

# Ossu WASH Assessment

## Preliminary Investigation and Options Report



July 2016

## Disclaimer

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<b>Prepared by:</b>	Fraser Goff	<b>Date:</b>	20 July 2016
<b>Reviewed by:</b>	Edmund Weking	<b>Date:</b>	21 July 2016
<b>Approved by:</b>	Justino da Silva	<b>Date:</b>	29 July 2016

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## Introduction

Willoughby Friends of Ossu (WFOO) engaged WaterAid Timor-Leste to conduct an assessment of the access to water, sanitation and hygiene (WASH) in Ossu town. The objectives of this assessment were:

- To establish contact with key stakeholders (refer Appendix A),
- To conduct a technical assessment of water supply infrastructure and develop options for water supply to schools,
- To determine the demand for and scope of WASH programs within the local schools, including improvement of facilities and WASH education.

In meeting with the Ossu community, WaterAid was careful to explain the above objectives and not to promise any particular outcomes resulting from the assessment.

This report presents the results of the WASH assessment and outlines recommended actions to improve the WASH services to the Ossu community, with a specific focus on local schools and health facilities. The first section provides an overview of the history of WASH in Ossu including several key social considerations, as well as highlighting relevant WASH standards and describing the existing water systems. The second section provides the details of assessments in each of the schools and clinic. The third section summarises WaterAid's community stakeholder meeting. The final section explains the recommended actions to improve WASH services to the Ossu community.

### Abbreviations used in this report

<b>DAA</b>	Departamento Abastecimento Água (Water Supply Department)
<b>EBC</b>	Eskola Baziko Centrá (Central School - also supports affiliated village schools)
<b>FPA</b>	Facilitador Posto Administrativo (Administrative Post Facilitator, DAA field staff)
<b>GMF</b>	Grupo Manajemento Facilidade (Water user group)
<b>kL</b>	Kilo litres (1000 L)
<b>MHM</b>	Menstrual hygiene management
<b>PNTL</b>	Polícia Nacional Timor Leste (Timor Leste National Police)
<b>ToT</b>	Training of Trainers
<b>WASH</b>	Water, sanitation and hygiene
<b>WFOO</b>	Willoughby Friends of Ossu

## Ossu WASH Context

### Community Overview

Ossu town is the capital of Ossu Posto Administrativo in Viqueque Municipality. The total population for Ossu Posto Administrativo from the 2015 census is 17,559 people<sup>1</sup>. Community leaders quoted a total of 778 households in Ossu town (approximately 4,700 residents).

WaterAid noted several recurring social themes related to WASH, which provide a useful context to this report.

### Urban or Rural?

In Indonesian times Ossu was classified as an urban community. Under such a classification, water supply to each household was standard and maintenance was the responsibility of the Government. Since Independence, Ossu is regarded as a rural community. The standard water supply for rural communities is to pipe to a public tap stand, and community maintenance (in conjunction with Government as outlined below).

This change is significant as the community previously came to expect a particular level of service, and the current standard is perceived as a backwards step.

### Water System Management

A recurring issue spoken about by the community and discussed in depth at the community stakeholder meeting, was the management of Ossu's water systems.

In Timor Leste's water decree (Decree Law No 4/2004)<sup>2</sup>, the management of rural water supply systems is the responsibility of water user groups (GMFs), which are elected from and by the community and supported by the DAA. However in water systems supporting more than 1000 people and those which include pumps or extensive networks, Timor Leste's Rural Water Supply Guidelines<sup>3</sup> proposes that the transmission line from source to tanks be managed by the DAA and the distribution line be managed by the GMF.

Each Municipality has a DAA office. They comprise the director and administration staff, technical officers (usually one or two per municipality) and field staff (FPAs) based in each Posto Administrativo, who are non-technical staff with the role of supporting GMFs

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<sup>1</sup> República Democrática de Timor-Leste, Ministeriu Finanzas, **Population and Housing Census 2015: Preliminary Results**, 2015

<sup>2</sup> Democratic Republic of Timor Leste Government, **Decree-Law No. 04/2004**, 11 February 2004

<sup>3</sup> República Democrática de Timor-Leste, Ministério das Infra-Estruturas, Direcção Nacional de Serviços de Água e Saneamento, **Timor Leste Rural Water Supply Guidelines**, 2010



to manage their systems and collate data on community access. There are two FPAs in Ossu.

In Ossu there are four existing systems, at least two of which supply water to more than 1000 people (Uaibua and Weulau). However, there are no functioning GMFs for any of the four systems, and the involvement of the Municipal DAA technical staff from Viqueque in managing transmission lines appears to be negligible.

WaterAid observed, and it was widely acknowledged, that many households make informal connections (by cutting or drilling into the pipes) to supply water for their households and livestock. These also provide locations for water loss through leakage. The extent of informal household connections has occurred, at least in part, due to lack of clear management structures for the systems. These connections mean that while houses at the upstream end of the system probably draw sufficient water for household and agricultural use, the volume of water reaching houses at the downstream end of the system is insufficient, especially in the dry season.



Figure 1 – Examples of community informal connections to the Uaiquirona system

It should be noted that as part of Timor Leste's decentralisation, as of 01 July 2016 the Municipal DAA will have greater responsibility for setting and managing its operation and maintenance budget, which to date has been done at a national level. There is great potential to advocate to the Municipal DAA for operational staff and budget for Ossu, especially as this new arrangement comes into place.

### **Lack of Community Forum to Discuss WASH Issues**

There appear to be limited opportunities for the Ossu community to discuss WASH issues. Specifically there seems to be a communication barrier between those working

at a community level and dealing with WASH issues (e.g. teachers, health workers) and those able to make decisions about WASH (e.g. Ministry of Education technical staff, Municipal water supply department - DAA). Understandably, this has resulted in frustration and low levels of confidence in the current structure.

Many community members expressed their appreciation to the new Posto Administrativo Administrator for hosting the community meeting and asked him to coordinate further meetings on the issue.



Figure 2 – Community stakeholder meeting at *Posto Administrativo* office

WaterAid understands that the Municipal DAA is not highly regarded within the community. No interviewees at the schools, clinic or Parish mentioned the role of the Municipal DAA without prompting and community comments indicated that Ossu was not a high priority for the Municipal DAA staff based in Viqueque.

### Sanitation and Hygiene

Community members noted that almost all households have a toilet. WaterAid's observations were that the majority of houses in Ossu town had a toilet, while about two thirds of houses in the rural areas uphill of the Olokasa School had their own toilets. However, it is likely in the dry season the lack of water causes poorer sanitation and hygiene practices. Sanitation and hygiene was often mentioned as a secondary issue to water supply.

WaterAid identified understanding of health and hygiene as a significant gap and an opportunity for knowledge sharing in each school visited.

## Relevant WASH Standards

In reviewing the existing situation and preparing recommendations, WaterAid has considered the minimum rural WASH services required by the Timor Leste Government. Specific serviceability indicators are outlined in Table 1 and Table 2 below.

Table 1 - Water supply quantities<sup>4</sup>

Water Quantity	Minimum	Recommended
Households	30L per person per day	60L per person per day
Health centre	10L per patient per day	20L per patient per day
School	10L per student per day	20L per student per day

Based on WaterAid's experience, a 25% allowance should be included to account for leakage from water supply systems.

Table 2 – School sanitation and hygiene standards<sup>5</sup>

	Minimum	Recommended
Female students	1 stall per 40 girls 1 additional stall for menstruating girls 1 stall for disabled girls	-
Male students	1 stall per 40 boys, or, 1 stall and 1 urinal per 60 boys 1 stall for disabled boys	-
Staff	1 stall for female staff 1 stall for male staff	-
Handwashing station	1 per 100 students	1 per 50 students

The Timor-Leste WASH in Schools Guidelines have not yet been released however in accordance with the final draft guideline reviewed by WaterAid, school toilets should be completely separate for male and female students, and also between students and staff.

Recommendations proposed in this report allow for Viqueque's 2% population growth<sup>6</sup> over a 10-year design life. The recommendations proposed throughout this report are intended as a roadmap to achieve the **minimum** WASH service standard.

<sup>4</sup> República Democrática de Timor-Leste, Ministério das Infra-Estruturas, Direcção Nacional de Serviços de Água e Saneamento, **Timor Leste Rural Water Supply Guidelines**, 2010

<sup>5</sup> Democratic Republic of Timor-Leste, Ministry of Education, **Water, Sanitation and Hygiene (WASH) in Schools: Guidelines for Timor-Leste**, Vol1 [Final Draft], 2012

<sup>6</sup> República Democrática de Timor-Leste, Ministeriu Finansas, **Population and Housing Census 2015: Preliminary Results**, 2015



## Water Supply Overview

The water systems supplying Ossu are shown in Figure 3, and enlarged in Appendix B.

