.08**		

DEPARTMENT NAME: NRW PROJECT TEAM **RECEIVED BY :** Mafe
AUTHORIZED BY : Eric Unga **ISSUED BY :** Paul Seda
REQUISITION NO: 2378 **DATE ISSUED:** 05/06/2014
JOB DESCRIPTION: Being for meter raising @ Kukum and Bahai Pilot Project Site
METER I.D : S13A00333,S13A00331,S13A00332.

ITEM	Materials Description	NEW ST ORDER	Quantity ISSUED	Unit Cost	Total Cost	BIN CARD BALANCE	STOCK COUNTED
1	15mm Kent Water meter New Zealend Ltd		3	$ 318.84	$ 956.52	236	236
2	30 Metres 16mm Poly Pipe (LKP)		30	$ 9.93	$ 297.90	477	477
3	40kg bag Cement		1	$ 80.00	$ 80.00	75	75
		Total per Requisition =			**$ 1,334.42**		

DEPARTMENT NAME: NRW PROJECT TEAM **RECEIVED BY :** Mafe
AUTHORIZED BY : Benjimen Billy **ISSUED BY :** George Blamoli
REQUISITION NO: 2483 **DATE ISSUED: 19** /07/2014
JOB DESCRIPTION: Being for meter raising @ Kukum/Bahai Pilot project site.
METER I.D : S13B00119,S13B00362,S13B00369,S13B 00363,S13B00370,S13B00364

ITEM	Materials Description	NEW ST ORDER	Quantity ISSUED	Unit Cost	Total Cost	BIN CARD BALANCE	STOCK COUNTED
1	20mm Kent Water meter New Zealend Ltd		7	$ 329.38	$ 2,305.66	21	21
2	20mm x 20mm Poly Coupling (Tongs order)	100	4	$ 50.00	$ 200.00	64	64
3	40kg bag Cement (Advance Tech)	100	3	$ 80.00	$ 240.00	31	31
4	30 metres 20mm Poly Pipe		30	$ 15.50	$ 465.00	154m	154m
5	20mm x 16mm Poly Reduce Coupling		5	$ 60.00	$ 300.00	73	73
6	20mm x 3/4″ Poly female Adaptor (TONGs order)		4	$ 40.00	$ 160.00	131	131
7	20mm x 3/4″ Poly male Adaptor (TONGs orde	100	4	$ 35.00	$ 140.00	95	95
8	5 metres 16mm Poly Pipe(LKP Order Stores)	3 Rolls	5	$ 9.93	$ 49.65	345m	345m
9	Threaded Tape (NRW order)		10	$ 10.00	$ 100.00	1235	1235
		Total per Requisition =			**$ 3,960.31**		

Total Material Cost for Kukum Bahai	**$ 180,944.38**

1. Costing Before Countermeasure

Location **Panatina Valley**

per day

Items	Specification	Quantity	Unit	Hourly Rate	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
1. Personnel	Grades- Steps								
Staff-3	3.1	0	Person	15.85	118.88				
	3.2	0	Person	16.37	122.78				
	3.3	0	Person	16.90	126.75				
	3.4	0	Person	17.43	130.73				
	3.5	0	Person	17.96	134.70				
Staff-4	4.1	40	Person	19.81	148.58	108.00		16,046.10	
	4.2	10	Person	20.60	154.50	27.00		4,171.50	
	4.3	0	Person	21.39	160.43			0.00	
	4.4	0	Person	22.18	166.35			0.00	
	4.5	10	Person	22.98	172.35	27.00		4,653.45	
Staff-5	5.1	10	Person	24.83	186.23	27.00		5,028.08	
	5.2	0	Person	25.88	194.10			0.00	
	5.3	0	Person	26.94	202.05			0.00	
	5.4	0	Person	27.99	209.93			0.00	
	5.5	0	Person	29.05	217.88	0.00		0.00	
Staff-6	6.1	1	Person	32.48	243.60	2.00		487.20	
	6.2	1	Person	33.81	253.58	1.00		253.58	
	6.3	0	Person	35.13	263.48			0.00	
	6.4	0	Person	36.45	273.38			0.00	
	6.5	0	Person	37.77	283.28			0.00	
Staff-7	7.1	9	Person	39.62	297.15	20.00		5,943.00	
	7.2	0	Person	40.94	307.05			0.00	
	7.3	0	Person	42.26	316.95			0.00	
	7.4	0	Person	43.58	326.85			0.00	
	7.5	0	Person	44.90	336.75			0.00	
Staff-8	8.1	0	Person	49.39	370.43			0.00	
	8.2	0	Person	50.71	380.33			0.00	
	8.3	0	Person	52.03	390.23			0.00	
	8.4	0	Person	53.35	400.13			0.00	
	8.5	7	Person	54.67	410.03	17.00		6,970.43	
Staff-9	9.1	1	Person	59.95	449.63	5.00		2,248.13	
	9.2	0	Person	61.27	459.53			0.00	
	9.3	0	Person	62.59	469.43			0.00	
	9.4	0	Person	63.91	479.33			0.00	
	9.5	0	Person	65.23	489.23			0.00	
Sub-total						**234.00**		**45,801.45**	
2. Consumable				$ Per Liter	L/km		$/km		
Diesel	For Excavator	72	Liter	11.80	0.3620		4.2716	307.56	50km/7km/liter=7.14liter 11liter/hrs (fuel consumption for about 60PS) x 1hr=11liter
Diesel	For Pick-up	300	Liter	11.80	0.1428	42.8400	1.68504	505.51	50km/7km/liter=7.14liter/5
Engine Oil	For Excavator	0	Liter	60.00	0.0016		0.096	0.00	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/
Engine Oil	For Pick-up	300	Liter	60.00	0.0016		0.096	28.80	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/
Tires		0	Nos	770.00	0.0014		1.078	0.00	50km x 252days=12,600km 12,600km/ 30,000km x 4nos=1.68nos 1.68nos/
Sub-total								**841.87**	
3. Material & Equipment									
Sluice/ Gate Valve	25mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	40mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	50mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	80mm		piece		2,432.00			0.00	Sluice Valve
Sluice/ Gate Valve	100mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	150mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	200mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	250mm		piece					0.00	Sluice Valve225mm
Sluice/ Gate Valve	300mm		piece					0.00	
Pipes (Poly)	15mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	20mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	25mm		coil					0.00	Length on 1 coil =200m

Items	Specification	Quantity	Unit	Hourly Rate	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
Pipes (Poly)	50mm		coil					0.00	Length on 1 coil =150m
Pipes (PVC)	25mm		piece					0.00	
Pipes (PVC)	50mm		piece					0.00	
Pipes (PVC)	80mm		piece					0.00	
Pipes (PVC)	100mm		piece					0.00	
Pipes (PVC)	150mm		piece					0.00	
Pipes (PVC)	200mm		piece					0.00	
Pipes (PVC)	250mm		piece					0.00	
Pipes (PVC)	300mm		piece					0.00	
Water Meter	10mm		piece					0.00	
Water Meter	16mm		piece					0.00	
Water Meter	20mm		piece					0.00	
Water Meter	25mm		piece					0.00	
Water Meter	32mm		piece					0.00	
Water Meter	40mm		piece					0.00	
All Materials for Countermeasures								7,216.18	
Sub-total								**7,216.18**	
Total								**53,859.50**	

1AUD=6.534SBD was applied to the above (rate as of 30 September, 2013 of Oanda).

2. Costing Countermeasure

Location **iATINA VALLEY**

per day

Items	Specification	Quantity	Unit	Hourly Rate	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
1. Personnel	Grades- Steps								
Staff-3	3.1	0	Person	15.85	118.88				
	3.2	0	Person	16.37	122.78				
	3.3	0	Person	16.90	126.75				
	3.4	0	Person	17.43	130.73				
	3.5	0	Person	17.96	134.70				
Staff-4	4.1	14	Person	19.81	148.58	45.00		6,685.88	
	4.2	4	Person	20.60	154.50	8.00		1,236.00	
	4.3	0	Person	21.39	160.43			0.00	
	4.4	0	Person	22.18	166.35			0.00	
	4.5	3	Person	22.98	172.35	7.00		1,206.45	
Staff-5	5.1	4	Person	24.83	186.23	23.00		4,283.18	
	5.2	0	Person	25.88	194.10			0.00	
	5.3	0	Person	26.94	202.05			0.00	
	5.4	0	Person	27.99	209.93			0.00	
	5.5	1	Person	29.05	217.88	1.00		217.88	
Staff-6	6.1	1	Person	32.48	243.60	1.00		243.60	
	6.2	0	Person	33.81	253.58			0.00	
	6.3	0	Person	35.13	263.48			0.00	
	6.4	0	Person	36.45	273.38			0.00	
	6.5	0	Person	37.77	283.28			0.00	
Staff-7	7.1	2	Person	39.62	297.15	4.00		1,188.60	
	7.2	0	Person	40.94	307.05			0.00	
	7.3	0	Person	42.26	316.95			0.00	
	7.4	0	Person	43.58	326.85			0.00	
	7.5	0	Person	44.90	336.75			0.00	
Staff-8	8.1	0	Person	49.39	370.43			0.00	
	8.2	0	Person	50.71	380.33			0.00	
	8.3	0	Person	52.03	390.23			0.00	
	8.4	0	Person	53.35	400.13			0.00	
	8.5	2	Person	54.67	410.03	4.00		1,640.10	
Staff-9	9.1	0	Person	59.95	449.63			0.00	
	9.2	0	Person	61.27	459.53			0.00	
	9.3	0	Person	62.59	469.43			0.00	
	9.4	0	Person	63.91	479.33			0.00	
	9.5	0	Person	65.23	489.23			0.00	
Contractors								$ 6,600.00	
Sub-total						**93.00**		**23,301.68**	
2. Consumable				$ Per Liter	L/km		$/km		
Diesel	For Excavator	0	Liter	11.80	0.3620		4.2716	0.00	50km/7km/liter=7.14liter 11liter/hrs (fuel consumption for about 60PS) x 1hr=11liter
Diesel	For Pick-up	336	Liter	11.80	0.1428	47.9808	1.68504	566.12	50km/7km/liter=7.14liter/
Engine Oil	For Excavator	0	Liter	60.00	0.0016		0.096	0.00	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/
Engine Oil	For Pick-up	336	Liter	60.00	0.0016		0.096	32.26	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/
Tires		0	Nos	770.00	0.0014		1.078	0.00	50km x 252days=12,600km 12,600km/ 30,000km x 4nos=1.68nos 1.68nos/ 252days=0.07nos/50km
Sub-total								**598.43**	
3. Material & Equipment									
Sluice/ Gate Valve	25mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	40mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	50mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	80mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	100mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	150mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	200mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	250mm		piece					0.00	Sluice Valve225mm
Sluice/ Gate Valve	300mm		piece					0.00	
Pipes (Poly)	15mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	20mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	25mm		coil					0.00	Length on 1 coil =200m
Pipes (Poly)	50mm		coil					0.00	Length on 1 coil =150m
Pipes (PVC)	25mm		piece					0.00	
Pipes (PVC)	50mm		piece					0.00	
Pipes (PVC)	80mm		piece					0.00	
Pipes (PVC)	100mm		piece					0.00	

Items	Specification	Quantity	Unit	Hourly Rate	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
Pipes (PVC)	150mm		piece					0.00	
Pipes (PVC)	200mm		piece					0.00	
Pipes (PVC)	250mm		piece					0.00	
Pipes (PVC)	300mm		piece					0.00	
Water Meter	10mm		piece					0.00	
Water Meter	16mm		piece					0.00	
Water Meter	20mm		piece					0.00	
Water Meter	25mm		piece					0.00	
Water Meter	32mm		piece					0.00	
Water Meter	40mm		piece					0.00	
All Materials for Countermeasures								33,880.76	
Sub-total								**33,880.76**	
Total								**57,780.86**	

1AUD=6.534SBD was applied to the above (rate as of 30 September, 2013 of Oanda).

3. Costing After Countermeasure

Location **VATINA VALLEY**

per day

Items	Specification	Quantity	Unit	Hourly Rate	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
1. Personnel	Grades- Steps								
Staff-3	3.1	0	Person	15.85	118.88				
	3.2	0	Person	16.37	122.78				
	3.3	0	Person	16.90	126.75				
	3.4	0	Person	17.43	130.73				
	3.5	0	Person	17.96	134.70				
Staff-4	4.1	12	Person	19.81	148.58	20.00		2,971.50	
	4.2	3	Person	20.60	154.50	5.00		772.50	
	4.3	0	Person	21.39	160.43			0.00	
	4.4	0	Person	22.18	166.35			0.00	
	4.5	3	Person	22.98	172.35	5.00		861.75	
Staff-5	5.1	3	Person	24.83	186.23	5.00		931.13	
	5.2	0	Person	25.88	194.10			0.00	
	5.3	0	Person	26.94	202.05			0.00	
	5.4	0	Person	27.99	209.93			0.00	
	5.5	0	Person	29.05	217.88			0.00	
Staff-6	6.1	0	Person	32.48	243.60			0.00	
	6.2	0	Person	33.81	253.58			0.00	
	6.3	0	Person	35.13	263.48			0.00	
	6.4	0	Person	36.45	273.38			0.00	
	6.5	0	Person	37.77	283.28			0.00	
Staff-7	7.1	3	Person	39.62	297.15	7.00		2,080.05	
	7.2	0	Person	40.94	307.05			0.00	
	7.3	0	Person	42.26	316.95			0.00	
	7.4	0	Person	43.58	326.85			0.00	
	7.5	0	Person	44.90	336.75			0.00	
Staff-8	8.1	0	Person	49.39	370.43			0.00	
	8.2	0	Person	50.71	380.33			0.00	
	8.3	0	Person	52.03	390.23			0.00	
	8.4	0	Person	53.35	400.13			0.00	
	8.5	2	Person	54.67	410.03	4.00		1,640.10	
Staff-9	9.1	1	Person	59.95	449.63	5.00		2,248.13	
	9.2	0	Person	61.27	459.53			0.00	
	9.3	0	Person	62.59	469.43			0.00	
	9.4	0	Person	63.91	479.33			0.00	
	9.5	0	Person	65.23	489.23			0.00	
Sub-total						**51.00**		**11,505.15**	
2. Consumable				$ Per Liter	L/km		$/km		
Diesel	For Excavator	0	Liter	11.80	0.3620		4.2716	0.00	50km/7km/liter=7.14liter 11liter/hrs (fuel consumption for about 60PS) x 1hr=11liter
Diesel	For Pick-up	60	Liter	11.80	0.1428	8.5680	1.68504	101.10	50km/7km/liter=7.14liter/
Engine Oil	For Excavator	0	Liter	60.00	0.0016		0.096	0.00	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50k
Engine Oil	For Pick-up	60	Liter	60.00	0.0016		0.096	5.76	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50k
Tires		0	Nos	770.00	0.0014		1.078	0.00	50km x 252days=12,600km 12,600km/ 30,000km x 4nos=1.68nos 1.68nos/
Sub-total								**106.86**	
3. Material & Equipment									
Sluice/ Gate Valve	25mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	40mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	50mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	80mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	100mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	150mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	200mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	250mm		piece					0.00	Sluice Valve225mm

Items	Specification	Quantity	Unit	Hourly Rate	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
Sluice/ Gate Valve	300mm		piece					0.00	
Pipes (Poly)	15mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	20mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	25mm		coil					0.00	Length on 1 coil =200m
Pipes (Poly)	50mm		coil					0.00	Length on 1 coil =150m
Pipes (PVC)	25mm		piece					0.00	
Pipes (PVC)	50mm		piece					0.00	
Pipes (PVC)	80mm		piece					0.00	
Pipes (PVC)	100mm		piece					0.00	
Pipes (PVC)	150mm		piece					0.00	
Pipes (PVC)	200mm		piece					0.00	
Pipes (PVC)	250mm		piece					0.00	
Pipes (PVC)	300mm		piece					0.00	
Water Meter	10mm		piece					0.00	
Water Meter	16mm		piece					0.00	
Water Meter	20mm		piece					0.00	
Water Meter	25mm		piece					0.00	
Water Meter	32mm		piece					0.00	
Water Meter	40mm		piece					0.00	
All Materials for Countermeasures								0.00	
Sub-total								**0.00**	
Total								**11,612.01**	

1AUD=6.534SBD was applied to the above (rate as of 30 September, 2013 of Oanda).

4. Routine Activities

Location **PANATINA VALLEY**

per day

Items	Specification	Quantity	Unit	Hourly Rate	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
1. Personnel	Grades- Steps								
Staff-3	3.1	0	Person	15.85	118.88				
	3.2	0	Person	16.37	122.78				
	3.3	0	Person	16.90	126.75				
	3.4	0	Person	17.43	130.73				
	3.5	0	Person	17.96	134.70				
Staff-4	4.1	0	Person	19.81	148.58			0.00	
	4.2	0	Person	20.60	154.50			0.00	
	4.3	0	Person	21.39	160.43			0.00	
	4.4	0	Person	22.18	166.35			0.00	
	4.5	0	Person	22.98	172.35			0.00	
Staff-5	5.1	0	Person	24.83	186.23			0.00	
	5.2	0	Person	25.88	194.10			0.00	
	5.3	0	Person	26.94	202.05			0.00	
	5.4	0	Person	27.99	209.93			0.00	
	5.5	0	Person	29.05	217.88			0.00	
Staff-6	6.1	3	Person	32.48	243.60	9.00		2,192.40	
	6.2	0	Person	33.81	253.58			0.00	
	6.3	0	Person	35.13	263.48			0.00	
	6.4	0	Person	36.45	273.38			0.00	
	6.5	0	Person	37.77	283.28			0.00	
Staff-7	7.1	0	Person	39.62	297.15			0.00	
	7.2	0	Person	40.94	307.05			0.00	
	7.3	0	Person	42.26	316.95			0.00	
	7.4	0	Person	43.58	326.85			0.00	
	7.5	0	Person	44.90	336.75			0.00	
Staff-8	8.1	0	Person	49.39	370.43			0.00	
	8.2	0	Person	50.71	380.33			0.00	
	8.3	0	Person	52.03	390.23			0.00	
	8.4	0	Person	53.35	400.13			0.00	
	8.5	0	Person	54.67	410.03			0.00	
Staff-9	9.1	0	Person	59.95	449.63			0.00	
	9.2	0	Person	61.27	459.53			0.00	
	9.3	0	Person	62.59	469.43			0.00	
	9.4	0	Person	63.91	479.33			0.00	
	9.5	0	Person	65.23	489.23			0.00	
Sub-total						**9.00**		**2,192.40**	
2. Consumable				$ Per Liter	L/km		$/km		
Diesel	For Excavator	0	Liter	11.80	0.3620		4.2716	0.00	50km/7km/liter=7.14liter 11liter/hrs (fuel consumption for about 60PS) x 1hr=11liter 11liter +7.1liter=18.1liter/50km
Diesel	For Pick-up	48	Liter	11.80	0.1428	6.8544	1.68504	80.88	50km/7km/liter=7.14liter/50km
Engine Oil	For Excavator	0	Liter	60.00	0.0016		0.096	0.00	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Engine Oil	For Pick-up	48	Liter	60.00	0.0016		0.096	4.61	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Tires		0	Nos	770.00	0.0014		1.078	0.00	50km x 252days=12,600km 12,600km/ 30,000km x 4nos=1.68nos 1.68nos/ 252days=0.07nos/50km
Sub-total								**85.49**	
3. Material &									
Sluice/ Gate Valve	25mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	40mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	50mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	80mm		piece					0.00	Sluice Valve

Sluice/ Gate Valve	100mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	150mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	200mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	250mm		piece					0.00	Sluice Valve225mm AUD1785
Sluice/ Gate Valve	300mm		piece					0.00	
Pipes (Poly)	15mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	20mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	25mm		coil					0.00	Length on 1 coil =200m
Pipes (Poly)	50mm		coil					0.00	Length on 1 coil =150m
Pipes (PVC)	25mm		piece					0.00	
Pipes (PVC)	50mm		piece					0.00	
Pipes (PVC)	80mm		piece					0.00	
Pipes (PVC)	100mm		piece					0.00	
Pipes (PVC)	150mm		piece					0.00	
Pipes (PVC)	200mm		piece					0.00	
Pipes (PVC)	250mm		piece					0.00	
Pipes (PVC)	300mm		piece					0.00	
Water Meter	10mm		piece					0.00	
Water Meter	16mm		piece					0.00	
Water Meter	20mm		piece					0.00	
Water Meter	25mm		piece					0.00	
Water Meter	32mm		piece					0.00	
Water Meter	40mm		piece					0.00	
All Materials for Countermeasures								0.00	
Sub-total								**0.00**	
Total								**2,277.89**	

1AUD=6.534SBD was applied to the above (rate as of 30 September, 2013 of Oanda).

DEPARTMENT NAME: NRW PROJECT TEAM — **RECEIVED BY :** Eric Unga
RECOMMENDED BY : Eric Unga — **ISSUED BY:** George Blamoli
REQUISITION NO: 2335 — **DATE ISSUED:** 14/02/2014
JOB DESCRIPTION: Being for NRW Pilot Site for Test Preparation /set up @ Panatina Valley

ITEM	Materials Description	NEW S' ORDER	Quantity ISSUED	Unit Cost	Total Cost	BIN CARD BALANCE	STOCK COUNTED
1	75mm (80 mm)Sluice Valve		1	$ 2,432.00	$ 2,432.00	1	1
2	75mm(80 mm) DI socket Flange (JICA order)		2	$ 636.73	$ 1,273.46	6	6
3	75mm(80 mm) Gilbault Joint (JICA order)		1	$ 659.20	$ 659.20	3	3
4	80mm x 3/4 Brass Tapping Band		1	$ 234.00	$ 234.00	17	17
5	20mm x 15mm reduce nipple		1	$ 14.00	$ 14.00	53	53
6	15mm Stop Cock (Last year Order,Tongs)	600	1	$ 95.00	$ 95.00	621	621
7	ThreadTape		1	$ 4.00	$ 4.00	399	399
8	2Kg Pipe Lubricant		1	329.86	$ 329.86	10	10
9	set 80mm Gaskets,Bolts & Nuts		2	$ 134.83	$ 269.66	24	24
				Total per Requisition =	**$ 5,311.18**		

DEPARTMENT NAME: NRW PROJECT TEAM — **RECEIVED BY :** John Teno
RECOMMENDED BY : Vincent Lui — **ISSUED BY:** George Blamoli
REQUISITION NO: 0783 — **DATE ISSUED:** 28/03/2014
JOB DESCRIPTION: Materials to be used @ Panatina Pilot Project site

ITEM	Materials Description	NEW S' ORDER	Quantity ISSUED	Unit Cost	Total Cost	BIN CARD BALANCE	STOCK COUNTED
1	80mm Brass Gate Valve (NRW Stock)		1	$ 775.00	$ 775.00	2	2
2	50mm Brass Gate Valve		1	$ 320.00	$ 320.00	25	25
3	1 1/4" Brass Gate Valve		2	$ 180.00	$ 360.00	2	2
4	80mm x 3" PVC male Adaptor		2	$ 77.00	$ 154.00	10	10
5	50mm x 2" poly male Adaptor		2	$ 38.00	$ 76.00	49	49
6	32mm x 1 1/4" poly male Adaptor		4	$ 55.00	$ 220.00	7	7
				Total per Requisition =	**$ 1,905.00**		

DEPARTMENT NAME: NRW PROJECT TEAM 2 — **RECEIVED BY :** John Chede
AUTHORIZED BY : Chris Meriko — **ISSUED BY :** Paul Seda
REQUISITION NO: 1668 — **DATE ISSUED:** 16/05/2014
JOB DESCRIPTION: Being for Meter raising @ Panatina Pilot Project Site .

ITEM	Materials Description	NEW S' ORDER	Quantity ISSUED	Unit Cost	Total Cost	BIN CARD BALANCE	STOCK COUNTED
1	15mm Stop Tap (Tongs order)	100	10	$ 95.00	$ 950.00	91	91
2	500mm x 1/2" threaded Galvanised pipe (LK	640	40	$ 71.00	$ 2,840.00	347	347
3	200mm x 1/2" threaded Galvanised pipe (LI	320	20	$ 53.60	$ 1,072.00	388	388
4	1/2" G.I Socket (NRW Mbua valley Stock)	160	15	$ 10.00	$ 150.00	62	62
5	1/2" G.I Elbow (NRW Stock)	460	50	$ 10.00	$ 500.00	407	407
6	16mm x 1/2" Poly female Adaptor (NRW stc	LKP	40	$ 54.00	$ 2,160.00	237	237
				Total per Requisition =	**$ 7,672.00**		

DEPARTMENT NAME: NRW PROJECT TEAM 1 — **RECEIVED BY :** David Akwa'asi
AUTHORIZED BY : Vincent Lui for Silas Talosui — **ISSUED BY :** George Blamoli
REQUISITION NO: 1671 — **DATE ISSUED:** 22/05/2014
JOB DESCRIPTION: Being for brasing of Meter Stand for Kukum & Bahai,Mbua Valley,Panatina and Naha Pilot Project Site

ITEM	Materials Description	NEW S' ORDER	Quantity ISSUED	Unit Cost	Total Cost	BIN CARD BALANCE	STOCK COUNTED
1	10mm Reinforce Steel Rod		120	$ 45.50	$ 5,460.00	0	0
2	Hack Saw Blade (ITA)		4	$ 21.00	$ 84.00	106	106
				Total per Requisition =	**$ 5,544.00**		

Summary of May

TOTAL COST	$ 20,432.18

Month of June requisition report

DEPARTMENT NAME: NRW PROJECT TEAM — **RECEIVED BY :** John Teno
AUTHORIZED BY : Benjimen Billy — **ISSUED BY :** Paul Seda
REQUISITION NO: 1692 — **DATE ISSUED: 02** /06/2014
JOB DESCRIPTION: Being for Panatina Pilot Project Site .
METER I.D : S13A00547,S13A00548,S13A00545,S13A00549,S13A00550,S13A00546,S13A00544,S13A00551,S13A552,S13A00553

ITEM	Materials Description	NEW S' ORDER	Quantity ISSUED	Unit Cost	Total Cost	BIN CARD BALANCE	STOCK COUNTED
1	40 Metres 16mm Poly Pipe (LKP)		40	$ 9.93	$ 397.20	887m	887m

2	15mm Kent Water meter New Zealend Ltd		10	$ 318.84	$ 3,188.40	270	270
3	16mm Poly Coupling (LKP)		6	$ 76.00	$ 456.00	43	43
4	16mm x 1/2" male Poly Adaptor (LKP Orde	100	4	$ 54.00	$ 216.00	322	322
5	Threaded Tape (NRW Stock) (LKP)	980	10	$ 10.00	$ 100.00	1,320	1,320
6	16mm x 3/4" Poly female Adaptor (tongs or	100	2	$ 50.00	$ 100.00	63	63
7	20mm x 16mm Poly reduce Coupling (TONGS,Stor		2	$ 56.00	$ 112.00	15	15
8	20mm x 16mm Poly reduce Coupling (LKP NRW)		2	$ 74.00	$ 148.00	25	25
9	25mm x 16mm Poly Reduce Coupling		1	$ 60.00	$ 60.00	23	23
10	40kg bag Cement (Advance Tech)	100	3	$ 80.00	$ 240.00	86	86
		Total per Requisition =			$ 5,017.60		

DEPARTMENT NAME: NRW PROJECT TEAM **RECEIVED BY :** Liston Tora
AUTHORIZED BY : Vincent Lui **ISSUED BY :** Paul Seda
REQUISITION NO: 1866 **DATE ISSUED:** 02/06/2014
JOB DESCRIPTION: Being for Pilot Project Test Site @ Panatina.
METER I.D :

ITEM	Materials Description	NEW S ORDER	Quantity ISSUED	Unit Cost	Total Cost	BIN CARD BALANCE	STOCK COUNTED
1	50mm(2") G.I Plug	60	1	$ 14.00	$ 14.00	27	27
		Total per Requisition =			$ 14.00		

DEPARTMENT NAME: NRW PROJECT TEAM **RECEIVED BY :** Francis Hiri
AUTHORIZED BY : Frank Daukali **ISSUED BY :** Paul Seda
REQUISITION NO: 1693 **DATE ISSUED:** 02/06/2014
JOB DESCRIPTION: Being for Pilot Project Test Site @ Panatina.
METER I.D :

ITEM	Materials Description	NEW S ORDER	Quantity ISSUED	Unit Cost	Total Cost	BIN CARD BALANCE	STOCK COUNTED
1	32mm x 20mm x 32mm Poly Tee		1	$ 70.00	$ 70.00	47	47
2	16mm Poly Coupling (LKP)		2	$ 76.00	$ 152.00	30	30
3	5 metre 20mm Poly Pipe		5	$ 15.15	$ 75.75	550m	550m
4	3/4" G.I Tee		1	$ 14.00	$ 14.00	24	24
5	16mm x 3/4" Male Poly Adaptor (TONGS o	100	2	$ 28.00	$ 56.00	30	30
6	20mm x 3/4" Poly male Adaptor (TONGs or	100	1	$ 35.00	$ 35.00	11	11
		Total per Requisition =			$ 402.75		

DEPARTMENT NAME: NRW PROJECT TEAM **RECEIVED BY :** John Teno
AUTHORIZED BY : Benjimen Billy **ISSUED BY :** George Blamoli
REQUISITION NO: 1695 **DATE ISSUED:** 03/06/2014
JOB DESCRIPTION: Being for Meter Raising @ Panatina Pilot Project Site.
METER I.D : S13A00376-380 (4 pics),S13A00372- 375 (4 pics),S13A00362-65(3pics),S13A00367-70 (4 pics).

