Gold Standard
for the Global Goals

TEMPLATE

MONITORING REPORT

PUBLICATION DATE **14.10.2020**

VERSION **v. 1.1**

RELATED SUPPORT – **TEMPLATE GUIDE Monitoring Report v. 1.1**

This document contains the following Sections

KEY PROJECT INFORMATION

Programme of Activity Information – (delete below table if N/A)

GS ID of Programme	GS1247
Title of Programme	Improved Kitchen Regimes Multi-Country PoA (GS1247)
Version of POA-DD applicable to this monitoring report	Version 9
Name and GS ID of fully Validated CPA/VPAs (i.e. non compliance check)	VPA 122 – GS 5951 VPA 123 – GS 5952 VPA 124 – GS 5953 VPA 125 – GS 5954 VPA 126 – GS 5955 VPA 129 - GS 6041 VPA 130 – GS 6042

Key Project Information

GS ID (s) of Project (s)	VPA 122 – GS 5951 VPA 123 – GS 5952 VPA 124 – GS 5953 VPA 125 – GS 5954 VPA 126 – GS 5955 VPA 129 - GS 6041 VPA 130 – GS 6042
Title of the project (s) covered by monitoring report	GS1247 VPA 122 Zoba Anseba Community Safe Water (GS5951) GS1247 VPA 123 Zoba Anseba Community Safe Water (GS5952) GS1247 VPA 124 Zoba Anseba Community Safe Water (GS5953) GS1247 VPA 125 Zoba Anseba Community Safe Water (GS5954) GS1247 VPA 126 Zoba Anseba Community Safe Water (GS5955) GS1247 VPA 129 Zoba Anseba Community Safe Water (GS6041)

	GS1247 VPA 130 Zoba Anseba Community Safe Water (GS6042)
Version number of the PDD/VPA-DD (s) applicable to this monitoring report	Version 2 (All VPAs)
Version number of the monitoring report	Version 5
Completion date of the monitoring report	15/09/2021
Date of project design certification	04/04/2018
Date of Last Annual Report	06/02/2020
Monitoring period number	MP3, MP1
Duration of this monitoring period	GS5951: (01/12/2019) to (30/11/2020) MP3 GS5952: (01/12/2019) to (30/11/2020) MP3 GS5953: (01/12/2019) to (30/11/2020) MP3 GS5954: (01/12/2019) to (30/11/2020) MP3 GS5955: (01/12/2019) to (30/11/2020) MP3 GS 6041: (18/02/2020) to (30/11/2020) MP1 GS 6042: (18/02/2020) to (30/11/2020) MP1
Project Representative	Amie Nevin, CO2balance
Host Country	Eritrea
Activity Requirements applied	☒ Community Services Activities ☐ Renewable Energy Activities ☐ Land Use and Forestry Activities/Risks & Capacities ☐ N/A
Methodology (ies) applied and version number	TPDDTEC v.1
Product Requirements applied	☒ GHG Emissions Reduction & Sequestration ☐ Renewable Energy Label ☐ N/A

Table 1 - Sustainable Development Contributions Achieved

Sustainable Development Goals Targeted	SDG Impact	Amount Achieved	Units/ Products
SDG 3 Good Health and Well-being	Variation in household smoke (All VPAs)	90% decrease in household smoke (All VPAs)	Percentage

SDG 5 Gender Equality	Variation of time spent on firewood collection	0.08 hours per household per day decrease in firewood collection time (All VPAs)	Hours
SDG 6 Clean Water and Sanitation	People gain access to safe water	16093 additional people gain access to safe water: GS5951: 2,483 GS5952: 1,924 GS5953: 1,915 GS5954: 1,781 GS5955: 1,651 GS 6041: 3,382 GS 6042: 2,957	Number of people
SDG 13 Climate Action	Emission Reductions	SDG 13: tCO2e/y per VPA GS5951: 4641 tCO2-e GS5952: 3597 tCO2-e GS5953: 3581 tCO2-e GS5954: 3329 tCO2-e GS5955: 3086 tCO2-e GS 6041: 4959 tCO2-e GS 6042: 4337 tCO2-e	VERs

Table 2 – Product Vintages

		Amount Achieved
Start Dates	**End Dates**	**VERS**
01-12-2019	31-12-2019	GS5951: 389 tCO2-e GS5952: 303 tCO2-e GS5953: 303 tCO2-e GS5954: 280tCO2-e GS5955: 261tCO2-e
01-01-2020	30-11/2020	GS5951: 4252 tCO2-e

		GS5952: 3294 tCO2-e GS5953: 3278 tCO2-e GS5954: 3049 tCO2-e GS5955: 2825 tCO2-e
18/02/2020	30/11/2020	GS 6041: 4959 tCO2-e GS 6042: 4337 tCO2-e

SECTION A. DESCRIPTION OF PROJECT

A.1. General description of project

>> In Eritrea over 45% of the rural population do not have access to safe water and rely exclusively on unprotected wells, lakes and other open water sources that are highly susceptible to contamination. Annexed from Ethiopia in 1962, the country has experienced periodic conflict and continuing tensions in the region.

Armed conflict, mandatory military service and external migration, takes men away from their villages and means that many rural families are headed by women, often widows. Female headed households in Eritrea face several disadvantages and as a result they cultivate less land and have fewer assets. These women then bear the burden of producing food as well as providing care for their families, including travelling to collect firewood and water.