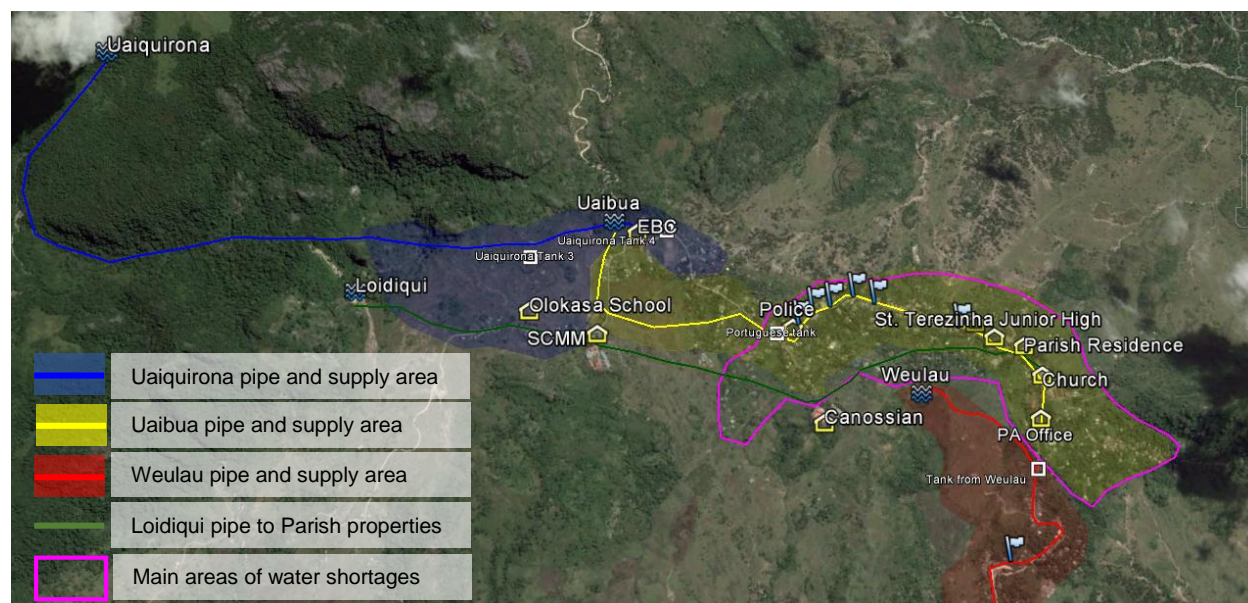


Figure 3 – Water systems and their supply areas for Ossu

WaterAid took measurements of water flow rates at the three springs visited. At Uaiquirona and Uaibua this was done by measuring the time taken to fill plastic water bottles several times and adopting an average of the times. Adjustments were made to account for the reality that not all flows were able to be captured in the narrow necked bottles. For Weulau, the flow rate was derived based on a simple calculation of observed velocity and water depth in the outflow channel. The flow rates provided in Table 3 should be read as approximations only.

Table 3 – Current Water system summary\*

System	June flow rate	Community Beneficiaries	Institutional Beneficiaries	Daily Yield (kL)	Daily Demand (kL)
Uaiquirona	0.6 L/s	300	1,500	57	32
Uaibua	1 L/s	3,200	100	86	130
Loidiqui	-	-	600	-	8
Weulau	30 L/s	1,200	-	2,592	48

\*Note: All numbers are approximate and demand excludes agricultural use

It must also be noted that the above flow rates were taken at the end of the wet season (albeit one affected by El Niño), and that during the dry season the flows would be

expected to be substantially less. The flow rates should be re-measured at the end of the dry season (October-November) to determine the minimum annual flow.

The volumes presented in Table 3 indicate that the daily yield from the Uaiquirona and Uaibua springs, which were constructed to supply the majority of Ossu town, is inadequate to meet the daily demand of the population based on minimum national standards, let alone cater for population growth. The current situation, with above-average leakage rates and additional use of the systems for agricultural purposes, is understandably even less adequate.

### **Uaiquirona System**

The Uaiquirona spring, located in the Mundo Perdido hills, provides water supply to the northern part of the Ossu community, including the Olokasa and EBC Mundo Perdido schools. It also provides water to 20-50 houses (approximately 300 people).

The system was constructed in Indonesian times (1975-1999) and rehabilitated by a government contracted company in 2013. The rehabilitation included installing a reservoir tank (seen on the east side of the road at the entrance to Ossu) immediately upstream of the fourth tank and constructing a new distribution line to the community on the east side of the main road. Not long after completion of the rehabilitation the supply in the system extension failed. WaterAid notes that there is unlikely to be enough pressure for this new system to function due to so many informal connections to the system upstream and the new reservoir tank's elevation being several metres higher than the adjacent fourth tank.



Figure 4 – Uaiquirona Spring intake

The intake has been constructed very close/over the spring, which results in some water soaking directly into the ground. In the dry season, the spring continues to flow (though less) but the supply of water to the lower end of the system is minimal. WaterAid believes this is due to leakage and users at the top of the system removing water directly from the pipe.

There are cultural considerations associated with the Uaiquirona spring. The spring itself cannot be touched by metal cooking implements or jewelry, and the water from the Uaiquirona spring cannot be mixed with water from the Uaibua spring.

### Uaibua System

The Uaibua spring was tapped during Portuguese times (pre-1975). It provides the main water supply to Ossu town as well as water for rice field irrigation. The spring is approximately 150 m west of the EBC Mundo Perdido School.



Figure 5 – Uaibua Spring intake

Originally the water system connected more or less directly from the spring to the Old Portuguese tank and then to the clinic. The system was rehabilitated by a government-employed contractor in 2011, including the construction of a large water tank in the rear of the police station, another in the rear of the clinic and a series of public tap stands along the east side of the main road. After approximately one year this water supply failed (reportedly due to informal connections) and since then users from the police station and downstream have had to fetch water elsewhere.

According to local beliefs, the water from Uaiquirona and Uaibua cannot be mixed or one of the springs will run dry.





Figure 6 – Examples of public tap stands in the Uaibua system along the main Ossu road



Figure 7 – Uaibua system tank in front of the Ossu clinic (tank is usually dry but leaked in the past)

### Loidiqui System

The system was constructed in 1992 by the Catholic Parish with support from the Japanese government. It was intended to supply water to the Parish facilities including:

- SCMM Convent and guesthouse,
- Canossian Sisters Boarding House and School,
- Santa Terezinha Junior High School
- Church and Priest's residence
- Santa Terezinha Primary School

The seasonal challenges with the Loidiqui system are significant. In the wet season the intake is often flooded by the adjacent stream and blocked by silt. In the dry season the spring flow rate is reduced and the flow within the system seldom reaches the downstream end of the system.

While this system has always been considered as dedicated for the Parish premises, several community members commented that in reality households have made informal

connections throughout the system. WaterAid believes that resulting leakage and strain on water resources exacerbates the already reduced dry season flow.

### Weulau Spring

The Weulau spring is a significant water source situated downhill of the main Ossu township. It provides water supply to two aldeias (hamlets) of approximately 200 households (1200 residents) in the southern part of Ossu. It is also an important water source for rice field irrigation south of Ossu and supplies vegetable and livestock farms.

The national office of the Programa Nasionál Desenvolvimento Suku (National Village Development Program) confirmed that through this National Government program a new water system will be constructed to the Borala community downstream of Weulau in their next funding cycle. No local leaders were able to further explain this plan.



Figure 8 – Weulau upwelling

The community are aware of Weulau's importance as a water resource. However its use is complicated by it being a shared asset, and more than one comment made about further utilising it indicated hostility.

“We are all the elders for this water source. There is no one person who can be called the owner”

-Community Leader

“[If a new pipe is laid] it won't be long until a machete finds it”

-Leader from community already using Weulau

It was widely agreed at the community meeting that careful discussion and agreement would need to precede any further use of the water. Preservation of the environment of Weulau was also raised as an issue, with two leaders suggesting a bore nearby would be preferable to installing a pump within the emergence.



## Other Water Sources

In the valley east of Ossu town are two other large springs (similar to Weulau) called Caima-Luli and Uaikun-Lale. Water from these springs is used for rice terrace irrigation and there are known ownership issues, similar to Weulau.

Ossu's annual rainfall is approximately 2000 mm, with the distribution shown in Figure 9. There is significant potential for harvest of rainwater, especially in institutions such as schools, though for the three months of the dry season this supply would be unreliable. WaterAid recommends that the use of rainwater should be limited to non-potable uses (toilet flushing, hand washing, clothes washing, garden watering etc.). As in many Timorese communities, there is social stigma associated with drinking rainwater; during the community meeting one community leader noted that while the community 'make the most of the rainfall in the wet season', it is linked with rheumatism, arthritis and increases in tuberculosis cases.

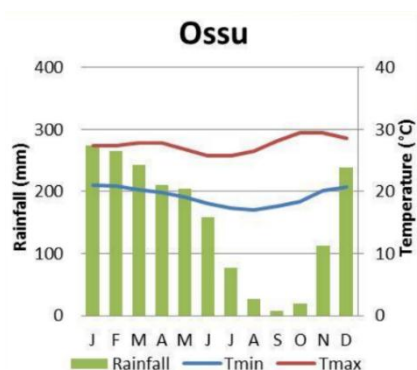


Figure 9 – Average annual rainfall for Ossu<sup>7</sup>

## Water Quality

WaterAid undertook water quality testing of each of the water systems, using the Aquagenx Compartment Bag Test. This test uses a chromogenic solute which indicates the presence of *E. coli* bacteria – an indicator of faecal contamination. Unfortunately, due to the cold temperatures in Ossu delaying the incubation period, only preliminary results were available to share with the community at the time of WaterAid's visit. The results are summarised in Table 4 and indicate that none of the water supplies are safe for potable use without boiling or other treatment.

The samples taken directly from the springs were highly contaminated. There are some improvements which could be made to the springs to minimise contamination risks,

<sup>7</sup> República Democrática de Timor-Leste, Ministério da Agricultura e Pescas/Seeds of Life, Climate Change, **Climate Viqueque District** (Poster), 2012

such as fencing to keep out livestock, digging catch drains to reroute surface water and ensuring any households upstream use a latrine. Refer to the sanitary inspection reports in Appendix C. Contamination in the systems also probably enters the systems at locations where the pipe has been cut or illegally tapped.