ITEM	Materials Description	NEW S ORDER	Quantity ISSUED	Unit Cost	Total Cost	BIN CARD BALANCE	STOCK COUNTED
1	15mm Kent Water meter New Zealend Ltd		15	$ 318.84	$ 4,782.60	265	265
2	16mm x 1/2" male Poly Adaptor (LKP Orde	100	10	$ 54.00	$ 540.00	310	310
3	30 Metres 16mm Poly Pipe (LKP)		30	$ 9.93	$ 297.90	787m	787m
4	15mm Galvanised Socket		5	$ 10.00	$ 50.00	139	139
5	40kg bag Cement		2	$ 80.00	$ 160.00	81	81
6	Threaded Tape (NRW Stock) (LKP)	980	5	$ 10.00	$ 50.00	1310m	1310m
		Total per Requisition =			$ 5,880.50		

DEPARTMENT NAME: NRW PROJECT TEAM **RECEIVED BY :** John Teno
AUTHORIZED BY : Benjimen Billy **ISSUED BY :** Paul Seda
REQUISITION NO: 1698 **DATE ISSUED:** 03/06/2014
JOB DESCRIPTION: Being for Pilot Project Site @ Panatina.
METER I.D : .

ITEM	Materials Description	NEW S ORDER	Quantity ISSUED	Unit Cost	Total Cost	BIN CARD BALANCE	STOCK COUNTED
1	80mm x 1" brass Tapping band/saddle		1	$ 401.00	$ 401.00	6	6
2	20mm x 3/4" Poly male Adaptor (TONGs or	100	1	$ 35.00	$ 35.00	89	89
3	3 metre 20mm Poly Pipe		3	$ 15.15	$ 45.45	527m	527m
4	16mm Poly Coupling (LKP)		2	$ 76.00	$ 152.00	22	22
5	20mm x 16mm Poly reduce Coupling (LKP NRW)		1	$ 74.00	$ 74.00	24	24
		Total per Requisition =			$ 707.45		

1	20 metres 16mm Poly Pipe(LKP Order Stor	3 Rolls	20	$ 9.93	$ 198.60	220m	220m
2	10 metres 20mm Poly Pipe		10	$ 15.50	$ 155.00	39m	39m
3	15mm Water Meter (JICA order)		8	$ 234.00	$ 1,872.00	574	574
4	20mm x 16mm Poly Reduce Coupling		6	$ 60.00	$ 360.00	46	46
		Total per Requisition =			$ 2,585.60		

DEPARTMENT NAME: NRW PROJECT TEAM **RECEIVED BY :** John Chede
AUTHORIZED BY : Benjimen Billy **ISSUED BY :** Paul Seda
REQUISITION NO: 1713 **DATE ISSUED:** 25/07/2014
JOB DESCRIPTION: Being required for Meter raising @ Panatina Pilot project Site .
METER I.D : .

ITEM	Materials Description	NEW S ORDER	Quantity ISSUED	Unit Cost	Total Cost	BIN CARD BALANCE	STOCK COUNTED
1	20mm x 16mm Poly Reduce Coupling		2	$ 60.00	$ 120.00	43	43
2	25mm x 20mm Poly reduce Coupling		2	$ 60.00	$ 120.00	22	22
		Total per Requisition =			$ 240.00		

Total Material Costing for Panatina Valley Pilot	**$ 50,150.90**
	$ 41,096.94

DEPARTMENT NAME: NRW PROJECT TEAM **RECEIVED BY :** Francis Hiri
AUTHORIZED BY : Benjimen Billy **ISSUED BY :** Paul Seda
REQUISITION NO: 1700 **DATE ISSUED:** 04/06/2014
JOB DESCRIPTION: Being for Panatina Valley Pilot Project Site
METER I.D :

ITEM	Materials Description	NEW S ORDER	Quantity ISSUED	Unit Cost	Total Cost	BIN CARD BALANCE	STOCK COUNTED
1	70 Metres 16mm Poly Pipe (LKP)		70	$ 9.93	$ 695.10	667m	667m
2	16mm x 1/2" male Poly Adaptor (LKP Orde	100	6	$ 54.00	$ 324.00	298	298
3	40kg bag Cement		1	$ 80.00	$ 80.00	77	77
4	16mm Poly Coupling (LKP)		5	$ 76.00	$ 380.00	130	130
5	15mm Galvanised Socket		8	$ 10.00	$ 80.00	130	130
		Total per Requisition =			$ 1,559.10		

DEPARTMENT NAME: NRW PROJECT TEAM **RECEIVED BY :** John Teno
AUTHORIZED BY : Benjimen Billy **ISSUED BY :** George Blamoli
REQUISITION NO: 1697 **DATE ISSUED:** 05/06/2014
JOB DESCRIPTION: Being for meter raising @ Panatina Pilot Project Site
METER I.D : S13B00100,S13A00401,S13A00336,S13A00337,S13A00338,S13A00334,S13A00399,S13A00340

ITEM	Materials Description	NEW S ORDER	Quantity ISSUED	Unit Cost	Total Cost	BIN CARD BALANCE	STOCK COUNTED
1	20mm Kent Water meter New Zealend Ltd		1	$ 329.38	$ 329.38	97	97
2	15mm Kent Water meter New Zealend Ltd		7	$ 318.84	$ 2,231.88	222	222
3	30 Metres 16mm Poly Pipe (LKP)		50	$ 9.93	$ 496.50	547m	547m
4	40kg bag Cement		2	$ 80.00	$ 160.00	70	70
5	16mm x 1/2" male Poly Adaptor (LKP Orde	100	8	$ 54.00	$ 432.00	284	284
6	15mm Galvanised Socket		6	$ 10.00	$ 60.00	120	120
		Total per Requisition =			$ 3,709.76		

DEPARTMENT NAME: NRW PROJECT TEAM **RECEIVED BY :** Selina Fai
AUTHORIZED BY : Vincent Lui **ISSUED BY :** Paul Seda
REQUISITION NO: 2396 **DATE ISSUED:** 12/07/2014
JOB DESCRIPTION: Being for Bulk Site Testing @ Lengakiki & Panatina .
METER I.D : 07- 001578 & SN-10-4176

ITEM	Materials Description	NEW S ORDER	Quantity ISSUED	Unit Cost	Total Cost	BIN CARD BALANCE	STOCK COUNTED
1	150mm Bulk Water Meter		1	$ 1,101.00	$ 1,101.00	5	5
2	150mm Flange Gibault Adaptor(NZ stock)		2	$ 796.29	$ 1,592.58	7	7
3	150mm Gibault Coupling		2	$ 497.00	$ 994.00	15	15
4	80mm Bulk Water Meter		1	$ 3,317.00	$ 3,317.00	6	6
5	80mm Flange Gibault Adaptor(NZ stock)		2	$ 500.00	$ 1,000.00	8	8
6	80mm Flange Gibault Coupling(NZ stock)		2	$ 524.69	$ 1,049.38	2	2
		Total per Requisition =			$ 9,053.96		

DEPARTMENT NAME: NRW PROJECT TEAM **RECEIVED BY :** Dykes
AUTHORIZED BY : Eric Unga **ISSUED BY :** Paul Seda
REQUISITION NO: 2485 **DATE ISSUED:** 23/07/2014
JOB DESCRIPTION: Being for Replacement of Stop Cock @ Panatina Vallley & Mbua Valley.
METER I.D :

ITEM	Materials Description	NEW S ORDER	Quantity ISSUED	Unit Cost	Total Cost	BIN CARD BALANCE	STOCK COUNTED
1	15mm Stop Tap (NRW order)	100	4	$ 95.00	$ 380.00	121	121
2	Threaded Tape (NRW order)		6	$ 10.00	$ 60.00	1199	1199
3	16mm x 1/2" male Poly Adaptor		2	$ 54.00	$ 108.00	44	44
		Total per Requisition =			$ 548.00		

DEPARTMENT NAME: NRW PROJECT TEAM **RECEIVED BY :** John Chede
AUTHORIZED BY : Benjimen Billy **ISSUED BY :** George Blamoli
REQUISITION NO: 2487 **DATE ISSUED:** 24/07/2014
JOB DESCRIPTION: Being required for Panatina @ project site .
METER I.D : 14A644958,14A644962,14A644967,14A644952,14A644957,14A644968,14A644963,14A644953.

ITEM	Materials Description	NEW S ORDER	Quantity ISSUED	Unit Cost	Total Cost	BIN CARD BALANCE	STOCK COUNTED

TOTAL COST FOR NAHA 2 PILOT

	Before Countermeasure		After Countermeasure		
	Before Countermeasure	Countermeasure	After Countermeasure	Routine Activities	**Total**
Personnel Cost	53,059.65	25,309.05	11,505.15	2,192.40	**92,066.25**
Consumable	840.76	481.59	92.61	74.09	**6,289.05**
Material and Equipment	1,503.85	30,553.70	0.00	0.00	**32,057.55**
Sub Total	**55,404.26**	**56,344.34**	**11,597.76**	**2,266.49**	**130,412.85**
TOTAL	**111,748.60**		**13,864.26**		

TOTAL MAN DAYS FOR NAHA 2	**552**

1. Costing Before Countermeasure

Location **Naha 2**

per day

Items	Specification	Quantity	Unit	Hourly Rate	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
1. Personnel	Grades- Steps								
Staff-3	3.1	0	Person	15.85	118.88				
	3.2	0	Person	16.37	122.78				
	3.3	0	Person	16.90	126.75				
	3.4	0	Person	17.43	130.73				
	3.5	0	Person	17.96	134.70				
Staff-4	4.1	40	Person	19.81	148.58	124.00		18,423.30	
	4.2	10	Person	20.60	154.50	31.00		4,789.50	
	4.3	0	Person	21.39	160.43			0.00	
	4.4	0	Person	22.18	166.35			0.00	
	4.5	10	Person	22.98	172.35	31.00		5,342.85	
Staff-5	5.1	10	Person	24.83	186.23	31.00		5,772.98	
	5.2	0	Person	25.88	194.10			0.00	
	5.3	0	Person	26.94	202.05			0.00	
	5.4	0	Person	27.99	209.93			0.00	
	5.5	0	Person	29.05	217.88	0.00		0.00	
Staff-6	6.1	1	Person	32.48	243.60	2.00		487.20	
	6.2	1	Person	33.81	253.58	1.00		253.58	
	6.3	0	Person	35.13	263.48			0.00	
	6.4	0	Person	36.45	273.38			0.00	
	6.5	0	Person	37.77	283.28			0.00	
Staff-7	7.1	9	Person	39.62	297.15	24.00		7,131.60	
	7.2	0	Person	40.94	307.05			0.00	
	7.3	0	Person	42.26	316.95			0.00	
	7.4	0	Person	43.58	326.85			0.00	
	7.5	0	Person	44.90	336.75			0.00	
Staff-8	8.1	0	Person	49.39	370.43			0.00	
	8.2	0	Person	50.71	380.33			0.00	
	8.3	0	Person	52.03	390.23			0.00	
	8.4	0	Person	53.35	400.13			0.00	
	8.5	7	Person	54.67	410.03	21.00		8,610.53	
Staff-9	9.1	1	Person	59.95	449.63	5.00		2,248.13	
	9.2	0	Person	61.27	459.53			0.00	
	9.3	0	Person	62.59	469.43			0.00	
	9.4	0	Person	63.91	479.33			0.00	
	9.5	0	Person	65.23	489.23			0.00	
Sub-total						**270.00**		**53,059.65**	
2. Consumable				$ Per Liter	L/km		$/km		
Diesel	For Excavator	62.4	Liter	11.80	0.3620		4.2716	266.55	50km/7km/liter=7.14liter 11liter/hrs (fuel consumption for about 60PS) x 1hr=11liter 11liter +7.1liter=18.1liter/50km
Diesel	For Pick-up	322.4	Liter	11.80	0.1428	46.0387	1.68504	543.26	50km/7km/liter=7.14liter/50km
Engine Oil	For Excavator	0	Liter	60.00	0.0016		0.096	0.00	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Engine Oil	For Pick-up	322.4	Liter	60.00	0.0016		0.096	30.95	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Tires		0	Nos	770.00	0.0014		1.078	0.00	50km x 252days=12,600km 12,600km/ 30,000km x 4nos=1.68nos 1.68nos/
Sub-total								**840.76**	
3. Material & Equipment									
Sluice/ Gate Valve	25mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	40mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	50mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	80mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	100mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	150mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	200mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	250mm		piece					0.00	Sluice Valve225mm AUD1785
Sluice/ Gate Valve	300mm		piece					0.00	
Pipes (Poly)	15mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	20mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	25mm		coil					0.00	Length on 1 coil =200m
Pipes (Poly)	50mm		coil					0.00	Length on 1 coil =150m
Pipes (PVC)	25mm		piece					0.00	
Pipes (PVC)	50mm		piece					0.00	
Pipes (PVC)	80mm		piece					0.00	
Pipes (PVC)	100mm		piece					0.00	
Pipes (PVC)	150mm		piece					0.00	
Pipes (PVC)	200mm		piece					0.00	
Pipes (PVC)	250mm		piece					0.00	

Items	Specification	Quantity	Unit	Hourly Rate	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
Pipes (PVC)	300mm		piece					0.00	
Water Meter	10mm		piece					0.00	
Water Meter	16mm		piece					0.00	
Water Meter	20mm		piece					0.00	
Water Meter	25mm		piece					0.00	
Water Meter	32mm		piece					0.00	
Water Meter	40mm		piece					0.00	
All Materials for Before Countermeasures								1,503.85	
Sub-total								**1,503.85**	
Total								**55,404.26**	

1AUD=6.534SBD was applied to the above (rate as of 30 September, 2013 of Oanda).

2. Costing Countermeasure

Location **Naha 2**

per day

Items	Specification	Quantity	Unit	Hourly Rate (SBD)	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
1. Personnel	Grades- Steps								
Staff-3	3.1	0	Person	15.85	118.88				
	3.2	0	Person	16.37	122.78				
	3.3	0	Person	16.90	126.75				
	3.4	0	Person	17.43	130.73				
	3.5	0	Person	17.96	134.70				
Staff-4	4.1	14	Person	19.81	148.58	49.00		7,280.18	
	4.2	4	Person	20.60	154.50	9.00		1,390.50	
	4.3	0	Person	21.39	160.43			0.00	
	4.4	0	Person	22.18	166.35			0.00	
	4.5	3	Person	22.98	172.35	8.00		1,378.80	
Staff-5	5.1	4	Person	24.83	186.23	24.00		4,469.40	
	5.2	0	Person	25.88	194.10			0.00	
	5.3	0	Person	26.94	202.05			0.00	
	5.4	0	Person	27.99	209.93			0.00	
	5.5	1	Person	29.05	217.88	1.00		217.88	
Staff-6	6.1	1	Person	32.48	243.60	1.00		243.60	
	6.2	0	Person	33.81	253.58			0.00	
	6.3	0	Person	35.13	263.48			0.00	
	6.4	0	Person	36.45	273.38			0.00	
	6.5	0	Person	37.77	283.28			0.00	
Staff-7	7.1	2	Person	39.62	297.15	4.00		1,188.60	
	7.2	0	Person	40.94	307.05			0.00	
	7.3	0	Person	42.26	316.95			0.00	
	7.4	0	Person	43.58	326.85			0.00	
	7.5	0	Person	44.90	336.75			0.00	
Staff-8	8.1	0	Person	49.39	370.43			0.00	
	8.2	0	Person	50.71	380.33			0.00	
	8.3	0	Person	52.03	390.23			0.00	
	8.4	0	Person	53.35	400.13			0.00	
	8.5	2	Person	54.67	410.03	4.00		1,640.10	
Staff-9	9.1	0	Person	59.95	449.63			0.00	
	9.2	0	Person	61.27	459.53			0.00	
	9.3	0	Person	62.59	469.43			0.00	
	9.4	0	Person	63.91	479.33			0.00	
	9.5	0	Person	65.23	489.23			0.00	
Contractors								$ 7,500.00	
Sub-total						**100.00**		**25,309.05**	
2. Consumable				$ Per Liter	L/km		$/km		
Diesel	For Excavator	0	Liter	11.80	0.3620		4.2716	0.00	50km/7km/liter=7.14liter 11liter/hrs (fuel consumption for about 60PS) x 1hr=11liter 11liter
Diesel	For Pick-up	270.4	Liter	11.80	0.1428	38.6131	1.68504	455.63	50km/7km/liter=7.14liter/50km
Engine Oil	For Excavator	0	Liter	60.00	0.0016		0.096	0.00	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/ 50km
Engine Oil	For Pick-up	270.4	Liter	60.00	0.0016		0.096	25.96	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/ 50km
Tires		0	Nos	770.00	0.0014		1.078	0.00	50km x 252days=12,600km 12,600km/ 30,000km x 4nos=1.68nos 1.68nos/ 252days=0.07nos/50k
Sub-total								**481.59**	

Items	Specification	Quantity	Unit	Hourly Rate (SBD)	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
3. Material & Equipment									
Sluice/ Gate Valve	25mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	40mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	50mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	80mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	100mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	150mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	200mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	250mm		piece					0.00	Sluice Valve225mm AUD1785
Sluice/ Gate Valve	300mm		piece					0.00	
Pipes (Poly)	15mm		coil					0.00	Length on 1 coil
Pipes (Poly)	20mm		coil					0.00	Length on 1 coil
Pipes (Poly)	25mm		coil					0.00	Length on 1 coil
Pipes (Poly)	50mm		coil					0.00	Length on 1 coil
Pipes (PVC)	25mm		piece					0.00	
Pipes (PVC)	50mm		piece					0.00	
Pipes (PVC)	80mm		piece					0.00	
Pipes (PVC)	100mm		piece					0.00	
Pipes (PVC)	150mm		piece					0.00	
Pipes (PVC)	200mm		piece					0.00	
Pipes (PVC)	250mm		piece					0.00	
Pipes (PVC)	300mm		piece					0.00	
Water Meter	10mm		piece					0.00	
Water Meter	16mm		piece					0.00	
Water Meter	20mm		piece					0.00	
Water Meter	25mm		piece					0.00	
Water Meter	32mm		piece					0.00	
Water Meter	40mm		piece					0.00	
All Materials for Countermeasures								30,553.70	
Sub-total								**30,553.70**	
Total								**56,344.34**	

1AUD=6.534SBD was applied to the above (rate as of 30 September, 2013 of Oanda).

3. Costing After Countermeasure

Location **Naha 2**

per day

Items	Specification	Quantity	Unit	Hourly Rate	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
1. Personnel	Grades- Steps								
Staff-3	3.1	0	Person	15.85	118.88				
	3.2	0	Person	16.37	122.78				
	3.3	0	Person	16.90	126.75				
	3.4	0	Person	17.43	130.73				
	3.5	0	Person	17.96	134.70				
Staff-4	4.1	12	Person	19.81	148.58	20.00		2,971.50	
	4.2	3	Person	20.60	154.50	5.00		772.50	
	4.3	0	Person	21.39	160.43			0.00	
	4.4	0	Person	22.18	166.35			0.00	
	4.5	3	Person	22.98	172.35	5.00		861.75	
Staff-5	5.1	3	Person	24.83	186.23	5.00		931.13	
	5.2	0	Person	25.88	194.10			0.00	
	5.3	0	Person	26.94	202.05			0.00	
	5.4	0	Person	27.99	209.93			0.00	
	5.5	0	Person	29.05	217.88			0.00	
Staff-6	6.1	0	Person	32.48	243.60			0.00	
	6.2	0	Person	33.81	253.58			0.00	
	6.3	0	Person	35.13	263.48			0.00	
	6.4	0	Person	36.45	273.38			0.00	
	6.5	0	Person	37.77	283.28			0.00	
Staff-7	7.1	3	Person	39.62	297.15	7.00		2,080.05	
	7.2	0	Person	40.94	307.05			0.00	
	7.3	0	Person	42.26	316.95			0.00	
	7.4	0	Person	43.58	326.85			0.00	
	7.5	0	Person	44.90	336.75			0.00	
Staff-8	8.1	0	Person	49.39	370.43			0.00	
	8.2	0	Person	50.71	380.33			0.00	
	8.3	0	Person	52.03	390.23			0.00	
	8.4	0	Person	53.35	400.13			0.00	
	8.5	2	Person	54.67	410.03	4.00		1,640.10	
Staff-9	9.1	1	Person	59.95	449.63	5.00		2,248.13	
	9.2	0	Person	61.27	459.53			0.00	
	9.3	0	Person	62.59	469.43			0.00	
	9.4	0	Person	63.91	479.33			0.00	
	9.5	0	Person	65.23	489.23			0.00	
Sub-total						**51.00**		**11,505.15**	
2. Consumable				$ Per Liter	L/km		$/km		
Diesel	For Excavator	0	Liter	11.80	0.3620		4.2716	0.00	50km/7km/liter=7.14liter 11liter/hrs (fuel consumption for about 60PS) x 1hr=11liter 11liter +7.1liter=18.1liter/50km
Diesel	For Pick-up	52	Liter	11.80	0.1428	7.4256	1.68504	87.62	50km/7km/liter=7.14liter/ 50km
Engine Oil	For Excavator	0	Liter	60.00	0.0016		0.096	0.00	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50
Engine Oil	For Pick-up	52	Liter	60.00	0.0016		0.096	4.99	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50
Tires		0	Nos	770.00	0.0014		1.078	0.00	50km x 252days=12,600km 12,600km/ 30,000km x 4nos=1.68nos 1.68nos/ 252days=0.07nos/50km
Sub-total								**92.61**	
3. Material &									
Sluice/ Gate Valve	25mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	40mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	50mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	80mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	100mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	150mm		piece					0.00	Sluice Valve

Items	Specification	Quantity	Unit	Hourly Rate	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
Sluice/ Gate Valve	200mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	250mm		piece					0.00	Sluice Valve225mm AUD1785
Sluice/ Gate Valve	300mm		piece					0.00	
Pipes (Poly)	15mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	20mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	25mm		coil					0.00	Length on 1 coil =200m
Pipes (Poly)	50mm		coil					0.00	Length on 1 coil =150m
Pipes (PVC)	25mm		piece					0.00	
Pipes (PVC)	50mm		piece					0.00	
Pipes (PVC)	80mm		piece					0.00	
Pipes (PVC)	100mm		piece					0.00	
Pipes (PVC)	150mm		piece					0.00	
Pipes (PVC)	200mm		piece					0.00	
Pipes (PVC)	250mm		piece					0.00	
Pipes (PVC)	300mm		piece					0.00	
Water Meter	10mm		piece					0.00	
Water Meter	16mm		piece					0.00	
Water Meter	20mm		piece					0.00	
Water Meter	25mm		piece					0.00	
Water Meter	32mm		piece					0.00	
Water Meter	40mm		piece					0.00	
All Materials for Countermeasures								0.00	
Sub-total								**0.00**	
Total								**11,597.76**	

1AUD=6.534SBD was applied to the above (rate as of 30 September, 2013 of Oanda).

4. Routine Activities

Location **Naha 2**

per day

Items	Specification	Quantity	Unit	Hourly Rate	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
1. Personnel	Grades- Steps								
Staff-3	3.1	0	Person	15.85	118.88				
	3.2	0	Person	16.37	122.78				
	3.3	0	Person	16.90	126.75				
	3.4	0	Person	17.43	130.73				
	3.5	0	Person	17.96	134.70				
Staff-4	4.1	0	Person	19.81	148.58			0.00	
	4.2	0	Person	20.60	154.50			0.00	
	4.3	0	Person	21.39	160.43			0.00	
	4.4	0	Person	22.18	166.35			0.00	
	4.5	0	Person	22.98	172.35			0.00	
Staff-5	5.1	0	Person	24.83	186.23			0.00	
	5.2	0	Person	25.88	194.10			0.00	
	5.3	0	Person	26.94	202.05			0.00	
	5.4	0	Person	27.99	209.93			0.00	
	5.5	0	Person	29.05	217.88			0.00	
Staff-6	6.1	3	Person	32.48	243.60	9.00		2,192.40	
	6.2	0	Person	33.81	253.58			0.00	
	6.3	0	Person	35.13	263.48			0.00	
	6.4	0	Person	36.45	273.38			0.00	
	6.5	0	Person	37.77	283.28			0.00	
Staff-7	7.1	0	Person	39.62	297.15			0.00	
	7.2	0	Person	40.94	307.05			0.00	
	7.3	0	Person	42.26	316.95			0.00	
	7.4	0	Person	43.58	326.85			0.00	
	7.5	0	Person	44.90	336.75			0.00	
Staff-8	8.1	0	Person	49.39	370.43			0.00	
	8.2	0	Person	50.71	380.33			0.00	
	8.3	0	Person	52.03	390.23			0.00	
	8.4	0	Person	53.35	400.13			0.00	
	8.5	0	Person	54.67	410.03			0.00	
Staff-9	9.1	0	Person	59.95	449.63			0.00	
	9.2	0	Person	61.27	459.53			0.00	
	9.3	0	Person	62.59	469.43			0.00	
	9.4	0	Person	63.91	479.33			0.00	
	9.5	0	Person	65.23	489.23			0.00	
Sub-total						**9.00**		**2,192.40**	
2. Consumable				$ Per Liter	L/km		$/km		
Diesel	For Excavator	0	Liter	11.80	0.3620		4.2716	0.00	50km/7km/liter=7.14liter 11liter/hrs (fuel consumption for about 60PS) x 1hr=11liter 11liter +7.1liter=18.1liter/50km
Diesel	For Pick-up	41.6	Liter	11.80	0.1428	5.9405	1.68504	70.10	50km/7km/liter=7.14liter/50km
Engine Oil	For Excavator	0	Liter	60.00	0.0016		0.096	0.00	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Engine Oil	For Pick-up	41.6	Liter	60.00	0.0016		0.096	3.99	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Tires		0	Nos	770.00	0.0014		1.078	0.00	50km x 252days=12,600km 12,600km/ 30,000km x 4nos=1.68nos 1.68nos/ 252days=0.07nos/50km
Sub-total								**74.09**	
3. Material & Equipment									
Sluice/ Gate Valve	25mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	40mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	50mm		piece					0.00	Gate Valve

Items	Specification	Quantity	Unit	Hourly Rate	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
Sluice/ Gate Valve	80mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	100mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	150mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	200mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	250mm		piece					0.00	Sluice Valve225mm AUD1785
Sluice/ Gate Valve	300mm		piece					0.00	
Pipes (Poly)	15mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	20mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	25mm		coil					0.00	Length on 1 coil =200m
Pipes (Poly)	50mm		coil					0.00	Length on 1 coil =150m
Pipes (PVC)	25mm		piece					0.00	
Pipes (PVC)	50mm		piece					0.00	
Pipes (PVC)	80mm		piece					0.00	
Pipes (PVC)	100mm		piece					0.00	
Pipes (PVC)	150mm		piece					0.00	
Pipes (PVC)	200mm		piece					0.00	
Pipes (PVC)	250mm		piece					0.00	
Pipes (PVC)	300mm		piece					0.00	
Water Meter	10mm		piece					0.00	
Water Meter	16mm		piece					0.00	
Water Meter	20mm		piece					0.00	
Water Meter	25mm		piece					0.00	
Water Meter	32mm		piece					0.00	
Water Meter	40mm		piece					0.00	
All Materials for Countermeasures								0.00	
Sub-total								**0.00**	
Total								**2,266.49**	

1AUD=6.534SBD was applied to the above (rate as of 30 September, 2013 of Oanda).