Many existing boreholes in Eritrea have fallen into disrepair because maintenance programmes have been poorly managed, or proven too expensive leaving people without access to clean water. CO2balance's project partner Vita has worked to identify broken down boreholes, renovate them and supply a maintenance programme to ensure that clean, safe water is delivered as a result of this project. The boreholes included under the project are entirely human operated and fitted with hand pump models that are commonly used in the area such as Afridev, U3 Modified and India Mark II pumps.

Zoba Anseba is a largely rural district in which many local people typically use wood fuel on inefficient three stone fires to purify their drinking, cleaning and washing water. This process results in the release of greenhouse gas emissions from the combustion of wood which can be avoided if a technology that does not require fuel (wood or fossil) supplies clean water desired by households. By providing safe water this project ensures that households consume less firewood during the process of water purification and therefore reduce greenhouse gas emissions from the combustion process.

In total 66 boreholes were rehabilitated as part of this project between the 2nd November 2017 and 17th March 2020. The date, location and number of people served by each borehole are given in the table below, which forms the project database. In line with the GS BAMG report, the users per borehole are capped to 300 people

VPA ID	GS ID	Borehole ID	Borehole Model	Village name	Latitude	Longitude	Date of rehab	People	Capped people
122	5951	ZA002	Mark II	Etharewyatat	16.26033	38.40542	02/11/2017	409	300
122	5951	ZA003	Mark II	Kedhat	16.17030	38.42163	03/11/2017	435	300

122	5951	ZA012	Mark II	Balwa	15.67374	38.69865	10/11/2017	672	300
122	5951	ZA017	Mark II	Aditafla	15.61317	38.62729	17/11/2017	276	276
122	5951	ZA020	Mark II	Bekushemnuk	15.59462	38.64577	18/11/2017	257	257
122	5951	ZA021	Mark II	Wasdemba 1	15.65963	38.57862	21/11/2017	300	300
122	5951	ZA035	Mark II	Kush	16.14950	38.05349	08/12/2017	126	126
122	5951	ZA037	Mark II	Orota	16.17624	37.95590	12/12/2017	459	300
122	5951	ZA039	Mark II	Shirara 2	15.81786	38.86357	16/12/2017	341	300
122	5951	ZA041	Mark II	Weledteshim	16.15750	38.07294	19/12/2017	366	300
123	5952	ZA005	Mark II	Karibosa	15.80716	38.38365	04/11/2017	282	282
123	5952	ZA010	Mark II	Jertem	15.68129	38.61430	09/11/2017	351	300
123	5952	ZA027	Mark II	Ghergher	15.77427	38.68305	26/11/2017	603	300
123	5952	ZA030	Mark II	Deghedeg	15.58268	38.77090	28/11/2017	98	98
123	5952	ZA031	Mark II	Glass	15.71860	38.31357	30/11/2017	258	258
123	5952	ZA033	Mark II	Asmat	16.15725	38.07292	08/12/2017	734	300
123	5952	ZA038	Mark II	Shirara 1	15.81800	38.86359	16/12/2017	404	300
123	5952	ZA042	Mark II	Dighi	15.75369	38.48991	21/12/2017	396	300
124	5953	ZA004	Mark II	Guluy	16.19030	38.41542	03/11/2017	294	294
124	5953	ZA006	Mark II	Robto	15.74029	38.66324	07/11/2017	155	155
124	5953	ZA007	Mark II	Garalebu	15.73062	38.67674	07/11/2017	150	150
124	5953	ZA009	Mark II	Jemberek	15.75284	38.66217	08/11/2017	248	248
124	5953	ZA015	Mark II	Hamrehamareb 1	15.62318	38.62206	17/11/2017	1537	300
124	5953	ZA019	Mark II	Firkutu	15.628	38.65469	18/11/2017	329	300
124	5953	ZA029	Mark II	Marat	15.86812	38.67113	27/11/2017	246	246
124	5953	ZA036	Mark II	Embelday	16.33935	37.78753	09/12/2017	135	135
124	5953	ZA040	Mark II	Shindwa	15.61528	38.71335	18/12/2017	575	300
125	5954	ZA013	Mark II	Haddishadi 1	15.64937	38.57620	11/11/2017	886	300