Table 4 – Water Quality Test Results

System	Test location	MPN*/100ml	Health Risk Category
Uaiquirona	Tank 3 (Olokasa)	>100	Unsafe
Uaibua	Uaibua spring	>100	Unsafe
Loidiqui	SCMM tap	48.3	High Risk/Possibly unsafe
Weulau	Weulau spring	>100	Unsafe
Clinic Tank	Patient toilet tap	>100	Unsafe

\*MPN = Most Probably Number of *E. coli* per 100ml of water. The Timor Leste Ministry of Health<sup>8</sup> and World Health Organisation<sup>9</sup> standard for safe drinking water is 0/100ml.



Figure 10 – Example of the water quality test results from the clinic – original test (left), preliminary result shown to community after two days (centre) and fully developed result after four three days (right). Blue colour indicates presence of bacteria

WaterAid did not collect water samples for chemical testing as part of this assessment. Future chemical testing could be conducted by agreement through Timor Leste's National Laboratory. Based on available literature<sup>10</sup>, limestone geology in Timor-Leste (which includes Mundo Perdido) is unlikely to produce spring water with high concentrations of elements such as arsenic, fluoride, lead or zinc. However pipe blockage due to calcium carbonate buildup may be a maintenance issue.

<sup>8</sup>República Democrática de Timor-Leste, Ministério da Saúde, **Protokolu Vijilánsia Nasionál ba Kualidade Be'e Hemu**, 2013

<sup>9</sup> World Health Organisation, **Guidelines for Drinking-Water Quality**, 4<sup>th</sup> Edition, 2011

<sup>10</sup> British Geological Survey, Natural Environment Research Council & WaterAid, **Groundwater Quality: East Timor**, 2007

## Results of Institutional Assessments

### Olokasa (Sekundaria/Senior High School)

#### Context

The Olokasa Senior High School is located at the foot of the Mundo Perdido hills, to the west of the main Ossu town. WaterAid met with the vice-principal Nelson Henrique and teachers Edia C. E. Monteiro and Antonio

Olokasa High School	
Total students	492
Female teachers	5
Male teachers	16
Year levels	Grades 10-12

This is one of two schools identified by WFOO as a priority for WASH projects.

#### Water

##### Overview

The main water supply is from the Uaiquirona spring. This system is from Indonesian times, but was rehabilitated by the government in 2013. There are approximately 50 households served by this system upstream of the school.



Figure 11 – Olokasa tank and disconnected tee

During the dry season this system runs dry. When the school does not have water the students collect it from the Uaibua spring.

Due to the topography and the number of buildings, there is considerable scope for using harvested rainwater to flush the toilets during the wet season.

### On-site storage

There is one zinc water tank on the uphill side of the school. However, the connection from the water system to this tank has been disconnected for some time.

## Sanitation and Hygiene

There are currently two functioning toilets for shared use by all students and staff, and teachers reported that many students practice open defecation. The toilets are sometimes clogged by students disposing sanitary products in the toilet. There is an existing septic (soak-style) tank connected to the toilets. The school cleaner holds the key to the toilets, which were locked on the day of WaterAid's visit.

Olokasa Sanitation	
Minimum required female student stalls	9
Minimum required male student stalls	8
Existing female student stalls	4
Existing male student stalls	4
Required additional female student stalls	5
Required additional male student stalls	4
Required additional staff toilet stalls (1 female, 1 male)	2

The student council is currently responsible for cleaning toilets and fetching water, which is scheduled for Saturdays. However WaterAid's observation was that no technical maintenance is being done. The hand washing facilities are unused as there is no water.



Figure 12 – Olokasa school hand washing facility

The teachers' expectation for the toilets at their school is that their toilets "can be used in accordance with their intended function and maintained in a clean condition."

The school curriculum includes hygiene education for year 12 students only, however there are no resources (books, posters, information etc.) provided. For this reason, there is currently no health and hygiene education running in the school. In July/August an education program about reproductive health will begin (arranged by Umbelina M. S. Rodrigues).

Olokasa Handwashing Facilities	
Minimum required handwashing points	6
Existing handwashing points	3
Required additional handwashing points	3

Previously there was an agreement with the clinic to provide training on health and hygiene. However this year, this has been discontinued. This was verified by the clinic who indicated that the priority for this year is for home visits and so they do not have the time or budget to provide training in schools.

When they have their period, many female students stay home from school. The staff were enthusiastic about potential menstrual hygiene management (MHM) training.

## Recommendations

### Water

- W1. **Option A:** Rehabilitate the Uaiquirona system to the third tank  
**Option B:** Construct new connection for the school from the first tank in the system (buried poly pipe)
- W2. Construct new water tank close to school buildings
- W3. Construct rainwater harvesting system and link to new tank to supply rainwater for toilet flushing.

### Health, Sanitation and Hygiene

- H1. Rehabilitate the water supply to the toilets and hand washing facilities
- H2. Construct a MHM and waste management facility
- H3. Provide health and hygiene training through a Training of Trainers (ToT) approach
- H4. Construct new separate toilet block for female students (9 stalls, existing toilets to become male-use only), staff toilet block (2 stalls) and at least additional 3 handwashing points



- H5. Rehabilitate existing toilet block and make disability-accessible

#### Social

- S1. Create GMF (water user group) for Uaiquirona water system
- S2. Form student WASH group (social) to promote health and hygiene practices amongst students
- S3. Form student WASH group (technical) to oversee maintenance of water and sanitation infrastructure

### EBC 15 Mundo Perdido (Pre-Sekundaria/Junior High School)

#### Context

The Junior High School is located north-west of the main town of Ossu, at the foot of the Mundo Perdido hills. It is immediately below the two water tanks on the main Baucau-Viqueque Road. In the mornings it functions as a primary school and the same facilities are used as a junior high school in the afternoon. WaterAid met with the school director (Acácio Monteiro) and deputy director (Domingos d C Guterres).

EBC 15 Mundo Perdido	
Female students	420
Male students	434
Kindergarten students	40
Female teachers	12
Male teachers	18
Year levels	Preschool, Grades 1-9

This is one of two schools identified by WFOO as a priority for WASH projects.

#### Water

##### Overview

The main water supply is from the Uaiquirona spring. During the dry season this supply is minimal and irregular (depending on community use) and the students often have to collect water from the nearby Uaibua spring (year-round flow, approx. 150m away) for their daily needs.

The original water connection to the school came from a tee off the main Ossu town supply, immediately upstream of the tank on the main road. In 2013 a new connection was cut into the system using a tee immediately downstream of the tank to supply to the newly built toilet block.

Once per year the Municipal health department chlorinates the tank supplying the school to improve the water quality. During WaterAid's visit, students were observed to drink the water from the kitchen water tank directly; a risk given the high levels of contamination found by water quality tests.

### On-site storage

The school has three zinc tanks:

The first water tank supplying the upper toilet block has rusted through the base and is no longer holding water.

A second tank in the upper half of the school was provided by AusCare and supplies water to the school kitchen for the school lunch program.

The third tank supplying the lower toilets block does not connect to the toilets.



Figure 13 – EBC Mundo Perdido tanks – rusted upper toilet block tank (left) and kitchen tank (right)

### Sanitation and Hygiene

There are two toilet blocks at the school. The upper block of nine toilets was constructed by ChildFund in 2013, including a disability-accessible toilet. Of these toilets, only two currently function. The lower toilet block, constructed by the government, consists of eight toilets, all of which are functional except for a lack of a continuous water supply (water is drawn from the kitchen tank via a hose across the road). All students and staff at the school therefore use two cubicles. Often students return home when they need to use the toilet, which impacts their education.

The upper toilet block was constructed directly over a septic tank. During the wet season the tank is often full and flushing results in wastewater backing up. There is no suction truck in Ossu capable of emptying the pit.

EBC 15 Mundo Perdido Sanitation*	
Minimum required female student stalls	10
Minimum required male student stalls	10
Existing female student stalls	9
Existing male student stalls	8
Required additional female student stalls	1
Required additional male student stalls	2
Required additional staff toilet stalls (1 female, 1 male)	2

\*As the same facilities are used by the primary school in the morning and the junior high school in the afternoon, only the larger number of students (primary school) needs to be catered for

The students are encouraged to wash their hands before lunch and after cleaning the school. They wash their hands at the kitchen water tank. Money from the education department is used to buy soap for the year, however no soap was observed when WaterAid visited. Maintenance of sanitation and hygiene facilities is the responsibility of the professor da turma in the primary school, and the class head and teachers in the junior high school.

In the past one teacher provided training about menstrual hygiene and the use of sanitary products to female students.



Figure 14 – EBC Mundo Perdido toilets – disability accessible (left) and lower toilet block (right)

EBC 15 Mundo Perdido Handwashing Facilities	
Minimum required handwashing points	8
Existing handwashing points	9
Required additional handwashing points	0

The school's hope for their sanitation is that "permanent water supply will enable [them] to keep their toilets in a good condition".

## Recommendations

### Water

- W4. **Option A:** Rehabilitate Uaiquirona system to the existing fourth tank. Construct new dedicated connection to school from existing tank by boring and rehabilitate community pipeline where former tees were installed.  
**Option A:** Install pump in Uaibua spring and connect to school using buried PE pipe.
- W5. Rehabilitate the existing water tanks supplying water to the toilets
- W6. Construct rainwater harvesting system to supply rainwater to toilets.