DEPARTMENT NAME: NRW PROJECT TEAM
RECOMMENDED BY : Silas Talosui
REQUISITION NO: 2368
JOB DESCRIPTION: Materials used for Installation @ Naha 2
RECEIVED BY : Mafe
ISSUED BY: Paul Seda
DATE ISSUED: 21/03/2014

ITEM	Materials Description	NEW ST ORDER	Quantity ISSUED	Unit Cost	Total Cost	BIN CARD BALANCE	STOCK COUNTED
1	50mm (2") G.I Nipple (Tongs order)	10	2	$ 42.00	$ 84.00	4	4
2	50mm Gate Valve		1	$ 320.00	$ 320.00	11	11
3	40mm Brass Gate Valve		1	$ 180.00	$ 180.00	0	0
4	40mm x 1 1/2" UPVC Male Adaptor		4	$ 25.00	$ 100.00	63	63
5	40mm UPVC Tee		1	$ 28.00	$ 28.00	49	49
6	40mm UPVC Compression		3	$ 41.00	$ 123.00	53	53
7	1 length 40mm UPVC PIpe		1	$ 300.00	$ 300.00	9	9
8	500ml UPVC Pressure Glue (NRW)		1	$ 150.00	$ 150.00	2	2
9	ThreadTape (NRW)		5	$ 4.00	$ 20.00	631	631
10	2" x 1 1/2" G.I Reduce Socket		2	$ 38.00	$ 76.00	56	56
11	50mm Gilbault Joint (KITANO stock)		1	$ 122.85	$ 122.85	3	3
			Total per Requisition =		**$ 1,503.85**		

DEPARTMENT NAME: NRW PROJECT TEAM
AUTHORIZED BY : Mathaus Bera for (Benjimen Billy)
REQUISITION NO: 1651
JOB DESCRIPTION: Being for Metre Raising Stand for Naha 2 Pilot Project Site .
METER ID: S13A00214,S13A00209,S13A00204,S13A00218,S13A00218,S13A00208,S13A00203,S13A00202,S13A00207, S13A00212,S13A00217,S13A00201,S13A00206,S13A00211,S13A00216
RECEIVED BY : Francis Hiri
ISSUED BY : Paul Seda
DATE ISSUED: 05/05/2014

ITEM	Materials Description	NEW ST ORDER	Quantity ISSUED	Unit Cost	Total Cost	BIN CARD BALANCE	STOCK COUNTED
1	1/2" G.I Elbow (NRW Stock)	428	60	$ 10.00	$ 600.00	749	749
2	1/2" G.I Socket (NRW Stock)	105	15	$ 10.00	$ 150.00	143	143
3	15mm Kent Stop Cock/Tap New Zealend Ltd		15	$ 45.25	$ 678.75	355	355
4	Threaded Tape (NRW Stock)	636	60	$ 10.00	$ 600.00	545	545
5	15mm Kent Water meter New Zealend Ltd		15	$ 318.84	$ 4,782.60	381	381
			Total per Requisition =		**$ 6,811.35**		

DEPARTMENT NAME: NRW PROJECT TEAM
AUTHORIZED BY : Silas Talosui
REQUISITION NO: 1667
JOB DESCRIPTION: Being for Used @ Naha 2 Pilot Project Site .
RECEIVED BY : Matthew Mafe
ISSUED BY : Paul Seda
DATE ISSUED: 15/05/2014

ITEM	Materials Description	NEW ST ORDER	Quantity ISSUED	Unit Cost	Total Cost	BIN CARD BALANCE	STOCK COUNTED
1	15mm G.I Nipple		1	$ 10.00	$ 10.00	120	120
2	100mm x 3/4" Brass Tapping Saddle		1	$ 234.00	$ 234.00	173	173
3	3/4" x 1/2" G.I Reduce Bush		1	$ 9.00	$ 9.00	45	45
4	Threaded Tape (NRW Stock) (LKP)	980	1	$ 10.00	$ 10.00	329	329
5	15mm Stop Tap (Tongs order)	100	1	$ 95.00	$ 95.00	134	134
6	1/2" G.I Plug	100	1	$ 8.00	$ 8.00	84	84
			Total per Requisition =		**$ 366.00**		

DEPARTMENT NAME: NRW PROJECT TEAM 1
AUTHORIZED BY : Vincent Lui for Silas Talosui
REQUISITION NO: 1671
JOB DESCRIPTION: Being for brasing of Meter Stand for Kukum & Bahai,Mbua Valley,Panatina and Naha Pilot Project Site .
RECEIVED BY : David Akwa'asi
ISSUED BY : George Blamoli
DATE ISSUED: 22/05/2014

ITEM	Materials Description	NEW ST ORDER	Quantity ISSUED	Unit Cost	Total Cost	BIN CARD BALANCE	STOCK COUNTED
1	10mm Reinforce Steel Rod		120	$ 45.50	$ 5,460.00	0	0
2	Hack Saw Blade (ITA)		4	$ 21.00	$ 84.00	106	106
			Total per Requisition =		**$ 5,544.00**		

DEPARTMENT NAME: NRW PROJECT TEAM
AUTHORIZED BY : Eric Unga
REQUISITION NO: 2394
JOB DESCRIPTION: Being for Meter Raising @ Naha 2 Pilot project Site .
METER I.D : S13A00381,S13A00382,S13A00392,S13A00393,S13A00397,S13A00387,S13B00303.
RECEIVED BY : John Teno
ISSUED BY : George Blamoli
DATE ISSUED: 11/07/2014

ITEM	Materials Description	NEW ST ORDER	Quantity ISSUED	Unit Cost	Total Cost	BIN CARD BALANCE	STOCK COUNTED
1	15mm Kent Water meter New Zealend Ltd		6	$ 318.84	$ 1,913.04	23	23
2	20mm Kent Water meter New Zealend Ltd		1	$ 329.38	$ 329.38	37	37
3	35 metres 16mm Poly Pipe(LKP Order S	3 Rolls	35	$ 9.93	$ 347.55	685m	685m
4	20mm x 16mm Poly Reduce Coupling		4	$ 60.00	$ 240.00	99	99
5	40kg bag Cement (Advance Tech)	100	3	$ 80.00	$ 240.00	43	43
6	16mm x 1/2" male Poly Adaptor (LKP Order)		4	$ 54.00	$ 216.00	0	0
12	16mm x 1/2" female Poly Adaptor	100	4	$ 45.00	$ 180.00	92	92
13	16mm Poly Coupling (Tongs order Store	100	4	$ 50.00	$ 200.00	85	85
			Total per Requisition =		**$ 3,665.97**		

DEPARTMENT NAME: NRW PROJECT TEAM
AUTHORIZED BY : Benjimen Billy
REQUISITION NO: 2395
JOB DESCRIPTION: Being for Meter Raising @ Naha 2 Pilot project Site .
METER I.D :
RECEIVED BY : Dykes
ISSUED BY : Paul Seda
DATE ISSUED: 11/07/2014

ITEM	Materials Description	NEW ST ORDER	Quantity ISSUED	Unit Cost	Total Cost	BIN CARD BALANCE	STOCK COUNTED
1	16mm x 3/4" poly female Adaptor (N/stock)		6	$ 50.00	$ 300.00	87	87
2	20mm x 16mm Poly Reduce Coupling		6	$ 60.00	$ 360.00	93	93
3	25mm x 16mm Poly Reduce Coupling (N	100	4	$ 60.00	$ 240.00	26	26
4	16mm x 1/2" male Poly Adaptor (NRW N/Order)		3	$ 54.00	$ 162.00	90	90
			Total per Requisition =		**$ 1,062.00**		

DEPARTMENT NAME: NRW PROJECT TEAM
AUTHORIZED BY : Benjimen Billy
REQUISITION NO: 2399
JOB DESCRIPTION: Being for Naha 2 Pilot Project Site for Step Test.
METER I.D : .
RECEIVED BY : Derick Hoa
ISSUED BY : George Blamoli
DATE ISSUED: 14/07/2014

ITEM	Materials Description	NEW ST ORDER	Quantity ISSUED	Unit Cost	Total Cost	BIN CARD BALANCE	STOCK COUNTED
1	60 metres 16mm Poly Pipe(LKP Order S	3 Rolls	60	$ 9.93	$ 595.80	535m	535m
			Total per Requisition =		**$ 595.80**		

DEPARTMENT NAME: NRW PROJECT TEAM
AUTHORIZED BY : Benjimen Billy
REQUISITION NO: 2399
JOB DESCRIPTION: Being for Naha 2 Pilot Project Site for Step Test.
METER I.D :
RECEIVED BY : Derick Hoa
ISSUED BY : George Blamoli
DATE ISSUED: 14/07/2014

ITEM	Materials Description	NEW ST ORDER	Quantity ISSUED	Unit Cost	Total Cost	BIN CARD BALANCE	STOCK COUNTED
1	60 metres 16mm Poly Pipe(LKP Order S	3 Rolls	60	$ 9.93	$ 595.80	535m	535m
			Total per Requisition =		**$ 595.80**		

DEPARTMENT NAME: NRW PROJECT TEAM
AUTHORIZED BY : Benjimen Billy
REQUISITION NO: 1512
JOB DESCRIPTION: Being for Meter raising @ Naha 2 Pilot Project Site.
METER I.D : .S13A00104,S13A00103,S13A00102,S13A00107,S13A00109.
RECEIVED BY : Matthew Mafe
ISSUED BY : Paul Seda
DATE ISSUED: 15/07/2014

ITEM	Materials Description	NEW ST ORDER	Quantity ISSUED	Unit Cost	Total Cost	BIN CARD BALANCE	STOCK COUNTED
1	30 metres 20mm Poly Pipe		30	$ 15.50	$ 465.00	264m	264m
2	20 metres 16mm Poly Pipe(LKP Order S	3 Rolls	20	$ 9.93	$ 198.60	505m	505m
3	40kg bag Cement (Advance Tech)	100	2	$ 80.00	$ 160.00	38	38
3	15mm Kent Water meter New Zealend Ltd		5	$ 318.84	$ 1,594.20	4	4
			Total per Requisition =		**$ 2,417.80**		

DEPARTMENT NAME: NRW PROJECT TEAM
AUTHORIZED BY : Vincent Lui
REQUISITION NO: 2400
JOB DESCRIPTION: Being for meter raising @ Naha 2 Pilot Project Site set up.
METER I.D : S13A00101,S13A00105.
RECEIVED BY : M. Keni
ISSUED BY : George Blamoli
DATE ISSUED: 16/07/2014

ITEM	Materials Description	NEW ST ORDER	Quantity ISSUED	Unit Cost	Total Cost	BIN CARD BALANCE	STOCK COUNTED

1	15mm Kent Water meter New Zealend Ltd		2	$ 318.84	$ 637.68	1	1
2	16mm Poly Coupling (Tongs order Store	100	10	$ 50.00	$ 500.00	40	40
3	20 metres 16mm Poly Pipe(LKP Order S	3 Rolls	20	$ 9.93	$ 198.60	350m	350m
4	20mm x 20mm Poly Coupling (Tongs or	100	6	$ 50.00	$ 300.00	68	68
5	20mm x 16mm Poly Reduce Coupling		6	$ 60.00	$ 360.00	78	78
6	40 metres 20mm Poly Pipe		40	$ 15.50	$ 620.00	184m	184m
7	16mm x 16mm x 16mm Poly Tee		3	$ 85.00	$ 255.00	78	78
8	20mm x 20mm Poly Tee (Tongs order)		2	$ 90.00	$ 180.00	49	49
9	Threaded Tape (NRW order)		10	$ 10.00	$ 100.00	1248	1248
			Total per Requisition =		**$ 3,151.28**		

DEPARTMENT NAME: NRW PROJECT TEAM
AUTHORIZED BY : Eric Unga
REQUISITION NO: 1516
JOB DESCRIPTION: Being for meter raising @ Naha 2 Pilot Project Site set up.
METER I.D : 14A644468,14A644463,14A644451,14A644457,14A644467,14A644452,14A645034,14A644462,14A645032.
RECEIVED BY : Selina Fai
ISSUED BY : George Blamoli
DATE ISSUED: 17/07/2014

ITEM	Materials Description	NEW ST ORDER	Quantity ISSUED	Unit Cost	Total Cost	BIN CARD BALANCE	STOCK COUNTED
1	40kg bag Cement (Advance Tech)	100	4	$ 80.00	$ 320.00	34	34
2	60 metres 16mm Poly Pipe(LKP Order S	3 Rolls	60	$ 9.93	$ 595.80	385	385
3	16mm Poly Coupling (Tongs order Store	100	10	$ 50.00	$ 500.00	50	50
4	15mm Water Meter (JICA order)		10	$ 234.00	$ 2,340.00	613	613
			Total per Requisition =		**$ 3,755.80**		

DEPARTMENT NAME: NRW PROJECT TEAM
AUTHORIZED BY : Ray Andersen
REQUISITION NO: 1518
JOB DESCRIPTION: Being for meter raising @ Naha 2 pilot project site.
METER I.D : 14A644707,14A644459,14A644453,14A644464,14A644454.
RECEIVED BY : John Chede
ISSUED BY : Paul Seda
DATE ISSUED: 19 /07/2014

ITEM	Materials Description	NEW ST ORDER	Quantity ISSUED	Unit Cost	Total Cost	BIN CARD BALANCE	STOCK COUNTED
1	16mm Poly Coupling (Tongs order Store	100	10	$ 50.00	$ 500.00	28	28
2	30 metres 16mm Poly Pipe(LKP Order S	3 Rolls	30	$ 9.93	$ 297.90	315m	315m
3	15mm Water Meter (JICA order)		5	$ 234.00	$ 1,170.00	599	599
4	20mm x 16mm Poly Reduce Coupling		5	$ 60.00	$ 300.00	73	73
5	40kg bag Cement (Advance Tech)	100	4	$ 80.00	$ 320.00	27	27
			Total per Requisition =		**$ 2,587.90**		

Total Material Cost for Naha 2 $ 32,057.55

TOTAL COST FOR NAHA 3 PILOT

	Before Countermeasure	Countermeasure	After Countermeasure	Routine Activities	Total
Personnel Cost	55,332.68	29,920.05	12,891.68	2,192.40	**100,336.80**
Consumable	966.65	555.68	98.31	74.09	**2,494.74**
Material and Equipment	1,470.46	23,457.00	0.00	0.00	**24,927.46**
Sub Total	**57,769.79**	**53,932.73**	**12,989.99**	**2,266.49**	**131,759.00**
TOTAL	**111,702.52**		**15,256.48**		

TOTAL MAN DAYS FOR NAHA 3	**601**

1. Costing Before Countermeasure

Location **Naha 3**

per day

Items	Specification	Quantity	Unit	Hourly Rate	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
1. Personnel	Grades- Steps								
Staff-3	3.1	0	Person	15.85	118.88				
	3.2	0	Person	16.37	122.78				
	3.3	0	Person	16.90	126.75				
	3.4	0	Person	17.43	130.73				
	3.5	0	Person	17.96	134.70				
Staff-4	4.1	40	Person	19.81	148.58	132.00		19,611.90	
	4.2	10	Person	20.60	154.50	33.00		5,098.50	
	4.3	0	Person	21.39	160.43			0.00	
	4.4	0	Person	22.18	166.35			0.00	
	4.5	10	Person	22.98	172.35	33.00		5,687.55	
Staff-5	5.1	10	Person	24.83	186.23	33.00		6,145.43	
	5.2	0	Person	25.88	194.10			0.00	
	5.3	0	Person	26.94	202.05			0.00	
	5.4	0	Person	27.99	209.93			0.00	
	5.5	10	Person	29.05	217.88	33.00		7,189.88	
Staff-6	6.1	1	Person	32.48	243.60	2.00		487.20	
	6.2	1	Person	33.81	253.58	1.00		253.58	
	6.3	0	Person	35.13	263.48			0.00	
	6.4	0	Person	36.45	273.38			0.00	
	6.5	0	Person	37.77	283.28			0.00	
Staff-7	7.1	0	Person	39.62	297.15	0.00		0.00	
	7.2	0	Person	40.94	307.05			0.00	
	7.3	0	Person	42.26	316.95			0.00	
	7.4	0	Person	43.58	326.85			0.00	
	7.5	0	Person	44.90	336.75			0.00	
Staff-8	8.1	0	Person	49.39	370.43			0.00	
	8.2	0	Person	50.71	380.33			0.00	
	8.3	0	Person	52.03	390.23			0.00	
	8.4	0	Person	53.35	400.13			0.00	
	8.5	7	Person	54.67	410.03	21.00		8,610.53	
Staff-9	9.1	1	Person	59.95	449.63	5.00		2,248.13	
	9.2	0	Person	61.27	459.53			0.00	
	9.3	0	Person	62.59	469.43			0.00	
	9.4	0	Person	63.91	479.33			0.00	
	9.5	0	Person	65.23	489.23			0.00	
Sub-total						**293.00**		**55,332.68**	
2. Consumable				$ Per Liter	L/km		$/km		
Diesel	For Excavator	83.2	Liter	11.80	0.3620		4.2716	355.40	50km/7km/liter=7.14liter 11liter/hrs (fuel consumption for about 60PS) x 1hr=11liter 11liter +7.1liter=18.1liter/50km
Diesel	For Pick-up	343.2	Liter	11.80	0.1428	49.0090	1.68504	578.31	50km/7km/liter=7.14liter/50km
Engine Oil	For Excavator	0	Liter	60.00	0.0016		0.096	0.00	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Engine Oil	For Pick-up	343.2	Liter	60.00	0.0016		0.096	32.95	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Tires		0	Nos	770.00	0.0014		1.078	0.00	50km x 252days=12,600km 12,600km/ 30,000km x 4nos=1.68nos 1.68nos/ 252days=0.07nos/50km
Sub-total								**966.65**	
3. Material & Equipment									
Sluice/ Gate Valve	25mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	40mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	50mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	80mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	100mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	150mm		piece					0.00	Sluice Valve

Items	Specification	Quantity	Unit	Hourly Rate	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
Sluice/ Gate Valve	200mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	250mm		piece					0.00	Sluice Valve225mm AUD1785
Sluice/ Gate Valve	300mm		piece					0.00	
Pipes (Poly)	15mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	20mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	25mm		coil					0.00	Length on 1 coil =200m
Pipes (Poly)	50mm		coil					0.00	Length on 1 coil =150m
Pipes (PVC)	25mm		piece					0.00	
Pipes (PVC)	50mm		piece					0.00	
Pipes (PVC)	80mm		piece					0.00	
Pipes (PVC)	100mm		piece					0.00	
Pipes (PVC)	150mm		piece					0.00	
Pipes (PVC)	200mm		piece					0.00	
Pipes (PVC)	250mm		piece					0.00	
Pipes (PVC)	300mm		piece					0.00	
Water Meter	10mm		piece					0.00	
Water Meter	16mm		piece					0.00	
Water Meter	20mm		piece					0.00	
Water Meter	25mm		piece					0.00	
Water Meter	32mm		piece					0.00	
Water Meter	40mm		piece					0.00	
All Materials for Before Countermeasures								1,470.46	
Sub-total								**1,470.46**	
Total								**57,769.79**	

1AUD=6.534SBD was applied to the above (rate as of 30 September, 2013 of Oanda).

2. Costing Countermeasure

Location **Naha 3**

per day

Items	Specification	Quantity	Unit	Hourly Rate (SBD)	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
1. Personnel	Grades- Steps								
Staff-3	3.1	0	Person	15.85	118.88				
	3.2	0	Person	16.37	122.78				
	3.3	0	Person	16.90	126.75				
	3.4	0	Person	17.43	130.73				
	3.5	0	Person	17.96	134.70				
Staff-4	4.1	14	Person	19.81	148.58	57.00		8,468.78	
	4.2	4	Person	20.60	154.50	10.00		1,545.00	
	4.3	0	Person	21.39	160.43			0.00	
	4.4	0	Person	22.18	166.35			0.00	
	4.5	3	Person	22.98	172.35	9.00		1,551.15	
Staff-5	5.1	4	Person	24.83	186.23	29.00		5,400.53	
	5.2	0	Person	25.88	194.10			0.00	
	5.3	0	Person	26.94	202.05			0.00	
	5.4	0	Person	27.99	209.93			0.00	
	5.5	4	Person	29.05	217.88	9.00		1,960.88	
Staff-6	6.1	1	Person	32.48	243.60	1.00		243.60	
	6.2	0	Person	33.81	253.58			0.00	
	6.3	0	Person	35.13	263.48			0.00	
	6.4	0	Person	36.45	273.38			0.00	
	6.5	0	Person	37.77	283.28			0.00	
Staff-7	7.1	0	Person	39.62	297.15	0.00		0.00	
	7.2	0	Person	40.94	307.05			0.00	
	7.3	0	Person	42.26	316.95			0.00	
	7.4	0	Person	43.58	326.85			0.00	
	7.5	0	Person	44.90	336.75			0.00	
Staff-8	8.1	0	Person	49.39	370.43			0.00	
	8.2	0	Person	50.71	380.33			0.00	
	8.3	0	Person	52.03	390.23			0.00	
	8.4	0	Person	53.35	400.13			0.00	
	8.5	2	Person	54.67	410.03	5.00		2,050.13	
Staff-9	9.1	0	Person	59.95	449.63			0.00	
	9.2	0	Person	61.27	459.53			0.00	
	9.3	0	Person	62.59	469.43			0.00	
	9.4	0	Person	63.91	479.33			0.00	
	9.5	0	Person	65.23	489.23			0.00	
Contractors								$8,700.00	
Sub-total						**120.00**		**29,920.05**	
2. Consumable				$ Per Liter	L/km		$/km		
Diesel	For Excavator	0	Liter	11.80	0.3620		4.2716	0.00	50km/7km/liter=7.14liter 11liter/hrs (fuel consumption for about 60PS) x 1hr=11liter 11liter +7.1liter=18.1liter/50km
Diesel	For Pick-up	312	Liter	11.80	0.1428	44.5536	1.68504	525.73	50km/7km/liter=7.14liter/50km
Engine Oil	For Excavator	0	Liter	60.00	0.0016		0.096	0.00	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Engine Oil	For Pick-up	312	Liter	60.00	0.0016		0.096	29.95	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km

Items	Specification	Quantity	Unit	Hourly Rate (SBD)	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
Tires		0	Nos	770.00	0.0014		1.078	0.00	50km x 252days=12,600km 12,600km/ 30,000km x 4nos=1.68nos 1.68nos/ 252days=0.07nos/50km
Sub-total								**555.68**	
3. Material & Equipment									
Sluice/ Gate Valve	25mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	40mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	50mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	80mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	100mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	150mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	200mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	250mm		piece					0.00	Sluice Valve225mm AUD1785
Sluice/ Gate Valve	300mm		piece					0.00	
Pipes (Poly)	15mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	20mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	25mm		coil					0.00	Length on 1 coil =200m
Pipes (Poly)	50mm		coil					0.00	Length on 1 coil =150m
Pipes (PVC)	25mm		piece					0.00	
Pipes (PVC)	50mm		piece					0.00	
Pipes (PVC)	80mm		piece					0.00	
Pipes (PVC)	100mm		piece					0.00	
Pipes (PVC)	150mm		piece					0.00	
Pipes (PVC)	200mm		piece					0.00	
Pipes (PVC)	250mm		piece					0.00	
Pipes (PVC)	300mm		piece					0.00	
Water Meter	10mm		piece					0.00	
Water Meter	16mm		piece					0.00	
Water Meter	20mm		piece					0.00	
Water Meter	25mm		piece					0.00	
Water Meter	32mm		piece					0.00	
Water Meter	40mm		piece					0.00	
All Materials for Countermeasures								23,457.00	
Sub-total								**23,457.00**	
Total								**53,932.73**	

1AUD=6.534SBD was applied to the above (rate as of 30 September, 2013 of Oanda).

3. Costing After Countermeasure

Location **Naha 3**

per day

Items	Specification	Quantity	Unit	Hourly Rate	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
1. Personnel	Grades- Steps								
Staff-3	3.1	0	Person	15.85	118.88				
	3.2	0	Person	16.37	122.78				
	3.3	0	Person	16.90	126.75				
	3.4	0	Person	17.43	130.73				
	3.5	0	Person	17.96	134.70				
Staff-4	4.1	12	Person	19.81	148.58	22.00		3,268.65	
	4.2	3	Person	20.60	154.50	5.00		772.50	
	4.3	0	Person	21.39	160.43			0.00	
	4.4	0	Person	22.18	166.35			0.00	
	4.5	3	Person	22.98	172.35	5.00		861.75	
Staff-5	5.1	3	Person	24.83	186.23	5.00		931.13	
	5.2	0	Person	25.88	194.10			0.00	
	5.3	0	Person	26.94	202.05			0.00	
	5.4	0	Person	27.99	209.93			0.00	
	5.5	3	Person	29.05	217.88	5.00		1,089.38	
Staff-6	6.1	0	Person	32.48	243.60			0.00	
	6.2	0	Person	33.81	253.58			0.00	
	6.3	0	Person	35.13	263.48			0.00	
	6.4	0	Person	36.45	273.38			0.00	
	6.5	0	Person	37.77	283.28			0.00	
Staff-7	7.1	3	Person	39.62	297.15	7.00		2,080.05	
	7.2	0	Person	40.94	307.05			0.00	
	7.3	0	Person	42.26	316.95			0.00	
	7.4	0	Person	43.58	326.85			0.00	
	7.5	0	Person	44.90	336.75			0.00	
Staff-8	8.1	0	Person	49.39	370.43			0.00	
	8.2	0	Person	50.71	380.33			0.00	
	8.3	0	Person	52.03	390.23			0.00	
	8.4	0	Person	53.35	400.13			0.00	
	8.5	2	Person	54.67	410.03	4.00		1,640.10	
Staff-9	9.1	1	Person	59.95	449.63	5.00		2,248.13	
	9.2	0	Person	61.27	459.53			0.00	
	9.3	0	Person	62.59	469.43			0.00	
	9.4	0	Person	63.91	479.33			0.00	
	9.5	0	Person	65.23	489.23			0.00	
Sub-total						**58.00**		**12,891.68**	
2. Consumable				$ Per Liter	L/km		$/km		
Diesel	For Excavator	0	Liter	11.80	0.3620		4.2716	0.00	50km/7km/liter=7.14liter 11liter/hrs (fuel consumption for about 60PS) x 1hr=11liter 11liter +7.1liter=18.1liter/50km
Diesel	For Pick-up	55.2	Liter	11.80	0.1428	7.8826	1.68504	93.01	50km/7km/liter=7.14liter/50 km
Engine Oil	For Excavator	0	Liter	60.00	0.0016		0.096	0.00	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50k m
Engine Oil	For Pick-up	55.2	Liter	60.00	0.0016		0.096	5.30	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50k m
Tires		0	Nos	770.00	0.0014		1.078	0.00	50km x 252days=12,600km 12,600km/ 30,000km x 4nos=1.68nos 1.68nos/ 252days=0.07nos/50km
Sub-total								**98.31**	
3. Material & Equipment									
Sluice/ Gate Valve	25mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	40mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	50mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	80mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	100mm		piece					0.00	Sluice Valve

Items	Specification	Quantity	Unit	Hourly Rate	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
Sluice/ Gate Valve	150mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	200mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	250mm		piece					0.00	Sluice Valve225mm AUD1785
Sluice/ Gate Valve	300mm		piece					0.00	
Pipes (Poly)	15mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	20mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	25mm		coil					0.00	Length on 1 coil =200m
Pipes (Poly)	50mm		coil					0.00	Length on 1 coil =150m
Pipes (PVC)	25mm		piece					0.00	
Pipes (PVC)	50mm		piece					0.00	
Pipes (PVC)	80mm		piece					0.00	
Pipes (PVC)	100mm		piece					0.00	
Pipes (PVC)	150mm		piece					0.00	
Pipes (PVC)	200mm		piece					0.00	
Pipes (PVC)	250mm		piece					0.00	
Pipes (PVC)	300mm		piece					0.00	
Water Meter	10mm		piece					0.00	
Water Meter	16mm		piece					0.00	
Water Meter	20mm		piece					0.00	
Water Meter	25mm		piece					0.00	
Water Meter	32mm		piece					0.00	
Water Meter	40mm		piece					0.00	
All Materials for After Countermeasures								0.00	
Sub-total								**0.00**	
Total								**12,989.99**	

1AUD=6.534SBD was applied to the above (rate as of 30 September, 2013 of Oanda).