125	5954	ZA018	Mark II	Tuumkofa	15.62773	38.62445	17/11/2017	389	300
125	5954	ZA024	Mark II	Iratahtai 2	15.6922	38.73472	22/11/2017	179	179
125	5954	ZA025	Mark III	Hashishay 1	15.78612	38.14242	24/11/2017	352	300
125	5954	ZA028	Mark II	Gherbet	15.83531	38.74289	27/11/2017	442	300
125	5954	ZA032	Mark II	Golagul	15.57881	38.79442	05/12/2017	541	300
125	5954	ZA034	Mark II	Hawish	16.19937	38.06788	08/12/2017	418	300
126	5955	ZA008	Mark II	Adkom	15.75306	38.64642	08/11/2017	459	300
126	5955	ZA011	Mark II	Habrenkeka	15.64808	38.70981	09/11/2017	140	140
126	5955	ZA014	Mark II	Haddishadi 2	15.64992	38.62321	13/11/2017	714	300
126	5955	ZA016	Mark II	Hamrehamareb 2	15.62401	38.62231	17/11/2017	1557	300
126	5955	ZA022	Mark II	Wasdemba 2	15.66615	38.57717	21/11/2017	313	300
126	5955	ZA023	Mark II	Iratahtai 1	15.69231	38.73512	22/11/2017	194	194
126	5955	ZA026	Mark II	Hashishay 2	15.78601	38.13548	24/11/2017	401	300
129	6041	ZA044	Mark II	Kerecha	15.69565	38.70827	17/02/2020	600	300
129	6041	ZA045	Mark II	Derkunoq	15.67422	38.47146	19/02/2020	262	262
129	6041	ZA046	Mark II	Libena	15.8816	38.36962	20/02/2020	1935	300
129	6041	ZA047	Mark II	Shirarwa	15.8631	38.37806	20/02/2020	745	300
129	6041	ZA048	Mark II	Habena	15.8259	38.75315	25/02/2020	250	250
129	6041	ZA049	Mark II	Bosa-Begu	15.72878	38.46433	26/02/2020	470	300
129	6041	ZA050	Mark III	Ferhen	15.80188	38.56108	26/02/2020	709	300
129	6041	ZA053	Mark II	Enchinaq	15.73324	38.32682	28/02/2020	1570	300
129	6041	ZA059	Mark II	Jengenait	15.93877	38.27981	05/03/2020	1800	300
129	6041	ZA064	Mark II	Yigar	15.73264	38.60712	11/03/2020	201	201
129	6041	ZA065	Mark II	Jufa	15.75237	38.46888	14/03/2020	745	300
129	6041	ZA066	Mark II	Abdura	15.86134	38.38472	16/03/2020	345	300
129	6041	ZA067	Mark II	Caedakirak	15.86133	38.38485	17/03/2020	273	273
130	6042	ZA043	Mark II	Habrenkeka	15.64887	38.71166	17/02/2020	165	165

130	6042	ZA051	Mark II	Dobiat	15.70677	38.32415	27/02/2020	344	300
130	6042	ZA052	Mark II	Adialemin	15.72925	38.46441	27/02/2020	714	300
130	6042	ZA054	Mark II	Hawatsi	16.13941	38.13591	01/03/2020	380	300
130	6042	ZA055	Mark II	Embelday	16.35044	37.96732	01/03/2020	121	121
130	6042	ZA056	Mark III	Forto	15.88159	38.36962	03/03/2020	376	300
130	6042	ZA057	Mark II	Kertset	16.1273	38.22351	03/03/2020	2636	300
130	6042	ZA058	Mark II	Gebeyalebu	15.9463	38.21762	05/03/2020	1591	300
130	6042	ZA060	Mark II	Gerbet	16.00402	38.25826	05/03/2020	1470	300
130	6042	ZA061	Mark II	Hilet	16.01433	38.21915	05/03/2020	1750	300
130	6042	ZA062	Mark II	Gam	15.911061	38.49687	09/03/2020	1114	300
130	6042	ZA063	Mark II	Bambi	15.78772	38.48668	11/03/2020	1040	300