### Health, Sanitation and Hygiene

- H6. Rehabilitate the water supply to the toilets and hand washing facilities and designate as separate for male/female students
- H7. Rehabilitate septic tank connected to the upper toilet block, and connect to a new soak field.
- H8. Construct a MHM and waste management facility
- H9. Provide health and hygiene training through a ToT approach
- H10. Extend existing toilet blocks to add 2 new stall for males and 1 new stall for females. Construct new separate staff toilet block (2 stalls) and associated 1 handwashing point
- H11. Rehabilitate existing lower student toilet block and make disability-accessible

### Social

- S4. Form student WASH group (social) to promote health and hygiene practices amongst students
- S5. Form student WASH group (technical) to oversee maintenance of water and sanitation infrastructure

## EBCC Santa Terezinha (Pre-Sekundaria/Junior High School)

### Context

The Parish's junior high school is located opposite the priest's residence and immediately uphill of the Weulau water source. While WaterAid were in Ossu, visitors from the Parish of Burleigh Heads in Australia were visiting to continue discussions with

Fr. Evaristo about reconstructing the school building. WaterAid spoke with Fr. Evaristo about the WASH situation at the school.

Santa Terezinha Schools (Primary and Junior High combined)	
Female students	278
Male students	284
Female teachers	10
Male teachers	21
Year levels	Grades 1-9

## Water

### Overview

As with all Ossu Parish facilities, the junior high school accesses water from the Loidiqui spring, constructed in 1992. The tapping for the school is a poorly-connected hose which leaks badly.

The connection to the school bathrooms is held together by tape and leaks extensively. It is doubtful much water is supplied to the bathroom facilities. This pipe is also often disconnected by neighbouring households to collect water.

The school kitchen is a 100 m walk from the main school building. Information from Fr. Evaristo indicates that for much of the year students collect water in buckets and jerry cans from the main school connection for the school food program.

The parish employs two people to undertake maintenance and also organizes annual working bees to clear out the intake when it is filled with sediment.

Fr. Evaristo's hope for the water situation at the school is that they "can find a way to conserve the water so that it keeps coming for many years".

### On-site storage

There is currently no on-site storage for the junior high school. Based on the volume of water available at the residence, church and primary school, WaterAid believes there is sufficient water flow through the Loidiqui system to supply the school, if the leaking upstream connections are repaired.





Figure 15 – St. Terezinha Junior High School connection to Loidiqui system (left) and bathroom connection (right)

### Sanitation and Hygiene

Only three of the five toilets are functioning, though all are currently used. Male and female students and teachers use the same facilities. Cleaning of the toilets is done by student council members on Saturdays. The one hand washing basin had no functioning water supply (disconnected). No soap was observed.

Santa Terezinha Junior High School Sanitation*	
Minimum required female student stalls	4
Minimum required male student stalls	3
Existing female student stalls	3
Existing male student stalls	2
Required additional female student stalls	1
Required additional male student stalls	1
Required additional staff toilet stalls (1 female, 1 male)	2

Santa Terezinha Junior High School Handwashing Facilities*	
Minimum required handwashing points	3
Existing handwashing points	1
Required additional handwashing points	2

\*Student numbers at the Santa Terezinha schools were only available as combined totals. The toilet and handwashing facility estimates are based on the proportion of year levels at each school.



Figure 16 – St. Terezinha Junior High toilet and hand washing basin

Often female students will miss school when they have their period, and there have been instances of students being hospitalised due to fainting during their period, which may be due to lack of knowledge about menstruation and its management.

There are currently no student representatives responsible for health and hygiene promotion.

## Recommendations

### Water

- W7. Install a new water tank for on-site storage of water to supply the school toilets. Connected to guttering for capture and use of rainwater.
- W8. Install a new water tank for on-site storage of water to supply the school kitchen. This tank should not be connected to rainwater. Consider including a public tap stand to allow for use by neighbouring community to formalise the existing arrangement (subject to discussion with Parish).
- W9. **Option A:** Rehabilitate the Loidiqui water system  
**Option B:** Construct new pumped Weulau system to connect to rehabilitated Old Portuguese tank

### Health, Sanitation and Hygiene

- H12. Rehabilitate the existing school toilets and hand washing facilities (Fr. Evaristo expects that this will be included in the reconstruction of the

school supported by Burleigh Heads Parish). This should include construction of separate male and female toilet blocks (3 and 4 stalls respectively), separate male and female staff toilets and at least 3 handwashing points.

H13. Construct a MHM and waste management facility

H14. Provide health and hygiene training through a ToT approach

#### Social

S6. Create GMF for Loidiqui water system

S7. Create GMF for new Weulau water system

S8. Form student WASH group (social) to promote health and hygiene practices amongst students

S9. Form student WASH group (technical) to oversee maintenance of water and sanitation infrastructure

### Santa Terezinha (Primaria/Primary School)

#### Context

The Parish's primary school is located immediately downhill of the church. WaterAid spoke with Fr. Evaristo about the WASH situation at the school.

#### Water

##### Overview

The primary school is the most downstream of the Parish properties connected to the Loidiqui system. In the dry season there is insufficient water available for students.

There is not yet a school food program at the school.

##### On-site storage

A tank adjacent to the church is the nearest water storage, however this supplies water to the church toilets, the former boarding house (currently used by Science of Life Systems training group) and the primary school. There is no on-site water storage for the school. Incidental rainwater harvesting is done using buckets.

Fr. Evaristo's hope for the school is that it may have a water tank that enables it to last the dry season (1-2 months).

#### Sanitation and Hygiene

Four toilets were constructed in 2012, and are shared by all staff and students. They are often locked and students defecate in the bush or at the church toilets.

Santa Terezinha Primary School Sanitation*	
Minimum required female student stalls	6
Minimum required male student stalls	6
Existing female student stalls	2
Existing male student stalls	2
Required additional female student stalls	4
Required additional male student stalls	4
Required additional staff toilet stalls (1 female, 1 male)	2

Santa Terezinha Primary School Handwashing Facilities*	
Minimum required handwashing points	5
Existing handwashing points	2
Required additional handwashing points	3

\*Student numbers at the Santa Terezinha schools were only available as combined totals. The toilet and handwashing facility estimates are based on the proportion of year levels at each school.

Fr. Evaristo believes the teachers encourage students to wash their hands, however due to the need to fetch and carry water he acknowledged that this is unlikely to occur frequently.

Hygiene education is included in environmental studies.

An anecdote from Fr. Evaristo indicated that it is not uncommon for 6-8 students to become sick with gastroenteritis at the same time, which may be evidence of poor hygiene behavior.

## Recommendations

### Water

- W10. Construct new tank connected to both existing system and rainwater harvesting to supply water to toilets.

### Health, Sanitation and Hygiene

- H15. Provide health and hygiene training through a ToT approach
- H16. Construct new separate toilet block for female students (6 stalls), existing toilets to become male use only and be extended by 2 additional stalls, staff toilet block (2 stalls) and at least 3 additional handwashing points

## Social

- S10. Form student WASH group (social) to promote health and hygiene practices amongst students
- S11. Form student WASH group (technical) to oversee maintenance of water and sanitation infrastructure

## Ossu Clinic

### Context

WaterAid met with Elsa E. M. C. Guterres, Director of the Ossu Health Centre (responsible for the Ossu Clinic and ten health posts). The health centre total staff consists of 52 people.

Until the end of 2015, the clinic provided health education to the schools (supported by Ministry of Health and Marie Stopes International), however in 2016 the ministry's focus is on achieving mandatory minimum numbers of home visits. Their school health education program has therefore been discontinued.

### Water

The piped water supply connection to the Clinic comes from the Uaibua spring, however this has been dry since 2012 due to heavy community water use upstream of the clinic.

The water currently used in the clinic's bathrooms comes from a mixture of harvested rainwater and water purchased (and carted) from either the fire brigade (\$5) or a local contractor (\$20). The fire brigade water comes from the Loi-Huno waterfall 45 minutes south of Ossu and is often chlorinated. The local contractor draws water from Weulau and does not treat the water. One tankful of water lasts 1-2 weeks.

### On-site storage

The clinic has a 3000 L tank and a 1500 L tank on site. The original plan was to place the 1500L poly tank on the existing tank stand, however due to the current arrangement of trucking water in (and the difficulty in pumping from the truck to the raised tank), this has been delayed.





Figure 17 – Clinic water tanks

### Sanitation and Hygiene

There are two functioning toilets – one for staff and one for patients, which is also used for cleaning medical equipment.

There is no dedicated, functioning hand washing facility (one basin in the staff bathroom has no water connection) at the clinic, and the current practice is to pour water through a filter for midwives to wash their hands. This is a major hygiene concern. Every quarter, the health department provides money for soap, and soap was present in the toilets.

The director's hope for the future is to have a functioning hand washing facility in the bathrooms as well as one outside for staff and patients to wash their hands. She would also like additional toilets for staff and the public.