4. Routine Activities

Location **Naha 3**

per day

Items	Specification	Quantity	Unit	Hourly Rate	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
1. Personnel	Grades- Steps								
Staff-3	3.1	0	Person	15.85	118.88				
	3.2	0	Person	16.37	122.78				
	3.3	0	Person	16.90	126.75				
	3.4	0	Person	17.43	130.73				
	3.5	0	Person	17.96	134.70				
Staff-4	4.1	0	Person	19.81	148.58			0.00	
	4.2	0	Person	20.60	154.50			0.00	
	4.3	0	Person	21.39	160.43			0.00	
	4.4	0	Person	22.18	166.35			0.00	
	4.5	0	Person	22.98	172.35			0.00	
Staff-5	5.1	0	Person	24.83	186.23			0.00	
	5.2	0	Person	25.88	194.10			0.00	
	5.3	0	Person	26.94	202.05			0.00	
	5.4	0	Person	27.99	209.93			0.00	
	5.5	0	Person	29.05	217.88			0.00	
Staff-6	6.1	3	Person	32.48	243.60	9.00		2,192.40	
	6.2	0	Person	33.81	253.58			0.00	
	6.3	0	Person	35.13	263.48			0.00	
	6.4	0	Person	36.45	273.38			0.00	
	6.5	0	Person	37.77	283.28			0.00	
Staff-7	7.1	0	Person	39.62	297.15			0.00	
	7.2	0	Person	40.94	307.05			0.00	
	7.3	0	Person	42.26	316.95			0.00	
	7.4	0	Person	43.58	326.85			0.00	
	7.5	0	Person	44.90	336.75			0.00	
Staff-8	8.1	0	Person	49.39	370.43			0.00	
	8.2	0	Person	50.71	380.33			0.00	
	8.3	0	Person	52.03	390.23			0.00	
	8.4	0	Person	53.35	400.13			0.00	
	8.5	0	Person	54.67	410.03			0.00	
Staff-9	9.1	0	Person	59.95	449.63			0.00	
	9.2	0	Person	61.27	459.53			0.00	
	9.3	0	Person	62.59	469.43			0.00	
	9.4	0	Person	63.91	479.33			0.00	
	9.5	0	Person	65.23	489.23			0.00	
Sub-total						**9.00**		**2,192.40**	
2. Consumable				$ Per Liter	L/km		$/km		
Diesel	For Excavator	0	Liter	11.80	0.3620		4.2716	0.00	50km/7km/liter=7.14liter 11liter/hrs (fuel consumption for about 60PS) x 1hr=11liter 11liter +7.1liter=18.1liter/50km
Diesel	For Pick-up	41.6	Liter	11.80	0.1428	5.9405	1.68504	70.10	50km/7km/liter=7.14liter/50k m
Engine Oil	For Excavator	0	Liter	60.00	0.0016		0.096	0.00	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Engine Oil	For Pick-up	41.6	Liter	60.00	0.0016		0.096	3.99	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Tires		0	Nos	770.00	0.0014		1.078	0.00	50km x 252days=12,600km 12,600km/ 30,000km x 4nos=1.68nos 1.68nos/ 252days=0.07nos/50km
Sub-total								**74.09**	
3. Material & Equipment									
Sluice/ Gate Valve	25mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	40mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	50mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	80mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	100mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	150mm		piece					0.00	Sluice Valve

Items	Specification	Quantity	Unit	Hourly Rate	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
Sluice/ Gate Valve	200mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	250mm		piece					0.00	Sluice Valve225mm AUD1785
Sluice/ Gate Valve	300mm		piece					0.00	
Pipes (Poly)	15mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	20mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	25mm		coil					0.00	Length on 1 coil =200m
Pipes (Poly)	50mm		coil					0.00	Length on 1 coil =150m
Pipes (PVC)	25mm		piece					0.00	
Pipes (PVC)	50mm		piece					0.00	
Pipes (PVC)	80mm		piece					0.00	
Pipes (PVC)	100mm		piece					0.00	
Pipes (PVC)	150mm		piece					0.00	
Pipes (PVC)	200mm		piece					0.00	
Pipes (PVC)	250mm		piece					0.00	
Pipes (PVC)	300mm		piece					0.00	
Water Meter	10mm		piece					0.00	
Water Meter	16mm		piece					0.00	
Water Meter	20mm		piece					0.00	
Water Meter	25mm		piece					0.00	
Water Meter	32mm		piece					0.00	
Water Meter	40mm		piece					0.00	
All Materials for routine activites								0.00	
Sub-total								**0.00**	
Total								**2,266.49**	

1AUD=6.534SBD was applied to the above (rate as of 30 September, 2013 of Oanda).

2014 Material Listing for Naha 3 Pilot

DEPARTMENT NAME: NRW PROJECT TEAM 2 — **RECEIVED BY :** David Aka'asi
AUTHORIZED BY : Benjimen Billy — **ISSUED BY :** George Blamoli
REQUISITION NO: 1674 — **DATE ISSUED:** 22/05/2014
JOB DESCRIPTION: Being for Repair @ Naha Pilot project site .

ITEM	Materials Description	NEW ST ORDER	Quantity ISSUED	Unit Cost	Total Cost	BIN CARD BALANCE	STOCK COUNTED
1	40mm x 1 1/2" Upvc Male Adaptor		1	$ 25.00	$ 25.00	55	55
2	40mm Brass Gate Valve		1	$ 180.00	$ 180.00	28	28
3	40mm Upvc compression Coupling		1	$ 41.00	$ 41.00	42	42
4	Threaded Tape (NRW Stock) (LKP)	980	5	$ 10.00	$ 50.00	1,349	1,359
			Total per Requisition =		$ 296.00		

DEPARTMENT NAME: NRW PROJECT TEAM 2 — **RECEIVED BY : David Akoasi**
AUTHORIZED BY : Benjimen Billy — **ISSUED BY :** George Blamoli
REQUISITION NO: 1686 — **DATE ISSUED:** 30/05/2014
JOB DESCRIPTION: Being for installation of Valve for testing @ Naha 3 pilot project site.
METER LD :

ITEM	Materials Description	NEW ST ORDER	Quantity ISSUED	Unit Cost	Total Cost	BIN CARD BALANCE	STOCK COUNTED
1	100mm x 20mm Brass Tepping Band		1	$ 234.00	$ 234.00	166	166
2	15mm Stop Tap (Tongs order)	100	1	$ 95.00	$ 95.00	9	9
3	40mm Poly Couplings		1	$ 41.00	$ 41.00	27	27
4	3/4" x 1/2" GI reduce Bush		1	$ 9.00	$ 9.00	76	76
5	200mm x 1/2" threaded Galvanised pipe (LKP)	320	1	$ 53.60	$ 53.60	428	428
6	40mm Upvc compression Coupling		1	$ 41.00	$ 41.00	41	41
7	1/2" GI Plug	100	4	$ 8.00	$ 32.00	68	68
			Total per Requisition =		$ 505.60		

DEPARTMENT NAME: NRW PROJECT TEAM 2 — **RECEIVED BY :** David Akoasi
AUTHORIZED BY : Benjimen Billy — **ISSUED BY :** Paul Seda
REQUISITION NO: 1685 — **DATE ISSUED:** 30/05/2014
JOB DESCRIPTION: Being for installation of Valve for testing @ Naha 3 pilot project site.

ITEM	Materials Description	NEW ST ORDER	Quantity ISSUED	Unit Cost	Total Cost	BIN CARD BALANCE	STOCK COUNTED
1	2 metre 40mm Poly Pipe		2	$ 45.00	$ 90.00	2m	2m
2	Threaded Tape (NRW Stock) (LKP)	980	4	$ 10.00	$ 40.00	1,330	1,330
3	2 Set 4" gasket & bolts (Kitano)		2	$146.07	$ 292.14	14	14
			Total per Requisition =		$ 422.14		

DEPARTMENT NAME: NRW PROJECT TEAM — **RECEIVED BY :** Dykes
AUTHORIZED BY : Eric Unga — **ISSUED BY :** George Blamoli
REQUISITION NO: 2383 — **DATE ISSUED:** 09/07/2014
JOB DESCRIPTION: Being for Naha 3 Pilot project site .
METER LD :

ITEM	Materials Description	NEW ST ORDER	Quantity ISSUED	Unit Cost	Total Cost	BIN CARD BALANCE	STOCK COUNTED
1	40mm Pressure UPVC Tee		1	$ 28.00	$ 28.00	47	47
2	40mm compression Coupling		1	$ 41.00	$ 41.00	41	41
3	3/4" poly nipple		1	$ 3.72	$ 3.72	32	32
4	25mm GI Socket		1	$ 15.00	$ 15.00	44	44
5	20mm x 3/4" Poly female Adaptor (TONGs order)		2	$ 40.00	$ 80.00	36	36
6	1 1/2" x 3/4" poly reduce Bush		1	$ 9.00	$ 9.00	37	37
7	20mm x 3/4" Poly male Adaptor (TONGs order)	100	2	$ 35.00	$ 70.00	122	122
			Total per Requisition =		$ 246.72		

DEPARTMENT NAME: NRW PROJECT TEAM — **RECEIVED BY :** Dykes
AUTHORIZED BY : Benjimen Billy — **ISSUED BY :** George Blamoli
REQUISITION NO: 1515 — **DATE ISSUED:** 14/07/2014
JOB DESCRIPTION: Being for Naha 3 Pilot Project Site for Step Test.
METER LD : S13A00106,S13A00114,S13A00111,S13A00112,S13A00113,S13A00114,S13A00115,S13A00116,S13A00117. S13A00119,S13A00120.

ITEM	Materials Description	NEW ST ORDER	Quantity ISSUED	Unit Cost	Total Cost	BIN CARD BALANCE	STOCK COUNTED
1	100m Flange Adaptor (Public service stock)		1	$ 401.19	$ 401.19	0	0
2	100mm Gaskets & Bolts/nuts		2	131.28	$ 262.56	0	0
3	15mm Kent Water meter New Zealend Ltd		10	$ 318.84	$ 3,188.40	11	11
4	40kg bag Cement (Advance Tech)	100	3	$ 80.00	$ 240.00	40	40
5	16mm Poly Coupling (Tongs order Stores)	100	8	$ 50.00	$ 400.00	71	71
6	20mm x 16mm Poly Reduce Coupling		8	$ 60.00	$ 480.00	85	85
7	16mm x 1/2" male Poly Adaptor (NRW N/Order)		6	$ 54.00	$ 324.00	84	84
8	16mm x 1/2" female Poly Adaptor	100	6	$ 45.00	$ 270.00	84	84
9	40 metres 16mm Poly Pipe(LKP Order Stores)	3 Rolls	40	$ 9.93	$ 397.20	635m	635m
10	30 metres 20mm Poly Pipe		30	$ 15.50	$ 465.00	384m	384m
			Total per Requisition =		$ 6,428.35		

DEPARTMENT NAME: NRW PROJECT TEAM — **RECEIVED BY :** Dykes
AUTHORIZED BY : Benjimen Billy — **ISSUED BY :** George Blamoli
REQUISITION NO: 1515 — **DATE ISSUED:** 14/07/2014
JOB DESCRIPTION: Being for Naha 3 Pilot Project Site for Step Test.
METER LD : S13A00106,S13A00114,S13A00111,S13A00112,S13A00113,S13A00114,S13A00115,S13A00116,S13A00117. S13A00119,S13A00120.

ITEM	Materials Description	NEW ST ORDER	Quantity ISSUED	Unit Cost	Total Cost	BIN CARD BALANCE	STOCK COUNTED
1	100m Flange Adaptor (Public service stock)		1	$ 401.19	$ 401.19	0	0
2	100mm Gaskets & Bolts/nuts		2	131.28	$ 262.56	0	0
3	15mm Kent Water meter New Zealend Ltd		10	$ 318.84	$ 3,188.40	11	11
4	40kg bag Cement (Advance Tech)	100	3	$ 80.00	$ 240.00	40	40
5	16mm Poly Coupling (Tongs order Stores)	100	8	$ 50.00	$ 400.00	71	71
6	20mm x 16mm Poly Reduce Coupling		8	$ 60.00	$ 480.00	85	85
7	16mm x 1/2" male Poly Adaptor (NRW N/Order)		6	$ 54.00	$ 324.00	84	84
8	16mm x 1/2" female Poly Adaptor	100	6	$ 45.00	$ 270.00	84	84
9	40 metres 16mm Poly Pipe(LKP Order Stores)	3 Rolls	40	$ 9.93	$ 397.20	635m	635m
10	30 metres 20mm Poly Pipe		30	$ 15.50	$ 465.00	384m	384m
			Total per Requisition =		$ 6,428.35		

DEPARTMENT NAME: NRW PROJECT TEAM — **RECEIVED BY :** Derick Hoa
AUTHORIZED BY : Eric Unga — **ISSUED BY :** Paul Seda
REQUISITION NO: 1519 — **DATE ISSUED:** 21/07/2014
JOB DESCRIPTION: Being for meter raising @ Naha 3 pilot project site.
METER LD : 14A644692,14A644697,14A644702,14A644703,14A644708.

ITEM	Materials Description	NEW ST ORDER	Quantity ISSUED	Unit Cost	Total Cost	BIN CARD BALANCE	STOCK COUNTED
1	15mm Water Meter (JICA order)		5	$ 234.00	$ 1,170.00	591	591
			Total per Requisition =		$ 1,170.00		

DEPARTMENT NAME: NRW PROJECT TEAM — **RECEIVED BY :** Derick Hoa
AUTHORIZED BY : Eric Unga — **ISSUED BY :** George Blamoli
REQUISITION NO: 2488 — **DATE ISSUED:** 28/07/2014
JOB DESCRIPTION: Being required for Meter raising @ Naha 3 Pilot project Site .
METER LD : 14A644969,14A644959,14A644965,14A644964,14A644700.

ITEM	Materials Description	NEW ST ORDER	Quantity ISSUED	Unit Cost	Total Cost	BIN CARD BALANCE	STOCK COUNTED
1	16mm x 3/4" Poly female Adaptor (TONGS Order)	100	6	$ 50.00	$ 300.00	71	71
2	Novekey pressure Glue 250ml		1	$ 150.00	$ 150.00	8	8
3	15mm Water Meter (JICA order)		6	$ 234.00	$ 1,404.00	555	555
4	Threaded Tape (NRW order)		16	$ 10.00	$ 160.00	1149	1149
5	40kg bag Cement (Advance Tech)	100	3	$ 80.00	$ 240.00	19	19
6	20 metres 16mm Poly Pipe(LKP Order Stores)	3 Rolls	20	$ 9.93	$ 198.60	110	110
7	16mm x 1/2" Male Poly Adaptor (N/stock order)	100	12	$ 28.00	$ 336.00	23	23
8	Threaded Tape (NRW order)		3	$ 10.00	$ 30.00	86	86
			Total per Requisition =		$ 2,818.60		

DEPARTMENT NAME: NRW PROJECT TEAM — **RECEIVED BY :** Selina Fai
AUTHORIZED BY : Eric Unga — **ISSUED BY :** Paul Seda
REQUISITION NO: 2489 — **DATE ISSUED:** 29/07/2014
JOB DESCRIPTION: Being required for Meter raising @ Naha 3 Pilot project Site .
METER LD : 14A644497,14A644492,14A644494,14A644510,14A644493,14A44505,14A44954.

ITEM	Materials Description	NEW ST ORDER	Quantity ISSUED	Unit Cost	Total Cost	BIN CARD BALANCE	STOCK COUNTED
1	40 metres 16mm Poly Pipe(LKP Order Stores)	3 Rolls	40	$ 9.93	$ 397.20	960m	960m
2	16mm Poly Coupling (Tongs order Stores)	100	10	$ 50.00	$ 500.00	30	30
3	16mm x 1/2" Male Poly Adaptor (N/stock order)	100	10	$ 28.00	$ 280.00	10	10
4	16mm x 1/2" female poly Adaptor (N/stock)		4	$ 45.00	$ 180.00	67	67
5	15mm Water Meter (JICA order)		7	$ 234.00	$ 1,638.00	547	547
			Total per Requisition =		$ 2,995.20		

DEPARTMENT NAME: NRW PROJECT TEAM — **RECEIVED BY :** Derick Hoa
AUTHORIZED BY : Eric Unga — **ISSUED BY :** Paul Seda
REQUISITION NO: 2490 — **DATE ISSUED:** 29/07/2014
JOB DESCRIPTION: Being required for Meter raising @ Naha 3 Pilot project Site .
METER LD : 14A644499,14A644504,14A644509,14A644498,14A644503,14A644508,14A644502,14A644507,14A644427,14A644422.

ITEM	Materials Description	NEW ST ORDER	Quantity ISSUED	Unit Cost	Total Cost	BIN CARD BALANCE	STOCK COUNTED
1	16mm Poly Coupling (Tongs order Stores)	100	10	$ 50.00	$ 500.00	20	20
2	16mm x 1/2" Male Poly Adaptor (N/stock order)	100	10	$ 28.00	$ 280.00	72	72
3	15mm Water Meter (JICA order)		10	$ 234.00	$ 2,340.00	536	536
4	50 metres 16mm Poly Pipe(LKP Order Stores)	3 Rolls	50	$ 9.93	$ 496.50	350m	350m
			Total per Requisition =		$ 3,616.50		

Total Material Cost for Naha 3 $ 24,927.46

TOTAL COST FOR FFA PILOT

	Before Countermeasure	Countermeasure	After Countermeasure	Routine Activities	Total
Personnel Cost	55,502.70	31,528.43	12,475.58	2,192.40	101,699.10
Consumable	4,133.83	320.59	53.43	42.74	4,550.59
Material and Equipment	8,274.01	61,631.78	0.00	0.00	69,905.79
Sub Total	**64,190.54**	**93,480.79**	**12,529.01**	**2,235.14**	**176,435.48**
TOTAL	**157,671.33**		**14,764.15**		

TOTAL MAN DAYS FOR FFA	674

1. Costing Before Countermeasure

Location **FFA**

per day

Items	Specification	Quantity	Unit	Hourly Rate	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
1. Personnel	Grades- Steps								
Staff-3	3.1	0	Person	15.85	118.88				
	3.2	0	Person	16.37	122.78				
	3.3	0	Person	16.90	126.75				
	3.4	0	Person	17.43	130.73				
	3.5	0	Person	17.96	134.70				
Staff-4	4.1	40	Person	19.81	148.58	133.00		19,760.48	
	4.2	21	Person	20.60	154.50	51.00		7,879.50	
	4.3	0	Person	21.39	160.43			0.00	
	4.4	0	Person	22.18	166.35			0.00	
	4.5	10	Person	22.98	172.35	25.00		4,308.75	
Staff-5	5.1	10	Person	24.83	186.23	25.00		4,655.63	
	5.2	0	Person	25.88	194.10			0.00	
	5.3	0	Person	26.94	202.05			0.00	
	5.4	0	Person	27.99	209.93			0.00	
	5.5	10	Person	29.05	217.88	25.00		5,446.88	
Staff-6	6.1	1	Person	32.48	243.60	1.00		243.60	
	6.2	1	Person	33.81	253.58	1.00		253.58	
	6.3	0	Person	35.13	263.48			0.00	
	6.4	0	Person	36.45	273.38			0.00	
	6.5	0	Person	37.77	283.28			0.00	
Staff-7	7.1	0	Person	39.62	297.15	0.00		0.00	
	7.2	0	Person	40.94	307.05			0.00	
	7.3	0	Person	42.26	316.95			0.00	
	7.4	0	Person	43.58	326.85			0.00	
	7.5	1	Person	44.90	336.75	1.00		336.75	
Staff-8	8.1	0	Person	49.39	370.43			0.00	
	8.2	0	Person	50.71	380.33			0.00	
	8.3	0	Person	52.03	390.23			0.00	
	8.4	0	Person	53.35	400.13			0.00	
	8.5	8	Person	54.67	410.03	22.00		9,020.55	
Staff-9	9.1	4	Person	59.95	449.63	8.00		3,597.00	
	9.2	0	Person	61.27	459.53			0.00	
	9.3	0	Person	62.59	469.43			0.00	
	9.4	0	Person	63.91	479.33			0.00	
	9.5	0	Person	65.23	489.23			0.00	
Sub-total						**292.00**		**55,502.70**	
2. Consumable				$ Per Liter	L/km		$/km		
Diesel	For Excavator	30	Liter	11.80	0.3620		4.2716	128.15	50km/7km/liter=7.14liter 11liter/hrs (fuel consumption for about 60PS) x 1hr=11liter 11liter +7.1liter=18.1liter/50km
Diesel	For Pick-up	160.4	Liter	11.80	0.1428	22.9051	1.68504	270.28	50km/7km/liter=7.14liter/50km
Engine Oil	For Excavator	0	Liter	60.00	0.0016		0.096	0.00	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Engine Oil	For Pick-up	160.4	Liter	60.00	0.0016		0.096	15.40	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Tires		0	Nos	770.00	0.0014		1.078	0.00	50km x 252days=12,600km 12,600km/ 30,000km x 4nos=1.6nos 1.6nos/ 252days=0.07nos/50km
Sub-total								**413.83**	
3. Material &									
Sluice/ Gate Valve	25mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	40mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	50mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	80mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	100mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	150mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	200mm		piece					0.00	Sluice Valve

Items	Specification	Quantity	Unit	Hourly Rate	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
Sluice/ Gate Valve	250mm		piece					0.00	Sluice Valve225mm AUD1785
Sluice/ Gate Valve	300mm		piece					0.00	
Pipes (Poly)	15mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	20mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	25mm		coil					0.00	Length on 1 coil =200m
Pipes (Poly)	50mm		coil					0.00	Length on 1 coil =150m
Pipes (PVC)	25mm		piece					0.00	
Pipes (PVC)	50mm		piece					0.00	
Pipes (PVC)	80mm		piece					0.00	
Pipes (PVC)	100mm		piece					0.00	
Pipes (PVC)	150mm		piece					0.00	
Pipes (PVC)	200mm		piece					0.00	
Pipes (PVC)	250mm		piece					0.00	
Pipes (PVC)	300mm		piece					0.00	
Water Meter	10mm		piece					0.00	
Water Meter	16mm		piece					0.00	
Water Meter	20mm		piece					0.00	
Water Meter	25mm		piece					0.00	
Water Meter	32mm		piece					0.00	
Water Meter	40mm		piece					0.00	
All Materials for Before Countermeasures								8,274.01	
Sub-total								**8,274.01**	
Total								**64,190.54**	

1AUD=6.534SBD was applied to the above (rate as of 30 September, 2013 of Oanda).

2. Costing Countermeasure

Location **FFA**

per day

Items	Specification	Quantity	Unit	Hourly Rate (SBD)	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
1. Personnel	Grades- Steps								
Staff-3	3.1	0	Person	15.85	118.88				
	3.2	0	Person	16.37	122.78				
	3.3	0	Person	16.90	126.75				
	3.4	0	Person	17.43	130.73				
	3.5	0	Person	17.96	134.70				
Staff-4	4.1	14	Person	19.81	148.58	57.00		8,468.78	
	4.2	7	Person	20.60	154.50	19.00		2,935.50	
	4.3	0	Person	21.39	160.43			0.00	
	4.4	0	Person	22.18	166.35			0.00	
	4.5	3	Person	22.98	172.35	9.00		1,551.15	
Staff-5	5.1	4	Person	24.83	186.23	29.00		5,400.53	
	5.2	0	Person	25.88	194.10			0.00	
	5.3	0	Person	26.94	202.05			0.00	
	5.4	0	Person	27.99	209.93			0.00	
	5.5	4	Person	29.05	217.88	10.00		2,178.75	
Staff-6	6.1	1	Person	32.48	243.60	1.00		243.60	
	6.2	0	Person	33.81	253.58			0.00	
	6.3	0	Person	35.13	263.48			0.00	
	6.4	0	Person	36.45	273.38			0.00	
	6.5	0	Person	37.77	283.28			0.00	
Staff-7	7.1	0	Person	39.62	297.15	0.00		0.00	
	7.2	0	Person	40.94	307.05			0.00	
	7.3	0	Person	42.26	316.95			0.00	
	7.4	0	Person	43.58	326.85			0.00	
	7.5	0	Person	44.90	336.75			0.00	
Staff-8	8.1	0	Person	49.39	370.43			0.00	
	8.2	0	Person	50.71	380.33			0.00	
	8.3	0	Person	52.03	390.23			0.00	
	8.4	0	Person	53.35	400.13			0.00	
	8.5	2	Person	54.67	410.03	5.00		2,050.13	
Staff-9	9.1	0	Person	59.95	449.63			0.00	
	9.2	0	Person	61.27	459.53			0.00	
	9.3	0	Person	62.59	469.43			0.00	
	9.4	0	Person	63.91	479.33			0.00	
	9.5	0	Person	65.23	489.23			0.00	
Contractors								$ 8,700.00	
Sub-total						**130.00**		**31,528.43**	
2. Consumable				$ Per Liter	L/km		$/km		
Diesel	For Excavator	0	Liter	11.80	0.3620		4.2716	0.00	50km/7km/liter=7.14liter 11liter/hrs (fuel consumption for about 60PS) x 1hr=11liter 11liter +7.1liter=18.1liter/50km
Diesel	For Pick-up	180	Liter	11.80	0.1428	25.7040	1.68504	303.31	50km/7km/liter=7.14liter/50km
Engine Oil	For Excavator	0	Liter	60.00	0.0016		0.096	0.00	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Engine Oil	For Pick-up	180	Liter	60.00	0.0016		0.096	17.28	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/
Tires		0	Nos	770.00	0.0014		1.078	0.00	50km x 252days=12,600km 12,600km/ 30,000km x 4nos=1.68nos 1.68nos/ 252days=0.07nos/50km

Items	Specification	Quantity	Unit	Hourly Rate (SBD)	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
Sub-total								**320.59**	
3. Material & Equipment									
Sluice/ Gate Valve	25mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	40mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	50mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	80mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	100mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	150mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	200mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	250mm		piece					0.00	Sluice Valve225mm
Sluice/ Gate Valve	300mm		piece					0.00	
Pipes (Poly)	15mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	20mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	25mm		coil					0.00	Length on 1 coil =200m
Pipes (Poly)	50mm		coil					0.00	Length on 1 coil =150m
Pipes (PVC)	25mm		piece					0.00	
Pipes (PVC)	50mm		piece					0.00	
Pipes (PVC)	80mm		piece					0.00	
Pipes (PVC)	100mm		piece					0.00	
Pipes (PVC)	150mm		piece					0.00	
Pipes (PVC)	200mm		piece					0.00	
Pipes (PVC)	250mm		piece					0.00	
Pipes (PVC)	300mm		piece					0.00	
Water Meter	10mm		piece					0.00	
Water Meter	16mm		piece					0.00	
Water Meter	20mm		piece					0.00	
Water Meter	25mm		piece					0.00	
Water Meter	32mm		piece					0.00	
Water Meter	40mm		piece					0.00	
All Materials for Countermeasures								61,631.78	
Sub-total								**61,631.78**	
Total								**93,480.79**	

1AUD=6.534SBD was applied to the above (rate as of 30 September, 2013 of Oanda).