ZA002

16.26033	38.40542

ZA003

16.17030	38.42163

ZA004

16.19030	38.41542

ZA005

15.80716	38.38365

ZA006

15.74029	38.66324

ZA007

15.73062	38.67674

ZA008

15.75306	38.64642

ZA009

15.75284	38.66217

ZA010

15.68129	38.61430

ZA011

15.64808	38.70981

ZA012

15.67374	38.69865

ZA013

15.64937	38.57620

ZA014

15.64992	38.62321

ZA015

15.62318	38.62206

ZA016

15.62401	38.62231

ZA017

15.61317	38.62729

ZA018

15.62773	38.62445

ZA019

15.628	38.65469

ZA020

15.59462	38.64577

ZA021

15.65963	38.57862

ZA022

15.66615	38.57717

ZA023

15.69231	38.73512

ZA024

15.6922	38.73472

ZA025

15.78612	38.14242

ZA026

15.78601	38.13548

ZA027

15.77427	38.68305

ZA028

15.83531	38.74289

ZA029

15.86812	38.67113

ZA030

15.58268	38.77090

ZA031

15.71860	38.31357

ZA032

15.57881	38.79442

ZA033

16.15725	38.07292

ZA034

16.19937	38.06788

ZA035

16.14950	38.05349

ZA036

16.33935	37.78753

ZA037

16.17624	37.95590

ZA038

15.81800	38.86359

ZA039

15.81786	38.86357

ZA040

15.61528	38.71335

ZA041

16.15750	38.07294

ZA042

15.75369	38.48991

ZA043

15.64887	38.71166

ZA044

15.69565	38.70827

ZA045

15.67422	38.47146

ZA046

15.8816	38.36962

ZA047

15.8631	38.37806

ZA048

15.8259	38.75315

ZA049

15.72878	38.46433

ZA050

15.80188	38.56108

ZA051