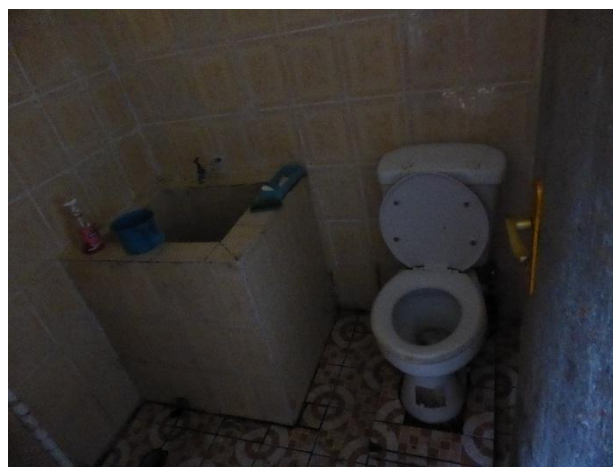


Figure 18 – Clinic toilets – patient toilet (left) and staff toilet (right)

## Recommendations

### Water

- W11.     **Option A:** Rehabilitate Uaibua water system  
          **Option B:** Construct new pumped Weulau system to connect to rehabilitated tank near clinic
- W12.     Rehabilitate internal connection of water to hand washing facilities.

### Sanitation and Hygiene

- H17.     Construct new public toilet facility, including internal and external hand washing facilities

### Social

- S12.     Create GMF for Uaibua water system

## Community Stakeholder Consultation

WaterAid, together with the Posto Administrativo Administrator, held a community stakeholder meeting to discuss the water and sanitation challenges facing the Ossu community. The list of attendees is included in Appendix D.

The general mood of the meeting was positive and enthusiastic, and several people appealed to the wider group to not just leave the discussion in words, but to take action.

“We are ready to cooperate with you with all the strength we have”  
-Health Centre Director



Figure 19 – Community water system mapping exercise (refer Appendix E)

During the Community stakeholder meeting, several key themes and issues were discussed by community members in addition to information included earlier in this report.

### Equitable Distribution of Water

The observation that in Indonesian times Ossu had a larger population and an abundance of water was widely endorsed, but many stated that this resource is now poorly distributed.

There was widespread consensus that any new or rehabilitated pipe through the community would need to include distributions points to the wider community. In the past, the water systems (Uaibua, Loidiqui) were constructed with the aim of taking supply directly to key water users at the lower end of the community, without allowing for distribution to the community and it was for this reason that households made informal connections and holes in the pipes.

Existing users appeared open to this idea, based on providing strategic communal water points and deterring household connections. One example was suggested by Father Evaristo for a rehabilitated Loidiqui system:

1. Tank and tap near the Olokasa high school
2. Tank and tap near the Canossian Sisters boarding house
3. Connection and tap near the existing tank near the clinic/church
4. Tank and tap near the PA Office

WaterAid notes that by installing weir systems internally within tanks, it would be possible to allow some water to be used along the system while maintaining transmission to the downstream areas.

### Social Issues to be Resolved Prior to Any Work

“Social problems – that’s what we need to discuss in depth together”  
-Xefe suco Uabubo

There was wide agreement by those present that there are minimal social issues associated with the Uaiquirona, Uaibua and Loidiqui water sources. In contrast, the ownership and management of Weulau is disputed, as described in the introduction to this report.



Figure 20 – Community water system mapping exercise

The PNTL offered to provide security for the duration of any construction works to minimize disturbance by community, however this is unlikely to be an ongoing management strategy for any water system.



The enactment of **tara bandu** (local laws agreed upon by the community and enforced by the elders) prior to inauguration of any new or rehabilitated system was suggested by multiple stakeholders as one way to minimize ongoing damage or informal connections.

Though the community leaders and PNTL assured WaterAid that these social problems were the community's issue to resolve and should not affect any planned works, it is important that these issues are resolved prior to any major works being undertaken

### Ongoing Management

In addition to this issue being raised during our site visits, it was discussed at length in the community meeting.

“We have water, but people don't know how to look after it”

-representative of Xefe suco Ossu de Cima

“The system is no good because there is no one to maintain it”

-PNTL Commander

“It's the management that's not good. In the future the leaders, the administration, need to organise management, not just do maintenance every one or two months and then leave it”

-Director of EBC Mundo Perdido

“The Government-implemented systems aren't good because there isn't any permanent staff member to pay attention to them”

-Ossu Posto Administrativo Administrator

There were criticisms of the previous government contractor who completed the work and then left without training the community to do ongoing maintenance. There were also concerns that previous attempts at volunteer management through a GMF had failed because members were active once or twice and then abandoned their responsibilities.

Multiple people also expressed concern that if money is invested in new systems but not in their management, the result will be the same situation: dry and useless infrastructure.

WaterAid sees the establishment of effective management structures as a crucial issue to be resolved alongside any infrastructure works, in order to ensure their sustainability.

## Recommended Actions

The table below provides a high-level summary of the recommended actions, ballpark costs, and the number of beneficiaries directly impacted by each proposed action. WaterAid recognizes the scale of investment required to realize all of these actions and includes it as a long-term roadmap to provide water, sanitation and hygiene services to the entire Ossu community.

The following explanations are intended to clarify some of the recommendations.

### GMF Formation

In order to overcome the key challenge of water supply management, we recommend creation, training, and a clear support structure for GMFs in coordination with the Municipal DAA. In WaterAid's experience in other rural communities in Timor Leste, sustainable management of a system can be achieved by:

- establishing a community-endorsed, well-respected, enthusiastic and gender-balanced GMF,
- training in technical matters (operation, inspection, repairs, bookkeeping etc.)
- training in organizational matters (management, collecting and managing funds, coordination with community and leaders, gender inclusion etc.)
- assisting them to develop clear regulations for their roles, responsibilities

Such a group must also work closely with the Municipal DAA and actively involve the FPAs, who should be involved from the initial group formation.

WaterAid promotes the integration of community discussion focusing on gender and disability inclusion during the community engagement and GMF formation process. Dialogue on the roles of men and women leads to better awareness of the greater burden and impact which women typically experience in relation to WASH issues in rural Timor-Leste. It also builds the foundations for women's involvement in decision making on WASH issues and involvement in GMFs. This is important as women are usually more aware of the condition of the water supply, better understand the community's water needs, and often manage the family budget which has direct links to collecting monthly contributions for operation and maintenance. Similarly, engaging the community in discussion of WASH access to all provides a forum for the community to hear the experiences of people with disabilities and begin to address the physical, institutional and social barriers facing people with disabilities.

## WASH in Schools education

As noted above, there is a clear need for knowledge sharing about WASH issues in schools, especially about health and hygiene.

WaterAid has had great successes providing WASH information sessions in schools in rural Timor Leste and can provide expertise and resources for sessions. We recommend that a Training of Trainers (ToT) approach be adopted to encourage teachers to take ownership of the process and enable student leaders to share information through peer-to-peer learning. Information sessions and activities would cover correct hand washing with soap techniques, how disease spreads, correct use of toilets, link between water contamination and health, and MHM. The sessions include behavior change communication material, and some sanitation/hygiene products. The outcome of WaterAid's sessions in other schools has been to create change agents within the student body who advocate for improved sanitation and hygiene behavior among their peers, the school and the wider community.

As with the community engagement process, WaterAid's WASH in school sessions include discussion about equity and inclusion. Activities include disability access demonstrations, and games to prompt discussion about male and female WASH-related needs and norms. Discussing these themes with students encourages changes in attitudes, and builds expectations within the student body of equal rights and roles in decision-making which also influence the broader community. WaterAid Timor-Leste's experience has been that on topics such as MHM, a gender-sensitive approach can create male 'change agents' who advocate for the needs and rights of their female classmates on issues that the male students and staff previously did not understand or engage in.

Gender-balanced student WASH groups should be formed and trained to be responsible for ongoing social programs (promotion of health and hygiene practices as above) and technical programs (operation and maintenance of school WASH facilities). Encouraging students to take ownership of these aspects enhances their sustainability.

The ballpark costs presented in the summary of recommendations include the cost of providing resources to the school, forming student groups and running ToT sessions for teachers and students.

## Uaiquirona System Rehabilitation

The existing GI system has many informal connections and leakage points, which require rehabilitation. Works would also include rehabilitation of tanks (e.g. tank 3 has

been disconnected/bypassed) and provision of distribution lines and tap stands so the community can access water without cutting the pipe.

With community participation, a GMF (management group) should be formed and training provided in maintenance, fund collection and spending, and system operation. This group should be established in close coordination with Municipal DAA, and include representatives from the community and both Olokasa and EBC Mundo Perdido schools (teacher or parent-teacher association member).