3. Costing After Countermeasure

Location **FFA**

per day

Items	Specification	Quantity	Unit	Hourly Rate	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
1. Personnel	Grades- Steps								
Staff-3	3.1	0	Person	15.85	118.88				
	3.2	0	Person	16.37	122.78				
	3.3	0	Person	16.90	126.75				
	3.4	0	Person	17.43	130.73				
	3.5	0	Person	17.96	134.70				
Staff-4	4.1	12	Person	19.81	148.58	20.00		2,971.50	
	4.2	6	Person	20.60	154.50	10.00		1,545.00	
	4.3	0	Person	21.39	160.43			0.00	
	4.4	0	Person	22.18	166.35			0.00	
	4.5	3	Person	22.98	172.35	5.00		861.75	
Staff-5	5.1	3	Person	24.83	186.23	5.00		931.13	
	5.2	0	Person	25.88	194.10			0.00	
	5.3	0	Person	26.94	202.05			0.00	
	5.4	0	Person	27.99	209.93			0.00	
	5.5	3	Person	29.05	217.88	5.00		1,089.38	
Staff-6	6.1	0	Person	32.48	243.60			0.00	
	6.2	0	Person	33.81	253.58			0.00	
	6.3	0	Person	35.13	263.48			0.00	
	6.4	0	Person	36.45	273.38			0.00	
	6.5	0	Person	37.77	283.28			0.00	
Staff-7	7.1	2	Person	39.62	297.15	4.00		1,188.60	
	7.2	0	Person	40.94	307.05			0.00	
	7.3	0	Person	42.26	316.95			0.00	
	7.4	0	Person	43.58	326.85			0.00	
	7.5	0	Person	44.90	336.75			0.00	
Staff-8	8.1	0	Person	49.39	370.43			0.00	
	8.2	0	Person	50.71	380.33			0.00	
	8.3	0	Person	52.03	390.23			0.00	
	8.4	0	Person	53.35	400.13			0.00	
	8.5	2	Person	54.67	410.03	4.00		1,640.10	
Staff-9	9.1	1	Person	59.95	449.63	5.00		2,248.13	
	9.2	0	Person	61.27	459.53			0.00	
	9.3	0	Person	62.59	469.43			0.00	
	9.4	0	Person	63.91	479.33			0.00	
	9.5	0	Person	65.23	489.23			0.00	
Sub-total						**58.00**		**12,475.58**	
2. Consumable				$ Per Liter	L/km		$/km		
Diesel	For Excavator	0	Liter	11.80	0.3620		4.2716	0.00	50km/7km/liter=7.14liter 11liter/hrs (fuel consumption for about 60PS) x 1hr=11liter 11liter +7.1liter=18.1liter/50km
Diesel	For Pick-up	30	Liter	11.80	0.1428	4.2840	1.68504	50.55	50km/7km/liter=7.14liter/50km
Engine Oil	For Excavator	0	Liter	60.00	0.0016		0.096	0.00	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Engine Oil	For Pick-up	30	Liter	60.00	0.0016		0.096	2.88	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Tires		0	Nos	770.00	0.0014		1.078	0.00	50km x 252days=12,600km 12,600km/ 30,000km x 4nos=1.68nos 1.68nos/ 252days=0.07nos/50km
Sub-total								**53.43**	
3. Material & Equipment									
Sluice/ Gate Valve	25mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	40mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	50mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	80mm		piece					0.00	Sluice Valve

Items	Specification	Quantity	Unit	Hourly Rate	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
Sluice/ Gate Valve	100mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	150mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	200mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	250mm		piece					0.00	Sluice Valve225mm AUD1785
Sluice/ Gate Valve	300mm		piece					0.00	
Pipes (Poly)	15mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	20mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	25mm		coil					0.00	Length on 1 coil =200m
Pipes (Poly)	50mm		coil					0.00	Length on 1 coil =150m
Pipes (PVC)	25mm		piece					0.00	
Pipes (PVC)	50mm		piece					0.00	
Pipes (PVC)	80mm		piece					0.00	
Pipes (PVC)	100mm		piece					0.00	
Pipes (PVC)	150mm		piece					0.00	
Pipes (PVC)	200mm		piece					0.00	
Pipes (PVC)	250mm		piece					0.00	
Pipes (PVC)	300mm		piece					0.00	
Water Meter	10mm		piece					0.00	
Water Meter	16mm		piece					0.00	
Water Meter	20mm		piece					0.00	
Water Meter	25mm		piece					0.00	
Water Meter	32mm		piece					0.00	
Water Meter	40mm		piece					0.00	
All Materials for After Countermeasures								0.00	
Sub-total								**0.00**	
Total								**12,529.01**	

1AUD=6.534SBD was applied to the above (rate as of 30 September, 2013 of Oanda).

4. Routine Activities

Location **FFA**

per day

Items	Specification	Quantity	Unit	Hourly Rate	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
1. Personnel	Grades- Steps								
Staff-3	3.1	0	Person	15.85	118.88			0.00	
	3.2	0	Person	16.37	122.78			0.00	
	3.3	0	Person	16.90	126.75			0.00	
	3.4	0	Person	17.43	130.73			0.00	
	3.5	0	Person	17.96	134.70			0.00	
Staff-4	4.1	0	Person	19.81	148.58			0.00	
	4.2	0	Person	20.60	154.50			0.00	
	4.3	0	Person	21.39	160.43			0.00	
	4.4	0	Person	22.18	166.35			0.00	
	4.5	0	Person	22.98	172.35			0.00	
Staff-5	5.1	0	Person	24.83	186.23			0.00	
	5.2	0	Person	25.88	194.10			0.00	
	5.3	0	Person	26.94	202.05			0.00	
	5.4	0	Person	27.99	209.93			0.00	
	5.5	0	Person	29.05	217.88			0.00	
Staff-6	6.1	3	Person	32.48	243.60	9.00		2,192.40	
	6.2	0	Person	33.81	253.58			0.00	
	6.3	0	Person	35.13	263.48			0.00	
	6.4	0	Person	36.45	273.38			0.00	
	6.5	0	Person	37.77	283.28			0.00	
Staff-7	7.1	0	Person	39.62	297.15			0.00	
	7.2	0	Person	40.94	307.05			0.00	
	7.3	0	Person	42.26	316.95			0.00	
	7.4	0	Person	43.58	326.85			0.00	
	7.5	0	Person	44.90	336.75			0.00	
Staff-8	8.1	0	Person	49.39	370.43			0.00	
	8.2	0	Person	50.71	380.33			0.00	
	8.3	0	Person	52.03	390.23			0.00	
	8.4	0	Person	53.35	400.13			0.00	
	8.5	0	Person	54.67	410.03			0.00	
Staff-9	9.1	0	Person	59.95	449.63			0.00	
	9.2	0	Person	61.27	459.53			0.00	
	9.3	0	Person	62.59	469.43			0.00	
	9.4	0	Person	63.91	479.33			0.00	
	9.5	0	Person	65.23	489.23			0.00	
Sub-total						**9.00**		**2,192.40**	
2. Consumable				$ Per Liter	L/km		$/km		
Diesel	For Excavator	0	Liter	11.80	0.3620		4.2716	0.00	50km/7km/liter=7.14liter 11liter/hrs (fuel consumption for about 60PS) x 1hr=11liter 11liter +7.1liter=18.1liter/50km
Diesel	For Pick-up	24	Liter	11.80	0.1428	3.4272	1.68504	40.44	50km/7km/liter=7.14liter/50km
Engine Oil	For Excavator	0	Liter	60.00	0.0016		0.096	0.00	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Engine Oil	For Pick-up	24	Liter	60.00	0.0016		0.096	2.30	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Tires		0	Nos	770.00	0.0014		1.078	0.00	50km x 252days=12,600km 12,600km/ 30,000km x 4nos=1.68nos 1.68nos/ 252days=0.07nos/50km
Sub-total								**42.74**	
3. Material & Equipment									
Sluice/ Gate Val	25mm		piece					0.00	Gate Valve

Items	Specification	Quantity	Unit	Hourly Rate	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
Sluice/ Gate Val	40mm		piece					0.00	Gate Valve
Sluice/ Gate Val	50mm		piece					0.00	Gate Valve
Sluice/ Gate Val	80mm		piece					0.00	Sluice Valve
Sluice/ Gate Val	100mm		piece					0.00	Sluice Valve
Sluice/ Gate Val	150mm		piece					0.00	Sluice Valve
Sluice/ Gate Val	200mm		piece					0.00	Sluice Valve
Sluice/ Gate Val	250mm		piece					0.00	Sluice Valve225mm AUD1785
Sluice/ Gate Val	300mm		piece					0.00	
Pipes (Poly)	15mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	20mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	25mm		coil					0.00	Length on 1 coil =200m
Pipes (Poly)	50mm		coil					0.00	Length on 1 coil =150m
Pipes (PVC)	25mm		piece					0.00	
Pipes (PVC)	50mm		piece					0.00	
Pipes (PVC)	80mm		piece					0.00	
Pipes (PVC)	100mm		piece					0.00	
Pipes (PVC)	150mm		piece					0.00	
Pipes (PVC)	200mm		piece					0.00	
Pipes (PVC)	250mm		piece					0.00	
Pipes (PVC)	300mm		piece					0.00	
Water Meter	10mm		piece					0.00	
Water Meter	16mm		piece					0.00	
Water Meter	20mm		piece					0.00	
Water Meter	25mm		piece					0.00	
Water Meter	32mm		piece					0.00	
Water Meter	40mm		piece					0.00	
All Materials for routine activites								0.00	
Sub-total								**0.00**	
Total								**2,235.14**	

1AUD=6.534SBD was applied to the above (rate as of 30 September, 2013 of Oanda).

DEPARTMENT NAME: NRW PROJECT TEAM — **RECEIVED BY :** Derick Hoa
AUTHORIZED BY : Silas Talosui — **ISSUED BY :** Paul Seda
REQUISITION NO: 1514 — **DATE ISSUED:** 11/07/2014
JOB DESCRIPTION: Being for FFA Pilot Project Site .
METER I.D :

ITEM	Materials Description	NEW ST ORDER	Quantity ISSUED	Unit Cost	Total Cost	BIN CARD BALANCE	STOCK COUNTED
1	100mm Sluice Valve (New Zealand stock)		1	$ 1,759.25	$ 1,759.25	5	5
2	100mm x 3/4" Brass Tapping Saddle/Band		1	$ 234.00	$ 234.00	163	163
3	Flange Collar Adaptor (New Zealand Stock)		4	$ 586.41	$ 2,345.64	6	6
4	100mm Gasket & Bolts,Nuts		4	131.28	$ 525.12	2	2
5	100mm BulkWater Meter		1	$ 3,306.00	$ 3,306.00	3	3
6	3/4" x 1/2" G.I reduce bush		1	$ 9.00	$ 9.00	55	55
7	15mm Stop Tap (NRW order)	100	1	$ 95.00	$ 95.00	134	134
		Total per Requisition =			**$ 8,274.01**		

DEPARTMENT NAME: NRW PROJECT TEAM — **RECEIVED BY : John Chede**
AUTHORIZED BY : Binjaman — **ISSUED BY :** Paul Seda
REQUISITION NO: 2493 — **DATE ISSUED:** 05/08/2014
JOB DESCRIPTION: Being for meter raising @ FFA area .

1	50mm Gate Valve (NRW Order)LKP		1	$ 580.00	$ 580.00	1	1
2	50mm Gibault Coupling (NZ Order)		1	$ 530.86	$ 530.86	2	2
3	50mm PVC Male Adaptor		2	$ 530.86	$ 1,061.72	57	57
4	Threaded Tape (NRW order)		4	$ 10.00	$ 40.00	1098	1098
		Total per Requisition =			**$ 2,212.58**		

DEPARTMENT NAME: NRW PROJECT TEAM — **RECEIVED BY : John Chede**
AUTHORIZED BY : Binjaman — **ISSUED BY :** Paul Seda
REQUISITION NO: 2492 — **DATE ISSUED:** 07/08/2014
JOB DESCRIPTION: Being for meter raising @ FFA area .

1	80mm SLUICEValve (Kitano)		1	$ 823.85	$ 823.85	3	3
2	Threaded Tape (NRW order)		6	$ 10.00	$ 60.00	1092	1092
3	80mm UPVC Pressure Pipe		1	$ 990.00	$ 990.00	67	67
4	PVC Glue 250ml Island enterprise order		1	$ 180.00	$ 180.00	5	5
		Total per Requisition =			**$ 2,053.85**		

DEPARTMENT NAME: NRW PROJECT TEAM — **RECEIVED BY : John Chede**
AUTHORIZED BY : Erio Unga — **ISSUED BY :** Paul Seda
REQUISITION NO: 2494 — **DATE ISSUED:** 08/08/2014
JOB DESCRIPTION: Being for meter raising @ FFA area .

1	40mm PVC Compression Coupling		1	$ 41.00	$ 41.00	37	38
2	100mm UPVC W/pipe		1	$ 171.00	$ 171.00	81	81
		Total per Requisition =			**$ 212.00**		

DEPARTMENT NAME: NRW PROJECT TEAM — **RECEIVED BY : John Chede**
AUTHORIZED BY : Erio Unga — **ISSUED BY :** Paul Seda
REQUISITION NO: 2494 — **DATE ISSUED:** 08/08/2014
JOB DESCRIPTION: Being for meter raising @ FFA area .

1	50mm Gate Valve (NRW Order)LKP		1	$ 580.00	$ 580.00	1	1
2	50mm x 2" Poly Male Adaptor		2	$ 38.00	$ 76.00	20	20
3	Threaded Tape (NRW order)		4	$ 10.00	$ 40.00	1092	1092
		Total per Requisition =			**$ 696.00**		

DEPARTMENT NAME: NRW PROJECT TEAM — **RECEIVED BY : John Chede**
AUTHORIZED BY : Binjaman — **ISSUED BY :** Paul Seda
REQUISITION NO: 2492 — **DATE ISSUED:** 08/08/2014
JOB DESCRIPTION: Being for meter raising @ FFA area .

1	30mm x 16mm Poly pipe (NRW)LKP		30	$ 9.93	$ 297.90	365	365
2	40mm PVC Male Adaptor		1	$ 25.00	$ 25.00	51	51
3	40mm x 1 1/2" poly female Adaptor		1	$ 56.00	$ 56.00	96	96

4	16mm x 16mm x 16mm Poly Tee		1	$ 85.00	$ 85.00	37	37
5	16mm x 16mm Poly Coupling		2	$ 50.00	$ 100.00	37	37
6	Threaded Tape (NRW order)		4	$ 10.00	$ 40.00	1092	1092
7	40mm x 1" Male Adaptor poly		1	$ 55.00	$ 55.00	45	45
8	16mm x 1/2" poly Male Adaptor LKP Order		4	$ 65.00	$ 260.00	280	280
			Total per Requisition =		$ 918.90		

DEPARTMENT NAME: NRW PROJECT TEAM — **RECEIVED BY :M. Mafe**
AUTHORIZED BY : Benjamin — **ISSUED BY : George Blamoli**
REQUISITION NO: 2089 — **DATE ISSUED: 18** /08/2014
JOB DESCRIPTION: Being for meter raising at FFA .
METER I.D : 14A644629, 14A644621, 14A644612, 14A644626, 14A644620, 14A644625, 14A644614, 14A644616, 14A644624, 14A644630

1	30mx 16mm Poly pipe (NRW)LKP		30	$ 9.93	$ 297.90	325	325
2	10m x 20mm Poly pipe(NRW LKP order)		10	$ 15.50	$ 155.00	317m	317m
3	20mm x 16mm Reducing Poly Coupling		10	$ 60.00	$ 600.00	29	29
4	16mm Poly Coupling (Tongs order)		8	$ 50.00	$ 400.00	126	126
5	16mm x 1/2" poly female Adaptor (NRW stock)		4	$ 45.00	$ 180.00	357	357
6	16mm x 1/2" poly Male Adaptor LKP Order		4	$ 65.00	$ 260.00	276	276
7	20mm x 1/2" poly Male Adaptor		3	$ 35.00	$ 105.00	67	67
8	15mm Water Meter (JICA order)		10	$ 234.00	$ 2,340.00	415	415
9	Threaded Tape (NRW order)		10	$ 10.00	$ 100.00	1074	1074
10	40Kg Bag Cement (Tongs Order)		6	$ 81.00	$ 486.00	87	87
			Total per Requisition =		$ 4,923.90		

DEPARTMENT NAME: NRW PROJECT TEAM — **RECEIVED BY :M. Mafe**
AUTHORIZED BY : Benjamin — **ISSUED BY : George Blamoli**
REQUISITION NO: 2089 — **DATE ISSUED: 18** /08/2014
JOB DESCRIPTION: Being for meter raising at FFA .
METER I.D : 14A644871, 14A644870, 14A644866, 14A644869, 14A644865, 14A644863, 14A644864,

1	60mx 16mm Poly pipe (NRW)LKP		60	$ 9.93	$ 595.80	265	265
2	20 metres 20mm Poly Pipe (NRW order)LKP		20	$ 15.50	$ 310.00	297m	297m
3	16mm G.I Tee		1	$ 5.00	$ 5.00	74	74
4	20 mm G.I Tee		1	$ 8.00	$ 8.00	84	84
5	40Kg Bag Cement (Tongs Order)		3	$ 81.00	$ 243.00	84	84
6	20mm x 1/2" poly Male Adaptor		3	$ 35.00	$ 105.00	64	64
			Total per Requisition =		$ 1,266.80		

DEPARTMENT NAME: NRW PROJECT TEAM — **RECEIVED BY :Derick**
AUTHORIZED BY : Silas Taloeiu — **ISSUED BY : George Blamoli**
REQUISITION NO: 2082 — **DATE ISSUED: 20** /08/2014
JOB DESCRIPTION: Being for meter raising at FFA .

1	15mm Water Meter (JICA order)		7	$ 234.00	$ 1,638.00	406	406
2	16mm Poly Coupling (Tongs order)		6	$ 50.00	$ 300.00	117	117
3	16mm x 1/2" poly Male Adaptor (NRW stock)		5	$ 70.00	$ 350.00	271	271
4	16mm x 1/2" poly female Adaptor (NRW stock)		5	$ 65.00	$ 325.00	305	305
5	16mm x 16mm x 16mm Poly Tee		4	$ 85.00	$ 340.00	31	31
6	16mm x 3/4" poly female Adaptor (N/stock)		3	$ 50.00	$ 150.00	43	43
7	20mm x 16mm R/ Poly Coupling (Tongs order)		4	$ 50.00	$ 200.00	25	25
8	25mm x 16mm R/ Poly Coupling (LKP NRW)		2	$ 110.00	$ 220.00	38	38
9	20mm x 15mm R/ Nipple G.I (Tongs order)		2	$ 12.00	$ 24.00	47	47
10	20mm x 15mm R/ Socket G.I (Tongs order)		2	$ 12.00	$ 24.00	212	212
11	Threaded Tape (NRW order)		30	$ 10.00	$ 300.00	1044	1044
			Total per Requisition =		$ 3,871.00		

DEPARTMENT NAME: NRW PROJECT TEAM — **RECEIVED BY : Selina Fai**
AUTHORIZED BY : Eric Unga — **ISSUED BY : George Blamoli**
REQUISITION NO: 2086 — **DATE ISSUED: 21/** 08/2014
JOB DESCRIPTION: Being for meter raising at FFA .
METER I.D : 14A644858, 14A644857, 14A644852, 14A644853, 14A644854, 14A644855, 14A644856, 14A644812, 14A644813 14A644814, 14A644815, 14A644816, 14A644817

1	15mm Water Meter (JICA order)		13	$ 234.00	$ 3,042.00	389	389
2	16mm x 16mm Poly Coupling		8	$ 50.00	$ 400.00	106	106
3	50mx 16mm Poly pipe (NRW)LKP		50	$ 9.93	$ 496.50	215	215
4	20 metres 20mm Poly Pipe (NRW order)LKP		20	$ 15.50	$ 310.00	270m	270m
5	25mm x 25mm Poly Coupling (NRW LKP order)		2	$ 85.00	$ 170.00	13	13
6	40Kg Bag Cement (Tongs Order)		2	$ 81.00	$ 162.00	82	82

7	15 metres 25mm Poly Pipe		15	$ 17.00	$ 255.00	84m	84m
8	20mm x 16mm R/ Poly Coupling (Tongs order)		4	$ 50.00	$ 200.00	21	21
9	20mm x 1/2" poly female Adaptor (NRW LKP)		1	$ 68.00	$ 68.00	264	264
			Total per Requisition =		$ 5,103.50		

DEPARTMENT NAME: NRW PROJECT TEAM — **RECEIVED BY :Derick**
AUTHORIZED BY : Eric Unga — **ISSUED BY : George Blamoli**
REQUISITION NO: 2090 — **DATE ISSUED: 21** /08/2014
JOB DESCRIPTION: Being for meter raising at FFA Pilot Site .

1	16mm x 1/2" poly Male Adaptor (NRW stock)		1	$ 70.00	$ 70.00	270	270
2	20mm x 1/2" x 20mm Poly reduce F/ Thread Tee		1	$ 24.00	$ 24.00	197	197
3	500mm x 15mm Galvanise pipe (NRW)LKP		80	$ 72.00	$ 5,760.00	136	136
4	200mm x 15mm Galvanise pipe (NRW)LKP		40	$ 65.00	$ 2,600.00	67	67
5	16mm x 1/2" poly female Adaptor (NRW stock)		40	$ 65.00	$ 2,600.00	262	262
6	15mm Stop Tap (Tongs order)		20	$ 95.00	$ 1,900.00	31	31
7	15mm Socket Galvanise(NRW LKP order)		20	$ 8.00	$ 160.00	160	160
8	Threaded Tape (NRW order)		40	$ 10.00	$ 400.00	989	989
9	16mm Poly Coupling (Tongs order)		2	$ 50.00	$ 100.00	103	103
			Total per Requisition =		$ 13,614.00		

DEPARTMENT NAME: NRW PROJECT TEAM — **RECEIVED BY : Selina Fai**
AUTHORIZED BY : Eric Unga — **ISSUED BY : George Blamoli**
REQUISITION NO: 1264 — **DATE ISSUED: 21/** 08/2014
JOB DESCRIPTION: Being for meter raising at FFA .
METER I.D : 14A644824, 14A644821, 14A644831, 14A644823, 14A644830, 14A644826, 14A644825, 14A644829,

1	15mm Water Meter (JICA order)		8	$ 234.00	$ 1,872.00	378	378
2	40mx 16mm Poly pipe (NRW)LKP		40	$ 9.93	$ 397.20	175	175
5	16mm x 1/2" poly female Adaptor (NRW stock)		6	$ 65.00	$ 390.00	256	256
6	16mm Poly Coupling (Tongs order)		8	$ 50.00	$ 400.00	95	95
7	20mm x 16mm R/ Poly Coupling (LKP Order)		3	$ 98.00	$ 294.00	10	10
8	16mm x 3/4" poly female Adaptor (N/stock)		3	$ 50.00	$ 150.00	39	39
9	16mm x 3/4" poly Male Adaptor		2	$ 28.00	$ 56.00	42	42
10	40Kg Bag Cement (SI Cement Order)		1	$ 81.00	$ 81.00	82	82
			Total per Requisition =		$ 3,840.20		

DEPARTMENT NAME: NRW PROJECT TEAM — **RECEIVED BY :J Chede**
AUTHORIZED BY : Silas Taloeiu — **ISSUED BY : George Blamoli**
REQUISITION NO: 2496 — **DATE ISSUED: 22** /08/2014
JOB DESCRIPTION: Being for meter raising at FFA Pilot Site .

1	16mm x 1/2" poly female Adaptor (NRW stock)		20	$ 65.00	$ 1,300.00	236	236
2	15mm Socket Galvanise(NRW LKP order)		10	$ 8.00	$ 80.00	150	150
3	15mm Elbow Galvanise (NRW LKP Order)		40	$ 10.00	$ 400.00	830	830
4	15mm Stop Tap (Tongs order)		10	$ 95.00	$ 950.00	21	21
5	Threaded Tape (NRW order)		20	$ 10.00	$ 200.00	969	969
6	40mx 16mm Poly pipe (NRW)LKP		20	$ 9.93	$ 198.60	155	155
7	16mm Poly Coupling (Tongs order)		2	$ 50.00	$ 100.00	92	92
8	15mm UPVC Fenale Faucet Adaptor Pressure		2	$ 9.00	$ 18.00	20	20
9	15mm G.I Plug		2	$ 9.00	$ 18.00	20	20
			Total per Requisition =		$ 3,264.60		

DEPARTMENT NAME: NRW PROJECT TEAM — **RECEIVED BY : M Mafe**
AUTHORIZED BY : Silas Taloeiu — **ISSUED BY : George Blamoli**
REQUISITION NO: 2498 — **DATE ISSUED: 23** /08/2014
JOB DESCRIPTION: Being for meter raising @ FFA pilot project site .
METER I.D : 14A644977, 14A644986, 14A644985, 14A644984, 14A644983, 14A644982, .

ITEM	Materials Description	NEW ST ORDER	Quantity ISSUED	Unit Cost	Total Cost	BIN CARD BALANCE	STOCK COUNTED
1	30 mx 16mm Poly pipe (NRW)LKP		30	$ 9.93	$ 297.90	125	125
2	15mm Water Meter (JICA order)		6	$ 234.00	$ 1,404.00	362	362
3	16mm x 16mm x 16mm Poly Tee		1	$ 85.00	$ 85.00	26	26
4	40Kg Bag Cement (SI Cement Order)		2	$ 81.00	$ 162.00	77	77
5	20mm x 1/2" Female Poly Adaptor		1	$ 45.00	$ 45.00	261	261
6	20mm x 16mm R/ Poly Coupling (LKP Order)		2	$ 98.00	$ 196.00	8	8
7	20mm x 20mm Poly Coupling (LKP Order)		2	$ 78.00	$ 156.00	7	7
			Total per Requisition =		$ 2,345.90		

DEPARTMENT NAME: NRW PROJECT TEAM — **RECEIVED BY : Selina Fai**
AUTHORIZED BY : Eric Unga — **ISSUED BY : George Blamoli**

REQUISITION NO: 1265 — **DATE ISSUED: 25/** 08/2014
JOB DESCRIPTION: Being for meter raising at FFA .
METER I.D : 14A645015, 14A645020, 14A644831, 14A645025, 14A645030, 14A645016, 14A645021, 14A64526, 14A645031

ITEM	Materials Description	NEW ST ORDER	Quantity ISSUED	Unit Cost	Total Cost	BIN CARD BALANCE	STOCK COUNTED
1	15mm Water Meter (JICA order)		8	$ 234.00	$ 1,872.00	354	354
2	16mm x 1/2" poly Male Adaptor (NRW stock)		5	$ 70.00	$ 350.00	260	260
3	16mm x 1/2" poly female Adaptor (NRW stock)		5	$ 65.00	$ 325.00	231	231
4	50mx 16mm Poly pipe (NRW)LKP		50	$ 9.93	$ 496.50	75	75
5	16mm Poly Coupling (Tongs order)		6	$ 50.00	$ 300.00	82	82
6	20mm x 16mm R/ Poly Coupling (LKP Order)		4	$ 98.00	$ 392.00	4	4
7	16mm x 3/4" poly female Adaptor (N/stock)		4	$ 50.00	$ 200.00	31	31
8	20mm x 20mm Poly Coupling (LKP Order)		3	$ 78.00	$ 234.00	4	4
9	40Kg Bag Cement (SI Cement Order)		4	$ 81.00	$ 324.00	73	73
1"0	25mm x 25mm Poly Tee (Tongs order)		1	$ 105.00	$ 105.00	39	39
			Total per Requisition =		$ 4,598.50		

DEPARTMENT NAME: NRW PROJECT TEAM — **RECEIVED BY : Selina Fai**
AUTHORIZED BY : Eric Unga — **ISSUED BY : George Blamoli**
REQUISITION NO: 1265 — **DATE ISSUED: 25/** 08/2014
JOB DESCRIPTION: Being for meter raising at FFA .