15.70677	38.32415

ZA052

15.72925	38.46441

ZA053

15.73324	38.32682

ZA054

16.13941	38.13591

ZA055

16.35044	37.96732

ZA056

15.88159	38.36962

ZA057

16.1273	38.22351

ZA058

15.9463	38.21762

ZA059

15.93877	38.27981

ZA060

16.00402	38.25826

ZA061

16.01433	38.21915

ZA062

15.911061	38.49687

ZA063

15.78772	38.48668

ZA064

15.73264	38.60712

ZA065

15.75237	38.46888

ZA066

15.86134	38.38472

ZA067

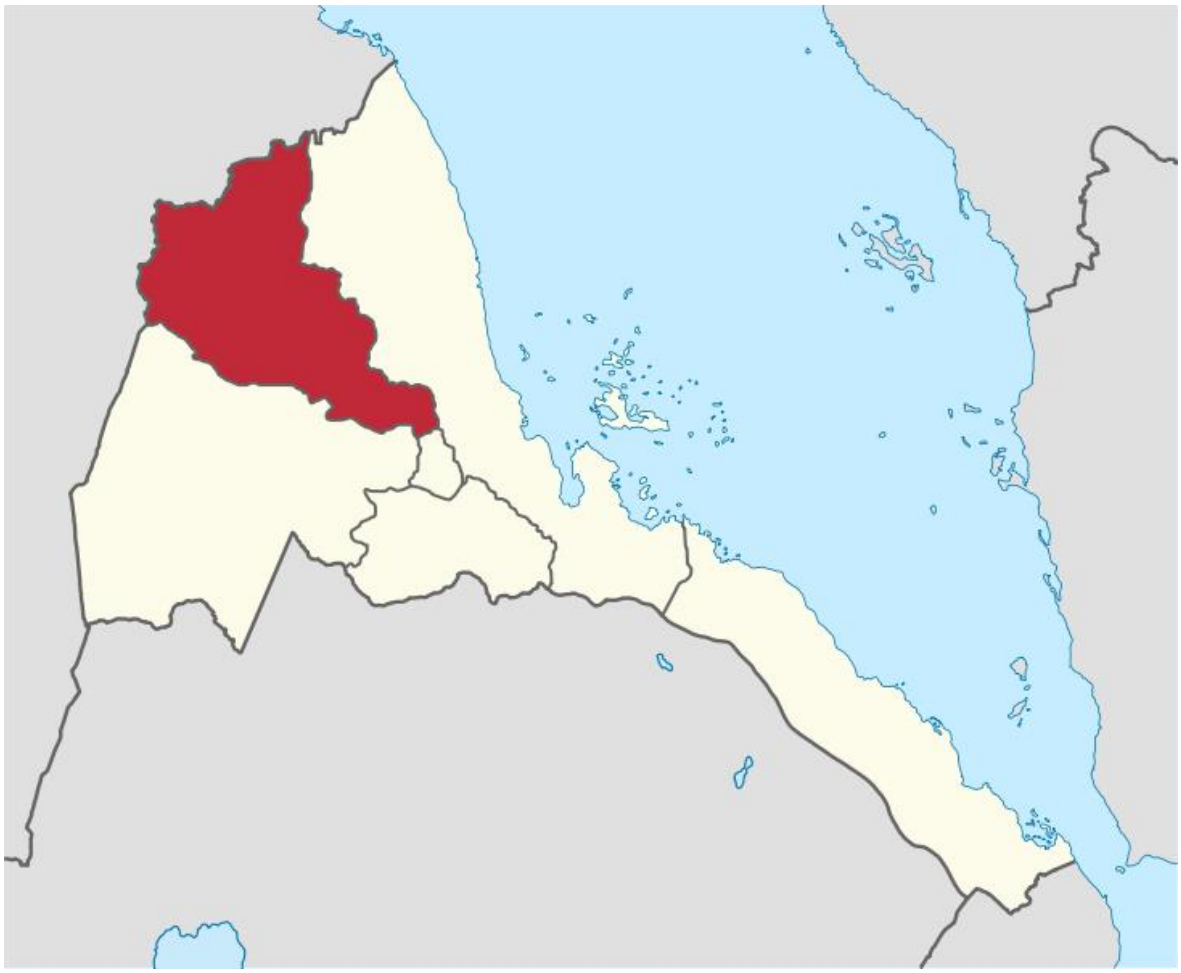
15.86133	38.38485

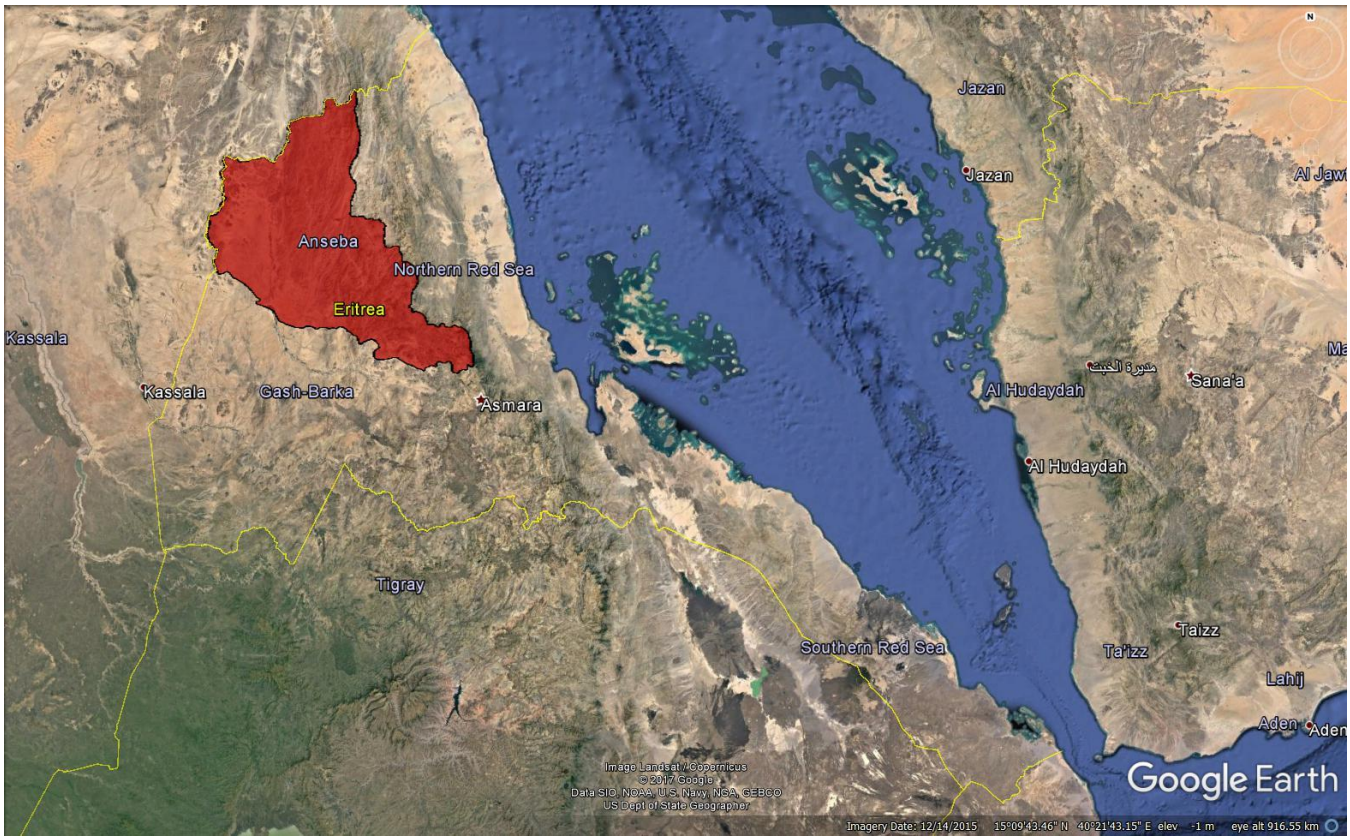
The date of rehabilitation was confirmed by a Repair Confirmation Form which was signed by the mechanic carrying out the repair along with a village administrator from the local community. The date of rehabilitation was used as the start date of operation and crediting for each borehole; we have conservatively assumed that the first day of crediting is not counted.

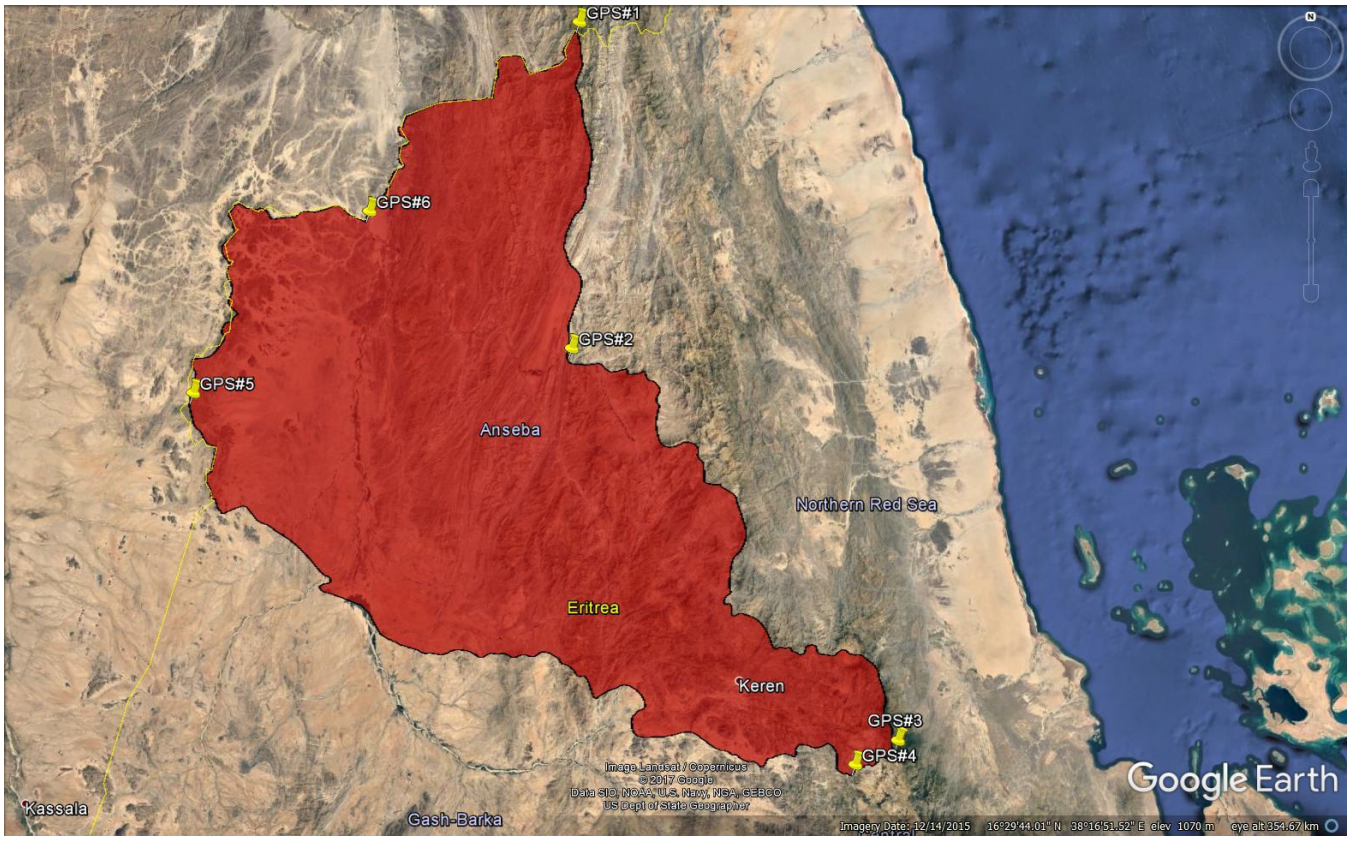
The number of days each borehole credited for in this monitoring period was multiplied by the number of people using the borehole to give the total number of project technology days for that borehole. The individual project technology days for each borehole were totaled to give the total number of project technology days for this monitoring period.