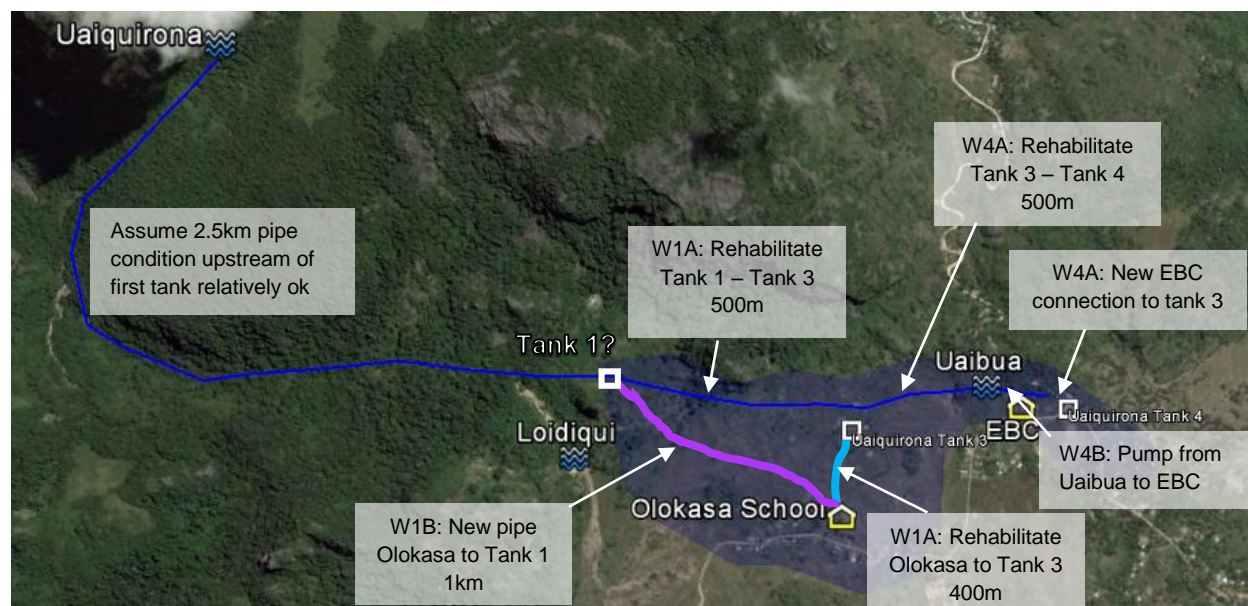


Figure 21 – Rehabilitation of Uaiquirona system

While the work could be staged to provide supply to the Olokasa School (to tank 3) and then a second stage to the EBC Mundo Perdido School, WaterAid recommends completing all works at once.

The rehabilitation of the Uaiquirona system would be a relatively achievable starting point, with a positive impact on the Olokasa and EBC Mundo Perdido schools.

### Uaibua System Rehabilitation

The existing GI system has many informal connections and leakage points, which require rehabilitation. Works would also include rehabilitation or replacement of tanks (e.g. the tank at the clinic is not watertight) and rehabilitation of existing distribution lines and tap stands so community can access water without cutting the pipe.

With community participation, a GMF (management group) should be formed and training provided in maintenance, fund collection and spending, and system operation.



This group should be established in close coordination with Municipal DAA, and include representatives from the community and the clinic.

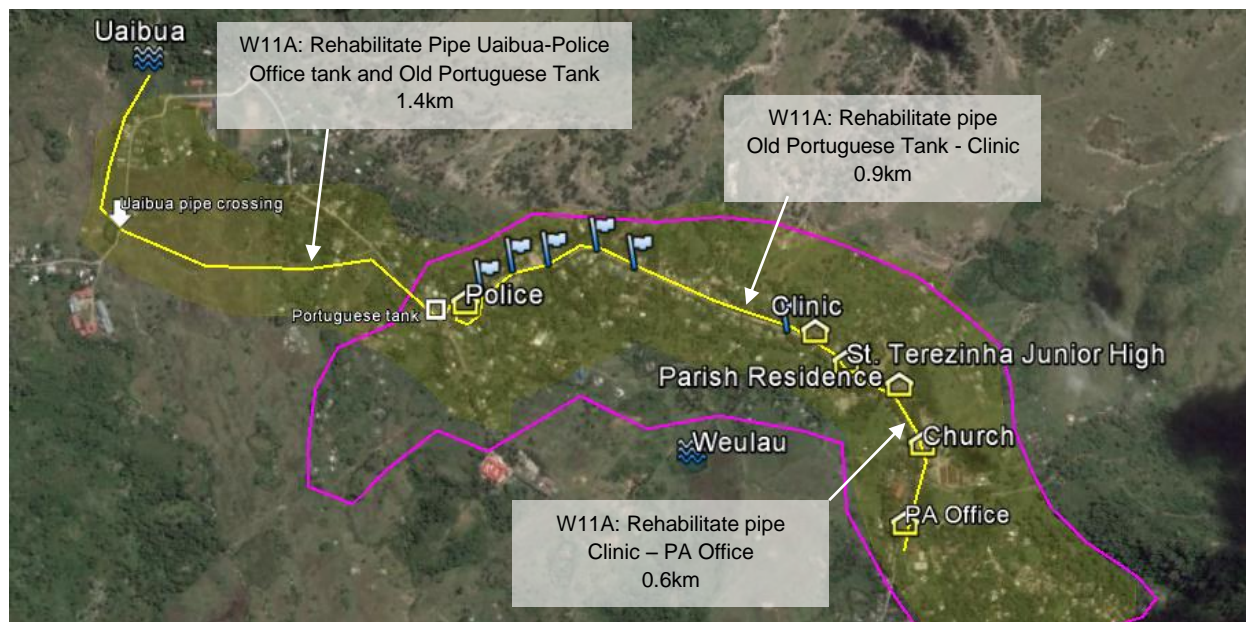


Figure 22 – Rehabilitation of Uaibua system

### Loidiqui System Rehabilitation

The existing GI system has many informal connections and leakage points, which require rehabilitation. Works should also include construction of additional tanks near SCMM and Canossian Sisters and provision of distribution lines to tap stands so community can access water without cutting the pipe. Comments made by Fr. Evaristo in the community meeting indicated willingness to provide distribution points for the community along the system.

Formation of a management group is recommended, including training for maintenance and system operation. However consideration should also be given to the existing maintenance regime by the church. Close collaboration with the Parish will be central to any works on this system.



Figure 23 – Rehabilitation of Loidiqui system

### Weulau System Proposal

The large and sustained flow from Weulau provides an attractive opportunity for water supply. Especially given its proximity to the parts of Ossu with the severest water shortages in the dry season. As noted in Table 3 the yield from the Uaiquirona and Uaibua springs is insufficient to meet the minimum water supply volume for Ossu town and eventually an additional water source such as Weulau will need to be utilised.



Figure 24 – Weulau System Options

WaterAid identified three options for construction of such a system, summarised in Table 5.

Table 5 – Weulau pumping options

Option	Technical considerations	Social considerations	
1	Pump Weulau water to existing tank near EBC, link all systems and supply by gravity flow to entire community	The elevation difference of 135m will require a substantial pump. The risk of community cutting the 2 km long pressure pipe is high.	Culturally, the water from Uaiquirona and Uaibua cannot be combined so the systems would need to be kept separate
2	Pump water to existing Portuguese-era tank and Police tank, supply gravity flow system to downstream community through Uaibua system	The elevation difference of 80m will require a substantial pump. Requires rehabilitation of part of Uaibua system.	Expectations between existing and proposed users of Weulau supply need to be managed carefully.
3	Pump water to rehabilitated tank near clinic, supply gravity flow system to downstream community through Uaibua system, with possible connection also to lower part of Loidiqui system	The elevation difference of 40m requires the smallest pump. Requires rehabilitation of part of Uaibua system.	

Based on the above considerations, WaterAid believes Option 1 to be unfeasible, and Options 2 and 3 are both technically and socially complicated. However, given appropriate community involvement, Municipal DAA involvement, clear system management structures, and deterrence from community interference in the pressure pipe, Option 2 (refer recommendation W9B) or Option 3 (refer recommendation W11B) could be achieved.

WaterAid has concerns about the sustainability of constructing a pumped system from Weulau. Firstly, the risk of community members cutting into the pressure pipe from the source to the tank will need to be addressed through involvement of community leaders and community-developed **tara bandu** laws or similar. Secondly, in most rural



communities in Timor-Leste, electricity supply is prone to outages or interruptions. Any electric pumps should be connected to backup power (e.g. solar, generator) and the community made aware of the link between electricity supply and water supply. Finally, the ongoing sustainability of the system would be dependent on the Municipal DAA's human resources. According to the Timor Leste Rural Water Supply Guidelines, the Municipal DAA would be responsible for maintaining the system from the pump to the storage tank. As in many places in Timor, technical skills or knowledge to maintain pumps are lacking in Viqueque and the Municipal DAA has been unable to obtain a pump technician to maintain and repair pumps despite actively seeking one (until recently there was only one pump technician employed nationally by the government). Several government-managed and community managed pumped systems in Viqueque have broken down and eventually been abandoned due to the unavailability of a pump technician in the municipality. While these issues are not insurmountable, WaterAid recommends focusing on the other water supply systems as easier first steps.



Figure 25 – Old Portuguese tank opposite PNTL office



## Summary of recommendations

As mentioned elsewhere in this report, the following recommendations represent the actions required to achieve the minimum WASH service for the Ossu community.

The costs listed should be considered ballpark figures only and will depend on detailed designs of hardware. Also, while an allowance has been included for project management, staffing, overheads and other administration costs, this will vary based on the approach taken by the implementer (e.g. NGO, private company, paid versus volunteer community labour etc). Rehabilitation costs have been estimated conservatively based on 50% of existing systems needing work. Based on information from Ossu community members, construction materials have been assumed to be supplied from Dili, and material transport has been included.