ITEM	Materials Description	NEW ST ORDER	Quantity ISSUED	Unit Cost	Total Cost	BIN CARD BALANCE	STOCK COUNTED
1	15mm Stop Tap (Tongs order)		5	$ 95.00	$ 475.00	16	16
2	Threaded Tape (NRW order)		2	$ 10.00	$ 20.00	949	949
			Total per Requisition =		$ 5,093.50		

DEPARTMENT NAME: NRW PROJECT TEAM — **RECEIVED BY : Selina Fai**
AUTHORIZED BY : Eric Unga — **ISSUED BY : George Blamoli**
REQUISITION NO: 1265 — **DATE ISSUED: 25/** 08/2014
JOB DESCRIPTION: Being for meter raising at FFA . MID 14W706956

ITEM	Materials Description	NEW ST ORDER	Quantity ISSUED	Unit Cost	Total Cost	BIN CARD BALANCE	STOCK COUNTED
1	200mm x 50mm Galvanise pipe (NRW)LKP		2	$ 90.00	$ 180.00	2	2
2	Threaded Tape (NRW order)		20	$ 10.00	$ 200.00	929	929
3	15mm Socket Galvanise(NRW LKP order)		20	$ 8.00	$ 160.00	130	130
4	50mm Water Meter (JICA order)		1	$ 3,306.00	$ 3,306.00	0	0
5	50mm Nipple Galvanise (2")		2	$ 42.00	$ 84.00	21	21
6	50mm Water Strainer (Island enterprise order)		1	$ 550.00	$ 550.00	4	4
5	50mm Flange Galvanise (2")		4	$ 30.00	$ 120.00	45	45
6	50mm Elbow Galvanise (2" NRW)		2	$ 54.00	$ 108.00	4	4
7	500mm x 50mm Galvanise pipe (NRW)LKP		4	$ 135.00	$ 540.00	4	4
8	50mm Gasket/ Bolts/Nuts/ Washers (JICA order)		5	$ 114.87	$ 574.35	6	6
			Total per Requisition =		$ 5,822.35		

DEPARTMENT NAME: NRW PROJECT TEAM — **RECEIVED BY : Selina Fai**
AUTHORIZED BY : Eric Unga — **ISSUED BY : George Blamoli**
REQUISITION NO: 1267 — **DATE ISSUED: 26/** 08/2014
JOB DESCRIPTION: Being for meter raising at FFA .
METER I.D : 14A645015, 14A645014, 13E30318

ITEM	Materials Description	NEW ST ORDER	Quantity ISSUED	Unit Cost	Total Cost	BIN CARD BALANCE	STOCK COUNTED
1	40mx 16mm Poly pipe (NRW)LKP		40	$ 9.93	$ 397.20	35	35
2	10 metres 20mm Poly Pipe (NRW order)LKP		10	$ 15.50	$ 155.00	260m	260m
3	15mm Water Meter (JICA order)		1	$ 234.00	$ 234.00	349	349
4	40Kg Bag Cement (SI Cement Order)		4	$ 81.00	$ 324.00	68	68
5	Threaded Tape (NRW order)		5	$ 10.00	$ 50.00	924	924
6	40mm Gate Valve Brass		1	$ 220.00	$ 220.00	24	24
7	40mm Nipple Galvanise		2	$ 28.00	$ 56.00	31	31
8	50mm x 40mm R/Socket Galvanise (2")		2	$ 46.00	$ 92.00	18	18
			Total per Requisition =		$ 1,528.20		

DEPARTMENT NAME: NRW PROJECT TEAM — **RECEIVED BY : M. Mafe**
AUTHORIZED BY : Eric Unga — **ISSUED BY : George Blamoli**
REQUISITION NO: 2499 — **DATE ISSUED: 28/** 08/2014
JOB DESCRIPTION: Being for meter raising at FFA .

ITEM	Materials Description	NEW ST ORDER	Quantity ISSUED	Unit Cost	Total Cost	BIN CARD BALANCE	STOCK COUNTED

1	50mm x 25mmx50mm R/ Poly Tee		4	$ 99.00	$ 396.00	4	4
2	2 metres 25mm Poly Pipe		2	$ 17.00	$ 34.00	56m	56m
3	25mm x 20mm Poly reduce Coupling		1	$ 60.00	$ 60.00	61	61
4	Threaded Tape (NRW order)		3	$ 10.00	$ 30.00	921	921
			Total per Requisition =		$ 520.00		

Total Material Cost for FFA — **$ 69,747.79**

TOTAL COST FOR LENGAKIKI PILOT

	Before Countermeasure	After Countermeasure		Total
		After Countermeasure	Routine Activities	
Personnel Cost	64,560.08	90,028.05	3,897.60	177,088.78
Consumable	1,333.90	1,310.85	56.99	11,045.70
Material and Equipment	39,170.87	225,566.00	0.00	264,736.87
Sub Total	**105,064.85**	**316,904.90**	**3,954.59**	**452,819.35**
TOTAL	**421,969.74**			**22,849.60**

TOTAL MAN DAYS BEFORE COUNTERMEASURE FOR LENGAKIKI	**1189**

1. Costing Before Countermeasure

Location **Lengakiki**

per day

Items	Specification	Quantity	Unit	Hourly Rate	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
1. Personnel	Grades- Steps								
Staff-3	3.1	2	Person	15.85	118.88	4.00		475.50	
	3.2	0	Person	16.37	122.78			0.00	
	3.3	0	Person	16.90	126.75			0.00	
	3.4	0	Person	17.43	130.73			0.00	
	3.5	0	Person	17.96	134.70			0.00	
Staff-4	4.1	50	Person	19.81	148.58	175.00		26,000.63	
	4.2	20	Person	20.60	154.50	70.00		10,815.00	
	4.3	0	Person	21.39	160.43			0.00	
	4.4	0	Person	22.18	166.35			0.00	
	4.5	10	Person	22.98	172.35	35.00		6,032.25	
Staff-5	5.1	10	Person	24.83	186.23	35.00		6,517.88	
	5.2	0	Person	25.88	194.10			0.00	
	5.3	0	Person	26.94	202.05			0.00	
	5.4	0	Person	27.99	209.93			0.00	
	5.5	10	Person	29.05	217.88	35.00		7,625.63	
Staff-6	6.1	1	Person	32.48	243.60	2.00		487.20	
	6.2	1	Person	33.81	253.58	1.00		253.58	
	6.3	0	Person	35.13	263.48			0.00	
	6.4	0	Person	36.45	273.38			0.00	
	6.5	0	Person	37.77	283.28			0.00	
Staff-7	7.1	4	Person	39.62	297.15	7.00		2,080.05	
	7.2	0	Person	40.94	307.05			0.00	
	7.3	0	Person	42.26	316.95			0.00	
	7.4	0	Person	43.58	326.85			0.00	
	7.5	0	Person	44.90	336.75	0.00		0.00	
Staff-8	8.1	0	Person	49.39	370.43			0.00	
	8.2	0	Person	50.71	380.33			0.00	
	8.3	0	Person	52.03	390.23			0.00	
	8.4	0	Person	53.35	400.13			0.00	
	8.5	4	Person	54.67	410.03	5.00		2,050.13	
Staff-9	9.1	2	Person	59.95	449.63	6.00		2,697.75	
	9.2	0	Person	61.27	459.53			0.00	
	9.3	0	Person	62.59	469.43			0.00	
	9.4	0	Person	63.91	479.33			0.00	
	9.5	0	Person	65.23	489.23			0.00	
Sub-total						**375.00**		**64,560.08**	
2. Consumable				$ Per Liter	L/km		$/km		
Diesel	For Excavator	64	Liter	11.80	0.3620		4.2716	273.38	50km/7km/liter=7.14liter 11liter/hrs (fuel consumption for about 60PS) x 1hr=11liter 11liter
Diesel	For Pick-up	592	Liter	11.80	0.1428	84.5376	1.68504	997.54	50km/7km/liter=7.14liter/50km
Engine Oil	For Excavator	64	Liter	60.00	0.0016		0.096	6.14	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Engine Oil	For Pick-up	592	Liter	60.00	0.0016		0.096	56.83	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Tires		0	Nos	770.00	0.0014		1.078	0.00	50km x 252days=12,600km 12,600km/ 30,000km x 4nos=1.68nos 1.68nos/
Sub-total								**1,333.90**	
3. Material & Equipment									
Sluice/ Gate Valve	25mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	40mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	50mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	80mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	100mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	150mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	200mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	250mm		piece					0.00	Sluice Valve225mm AUD1785
Sluice/ Gate Valve	300mm		piece					0.00	
Pipes (Poly)	15mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	20mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	25mm		coil					0.00	Length on 1 coil =200m
Pipes (Poly)	50mm		coil					0.00	Length on 1 coil =150m

Items	Specification	Quantity	Unit	Hourly Rate	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
Pipes (PVC)	25mm		piece					0.00	
Pipes (PVC)	50mm		piece					0.00	
Pipes (PVC)	80mm		piece					0.00	
Pipes (PVC)	100mm		piece					0.00	
Pipes (PVC)	150mm		piece					0.00	
Pipes (PVC)	200mm		piece					0.00	
Pipes (PVC)	250mm		piece					0.00	
Pipes (PVC)	300mm		piece					0.00	
Water Meter	10mm		piece					0.00	
Water Meter	16mm		piece					0.00	
Water Meter	20mm		piece					0.00	
Water Meter	25mm		piece					0.00	
Water Meter	32mm		piece					0.00	
Water Meter	40mm		piece					0.00	
All Materials for Before Countermeasures								39,170.87	
Sub-total								**39,170.87**	
Total								**105,064.85**	

1AUD=6.5345BD was applied to the above (rate as of 30 September, 2013 of Oanda).

2. Costing Countermeasure

Location **Lengakiki**

per day

Items	Specification	Quantity	Unit	Hourly Rate (SBD)	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
1. Personnel	Grades- Steps								
Staff-3	3.1	1	Person	15.85	118.88	1.00		118.88	
	3.2	0	Person	16.37	122.78			0.00	
	3.3	0	Person	16.90	126.75			0.00	
	3.4	0	Person	17.43	130.73			0.00	
	3.5	0	Person	17.96	134.70			0.00	
Staff-4	4.1	30	Person	19.81	148.58	230.00		34,172.25	
	4.2	12	Person	20.60	154.50	92.00		14,214.00	
	4.3	0	Person	21.39	160.43			0.00	
	4.4	0	Person	22.18	166.35			0.00	
	4.5	6	Person	22.98	172.35	46.00		7,928.10	
Staff-5	5.1	6	Person	24.83	186.23	46.00		8,566.35	
	5.2	0	Person	25.88	194.10			0.00	
	5.3	0	Person	26.94	202.05			0.00	
	5.4	0	Person	27.99	209.93			0.00	
	5.5	5	Person	29.05	217.88	41.00		8,932.88	
Staff-6	6.1	0	Person	32.48	243.60	0.00		0.00	
	6.2	0	Person	33.81	253.58			0.00	
	6.3	0	Person	35.13	263.48			0.00	
	6.4	0	Person	36.45	273.38			0.00	
	6.5	0	Person	37.77	283.28			0.00	
Staff-7	7.1	1	Person	39.62	297.15	2.00		594.30	
	7.2	0	Person	40.94	307.05			0.00	
	7.3	0	Person	42.26	316.95			0.00	
	7.4	0	Person	43.58	326.85			0.00	
	7.5	0	Person	44.90	336.75			0.00	
Staff-8	8.1	0	Person	49.39	370.43			0.00	
	8.2	0	Person	50.71	380.33			0.00	
	8.3	0	Person	52.03	390.23			0.00	
	8.4	0	Person	53.35	400.13			0.00	
	8.5	2	Person	54.67	410.03	7.00		2,870.18	
Staff-9	9.1	0	Person	59.95	449.63			0.00	
	9.2	0	Person	61.27	459.53			0.00	
	9.3	0	Person	62.59	469.43			0.00	
	9.4	0	Person	63.91	479.33			0.00	
	9.5	0	Person	65.23	489.23			0.00	
Contractors								$ 12,750.00	
Sub-total						**465.00**		**90,028.05**	
2. Consumable				$ Per Liter	L/km		$/km		
Diesel	For Excavator	0	Liter	11.80	0.3620		4.2716	0.00	50km/7km/liter=7.14liter 11liter/hrs (fuel consumption for about 60PS) x 1hr=11liter 11liter
Diesel	For Pick-up	736	Liter	11.80	0.1428	105.1008	1.68504	1,240.19	50km/7km/liter=7.14liter/50km
Engine Oil	For Excavator	0	Liter	60.00	0.0016		0.096	0.00	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Engine Oil	For Pick-up	736	Liter	60.00	0.0016		0.096	70.66	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Tires		0	Nos	770.00	0.0014		1.078	0.00	50km x 252days=12,600km 12,600km/ 30,000km x 4nos=1.68nos 1.68nos/
Sub-total								**1,310.85**	
3. Material & Equipment									
Sluice/ Gate Valve	25mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	40mm		piece					0.00	Gate Valve

Sluice/ Gate Valve	50mm		piece				0.00	Gate Valve
Sluice/ Gate Valve	80mm		piece				0.00	Sluice Valve
Sluice/ Gate Valve	100mm		piece				0.00	Sluice Valve
Sluice/ Gate Valve	150mm		piece				0.00	Sluice Valve
Sluice/ Gate Valve	200mm		piece				0.00	Sluice Valve
Sluice/ Gate Valve	250mm		piece				0.00	Sluice Valve225mm
Sluice/ Gate Valve	300mm		piece				0.00	
Pipes (Poly)	15mm		coil				0.00	Length on 1 coil =300m
Pipes (Poly)	20mm		coil				0.00	Length on 1 coil =300m
Pipes (Poly)	25mm		coil				0.00	Length on 1 coil =200m
Pipes (Poly)	50mm		coil				0.00	Length on 1 coil =150m
Pipes (PVC)	25mm		piece				0.00	
Pipes (PVC)	50mm		piece				0.00	
Pipes (PVC)	80mm		piece				0.00	
Pipes (PVC)	100mm		piece				0.00	
Pipes (PVC)	150mm		piece				0.00	
Pipes (PVC)	200mm		piece				0.00	
Pipes (PVC)	250mm		piece				0.00	
Pipes (PVC)	300mm		piece				0.00	
Water Meter	10mm		piece				0.00	
Water Meter	16mm		piece				0.00	
Water Meter	20mm		piece				0.00	
Water Meter	25mm		piece				0.00	
Water Meter	32mm		piece				0.00	
Water Meter	40mm		piece				0.00	
All Materials for Countermeasures							225,566.00	
Sub-total							**225,566.00**	
Total							**316,904.90**	

1AUD=6.534SBD was applied to the above (rate as of 30 September, 2013 of Oanda).

3. Costing After Countermeasure

Location **Lengakiki**

per day

Items	Specification	Quantity	Unit	Hourly Rate	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
1. Personnel	Grades- Steps								
Staff-3	3.1	0	Person	15.85	118.88				
	3.2	0	Person	16.37	122.78				
	3.3	0	Person	16.90	126.75				
	3.4	0	Person	17.43	130.73				
	3.5	0	Person	17.96	134.70				
Staff-4	4.1	15	Person	19.81	148.58	40.00		5,943.00	
	4.2	6	Person	20.60	154.50	16.00		2,472.00	
	4.3	0	Person	21.39	160.43			0.00	
	4.4	0	Person	22.18	166.35			0.00	
	4.5	3	Person	22.98	172.35	8.00		1,378.80	
Staff-5	5.1	3	Person	24.83	186.23	8.00		1,489.80	
	5.2	0	Person	25.88	194.10			0.00	
	5.3	0	Person	26.94	202.05			0.00	
	5.4	0	Person	27.99	209.93			0.00	
	5.5	3	Person	29.05	217.88	8.00		1,743.00	
Staff-6	6.1	0	Person	32.48	243.60			0.00	
	6.2	0	Person	33.81	253.58			0.00	
	6.3	0	Person	35.13	263.48			0.00	
	6.4	0	Person	36.45	273.38			0.00	
	6.5	0	Person	37.77	283.28			0.00	
Staff-7	7.1	2	Person	39.62	297.15	4.00		1,188.60	
	7.2	0	Person	40.94	307.05			0.00	
	7.3	0	Person	42.26	316.95			0.00	
	7.4	0	Person	43.58	326.85			0.00	
	7.5	0	Person	44.90	336.75			0.00	
Staff-8	8.1	0	Person	49.39	370.43			0.00	
	8.2	0	Person	50.71	380.33			0.00	
	8.3	0	Person	52.03	390.23			0.00	
	8.4	0	Person	53.35	400.13			0.00	
	8.5	3	Person	54.67	410.03	4.00		1,640.10	
Staff-9	9.1	1	Person	59.95	449.63	6.00		2,697.75	
	9.2	0	Person	61.27	459.53			0.00	
	9.3	0	Person	62.59	469.43			0.00	
	9.4	0	Person	63.91	479.33			0.00	
	9.5	0	Person	65.23	489.23			0.00	
Sub-total							**94.00**	**18,553.05**	
2. Consumable				$ Per Liter	L/km		$/km		
Diesel	For Excavator	0	Liter	11.80	0.3620		4.2716	0.00	50km/7km/liter=7.14liter 11liter/hrs (fuel consumption for about 60PS) x 1hr=11liter
Diesel	For Pick-up	192	Liter	11.80	0.1428	27.4176	1.68504	323.53	50km/7km/liter=7.14liter/3 0r
Engine Oil	For Excavator	0	Liter	60.00	0.0016		0.096	0.00	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/
Engine Oil	For Pick-up	192	Liter	60.00	0.0016		0.096	18.43	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/
Tires		0	Nos	770.00	0.0014		1.078	0.00	50km x 252days=12,600km 12,600km/ 30,000km x 4nos=1.68nos 1.68nos/ 252days=0.07nos/50km
Sub-total								**341.96**	
3. Material & Equipment									
Sluice/ Gate Valve	25mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	40mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	50mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	80mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	100mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	150mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	200mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	250mm		piece					0.00	Sluice Valve225mm
Sluice/ Gate Valve	300mm		piece					0.00	
Pipes (Poly)	15mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	20mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	25mm		coil					0.00	Length on 1 coil =200m

Items	Specification	Quantity	Unit	Hourly Rate	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
Pipes (Poly)	50mm		coil					0.00	Length on 1 coil =150m
Pipes (PVC)	25mm		piece					0.00	
Pipes (PVC)	50mm		piece					0.00	
Pipes (PVC)	80mm		piece					0.00	
Pipes (PVC)	100mm		piece					0.00	
Pipes (PVC)	150mm		piece					0.00	
Pipes (PVC)	200mm		piece					0.00	
Pipes (PVC)	250mm		piece					0.00	
Pipes (PVC)	300mm		piece					0.00	
Water Meter	10mm		piece					0.00	
Water Meter	16mm		piece					0.00	
Water Meter	20mm		piece					0.00	
Water Meter	25mm		piece					0.00	
Water Meter	32mm		piece					0.00	
Water Meter	40mm		piece					0.00	
All Materials for After Countermeasures								0.00	
Sub-total								**0.00**	
Total								**18,895.01**	

1AUD=6.534SBD was applied to the above (rate as of 30 September, 2013 of Oanda).

4. Routine Activities

Location **Lengakiki**

per day

Items	Specification	Quantity	Unit	Hourly Rate	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
1. Personnel	Grades- Steps								
Staff-3	3.1	1	Person	15.85	118.88	15.00			
	3.2	0	Person	16.37	122.78				
	3.3	0	Person	16.90	126.75				
	3.4	0	Person	17.43	130.73				
	3.5	0	Person	17.96	134.70				
Staff-4	4.1	0	Person	19.81	148.58			0.00	
	4.2	0	Person	20.60	154.50			0.00	
	4.3	0	Person	21.39	160.43			0.00	
	4.4	0	Person	22.18	166.35			0.00	
	4.5	0	Person	22.98	172.35			0.00	
Staff-5	5.1	0	Person	24.83	186.23			0.00	
	5.2	0	Person	25.88	194.10			0.00	
	5.3	0	Person	26.94	202.05			0.00	
	5.4	0	Person	27.99	209.93			0.00	
	5.5	0	Person	29.05	217.88			0.00	
Staff-6	6.1	2	Person	32.48	243.60	16.00		3,897.60	
	6.2	0	Person	33.81	253.58			0.00	
	6.3	0	Person	35.13	263.48			0.00	
	6.4	0	Person	36.45	273.38			0.00	
	6.5	0	Person	37.77	283.28			0.00	
Staff-7	7.1	0	Person	39.62	297.15			0.00	
	7.2	0	Person	40.94	307.05			0.00	
	7.3	0	Person	42.26	316.95			0.00	
	7.4	0	Person	43.58	326.85			0.00	
	7.5	0	Person	44.90	336.75			0.00	
Staff-8	8.1	0	Person	49.39	370.43			0.00	
	8.2	0	Person	50.71	380.33			0.00	
	8.3	0	Person	52.03	390.23			0.00	
	8.4	0	Person	53.35	400.13			0.00	
	8.5	0	Person	54.67	410.03			0.00	
Staff-9	9.1	0	Person	59.95	449.63			0.00	
	9.2	0	Person	61.27	459.53			0.00	
	9.3	0	Person	62.59	469.43			0.00	
	9.4	0	Person	63.91	479.33			0.00	
	9.5	0	Person	65.23	489.23			0.00	
Sub-total						**31.00**		**3,897.60**	
2. Consumable				$ Per Liter	L/km		$/km		
Diesel	For Excavator	0	Liter	11.80	0.3620		4.2716	0.00	50km/7km/liter=7.14liter 11liter/hrs (fuel consumption for about 60PS) x 1hr=11liter 11liter +7.1liter=18.1liter/50km
Diesel	For Pick-up	32	Liter	11.80	0.1428	4.5696	1.68504	53.92	50km/7km/liter=7.14liter/50km
Engine Oil	For Excavator	0	Liter	60.00	0.0016		0.096	0.00	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Engine Oil	For Pick-up	32	Liter	60.00	0.0016		0.096	3.07	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Tires		0	Nos	770.00	0.0014		1.078	0.00	50km x 252days=12,600km 12,600km/ 30,000km x 4nos=1.68nos 1.68nos/ 252days=0.07nos/50km
Sub-total								**56.99**	
3. Material &									
Sluice/ Gate Valve	25mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	40mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	50mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	80mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	100mm		piece					0.00	Sluice Valve

Items	Specification	Quantity	Unit	Hourly Rate	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
Sluice/ Gate Valve	150mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	200mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	250mm		piece					0.00	Sluice Valve225mm AUD1785
Sluice/ Gate Valve	300mm		piece					0.00	
Pipes (Poly)	15mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	20mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	25mm		coil					0.00	Length on 1 coil =200m
Pipes (Poly)	50mm		coil					0.00	Length on 1 coil =150m
Pipes (PVC)	25mm		piece					0.00	
Pipes (PVC)	50mm		piece					0.00	
Pipes (PVC)	80mm		piece					0.00	
Pipes (PVC)	100mm		piece					0.00	
Pipes (PVC)	150mm		piece					0.00	
Pipes (PVC)	200mm		piece					0.00	
Pipes (PVC)	250mm		piece					0.00	
Pipes (PVC)	300mm		piece					0.00	
Water Meter	10mm		piece					0.00	
Water Meter	16mm		piece					0.00	
Water Meter	20mm		piece					0.00	
Water Meter	25mm		piece					0.00	
Water Meter	32mm		piece					0.00	
Water Meter	40mm		piece					0.00	
All Materials for routine activites								0.00	
Sub-total								**0.00**	
Total								**3,954.59**	

1AUD=6.534SBD was applied to the above (rate as of 30 September, 2013 of Oanda).