A.2. Location of project

>> Below is the geographic reference to allow unique identification of the project boundary for the project. The district Zoba Anseba, Eritrea is marked in red on the Google Earth images. The target area and the fuel collection area are defined as being contained within project boundary, with the outer limits of the project boundary being clearly defined below. As the majority of beneficiaries collect their wood fuel locally in close proximity to their homesteads, the woodfuel collection area and target area are considered the same.




Jazan
Jazan
Anseba
Northern Red Sea
Eritrea
Kassala
Kassala
Gash-Barka
Asmara
Al Hudaydah
Sana'a
Al Hudaydah
Tigray
Southern Red Sea
Ta'izz
Taizz
Lahij
Aden
Google Earth



Project Area Coordinates		
	Latitude	Longitude
GPS1	17°33'14.79"N	38° 0'28.27"E
GPS2	16°39'54.06"N	37°58'31.30"E
GPS3	15°35'2.36"N	38°53'15.55"E
GPS4	15°31'10.73"N	38°45'57.03"E
GPS5	16°33'6.39"N	36°53'18.85"E
GPS6	17° 2'46.75"N	37°23'56.05"E

A.3. Reference of applied methodology

>> This project utilises the Gold Standard Methodology 'Technologies and Practices to Displace Decentralized Thermal Energy Consumption V.01'.

A.4. Crediting period of project

>> The date of rehabilitation was used as the start date of operation. It was conservatively assumed that the first day of crediting is not counted and the crediting period begins the following day after the borehole is rehabilitated. The length of the crediting period is to be 7 years, twice renewable totaling 21 years as per the approved PDD.

Please find the start dates for the projects below (crediting period begins the following day):

Project ID	Start Date	Crediting period start date	Crediting period end date
5951	02/11/2017	03/11/2017	02/11/2024
5952	04/11/2017	05/11/2017	04/11/2024
5953	03/11/2017	04/11/2017	03/11/2024
5954	11/11/2017	12/11/2017	11/11/2024
5955	08/11/2017	09/11/2017	08/11/2024
6041	18/02/2020	18/02/2020	17/02/2027
6042	18/02/2020	18/02/2020	17/02/2027

SECTION B. IMPLEMENTATION OF PROJECT

B.1. Description of implemented project

>>

Vita has rehabilitated 66 boreholes as part of these projects and all boreholes under the VPAs are in good working order. For boreholes that went through technical problems and that were not functional during this entire monitoring period, the non-functional days have been discounted from the ERs. All boreholes undergo annual water quality testing to ensure the water is safe for human consumption as WHO drinking water standards. The water quality is approved by the Ministry of Land, Water and Environment in Zoba Anseba. Monitoring surveys are conducted in compliance with the latest available sampling and monitoring guidelines, according to TPDDTEC v1 methodology.

Requirements within TPDDTEC v1 methodology for monitoring surveys are as follows:

Relevant Section	Requirement(s)	Compliance
3.1.C	Monitoring surveys are completed annually, beginning 1 year after project registration	Monitoring Surveys have been completed annually, beginning 1 year after project registration in the first monitoring period.
3.1.C – Monitoring Survey Representativeness	End users from a given project scenario are selected using	A random sampling approach was used to