	Action	Institution	2016 Institutional Beneficiaries	Other Community Beneficiaries?	Approx. Cost (US\$)	Social Challenges	Technical Challenges	Remarks
W1A	Rehabilitate the Uaiquirona system to the third tank	Olokasa	513	Yes	\$19,500	Minor	Negligible	Necessary for W4A
W1B	Construct new connection for the school from the first tank in the system (buried PE pipe)	Olokasa	513	No	\$10,500	Minor	Negligible	
W2	Construct new water tank close to school buildings	Olokasa	513	No	\$ 4,500	Negligible	Negligible	Necessary for W3
W3	Construct rainwater harvesting system and link to new tank to supply rainwater for toilet flushing	Olokasa	513	No	\$ 2,500	Negligible	Negligible	Assumes W2 is already complete
W4A	Rehabilitate Uaiquirona system to the existing fourth tank. Construct new dedicated connection to school from existing tank by boring and rehabilitate community pipeline where former tees were installed	EBC	924	Yes	\$12,000	Minor	Minor	Assumes rehabilitation to third tank is already complete (see W1A),
W4B	Install pump in Uaibua spring and connect to school using buried PE pipe	EBC	924	No	\$ 4,000	Minor	Minor	

	Action	Institution	2016 Institutional Beneficiaries	Other Community Beneficiaries?	Approx. Cost (US\$)	Social Challenges	Technical Challenges	Remarks
W5	Rehabilitate the existing water tanks supplying water to the toilets	EBC	924	No	\$ 3,000	Negligible	Negligible	
W6	Construct rainwater harvesting system to supply rainwater to toilets	EBC	924	No	\$ 1,000	Negligible	Negligible	
W7	Install a new water tank for on-site storage of water to supply the school toilets. Connect to guttering for capture and use of rainwater.	St. Terezinha Junior High	593	No	\$ 5,000	Negligible	Negligible	
W8	Install a new water tank for on-site storage of water to supply the school kitchen. This tank should not be connected to rainwater. Consider including a public tapstand to allow for use by neighbouring community to formalise the existing arrangement (subject to discussion with Parish).	St. Terezinha Junior High	593	Yes	\$ 2,500	Minor	Negligible	
W9A	Rehabilitate the Loidiqui water system	St. Terezinha schools	593	Yes	\$48,000	Major	Minor	
W9B	Construct new pumped Weulau system to connect to rehabilitated Old Portuguese tank	St. Terezinha schools, Clinic	645	Yes	\$21,000	Major	Major	Note, requires W11A
W10	Construct new tank connected to both existing system and rainwater harvesting to supply water to toilets	St. Terezinha Primary	645	No	\$ 2,500	Negligible	Negligible	
W11A	Rehabilitate the Uaibua water system	Clinic	52	Yes	\$41,000	Major	Minor	Necessary for W9B

	Action	Institution	2016 Institutional Beneficiaries	Other Community Beneficiaries?	Approx. Cost (US\$)	Social Challenges	Technical Challenges	Remarks
W11B	Construct new pumped Weulau system to connect to rehabilitated tank near clinic	St. Terezinha schools, Clinic	645	Yes	\$21,000	Major	Major	
W12	Rehabilitate internal connection of water to handwashing facilities	Clinic	52	Yes	\$ 1,000	Negligible	Negligible	
H1	Rehabilitate the water supply to the toilets and handwashing facilities	Olokasa	513	No	\$ 1,000	Negligible	Negligible	
H2	Construct a MHM and waste management facility	Olokasa	251	No	\$ 1,500	Negligible	Negligible	Assume 50% of students are female
H3	Provide health and hygiene training through a Training of Trainers (ToT) approach	Olokasa	513	No	\$ 1,500	Negligible	Negligible	
H4	Construct new separate toilet block for female students (9 stalls, existing toilets to become male-use only), staff toilet block (2 stalls) and at least additional 3 handwashing points	Olokasa	513	No	\$33,000	Negligible	Negligible	
H5	Rehabilitate existing toilet block and make disability-accessible	Olokasa	513	No	\$ 5,500	Negligible	Negligible	
H6	Rehabilitate the water supply to the toilets and handwashing facilities and designate as separate for male/female students	EBC	924	No	\$ 1,000	Negligible	Negligible	
H7	Rehabilitate septic tank connected to the upper toilet block, and connect to a new soak field	EBC	924	No	\$ 1,000	Negligible	Minor	
H8	Construct a MHM and waste management facility	EBC	432	No	\$ 1,500	Negligible	Negligible	

	Action	Institution	2016 Institutional Beneficiaries	Other Community Beneficiaries?	Approx. Cost (US\$)	Social Challenges	Technical Challenges	Remarks
H9	Provide health and hygiene training through a ToT approach	EBC	924	No	\$ 1,500	Negligible	Negligible	
H10	Extend existing toilet blocks to add 2 new stalls for males and 1 new stall for females. Construct new separate staff toilet block (2 stalls) and associated 1 handwashing point	EBC	924	No	\$12,000	Negligible	Negligible	
H11	Rehabilitate existing lower student toilet block and make disability-accessible	EBC	924	No	\$ 5,500	Negligible	Negligible	
H12	Rehabilitate the existing school toilets and handwashing facilities (Fr. Evaristo expects that this will be included in the reconstruction of the school supported by Burleigh Heads Parish)	St. Terezinha Junior High	593	No	n/a	Negligible	Negligible	
H13	Construct a MHM and waste management facility	St. Terezinha Junior High	288	No	\$ 1,500	Negligible	Negligible	
H14	Provide health and hygiene training through a Training of Trainers (ToT) approach	St. Terezinha Junior High	593	No	\$ 1,500	Negligible	Negligible	
H15	Provide health and hygiene training through a Training of Trainers (ToT) approach	St. Terezinha Primary	645	No	\$ 1,500	Negligible	Negligible	



	Action	Institution	2016 Institutional Beneficiaries	Other Community Beneficiaries?	Approx. Cost (US\$)	Social Challenges	Technical Challenges	Remarks
H16	Construct new separate toilet block for female students (6 stalls), existing toilets to become male use only and be extended by 2 additional stalls, staff toilet block (2 stalls) and at least 3 additional handwashing points	St. Terezinha Primary	645	No	\$ 6,000	Negligible	Negligible	
H17	Construct new public toilet facility, including internal and external handwashing facilities	Clinic	52	Yes	\$ 7,000	Minor	Negligible	
S1	Create GMF (water user group) for Uaiquirona water system	Olokasa, EBC	1437	Yes	\$ 1,000	Major	Negligible	
S2	Form student WASH group (social) to promote health and hygiene practices amongst students	Olokasa	513	No	n/a	Negligible	Negligible	Cost included in H3
S3	Form student WASH group (technical) to oversee maintenance of water and sanitation infrastructure	Olokasa	513	No	n/a	Negligible	Negligible	Cost included in H3
S4	Form student WASH group (social) to promote health and hygiene practices amongst students	EBC	924	No	n/a	Negligible	Negligible	Cost included in H9
S5	Form student WASH group (technical) to oversee maintenance of water and sanitation infrastructure	EBC	924	No	n/a	Negligible	Negligible	Cost included in H9
S6	Create GMF for Loidiqui water system	St. Terezinha schools	593	Yes	\$ 1,000	Major	Negligible	

	Action	Institution	2016 Institutional Beneficiaries	Other Community Beneficiaries?	Approx. Cost (US\$)	Social Challenges	Technical Challenges	Remarks
S7	Create GMF for new Weulau water system	St. Terezinha schools, Clinic	645	Yes	\$ 1,000	Major	Negligible	
S8	Form student WASH group (social) to promote health and hygiene practices amongst students	St. Terezinha Junior High	593	No	n/a	Negligible	Negligible	Cost included in H14
S9	Form student WASH group (technical) to oversee maintenance of water and sanitation infrastructure	St. Terezinha Junior High	593	No	n/a	Negligible	Negligible	Cost included in H14
S10	Form student WASH group (social) to promote health and hygiene practices amongst students	St. Terezinha Primary	645	No	n/a	Negligible	Negligible	Cost included in H15
S11	Form student WASH group (technical) to oversee maintenance of water and sanitation infrastructure	St. Terezinha Primary	645	No	n/a	Negligible	Negligible	Cost included in H15
S12	Create GMF for Uaibua water system	Clinic	52	Yes	\$ 1,000	Major	Negligible	