TOTAL COST FOR TASAHE A& B DMA

	Before Countermeasure	Countermeasure	After Countermeasure	Routine Activites	Total
Personnel Cost	56,271.53	153,338.54	2,147.88	8,282.40	**230,040.44**
Consumable	3,522.51	8,890.38	564.23	125.39	**23,102.51**
Material and Equipment	11,569.20	402,188.93	1,600.16	0.00	**415,888.29**
Sub Total	**71,363.23**	**564,417.85**	**23,342.27**	**8,407.79**	**677,531.24**
TOTAL	**635,781.08**		**31,750.15**		
TOTAL MAN DAYS FOR TASAHE A&B					**1163**

1. Costing Before Countermeasure

Location **Tasahe A&B**

per day

Items	Specification	Quantity	Unit	Hourly Rate	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
1. Personnel	Grades- Steps								
Staff-3	3.1	4	Person	15.85	118.88	3.00		356.63	
	3.2	0	Person	16.37	122.78			0.00	
	3.3	0	Person	16.90	126.75			0.00	
	3.4	0	Person	17.43	130.73			0.00	
	3.5	0	Person	17.96	134.70			0.00	
Staff-4	4.1	38	Person	19.81	148.58	160.00		23,772.00	
	4.2	16	Person	20.60	154.50	64.00		9,888.00	
	4.3	0	Person	21.39	160.43			0.00	
	4.4	0	Person	22.18	166.35			0.00	
	4.5	6	Person	22.98	172.35	13.00		2,240.55	
Staff-5	5.1	6	Person	24.83	186.23	13.00		2,420.93	
	5.2	0	Person	25.88	194.10			0.00	
	5.3	0	Person	26.94	202.05			0.00	
	5.4	0	Person	27.99	209.93			0.00	
	5.5	0	Person	29.05	217.88	0.00		0.00	
Staff-6	6.1	1	Person	32.48	243.60	3.00		730.80	
	6.2	1	Person	33.81	253.58	1.00		253.58	
	6.3	0	Person	35.13	263.48			0.00	
	6.4	0	Person	36.45	273.38			0.00	
	6.5	0	Person	37.77	283.28			0.00	
Staff-7	7.1	4	Person	39.62	297.15	8.00		2,377.20	
	7.2	0	Person	40.94	307.05			0.00	
	7.3	0	Person	42.26	316.95			0.00	
	7.4	0	Person	43.58	326.85			0.00	
	7.5	0	Person	44.90	336.75	0.00		0.00	
Staff-8	8.1	0	Person	49.39	370.43			0.00	
	8.2	0	Person	50.71	380.33			0.00	
	8.3	0	Person	52.03	390.23			0.00	
	8.4	0	Person	53.35	400.13			0.00	
	8.5	6	Person	54.67	410.03	29.00		11,890.73	
Staff-9	9.1	2	Person	59.95	449.63	6.00		2,697.75	
	9.2	0	Person	61.27	459.53			0.00	
	9.3	0	Person	62.59	469.43			0.00	
	9.4	0	Person	63.91	479.33			0.00	
	9.5	0	Person	65.23	489.23			0.00	
Sub-total						**300.00**		**56,271.53**	
2. Consumable				$ Per Liter	L/km		$/km		
Diesel	For Excavator	281.6	Liter	11.80	0.3620		4.2716	1,202.88	50km/7km/liter=7.14liter 11liter/hrs (fuel consumption for about 60PS) x 1hr=11liter 11liter +7.1liter=18.1liter/50km
Diesel	For Pick-up	1302.4	Liter	11.80	0.1428	185.9827	1.68504	2,194.60	50km/7km/liter=7.14liter/50km
Engine Oil	For Excavator	0	Liter	60.00	0.0016		0.096	0.00	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Engine Oil	For Pick-up	1302.4	Liter	60.00	0.0016		0.096	125.03	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Tires		0	Nos	770.00	0.0014		1.078	0.00	50km x 252days=12,600km 12,600km/ 30,000km x 4nos=1.68nos 1.68nos/ 252days=0.07nos/50km
Sub-total								**3,522.51**	
3. Material &									
Sluice/ Gate Valve	25mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	40mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	50mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	80mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	100mm		piece					0.00	Sluice Valve

Items	Specification	Quantity	Unit	Hourly Rate	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
Sluice/ Gate Valve	150mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	200mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	250mm		piece					0.00	Sluice Valve225mm AUD1785
Sluice/ Gate Valve	300mm		piece					0.00	
Pipes (Poly)	15mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	20mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	25mm		coil					0.00	Length on 1 coil =200m
Pipes (Poly)	50mm		coil					0.00	Length on 1 coil =150m
Pipes (PVC)	25mm		piece					0.00	
Pipes (PVC)	50mm		piece					0.00	
Pipes (PVC)	80mm		piece					0.00	
Pipes (PVC)	100mm		piece					0.00	
Pipes (PVC)	150mm		piece					0.00	
Pipes (PVC)	200mm		piece					0.00	
Pipes (PVC)	250mm		piece					0.00	
Pipes (PVC)	300mm		piece					0.00	
Water Meter	10mm		piece					0.00	
Water Meter	16mm		piece					0.00	
Water Meter	20mm		piece					0.00	
Water Meter	25mm		piece					0.00	
Water Meter	32mm		piece					0.00	
Water Meter	40mm		piece					0.00	
All Materials for Before Countermeasures								11,569.20	
Sub-total								**11,569.20**	
Total								**71,363.23**	

1AUD=6.534SBD was applied to the above (rate as of 30 September, 2013 of Oanda).

2. Costing Countermeasure

Location **Tasahe A&B**

per day

Items	Specification	Quantity	Unit	Hourly Rate (SBD)	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
1. Personnel	Grades- Steps								
Staff-3	3.1	0	Person	15.85	118.88				
	3.2	0	Person	16.37	122.78				
	3.3	0	Person	16.90	126.75				
	3.4	0	Person	17.43	130.73				
	3.5	0	Person	17.96	134.70				
Staff-4	4.1	17	Person	19.81	148.58	280.00		41,601.00	
	4.2	8	Person	20.60	154.50	139.00		21,475.50	
	4.3	0	Person	21.39	160.43			0.00	
	4.4	0	Person	22.18	166.35			0.00	
	4.5	7	Person	22.98	172.35	137.00		23,611.95	
Staff-5	5.1	1	Person	24.83	186.23	2.00		372.45	
	5.2	0	Person	25.88	194.10			0.00	
	5.3	0	Person	26.94	202.05			0.00	
	5.4	0	Person	27.99	209.93			0.00	
	5.5	1	Person	29.05	217.88	5.00		1,089.38	
Staff-6	6.1	1	Person	32.48	243.60	1.00		243.60	
	6.2	0	Person	33.81	253.58			0.00	
	6.3	0	Person	35.13	263.48			0.00	
	6.4	0	Person	36.45	273.38			0.00	
	6.5	0	Person	37.77	283.28			0.00	
Staff-7	7.1	1	Person	39.62	297.15	2.00		594.30	
	7.2	0	Person	40.94	307.05			0.00	
	7.3	0	Person	42.26	316.95			0.00	
	7.4	0	Person	43.58	326.85			0.00	
	7.5	0	Person	44.90	336.75			0.00	
Staff-8	8.1	0	Person	49.39	370.43			0.00	
	8.2	0	Person	50.71	380.33			0.00	
	8.3	0	Person	52.03	390.23			0.00	
	8.4	0	Person	53.35	400.13			0.00	
	8.5	2	Person	54.67	410.03	10.00		4,100.25	
Staff-9	9.1	0	Person	59.95	449.63			0.00	
	9.2	0	Person	61.27	459.53			0.00	
	9.3	0	Person	62.59	469.43			0.00	
	9.4	0	Person	63.91	479.33			0.00	
	9.5	0	Person	65.23	489.23			0.00	
Contractors	2M Contractors							20,250.11	
PRV chamber contractors								40,000.00	
								0.00	
Sub-total						**576.00**		**153,338.54**	
2. Consumable				$ Per Liter	L/km		$/km		
Diesel	For Excavator	140.8	Liter	11.80	0.3620		4.2716	601.44	50km/7km/liter=7.14liter 11liter/hrs (fuel consumption for about 60PS) x 1hr=11liter 11liter +7.1liter=18.1liter/50km
Diesel	For Pick-up	**4646.4**	Liter	11.80	0.1428	663.5059	1.68504	7,829.37	50km/7km/liter=7.14liter/50km
Engine Oil	For Excavator	140.8	Liter	60.00	0.0016		0.096	13.52	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Engine Oil	For Pick-up	4646.4	Liter	60.00	0.0016		0.096	446.05	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Tires		0	Nos	770.00	0.0014		1.078	0.00	50km x 252days=12,600km 12,600km/ 30,000km x 4nos=1.68nos 1.68nos/ 252days=0.07nos/50km
Sub-total								**8,890.38**	
3. Material & Equipment									
Sluice/ Gate Valve	25mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	40mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	50mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	80mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	100mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	150mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	200mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	250mm		piece					0.00	Sluice Valve225mm AUD1785
Sluice/ Gate Valve	300mm		piece					0.00	
Pipes (Poly)	15mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	20mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	25mm		coil					0.00	Length on 1 coil =200m
Pipes (Poly)	50mm		coil					0.00	Length on 1 coil =150m
Pipes (PVC)	25mm		piece					0.00	
Pipes (PVC)	50mm		piece					0.00	
Pipes (PVC)	80mm		piece					0.00	
Pipes (PVC)	100mm		piece					0.00	
Pipes (PVC)	150mm		piece					0.00	
Pipes (PVC)	200mm		piece					0.00	
Pipes (PVC)	250mm		piece					0.00	
Pipes (PVC)	300mm		piece					0.00	
Water Meter	10mm		piece					0.00	
Water Meter	16mm		piece					0.00	
Water Meter	20mm		piece					0.00	
Water Meter	25mm		piece					0.00	
Water Meter	32mm		piece					0.00	
Water Meter	40mm		piece					0.00	
All Materials for Countermeasures								206,548.93	
PRV Set								115,640.00	
PRV Chamber								80,000.00	
Sub-total								**402,188.93**	
Total								**564,417.85**	

1AUD=6.534SBD was applied to the above (rate as of 30 September, 2013 of Oanda).

3. Costing After Countermeasure

Location **Tasahe A&B**

per day

Items	Specification	Quantity	Unit	Hourly Rate	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
1. Personnel	Grades- Steps								
Staff-3	3.1	0	Person	15.85	118.88				
	3.2	0	Person	16.37	122.78				
	3.3	0	Person	16.90	126.75				
	3.4	0	Person	17.43	130.73				
	3.5	0	Person	17.96	134.70				
Staff-4	4.1	12	Person	19.81	148.58	50.00		7,428.75	
	4.2	5	Person	20.60	154.50	21.00		3,244.50	
	4.3	0	Person	21.39	160.43			0.00	
	4.4	0	Person	22.18	166.35			0.00	
	4.5	3	Person	22.98	172.35	13.00		2,240.55	
Staff-5	5.1	2	Person	24.83	186.23	8.00		1,489.80	
	5.2	0	Person	25.88	194.10			0.00	
	5.3	0	Person	26.94	202.05			0.00	
	5.4	0	Person	27.99	209.93			0.00	
	5.5	0	Person	29.05	217.88	0.00		0.00	
Staff-6	6.1	0	Person	32.48	243.60			0.00	
	6.2	0	Person	33.81	253.58			0.00	
	6.3	0	Person	35.13	263.48			0.00	
	6.4	0	Person	36.45	273.38			0.00	
	6.5	0	Person	37.77	283.28			0.00	
Staff-7	7.1	0	Person	39.62	297.15	0.00		0.00	
	7.2	0	Person	40.94	307.05			0.00	
	7.3	0	Person	42.26	316.95			0.00	
	7.4	0	Person	43.58	326.85			0.00	
	7.5	0	Person	44.90	336.75			0.00	
Staff-8	8.1	0	Person	49.39	370.43			0.00	
	8.2	0	Person	50.71	380.33			0.00	
	8.3	0	Person	52.03	390.23			0.00	
	8.4	0	Person	53.35	400.13			0.00	
	8.5	0	Person	54.67	410.03	0.00		0.00	
Staff-9	9.1	1	Person	59.95	449.63	15.00		6,744.38	
	9.2	0	Person	61.27	459.53			0.00	
	9.3	0	Person	62.59	469.43			0.00	
	9.4	0	Person	63.91	479.33			0.00	
	9.5	0	Person	65.23	489.23			0.00	
Sub-total						**107.00**		**21,147.98**	
2. Consumable				$ Per Liter	L/km		$/km		
Diesel	For Excavator	0	Liter	11.80	0.3620		4.2716	0.00	50km/7km/liter=7.14liter 11liter/hrs (fuel consumption for about 60PS) x 1hr=11liter
Diesel	For Pick-up	316.8	Liter	11.80	0.1428	45.2390	1.68504	533.82	50km/7km/liter=7.14liter/5
Engine Oil	For Excavator	0	Liter	60.00	0.0016		0.096	0.00	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/
Engine Oil	For Pick-up	316.8	Liter	60.00	0.0016		0.096	30.41	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/
Tires		0	Nos	770.00	0.0014		1.078	0.00	50km x 252days=12,600km 12,600km/ 30,000km x 4nos=1.68nos 1.68nos/ 252days=0.07nos/50km
Sub-total								**564.23**	
3. Material &									
Sluice/ Gate Valve	25mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	40mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	50mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	80mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	100mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	150mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	200mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	250mm		piece					0.00	Sluice Valve225mm
Sluice/ Gate Valve	300mm		piece					0.00	
Pipes (Poly)	15mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	20mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	25mm		coil					0.00	Length on 1 coil =200m

Items	Specification	Quantity	Unit	Hourly Rate	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
Pipes (Poly)	50mm		coil					0.00	Length on 1 coil =150m
Pipes (PVC)	25mm		piece					0.00	
Pipes (PVC)	50mm		piece					0.00	
Pipes (PVC)	80mm		piece					0.00	
Pipes (PVC)	100mm		piece					0.00	
Pipes (PVC)	150mm		piece					0.00	
Pipes (PVC)	200mm		piece					0.00	
Pipes (PVC)	250mm		piece					0.00	
Pipes (PVC)	300mm		piece					0.00	
Water Meter	10mm		piece					0.00	
Water Meter	16mm		piece					0.00	
Water Meter	20mm		piece					0.00	
Water Meter	25mm		piece					0.00	
Water Meter	32mm		piece					0.00	
Water Meter	40mm		piece					0.00	
All Materials for After Countermeasures								1,630.16	
Sub-total								**1,630.16**	
Total								**23,342.37**	

1AUD=6.534SBD was applied to the above (rate as of 30 September, 2013 of Oanda).

4. Routine Activities

Location **Tasahe A&B**

per day

Items	Specification	Quantity	Unit	Hourly Rate	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
1. Personnel	Grades- Steps								
Staff-3	3.1	1	Person	15.85	118.88	20.00		2,377.50	
	3.2	0	Person	16.37	122.78			0.00	
	3.3	0	Person	16.90	126.75			0.00	
	3.4	0	Person	17.43	130.73			0.00	
	3.5	0	Person	17.96	134.70			0.00	
Staff-4	4.1	0	Person	19.81	148.58			0.00	
	4.2	0	Person	20.60	154.50			0.00	
	4.3	0	Person	21.39	160.43			0.00	
	4.4	0	Person	22.18	166.35			0.00	
	4.5	0	Person	22.98	172.35			0.00	
Staff-5	5.1	0	Person	24.83	186.23			0.00	
	5.2	0	Person	25.88	194.10			0.00	
	5.3	0	Person	26.94	202.05			0.00	
	5.4	0	Person	27.99	209.93			0.00	
	5.5	0	Person	29.05	217.88			0.00	
Staff-6	6.1	2	Person	32.48	243.60	34.00		8,282.40	
	6.2	0	Person	33.81	253.58			0.00	
	6.3	0	Person	35.13	263.48			0.00	
	6.4	0	Person	36.45	273.38			0.00	
	6.5	0	Person	37.77	283.28			0.00	
Staff-7	7.1	0	Person	39.62	297.15			0.00	
	7.2	0	Person	40.94	307.05			0.00	
	7.3	0	Person	42.26	316.95			0.00	
	7.4	0	Person	43.58	326.85			0.00	
	7.5	0	Person	44.90	336.75			0.00	
Staff-8	8.1	0	Person	49.39	370.43			0.00	
	8.2	0	Person	50.71	380.33			0.00	
	8.3	0	Person	52.03	390.23			0.00	
	8.4	0	Person	53.35	400.13			0.00	
	8.5	0	Person	54.67	410.03			0.00	
Staff-9	9.1	0	Person	59.95	449.63			0.00	
	9.2	0	Person	61.27	459.53			0.00	
	9.3	0	Person	62.59	469.43			0.00	
	9.4	0	Person	63.91	479.33			0.00	
	9.5	0	Person	65.23	489.23			0.00	
Sub-total						**54.00**		**8,282.40**	
2. Consumable				$ Per Liter	L/km		$/km		
Diesel	For Excavator	0	Liter	11.80	0.3620		4.2716	0.00	50km/7km/liter=7.14liter 11liter/hrs (fuel consumption for about 60PS) x 1hr=11liter 11liter +7.1liter=18.1liter/50k
Diesel	For Pick-up	70.4	Liter	11.80	0.1428	10.0531	1.68504	118.63	50km/7km/liter=7.14liter/50km
Engine Oil	For Excavator	0	Liter	60.00	0.0016		0.096	0.00	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Engine Oil	For Pick-up	70.4	Liter	60.00	0.0016		0.096	6.76	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Tires		0	Nos	770.00	0.0014		1.078	0.00	50km x 252days=12,600km 12,600km/ 30,000km x 4nos=1.68nos 1.68nos/
Sub-total								**125.39**	

Items	Specification	Quantity	Unit	Hourly Rate	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
3. Material &									
Sluice/ Gate Valve	25mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	40mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	50mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	80mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	100mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	150mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	200mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	250mm		piece					0.00	Sluice Valve225mm AUD1785
Sluice/ Gate Valve	300mm		piece					0.00	
Pipes (Poly)	15mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	20mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	25mm		coil					0.00	Length on 1 coil =200m
Pipes (Poly)	50mm		coil					0.00	Length on 1 coil =150m
Pipes (PVC)	25mm		piece					0.00	
Pipes (PVC)	50mm		piece					0.00	
Pipes (PVC)	80mm		piece					0.00	
Pipes (PVC)	100mm		piece					0.00	
Pipes (PVC)	150mm		piece					0.00	
Pipes (PVC)	200mm		piece					0.00	
Pipes (PVC)	250mm		piece					0.00	
Pipes (PVC)	300mm		piece					0.00	
Water Meter	10mm		piece					0.00	
Water Meter	16mm		piece					0.00	
Water Meter	20mm		piece					0.00	
Water Meter	25mm		piece					0.00	
Water Meter	32mm		piece					0.00	
Water Meter	40mm		piece					0.00	
All Materials for routine activites								0.00	
Sub-total								**0.00**	
Total								**8,407.79**	

1AUD=6.534SBD was applied to the above (rate as of 30 September, 2013 of Oanda).

TOTAL COST FOR WEST KOLA A PILOT

	Before Countermeasure		After Countermeasure		
	Before Countermeasure	Countermeasure	After Countermeasure	Routine Activities	Total
Personnel Cost	37,197.83	90,032.63	24,583.05	4,141.20	**155,954.70**
Consumable	1,222.64	1,852.28	341.96	56.99	**11,473.87**
Material and Equipment	28,283.88	141,664.84	0.00	0.00	**169,948.72**
Sub Total	**66,704.34**	**233,549.75**	**24,925.01**	**4,198.19**	
TOTAL	**300,254.09**		**29,123.20**		**337,377.29**

TOTAL MAN DAYS BEFORE COUNTERMEASURE FOR WEST KOLA RIDGE A	**822**

1. Costing Before Countermeasure

Location **West Kola A**

per day

Items	Specification	Quantity	Unit	Hourly Rate	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
1. Personnel	Grades- Steps								
Staff-3	3.1	2	Person	15.85	118.88	4.00		475.50	
	3.2	0	Person	16.37	122.78			0.00	
	3.3	0	Person	16.90	126.75			0.00	
	3.4	0	Person	17.43	130.73			0.00	
	3.5	0	Person	17.96	134.70			0.00	
Staff-4	4.1	34	Person	19.81	148.58	108.00		16,046.10	
	4.2	12	Person	20.60	154.50	38.00		5,871.00	
	4.3	0	Person	21.39	160.43			0.00	
	4.4	0	Person	22.18	166.35			0.00	
	4.5	2	Person	22.98	172.35	4.00		689.40	
Staff-5	5.1	8	Person	24.83	186.23	25.00		4,655.63	
	5.2	0	Person	25.88	194.10			0.00	
	5.3	0	Person	26.94	202.05			0.00	
	5.4	0	Person	27.99	209.93			0.00	
	5.5	0	Person	29.05	217.88	0.00		0.00	
Staff-6	6.1	1	Person	32.48	243.60	3.00		730.80	
	6.2	1	Person	33.81	253.58	1.00		253.58	
	6.3	0	Person	35.13	263.48			0.00	
	6.4	0	Person	36.45	273.38			0.00	
	6.5	0	Person	37.77	283.28			0.00	
Staff-7	7.1	3	Person	39.62	297.15	6.00		1,782.90	
	7.2	0	Person	40.94	307.05			0.00	
	7.3	0	Person	42.26	316.95			0.00	
	7.4	0	Person	43.58	326.85			0.00	
	7.5	0	Person	44.90	336.75	0.00		0.00	
Staff-8	8.1	0	Person	49.39	370.43			0.00	
	8.2	0	Person	50.71	380.33			0.00	
	8.3	0	Person	52.03	390.23			0.00	
	8.4	0	Person	53.35	400.13			0.00	
	8.5	6	Person	54.67	410.03	12.00		4,920.30	
Staff-9	9.1	1	Person	59.95	449.63	5.00		2,248.13	
	9.2	0	Person	61.27	459.53			0.00	
	9.3	0	Person	62.59	469.43			0.00	
	9.4	0	Person	63.91	479.33			0.00	
	9.5	0	Person	65.23	489.23			0.00	
Sub-total						**206.00**		**37,197.83**	
2. Consumable				$ Per Liter	L/km		$/km		
Diesel	For Excavator	32	Liter	11.80	0.3620		4.2716	136.69	50km/7km/liter=7.14liter 11liter/hrs (fuel consumption for about 60PS) x 1hr=11liter 11liter +7.1liter=18.1liter/50km
Diesel	For Pick-up	608	Liter	11.80	0.1428	86.8224	1.68504	1,024.50	50km/7km/liter=7.14liter/50km
Engine Oil	For Excavator	32	Liter	60.00	0.0016		0.096	3.07	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Engine Oil	For Pick-up	608	Liter	60.00	0.0016		0.096	58.37	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Tires		0	Nos	770.00	0.0014		1.078	0.00	50km x 252days=12,600km 12,600km/ 30,000km x 4nos=1.68nos 1.68nos/ 252days=0.07nos/50km
Sub-total								**1,222.64**	
3. Material &									
Sluice/ Gate Valve	25mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	40mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	50mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	80mm		piece					0.00	Sluice Valve

Items	Specification	Quantity	Unit	Hourly Rate	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
Sluice/ Gate Valve	100mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	150mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	200mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	250mm		piece					0.00	Sluice Valve225mm AUD1785
Sluice/ Gate Valve	300mm		piece					0.00	
Pipes (Poly)	15mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	20mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	25mm		coil					0.00	Length on 1 coil =200m
Pipes (Poly)	50mm		coil					0.00	Length on 1 coil =150m
Pipes (PVC)	25mm		piece					0.00	
Pipes (PVC)	50mm		piece					0.00	
Pipes (PVC)	80mm		piece					0.00	
Pipes (PVC)	100mm		piece					0.00	
Pipes (PVC)	150mm		piece					0.00	
Pipes (PVC)	200mm		piece					0.00	
Pipes (PVC)	250mm		piece					0.00	
Pipes (PVC)	300mm		piece					0.00	
Water Meter	10mm		piece					0.00	
Water Meter	16mm		piece					0.00	
Water Meter	20mm		piece					0.00	
Water Meter	25mm		piece					0.00	
Water Meter	32mm		piece					0.00	
Water Meter	40mm		piece					0.00	
All Materials for Before Countermeasures								28,283.88	
Sub-total								**28,283.88**	
Total								**66,704.34**	

1AUD=6.534SBD was applied to the above (rate as of 30 September, 2013 of Oanda).

2. Costing Countermeasure

Location **West Kola A**

per day

Items	Specification	Quantity	Unit	Hourly Rate (SBD)	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
1. Personnel	Grades- Steps								
Staff-3	3.1	0	Person	15.85	118.88			0.00	
	3.2	0	Person	16.37	122.78			0.00	
	3.3	0	Person	16.90	126.75			0.00	
	3.4	0	Person	17.43	130.73			0.00	
	3.5	0	Person	17.96	134.70			0.00	
Staff-4	4.1	20	Person	19.81	148.58	236.00		35,063.70	
	4.2	7	Person	20.60	154.50	72.00		11,124.00	
	4.3	0	Person	21.39	160.43			0.00	
	4.4	0	Person	22.18	166.35			0.00	
	4.5	1	Person	22.98	172.35	2.00		344.70	
Staff-5	5.1	6	Person	24.83	186.23	70.00		13,035.75	
	5.2	0	Person	25.88	194.10			0.00	
	5.3	0	Person	26.94	202.05			0.00	
	5.4	0	Person	27.99	209.93			0.00	
	5.5	0	Person	29.05	217.88	0.00		0.00	
Staff-6	6.1	0	Person	32.48	243.60	0.00		0.00	
	6.2	0	Person	33.81	253.58			0.00	
	6.3	0	Person	35.13	263.48			0.00	
	6.4	0	Person	36.45	273.38			0.00	
	6.5	0	Person	37.77	283.28			0.00	
Staff-7	7.1	1	Person	39.62	297.15	2.00		594.30	
	7.2	0	Person	40.94	307.05			0.00	
	7.3	0	Person	42.26	316.95			0.00	
	7.4	0	Person	43.58	326.85			0.00	
	7.5	0	Person	44.90	336.75			0.00	
Staff-8	8.1	0	Person	49.39	370.43			0.00	
	8.2	0	Person	50.71	380.33			0.00	
	8.3	0	Person	52.03	390.23			0.00	
	8.4	0	Person	53.35	400.13			0.00	
	8.5	2	Person	54.67	410.03	7.00		2,870.18	
Staff-9	9.1	0	Person	59.95	449.63			0.00	
	9.2	0	Person	61.27	459.53			0.00	
	9.3	0	Person	62.59	469.43			0.00	
	9.4	0	Person	63.91	479.33			0.00	
	9.5	0	Person	65.23	489.23			0.00	
Contractors								$27,000.00	
Sub-total							**389.00**	**90,032.63**	
2. Consumable				$ Per Liter	L/km		$/km		
Diesel	For Excavator	0	Liter	11.80	0.3620		4.2716	0.00	50km/7km/liter=7.14liter 11liter/hrs (fuel consumption for about 60PS) x 1hr=11liter 11liter +7.1liter=18.1liter/50km
Diesel	For Pick-up	1040	Liter	11.80	0.1428	148.5120	1.68504	1,752.44	50km/7km/liter=7.14liter/50km
Engine Oil	For Excavator	0	Liter	60.00	0.0016		0.096	0.00	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Engine Oil	For Pick-up	1040	Liter	60.00	0.0016		0.096	99.84	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/
Tires		0	Nos	770.00	0.0014		1.078	0.00	50km x 252days=12,600km 12,600km/ 30,000km x 4nos=1.68nos 1.68nos/
Sub-total								**1,852.28**	
3. Material & Equipment									

Items	Specification	Quantity	Unit	Hourly Rate (SBD)	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
Sluice/ Gate Valve	25mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	40mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	50mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	80mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	100mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	150mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	200mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	250mm		piece					0.00	Sluice Valve225mm AUD1
Sluice/ Gate Valve	300mm		piece					0.00	
Pipes (Poly)	15mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	20mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	25mm		coil					0.00	Length on 1 coil =200m
Pipes (Poly)	50mm		coil					0.00	Length on 1 coil =150m
Pipes (PVC)	25mm		piece					0.00	
Pipes (PVC)	50mm		piece					0.00	
Pipes (PVC)	80mm		piece					0.00	
Pipes (PVC)	100mm		piece					0.00	
Pipes (PVC)	150mm		piece					0.00	
Pipes (PVC)	200mm		piece					0.00	
Pipes (PVC)	250mm		piece					0.00	
Pipes (PVC)	300mm		piece					0.00	
Water Meter	10mm		piece					0.00	
Water Meter	16mm		piece					0.00	
Water Meter	20mm		piece					0.00	
Water Meter	25mm		piece					0.00	
Water Meter	32mm		piece					0.00	
Water Meter	40mm		piece					0.00	
All Materials for Countermeasures								141,664.84	
Sub-total								**141,664.84**	
Total								**233,549.75**	

1AUD=6.534SBD was applied to the above (rate as of 30 September, 2013 of Oanda).

3. Costing After Countermeasure

Location **West Kola A**

per day

Items	Specification	Quantity	Unit	Hourly Rate	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
1. Personnel	Grades- Steps								
Staff-3	3.1	0	Person	15.85	118.88				
	3.2	0	Person	16.37	122.78				
	3.3	0	Person	16.90	126.75				
	3.4	0	Person	17.43	130.73				
	3.5	0	Person	17.96	134.70				
Staff-4	4.1	13	Person	19.81	148.58	52.00		7,725.90	
	4.2	5	Person	20.60	154.50	20.00		3,090.00	
	4.3	0	Person	21.39	160.43			0.00	
	4.4	0	Person	22.18	166.35			0.00	
	4.5	2	Person	22.98	172.35	8.00		1,378.80	
Staff-5	5.1	3	Person	24.83	186.23	12.00		2,234.70	
	5.2	0	Person	25.88	194.10			0.00	
	5.3	0	Person	26.94	202.05			0.00	
	5.4	0	Person	27.99	209.93			0.00	
	5.5	0	Person	29.05	217.88	0.00		0.00	
Staff-6	6.1	0	Person	32.48	243.60			0.00	
	6.2	0	Person	33.81	253.58			0.00	
	6.3	0	Person	35.13	263.48			0.00	
	6.4	0	Person	36.45	273.38			0.00	
	6.5	0	Person	37.77	283.28			0.00	
Staff-7	7.1	2	Person	39.62	297.15	8.00		2,377.20	
	7.2	0	Person	40.94	307.05			0.00	
	7.3	0	Person	42.26	316.95			0.00	
	7.4	0	Person	43.58	326.85			0.00	
	7.5	0	Person	44.90	336.75			0.00	
Staff-8	8.1	0	Person	49.39	370.43			0.00	
	8.2	0	Person	50.71	380.33			0.00	
	8.3	0	Person	52.03	390.23			0.00	
	8.4	0	Person	53.35	400.13			0.00	
	8.5	2	Person	54.67	410.03	8.00		3,280.20	
Staff-9	9.1	1	Person	59.95	449.63	10.00		4,496.25	
	9.2	0	Person	61.27	459.53			0.00	
	9.3	0	Person	62.59	469.43			0.00	
	9.4	0	Person	63.91	479.33			0.00	
	9.5	0	Person	65.23	489.23			0.00	
Sub-total						**118.00**		**24,583.05**	
2. Consumable				$ Per Liter	L/km		$/km		
Diesel	For Excavator	0	Liter	11.80	0.3620		4.2716	0.00	50km/7km/liter=7.14liter 11liter/hrs (fuel consumption for about 60PS) x 1hr=11liter 11liter
Diesel	For Pick-up	192	Liter	11.80	0.1428	27.4176	1.68504	323.53	50km/7km/liter=7.14liter/50km
Engine Oil	For Excavator	0	Liter	60.00	0.0016		0.096	0.00	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/5
Engine Oil	For Pick-up	192	Liter	60.00	0.0016		0.096	18.43	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/5
Tires		0	Nos	770.00	0.0014		1.078	0.00	50km x 252days=12,600km 12,600km/ 30,000km x 4nos=1.68nos 1.68nos/
Sub-total								**341.96**	
3. Material &									
Sluice/ Gate Valve	25mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	40mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	50mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	80mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	100mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	150mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	200mm		piece					0.00	Sluice Valve

Items	Specification	Quantity	Unit	Hourly Rate	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
Sluice/ Gate Valve	250mm		piece					0.00	Sluice Valve225mm AUD1785
Sluice/ Gate Valve	300mm		piece					0.00	
Pipes (Poly)	15mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	20mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	25mm		coil					0.00	Length on 1 coil =200m
Pipes (Poly)	50mm		coil					0.00	Length on 1 coil =150m
Pipes (PVC)	25mm		piece					0.00	
Pipes (PVC)	50mm		piece					0.00	
Pipes (PVC)	80mm		piece					0.00	
Pipes (PVC)	100mm		piece					0.00	
Pipes (PVC)	150mm		piece					0.00	
Pipes (PVC)	200mm		piece					0.00	
Pipes (PVC)	250mm		piece					0.00	
Pipes (PVC)	300mm		piece					0.00	
Water Meter	10mm		piece					0.00	
Water Meter	16mm		piece					0.00	
Water Meter	20mm		piece					0.00	
Water Meter	25mm		piece					0.00	
Water Meter	32mm		piece					0.00	
Water Meter	40mm		piece					0.00	
All Materials for After Countermeasures								0.00	
Sub-total								**0.00**	
Total								**24,925.01**	

1AUD=6.534SBD was applied to the above (rate as of 30 September, 2013 of Oanda).

4. Routine Activities

Location **West Kola A**

per day

Items	Specification	Quantity	Unit	Hourly Rate	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
1. Personnel	Grades- Steps								
Staff-3	3.1	1	Person	15.85	118.88	20.00			
	3.2	0	Person	16.37	122.78				
	3.3	0	Person	16.90	126.75				
	3.4	0	Person	17.43	130.73				
	3.5	0	Person	17.96	134.70				
Staff-4	4.1	0	Person	19.81	148.58			0.00	
	4.2	0	Person	20.60	154.50			0.00	
	4.3	0	Person	21.39	160.43			0.00	
	4.4	0	Person	22.18	166.35			0.00	
	4.5	0	Person	22.98	172.35			0.00	
Staff-5	5.1	0	Person	24.83	186.23			0.00	
	5.2	0	Person	25.88	194.10			0.00	
	5.3	0	Person	26.94	202.05			0.00	
	5.4	0	Person	27.99	209.93			0.00	
	5.5	0	Person	29.05	217.88			0.00	
Staff-6	6.1	2	Person	32.48	243.60	17.00		4,141.20	
	6.2	0	Person	33.81	253.58			0.00	
	6.3	0	Person	35.13	263.48			0.00	
	6.4	0	Person	36.45	273.38			0.00	
	6.5	0	Person	37.77	283.28			0.00	
Staff-7	7.1	0	Person	39.62	297.15			0.00	
	7.2	0	Person	40.94	307.05			0.00	
	7.3	0	Person	42.26	316.95			0.00	
	7.4	0	Person	43.58	326.85			0.00	
	7.5	0	Person	44.90	336.75			0.00	
Staff-8	8.1	0	Person	49.39	370.43			0.00	
	8.2	0	Person	50.71	380.33			0.00	
	8.3	0	Person	52.03	390.23			0.00	
	8.4	0	Person	53.35	400.13			0.00	
	8.5	0	Person	54.67	410.03			0.00	
Staff-9	9.1	0	Person	59.95	449.63			0.00	
	9.2	0	Person	61.27	459.53			0.00	
	9.3	0	Person	62.59	469.43			0.00	
	9.4	0	Person	63.91	479.33			0.00	
	9.5	0	Person	65.23	489.23			0.00	
Sub-total						**37.00**		**4,141.20**	
2. Consumable				$ Per Liter	L/km		$/km		
Diesel	For Excavator	0	Liter	11.80	0.3620		4.2716	0.00	50km/7km/liter=7.14liter 11liter/hrs (fuel consumption for about 60PS) x 1hr=11liter 11liter +7.1liter=18.1liter/50km
Diesel	For Pick-up	32	Liter	11.80	0.1428	4.5696	1.68504	53.92	50km/7km/liter=7.14liter/50km
Engine Oil	For Excavator	0	Liter	60.00	0.0016		0.096	0.00	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Engine Oil	For Pick-up	32	Liter	60.00	0.0016		0.096	3.07	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Tires		0	Nos	770.00	0.0014		1.078	0.00	50km x 252days=12,600km 12,600km/ 30,000km x 4nos=1.68nos 1.68nos/ 252days=0.07nos/50km
Sub-total								**56.99**	
3. Material &									
Sluice/ Gate Valve	25mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	40mm		piece					0.00	Gate Valve

Items	Specification	Quantity	Unit	Hourly Rate	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
Sluice/ Gate Valve	50mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	80mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	100mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	150mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	200mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	250mm		piece					0.00	Sluice Valve225mm AUD178
Sluice/ Gate Valve	300mm		piece					0.00	
Pipes (Poly)	15mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	20mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	25mm		coil					0.00	Length on 1 coil =200m
Pipes (Poly)	50mm		coil					0.00	Length on 1 coil =150m
Pipes (PVC)	25mm		piece					0.00	
Pipes (PVC)	50mm		piece					0.00	
Pipes (PVC)	80mm		piece					0.00	
Pipes (PVC)	100mm		piece					0.00	
Pipes (PVC)	150mm		piece					0.00	
Pipes (PVC)	200mm		piece					0.00	
Pipes (PVC)	250mm		piece					0.00	
Pipes (PVC)	300mm		piece					0.00	
Water Meter	10mm		piece					0.00	
Water Meter	16mm		piece					0.00	
Water Meter	20mm		piece					0.00	
Water Meter	25mm		piece					0.00	
Water Meter	32mm		piece					0.00	
Water Meter	40mm		piece					0.00	
All Materials for routine activites								0.00	
Sub-total								**0.00**	
Total								**4,198.19**	

1AUD=6.534SBD was applied to the above (rate as of 30 September, 2013 of Oanda).

TOTAL COST FOR TASAHE C PILOT

	Before Countermeasure		After Countermeasure		
	Before Countermeasure	Countermeasure	After Countermeasure	Routine Activities	Total
Personnel Cost	57,819.07	104,310.36	9,877.73	9,664.50	**181,671.66**
Consumable	1,557.12	2,030.39	124.67	178.10	**11,890.28**
Material and Equipment	169,465.67	156,575.35	0.00	0.00	**326,041.02**
Sub Total	**228,841.86**	**262,916.10**	**10,002.40**	**9,842.60**	**519,602.96**
TOTAL	**491,757.96**		**19,845.00**		

TOTAL MAN DAYS BEFORE COUNTERMEASURE FOR WEST KOLA	**289.22**

1. Costing Before Countermeasure

Location **TASAHE C**

per day

Items	Specification	Quantity	Unit	Hourly Rate	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
1. Personnel	Grades- Steps								
Staff-3	3.1	1	Person	15.85	118.88	1.00		118.88	
	3.2	0	Person	16.37	122.78			0.00	
	3.3	0	Person	16.90	126.75			0.00	
	3.4	0	Person	17.43	130.73			0.00	
	3.5	0	Person	17.96	134.70			0.00	
Staff-4	4.1	23	Person	19.81	148.58	20.90		3,105.22	
	4.2	26	Person	20.60	154.50	28.16		4,350.72	
	4.3	0	Person	21.39	160.43			0.00	
	4.4	0	Person	22.18	166.35			0.00	
	4.5	9	Person	22.98	172.35	21.00		3,619.35	
Staff-5	5.1	5	Person	24.83	186.23	15.58		2,901.39	
	5.2	0	Person	25.88	194.10			0.00	
	5.3	0	Person	26.94	202.05			0.00	
	5.4	0	Person	27.99	209.93			0.00	
	5.5	6	Person	29.05	217.88	15.58		3,394.49	
Staff-6	6.1	2	Person	32.48	243.60	2.00		487.20	
	6.2	4	Person	33.81	253.58	3.58		908.64	
	6.3	0	Person	35.13	263.48			0.00	
	6.4	0	Person	36.45	273.38			0.00	
	6.5	0	Person	37.77	283.28			0.00	
Staff-7	7.1	7	Person	39.62	297.15	6.08		1,807.66	
	7.2	0	Person	40.94	307.05			0.00	
	7.3	0	Person	42.26	316.95			0.00	
	7.4	0	Person	43.58	326.85			0.00	
	7.5	0	Person	44.90	336.75	0.00		0.00	
Staff-8	8.1	0	Person	49.39	370.43			0.00	
	8.2	0	Person	50.71	380.33			0.00	
	8.3	0	Person	52.03	390.23			0.00	
	8.4	0	Person	53.35	400.13			0.00	
	8.5	4	Person	54.67	410.03	3.08		1,264.24	
Staff-9	9.1	5	Person	59.95	449.63	3.25		1,461.28	
	9.2	0	Person	61.27	459.53			0.00	
	9.3	0	Person	62.59	469.43			0.00	
	9.4	0	Person	63.91	479.33			0.00	
	9.5	0	Person	65.23	489.23			0.00	
In-house Consultant				160.00	1,200.00	12.00		14,400.00	
ctor for Chamber construction								20,000.00	
Sub-total						**120.22**		**57,819.07**	
2. Consumable				$ Per Liter	L/km		$/km		
Diesel	For Excavator	120	Liter	11.80	0.3620		4.2716	512.59	50km/7km/liter=7.14liter 11liter/hrs (fuel consumption for about 60PS) x 1hr=11liter 11liter +7.1liter=18.1liter/50km
Diesel	For Pick-up	580	Liter	11.80	0.1428	82.8240	1.68504	977.32	50km/7km/liter=7.14liter/50km
Engine Oil	For Excavator	120	Liter	60.00	0.0016		0.096	11.52	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Engine Oil	For Pick-up	580	Liter	60.00	0.0016		0.096	55.68	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter
Tires		0	Nos	770.00	0.0014		1.078	0.00	50km x 252days=12,600km 12,600km/ 30,000km x 4nos=1.68nos 1.68nos/ 252days=0.07nos/50km
Sub-total								**1,557.12**	
3. Material &									
Sluice/ Gate Valve	25mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	40mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	50mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	80mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	100mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	150mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	200mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	250mm		piece					0.00	Sluice Valve225mm AUD1785
Sluice/ Gate Valve	300mm		piece					0.00	
Pipes (Poly)	15mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	20mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	25mm		coil					0.00	Length on 1 coil =200m
Pipes (Poly)	50mm		coil					0.00	Length on 1 coil =150m
Pipes (PVC)	25mm		piece					0.00	
Pipes (PVC)	50mm		piece					0.00	
Pipes (PVC)	80mm		piece					0.00	
Pipes (PVC)	100mm		piece					0.00	
Pipes (PVC)	150mm		piece					0.00	
Pipes (PVC)	200mm		piece					0.00	
Pipes (PVC)	250mm		piece					0.00	
Pipes (PVC)	300mm		piece					0.00	
Water Meter	10mm		piece					0.00	
Water Meter	16mm		piece					0.00	
Water Meter	20mm		piece					0.00	
Water Meter	25mm		piece					0.00	
Water Meter	32mm		piece					0.00	
Water Meter	40mm		piece					0.00	
Component for Bulk Meter								20,950.00	
Chamber								50,000.00	
All Materials for Before Countermeasures								98,515.67	
Sub-total								**169,465.67**	
Total								**228,841.86**	

1AUD=6.534SBD was applied to the above (rate as of 30 September, 2013 of Oanda).

2. Costing Countermeasure

Location **West Kola A**

per day

Items	Specification	Quantity	Unit	Hourly Rate (SBD)	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
1. Personnel	Grades- Steps								
Staff-3	3.1	0	Person	15.85	118.88			0.00	
	3.2	0	Person	16.37	122.78			0.00	
	3.3	0	Person	16.90	126.75			0.00	
	3.4	0	Person	17.43	130.73			0.00	
	3.5	0	Person	17.96	134.70			0.00	
Staff-4	4.1	2	Person	19.81	148.58	2.00		297.15	
	4.2	7	Person	20.60	154.50	50.00		7,725.00	
	4.3	0	Person	21.39	160.43			0.00	
	4.4	0	Person	22.18	166.35			0.00	
	4.5	6	Person	22.98	172.35	49.00		8,445.15	
Staff-5	5.1	1	Person	24.83	186.23	3.00		558.68	
	5.2	0	Person	25.88	194.10			0.00	
	5.3	0	Person	26.94	202.05			0.00	
	5.4	0	Person	27.99	209.93			0.00	
	5.5	0	Person	29.05	217.88	0.00		0.00	
Staff-6	6.1	1	Person	32.48	243.60	3.00		730.80	
	6.2	0	Person	33.81	253.58			0.00	
	6.3	0	Person	35.13	263.48			0.00	
	6.4	0	Person	36.45	273.38			0.00	
	6.5	0	Person	37.77	283.28			0.00	
Staff-7	7.1	1	Person	39.62	297.15	0.50		148.58	
	7.2	0	Person	40.94	307.05			0.00	
	7.3	0	Person	42.26	316.95			0.00	
	7.4	0	Person	43.58	326.85			0.00	
	7.5	0	Person	44.90	336.75			0.00	
Staff-8	8.1	0	Person	49.39	370.43			0.00	
	8.2	0	Person	50.71	380.33			0.00	
	8.3	0	Person	52.03	390.23			0.00	
	8.4	0	Person	53.35	400.13			0.00	
	8.5	1	Person	54.67	410.03	0.50		205.01	
Staff-9	9.1	0	Person	59.95	449.63			0.00	
	9.2	0	Person	61.27	459.53			0.00	
	9.3	0	Person	62.59	469.43			0.00	
	9.4	0	Person	63.91	479.33			0.00	
	9.5	0	Person	65.23	489.23			0.00	
Inhouse consultant				160.00	1,200.00	1.00		1,200.00	
ontractors for meter raising								########	
Sub-total						**108.00**		**104,310.36**	
2. Consumable				$ Per Liter	L/km		$/km		
Diesel	For Excavator	0	Liter	11.80	0.3620		4.2716	0.00	50km/7km/liter=7.14liter 11liter/hrs (fuel consumption for about 60PS) x 1hr=11liter
Diesel	For Pick-up	1140	Liter	11.80	0.1428	162.7920	1.68504	1,920.95	50km/7km/liter=7.14liter/50
Engine Oil	For Excavator	0	Liter	60.00	0.0016		0.096	0.00	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/
Engine Oil	For Pick-up	1140	Liter	60.00	0.0016		0.096	109.44	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/
Tires		0	Nos	770.00	0.0014		1.078	0.00	50km x 252days=12,600km 12,600km/ 30,000km x 4nos=1.68nos 1.68nos/ 252days=0.07nos/50km
Sub-total								**2,030.39**	
3. Material & Equipment									
Sluice/ Gate Valve	25mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	40mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	50mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	80mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	100mm		piece					0.00	Sluice Valve

Items	Specification	Quantity	Unit	Hourly Rate (SBD)	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
Sluice/ Gate Valve	150mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	200mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	250mm		piece					0.00	Sluice Valve225mm
Sluice/ Gate Valve	300mm		piece					0.00	
Pipes (Poly)	15mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	20mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	25mm		coil					0.00	Length on 1 coil =200m
Pipes (Poly)	50mm		coil					0.00	Length on 1 coil =150m
Pipes (PVC)	25mm		piece					0.00	
Pipes (PVC)	50mm		piece					0.00	
Pipes (PVC)	80mm		piece					0.00	
Pipes (PVC)	100mm		piece					0.00	
Pipes (PVC)	150mm		piece					0.00	
Pipes (PVC)	200mm		piece					0.00	
Pipes (PVC)	250mm		piece					0.00	
Pipes (PVC)	300mm		piece					0.00	
Water Meter	10mm		piece					0.00	
Water Meter	16mm		piece					0.00	
Water Meter	20mm		piece					0.00	
Water Meter	25mm		piece					0.00	
Water Meter	32mm		piece					0.00	
Water Meter	40mm		piece					0.00	
All Materials for Countermeasures								156,575.35	
Sub-total								**156,575.35**	
Total								**262,916.10**	

1AUD=6.534SBD was applied to the above (rate as of 30 September, 2013 of Oanda).

3. Costing After Countermeasure

Location **West Kola A**

per day

Items	Specification	Quantity	Unit	Hourly Rate	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
1. Personnel	Grades- Steps								
Staff-3	3.1	1	Person	15.85	118.88	1.00			
	3.2	0	Person	16.37	122.78				
	3.3	0	Person	16.90	126.75				
	3.4	0	Person	17.43	130.73				
	3.5	0	Person	17.96	134.70				
Staff-4	4.1	0	Person	19.81	148.58	0.00		0.00	
	4.2	1	Person	20.60	154.50	3.00		463.50	
	4.3	0	Person	21.39	160.43			0.00	
	4.4	0	Person	22.18	166.35			0.00	
	4.5	1	Person	22.98	172.35	3.00		517.05	
Staff-5	5.1	0	Person	24.83	186.23	0.00		0.00	
	5.2	0	Person	25.88	194.10			0.00	
	5.3	0	Person	26.94	202.05			0.00	
	5.4	0	Person	27.99	209.93			0.00	
	5.5	0	Person	29.05	217.88	0.00		0.00	
Staff-6	6.1	1	Person	32.48	243.60	1.00		243.60	
	6.2	1	Person	33.81	253.58	1.00		253.58	
	6.3	0	Person	35.13	263.48			0.00	
	6.4	0	Person	36.45	273.38			0.00	
	6.5	0	Person	37.77	283.28			0.00	
Staff-7	7.1	0	Person	39.62	297.15	0.00		0.00	
	7.2	0	Person	40.94	307.05			0.00	
	7.3	0	Person	42.26	316.95			0.00	
	7.4	0	Person	43.58	326.85			0.00	
	7.5	0	Person	44.90	336.75			0.00	
Staff-8	8.1	0	Person	49.39	370.43			0.00	
	8.2	0	Person	50.71	380.33			0.00	
	8.3	0	Person	52.03	390.23			0.00	
	8.4	0	Person	53.35	400.13			0.00	
	8.5	0	Person	54.67	410.03	0.00		0.00	
Staff-9	9.1	0	Person	59.95	449.63	0.00		0.00	
	9.2	0	Person	61.27	459.53			0.00	
	9.3	0	Person	62.59	469.43			0.00	
	9.4	0	Person	63.91	479.33			0.00	
	9.5	0	Person	65.23	489.23			0.00	
Inhouse Consultant				160.00	1,200.00	7.00		8,400.00	
Contractor									
Sub-total						**9.00**		**9,877.73**	
2. Consumable				$ Per Liter	L/km		$/km		
Diesel	For Excavator	0	Liter	11.80	0.3620		4.2716	0.00	50km/7km/liter=7.14liter 11liter/hrs (fuel consumption for about 60PS) x 1hr=11liter 11liter +7.1liter=18.1liter/50km
Diesel	For Pick-up	70	Liter	11.80	0.1428	9.9960	1.68504	117.95	50km/7km/liter=7.14liter/ 100km
Engine Oil	For Excavator	0	Liter	60.00	0.0016		0.096	0.00	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50 km
Engine Oil	For Pick-up	70	Liter	60.00	0.0016		0.096	6.72	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50 km
Tires		0	Nos	770.00	0.0014		1.078	0.00	50km x 252days=12,600km 12,600km/ 30,000km x 4nos=1.68nos 1.68nos/
Sub-total								**124.67**	
3. Material & Equipment									
Sluice/ Gate Valve	25mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	40mm		piece					0.00	Gate Valve

Items	Specification	Quantity	Unit	Hourly Rate	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
Sluice/ Gate Valve	50mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	80mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	100mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	150mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	200mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	250mm		piece					0.00	Sluice Valve225mm
Sluice/ Gate Valve	300mm		piece					0.00	
Pipes (Poly)	15mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	20mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	25mm		coil					0.00	Length on 1 coil =200m
Pipes (Poly)	50mm		coil					0.00	Length on 1 coil =150m
Pipes (PVC)	25mm		piece					0.00	
Pipes (PVC)	50mm		piece					0.00	
Pipes (PVC)	80mm		piece					0.00	
Pipes (PVC)	100mm		piece					0.00	
Pipes (PVC)	150mm		piece					0.00	
Pipes (PVC)	200mm		piece					0.00	
Pipes (PVC)	250mm		piece					0.00	
Pipes (PVC)	300mm		piece					0.00	
Water Meter	10mm		piece					0.00	
Water Meter	16mm		piece					0.00	
Water Meter	20mm		piece					0.00	
Water Meter	25mm		piece					0.00	
Water Meter	32mm		piece					0.00	
Water Meter	40mm		piece					0.00	
All Materials for After Countermeasures								0.00	
Sub-total								**0.00**	
Total								**10,002.40**	

1AUD=6.534SBD was applied to the above (rate as of 30 September, 2013 of Oanda).

4. Routine Activities

Location **West Kola A**

per day

Items	Specification	Quantity	Unit	Hourly Rate	Unit Cost (SBD)	Total Days	Amount (SBD)	Amount (SBD)	Reamarks
1. Personnel	Grades- Steps								
Staff-3	3.1	0	Person	15.85	118.88	0.00		0.00	
	3.2	0	Person	16.37	122.78			0.00	
	3.3	0	Person	16.90	126.75			0.00	
	3.4	0	Person	17.43	130.73			0.00	
	3.5	0	Person	17.96	134.70			0.00	
Staff-4	4.1	1	Person	19.81	148.58	5.00		742.88	
	4.2	0	Person	20.60	154.50			0.00	
	4.3	0	Person	21.39	160.43			0.00	
	4.4	0	Person	22.18	166.35			0.00	
	4.5	0	Person	22.98	172.35			0.00	
Staff-5	5.1	0	Person	24.83	186.23			0.00	
	5.2	0	Person	25.88	194.10			0.00	
	5.3	0	Person	26.94	202.05			0.00	
	5.4	0	Person	27.99	209.93			0.00	
	5.5	1	Person	29.05	217.88	2.00		435.75	
Staff-6	6.1	1	Person	32.48	243.60	5.00		1,218.00	
	6.2	1	Person	33.81	253.58	5.00		1,267.88	
	6.3	0	Person	35.13	263.48			0.00	
	6.4	0	Person	36.45	273.38			0.00	
	6.5	0	Person	37.77	283.28			0.00	
Staff-7	7.1	0	Person	39.62	297.15			0.00	
	7.2	0	Person	40.94	307.05			0.00	
	7.3	0	Person	42.26	316.95			0.00	
	7.4	0	Person	43.58	326.85			0.00	
	7.5	0	Person	44.90	336.75			0.00	
Staff-8	8.1	0	Person	49.39	370.43			0.00	
	8.2	0	Person	50.71	380.33			0.00	
	8.3	0	Person	52.03	390.23			0.00	
	8.4	0	Person	53.35	400.13			0.00	
	8.5	0	Person	54.67	410.03			0.00	
Staff-9	9.1	0	Person	59.95	449.63			0.00	
	9.2	0	Person	61.27	459.53			0.00	
	9.3	0	Person	62.59	469.43			0.00	
	9.4	0	Person	63.91	479.33			0.00	
	9.5	0	Person	65.23	489.23			0.00	
Inhouse Consultant				160.00	1,200.00	5.00		6,000.00	
Contractor									
Sub-total						**17.00**		**9,664.50**	
2. Consumable				$ Per Liter	L/km		$/km		
Diesel	For Excavator	0	Liter	11.80	0.3620		4.2716	0.00	50km/7km/liter=7.14liter 11liter/hrs (fuel consumption for about 60PS) x 1hr=11liter 11liter +7.1liter=18.1liter/50km
Diesel	For Pick-up	100	Liter	11.80	0.1428	14.2800	1.68504	168.50	50km/7km/liter=7.14liter/50km
Engine Oil	For Excavator	0	Liter	60.00	0.0016		0.096	0.00	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Engine Oil	For Pick-up	100	Liter	60.00	0.0016		0.096	9.60	100km x 252days=25,200km 25,200km/ 10,000km x 8liter=20.16liter 20.16liter/ 252days=0.08liter/day/50km
Tires		0	Nos	770.00	0.0014		1.078	0.00	50km x 252days=12,600km 12,600km/ 30,000km x 4nos=1.68nos 1.68nos/ 252days=0.07nos/50km
Sub-total								**178.10**	
3. Material & Equipment									
Sluice/ Gate Valve	25mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	40mm		piece					0.00	Gate Valve

Sluice/ Gate Valve	50mm		piece					0.00	Gate Valve
Sluice/ Gate Valve	80mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	100mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	150mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	200mm		piece					0.00	Sluice Valve
Sluice/ Gate Valve	250mm		piece					0.00	Sluice Valve225mm AUD1785
Sluice/ Gate Valve	300mm		piece					0.00	
Pipes (Poly)	15mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	20mm		coil					0.00	Length on 1 coil =300m
Pipes (Poly)	25mm		coil					0.00	Length on 1 coil =200m
Pipes (Poly)	50mm		coil					0.00	Length on 1 coil =150m
Pipes (PVC)	25mm		piece					0.00	
Pipes (PVC)	50mm		piece					0.00	
Pipes (PVC)	80mm		piece					0.00	
Pipes (PVC)	100mm		piece					0.00	
Pipes (PVC)	150mm		piece					0.00	
Pipes (PVC)	200mm		piece					0.00	
Pipes (PVC)	250mm		piece					0.00	
Pipes (PVC)	300mm		piece					0.00	
Water Meter	10mm		piece					0.00	
Water Meter	16mm		piece					0.00	
Water Meter	20mm		piece					0.00	
Water Meter	25mm		piece					0.00	
Water Meter	32mm		piece					0.00	
Water Meter	40mm		piece					0.00	
All Materials for routine activites								0.00	
Sub-total								**0.00**	
Total								**9,842.60**	

1AUD=6.534SBD was applied to the above (rate as of 30 September, 2013 of Oanda).