## References

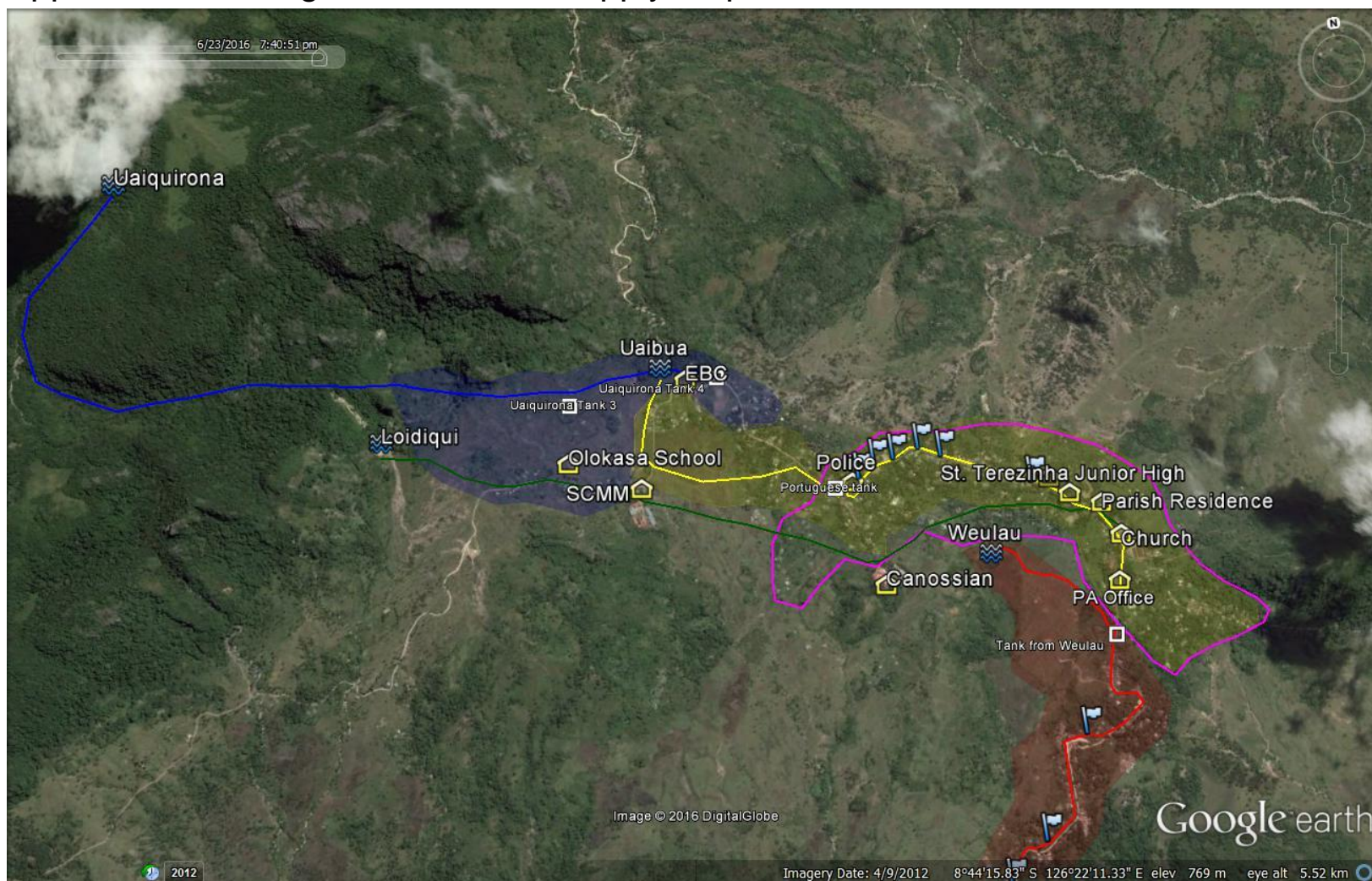
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## Appendix A – Updated Contact List

Name	Organisation	Position	Telephone Number
Acácio Minteiro	Education	Director EBC	78274717
Agusto de Sousa	Ministry of State	Administrator, PA	77304474
Apolonia Barreto	WaterAid Timor Leste	Technical Officer	77315522
Artur Pinto	Community	Xefe Aldeia	77490038
Celestiano F. da Silva	Department of Water Supply	PA Facilitator	77333227
Domingos d C Guterres	Education	Vice Director, EBC	
Doroteia de Jesus Guterres	MSS - DNDS	Social	77355961
Edia Cecilia Eliza Monteiro	Education	Teacher, Olokasa	77279223
Elsa E.M.C. Guterres	Health	Director of Clinic	78317753
Elviro C. Guterres	DNN Ossu		77301556
Eva de Fatima	PNDS	Finance	78443899
Felismina S. Guterres	Community		77330881
Francisco da Costa Guterres	Community	ex Xefe Aldeia Loi Huno	77466853
Fraser Goff	EWB / WaterAid Timor Leste	WASH Program Mentor	77669170
Joanico Alves da Cruz	Community	Xefe Suco Uabubo	77267554
Jose da Silva Amaral (Radityo)	Veterans	Coordinator	77464853
Jose Moreira Antones	Education		-
Maria Odete	WaterAid Timor Leste	Sanitation Officer	77694777
Marito	Department of Water Supply	Director	77009015
Mateus da Silva	PNTL		77629365
Memensio Freitas	Education	Teacher, Olokasa	77280632
Nazario Amaral	PNDS	Technical	78443903
Pe. Evaristo A. Costo	Parish	Priest	77130296
Umbelina M S Rodrigues	WFOO	Coordinator	77609206
Virgilio da Costa	Department of Water Supply	PA Facilitator	77252005



## Appendix B – Google earth Water Supply Map



## Appendix C – Spring Sanitary Inspection Forms

### A. General Information

Location of Spring: Uaiquirona	Total Risk Score (Total yes answers) 6/9
District: Viqueque	<b>Risk Score Grading</b>  9..... Very High Risk  6/7/8..... High Risk  3/4/5..... Moderate Risk  0/1/2..... Low Risk
Sub District: Ossu	
Suco: Ossu de Cima	
Aldeia:	
Pcode:	
Date of Visit: 23/06/2016	
Water Sample Collected? No	
Sample Reference #	

### B. Identification of sanitation factors

Factors	YES	NO	Recommendations
1. Is the source open to surface water contamination? (spring structure cracked or non-existent)	X		
2. Is the manhole cracked, too small or not in the proper position?	X		
3. Is the overflow screen missing or unsanitary?	X		
4. Is there inadequate fencing around the spring?	X		
5. Is the cut-off ditch above the spring blocked or non-existent?	X		
6. Is there a latrine uphill from the spring?		X	
7. Is there another source of pollution uphill from the spring?		X	
8. Is there ponding of water at the collection point?	X		
9. Is the drainage away from the spring blocked causing ponding?		X	
<b>TOTAL YES ANSWERS</b>	<b>6</b>		<b>(record score in upper right box)</b>

### C. Recommendations

Improve fencing and cutoff drain above spring, add screen to overflow

**D. General Information**

<b>Location of Spring: Uaibua</b>	<b>Total Risk Score</b> (Total yes answers) <b>5/9</b>
District: Viqueque	<b>Risk Score Grading</b>  9..... Very High Risk  6/7/8..... High Risk  3/4/5..... Moderate Risk  0/1/2..... Low Risk
Sub District: Ossu	
Suco: Ossu de Cima	
Aldeia:	
Pcode:	
Date of Visit: 21/06/2016	
Water Sample Collected? Yes	
Sample Reference #	

**E. Identification of sanitation factors**

Factors	YES	NO	Recommendations
10. Is the source open to surface water contamination? (spring structure cracked or non-existent)		X	
11. Is the manhole cracked, too small or not in the proper position?	X		
12. Is the overflow screen missing or unsanitary?	X		
13. Is there inadequate fencing around the spring?		X	
14. Is the cut-off ditch above the spring blocked or non-existent?	X		
15. Is there a latrine uphill from the spring?	X		
16. Is there another source of pollution uphill from the spring?	X		Road and Uaiquirona pipe upstream
17. Is there ponding of water at the collection point?		X	
18. Is the drainage away from the spring blocked causing ponding?		X	
<b>TOTAL YES ANSWERS</b>	<b>5</b>		<b>(record score in upper right box)</b>

**F. Recommendations**

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**G. General Information**

<b>Location of Spring: Weulau</b>	<b>Total Risk Score (Total yes answers) 8/9</b>
District: Viqueque	<b>Risk Score Grading</b>  9..... Very High Risk  6/7/8..... High Risk  3/4/5..... Moderate Risk  0/1/2..... Low Risk
Sub District: Ossu	
Suco: Ossu de Cima	
Aldeia:	
Pcode:	
Date of Visit: 23/06/2016	
Water Sample Collected? No	
Sample Reference #	

**H. Identification of sanitation factors**

Factors	YES	NO	Recommendations
19. Is the source open to surface water contamination? (spring structure cracked or non-existent)	X		
20. Is the manhole cracked, too small or not in the proper position?	X		
21. Is the overflow screen missing or unsanitary?	X		
22. Is there inadequate fencing around the spring?	X		
23. Is the cut-off ditch above the spring blocked or non-existent?	X		
24. Is there a latrine uphill from the spring?	X		
25. Is there another source of pollution uphill from the spring?	X		
26. Is there ponding of water at the collection point?	X		
27. Is the drainage away from the spring blocked causing ponding?		X	
<b>TOTAL YES ANSWERS</b>	<b>8</b>		<b>(record score in upper right box)</b>




















**I. Recommendations**

Improve fencing and cutoff drain above spring and encourage safe sanitation practices in the upstream community.
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## Appendix D – Participant List: Community Stakeholder Meeting

Lista Participante Encontro Bee, Saneamento no Ljane  
Ossu, 22 Junho 2016.

Nº	Nome	Organização	Posição	Numero Telefone	Assinatura
1	Apolonia A. Barreto	Wateraid	T.O	77315522	
2	Maria Odete		S.O	7767 4777	
3	Artur Pinto		chefe Aldeia	77490038	
4	Acácia MONTEIRO	EDUCAÇÃO	DIRECTOR EBC.	78278722	
5	Matheus Da Silveira	PNRL	OPS	77429368	
6	post morais Antunes	Educação	Imp. Escola		
7	Nazario Amador	PNDS	FFPA	78443903	
8	Eva de Fatima	PNDS	FFPA	78443899	
9	Doroteia de Jesus Guterres	MSS - DNDS	Animador social	77355961	
10	Jornico M. Alves da Cruz	Comunidade	chefe Sudo	77267554	
11	Francisco da Costa Guterres	Comunidade	comandante	77466853	
12	Mrs. da Silva (Radity)	Comunidade	coordenador	77464853	
13	Elsa E.M.C. Guterres	Comunidade	chefe CS	78317753	
14	Felismina S. Guterres	Comunidade		77330891	
15	Celso F. da Silva	PNRL	IPA OSSU	77333227	
16	Elvino C. Guterres	PNRL OSSU	2º Com. seg.	77301556	
17	Le. Evaristo A. Costa	PNRL OSSU	PNRL	77180296	
18	Vizgilio da Costa	PNRL OSSU	PNRL	77252005	
19	Francisco de Sousa	MAS-ONAL	A. port. OSSU	77304474	
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