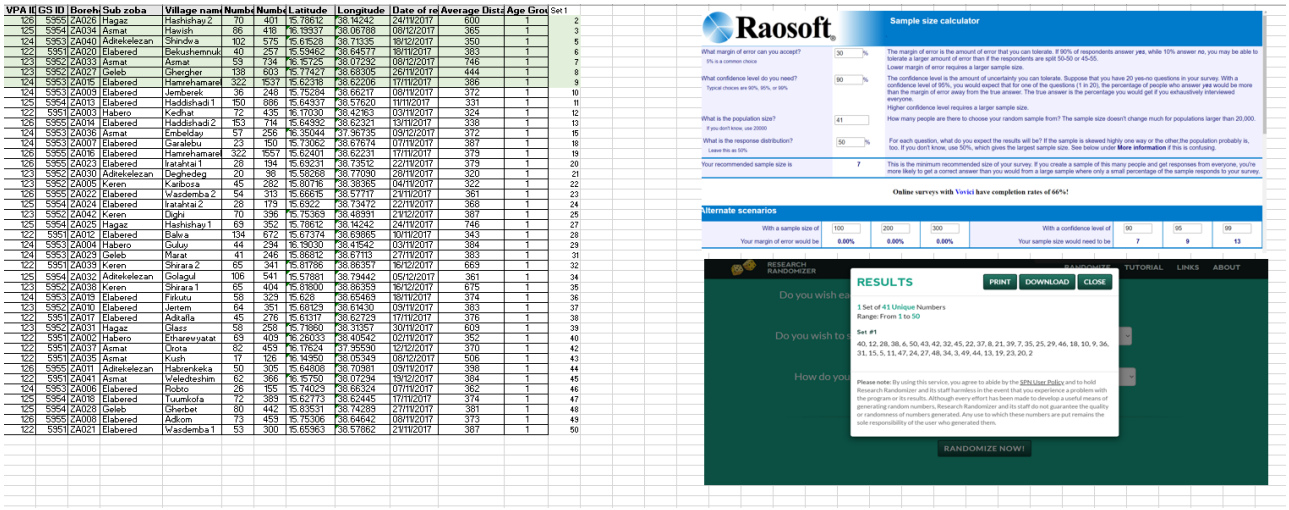
	representative sampling techniques to ensure adequate representation of users with technologies of different ages. Common sampling approaches such as clustered random sampling are allowed and geographic distribution should be factored into selection criteria. End users can be surveyed at any time(s) throughout the year with care taken to collect information pertaining to seasonal variations in technology and fuel use patterns.	select representative users for the monitoring surveys. Surveys are conducted through use of a Random Sample Group (RSG) generated from all boreholes that are being cross-sampled during this monitoring period. The size of the sample group is selected so the number of boreholes samples satisfies 90/30 precision. Using a sample size calculator, it was determined that a sample of 7 boreholes aged 0-1 years and 6 boreholes aged 2-3 years were required. The households are then randomly selected (through a random number generator process) from the RSG of boreholes to comply with minimum sample size requirements for each survey. PP has uploaded an Excel document displaying the Random Sample Process (MP3 Random Sampling).

		This document displays the locations identified for sampling. Screenshots of the age-wise sampling are below. All monitoring surveys took place between 11/08/20 and 19/08/20, the specific date and location of each survey is included in the monitoring result spreadsheets submitted to GS.
3.1.C – Monitoring Survey sample sizing and data collection	The monitoring survey is only conducted with end users representative of the project scenario and currently using the project technology.	The monitoring surveys include questions which determine if the respondent is representative of the project scenario. If not, then the respondent is not included in the survey results.
	The minimum total sample size is 100, with at least 30 samples for project technologies of each age being credited.	The sample size for the monitoring period was 110, satisfying sample size requirements.

All boreholes are from the same age group.

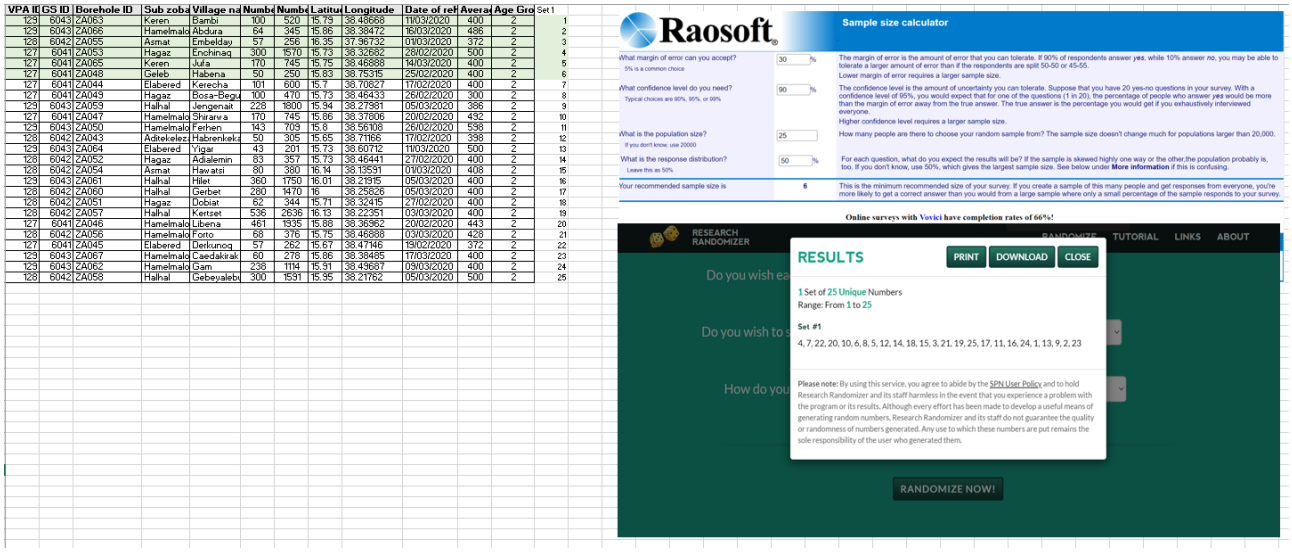
Screenshots of the random sampling process for generating the households surveyed in the annual monitoring:

Age 0-1 year Technology Selection



VPA ID	GS ID	Borehole ID	Sub zoba	Village name	Number	Number	Latitude	Longitude	Date of re	Average Dista	Age Grou	Set 1
126	5953	ZA026	Hagaz	Hashishay 2	70	401	15.78612	38.16242	24/11/2017	600	1	2
125	5954	ZA034	Asmat	Hawish	86	416	15.19337	38.06788	09/12/2017	365	1	3
124	5953	ZA040	Adikekelezan	Shindwa	102	575	15.61528	38.71335	18/12/2017	350	1	5
122	5951	ZA020	Elabered	Bekushemnuk	40	257	15.59462	38.64577	18/11/2017	383	1	6
123	5952	ZA033	Asmat	Asmat	59	734	15.15725	38.07292	08/12/2017	746	1	7
123	5952	ZA027	Geleb	Ghergher	138	603	15.77427	38.68305	26/11/2017	444	1	8
124	5953	ZA015	Elabered	Hamrehamarel	322	1537	15.62318	38.62206	17/11/2017	386	1	9
124	5953	ZA009	Elabered	Jemberek	36	248	15.75284	38.66217	08/11/2017	372	1	10
125	5954	ZA013	Elabered	Haddishadli 1	150	886	15.64357	38.57620	11/11/2017	331	1	11
122	5951	ZA003	Habero	Kedhat	72	435	16.17030	38.42363	03/11/2017	324	1	12
126	5955	ZA014	Elabered	Haddishadli 2	153	714	15.64392	38.62321	13/11/2017	338	1	13
124	5953	ZA036	Asmat	Embelday	57	256	15.35044	37.96735	09/12/2017	372	1	15
124	5953	ZA007	Elabered	Garalebu	23	150	15.73062	38.67674	07/11/2017	387	1	18
126	5955	ZA016	Elabered	Hamrehamarel	322	1557	15.62401	38.62231	17/11/2017	379	1	19
126	5955	ZA023	Elabered	Iratahtai 1	28	194	15.63231	38.73512	22/11/2017	379	1	20
123	5952	ZA030	Adikekelezan	Degihedeg	20	98	15.58268	38.77090	28/11/2017	320	1	21
123	5952	ZA005	Keren	Karibosa	45	282	15.80716	38.38365	04/11/2017	322	1	22
126	5955	ZA022	Elabered	Wasdemba 2	54	313	15.66615	38.57717	21/11/2017	361	1	23
125	5954	ZA024	Elabered	Iratahtai 2	28	179	15.6322	38.73472	22/11/2017	368	1	24
123	5952	ZA042	Keren	Dighi	70	396	15.75363	38.48991	21/12/2017	387	1	25
125	5954	ZA025	Hagaz	Hashishay 1	69	352	15.78612	38.16242	24/11/2017	746	1	27
122	5951	ZA012	Elabered	Balwa	134	672	15.67374	38.63665	10/11/2017	343	1	28
124	5953	ZA004	Habero	Guluy	44	234	16.19030	38.41542	03/11/2017	384	1	29
124	5953	ZA029	Geleb	Marat	41	246	15.86612	38.67115	27/11/2017	383	1	31
122	5951	ZA039	Keren	Shirara 2	65	341	15.81786	38.86357	16/12/2017	669	1	32
125	5954	ZA032	Adikekelezan	Golagul	106	541	15.57881	38.79442	05/12/2017	361	1	34
123	5952	ZA038	Keren	Shirara 1	65	404	15.81800	38.86359	16/12/2017	675	1	35
124	5953	ZA018	Elabered	Fiktutu	58	329	15.628	38.65469	18/11/2017	374	1	36
123	5952	ZA010	Elabered	Jertem	64	351	15.68129	38.61430	09/11/2017	383	1	37
122	5951	ZA017	Elabered	Adkafla	45	276	15.61317	38.62729	17/11/2017	376	1	38
123	5952	ZA031	Hagaz	Glass	58	258	15.71880	38.31957	30/11/2017	609	1	39
122	5951	ZA002	Habero	Etharevyatat	83	409	16.26033	38.40542	02/11/2017	352	1	40
122	5951	ZA037	Asmat	Orota	82	459	16.17624	37.95530	12/12/2017	370	1	42
122	5951	ZA035	Asmat	Kush	17	126	16.14350	38.05349	08/12/2017	506	1	43
126	5955	ZA011	Adikekelezan	Habrenkeka	50	305	15.64808	38.70981	09/11/2017	398	1	44
122	5951	ZA041	Asmat	Weledteshim	62	366	16.15750	38.07294	13/12/2017	384	1	45
124	5953	ZA008	Elabered	Pobto	26	155	15.74029	38.66324	07/11/2017	362	1	46
125	5954	ZA018	Elabered	Tuumkofa	72	389	15.62773	38.62445	17/11/2017	374	1	47
125	5954	ZA028	Geleb	Gherbet	80	442	15.83531	38.74289	27/11/2017	381	1	48
126	5955	ZA008	Elabered	Adkom	73	459	15.75306	38.64642	08/11/2017	373	1	49
122	5951	ZA021	Elabered	Wasdemba 1	53	300	15.65963	38.57862	21/11/2017	387	1	50

Age 2-3 year Technology Selection



VPA ID	GS ID	Borehole ID	Sub zoba	Village na	Numbe	Numbe	Latitu	Longitude	Date of rell	Averag	Age Gro	Set 1
123	6043	ZA063	Keren	Bambi	100	520	15.73	38.48866	11/03/2020	400	2	1
128	6043	ZA066	Hamelmalo	Abdura	64	345	15.86	38.38472	16/03/2020	486	2	2
128	6042	ZA055	Asmat	Embelday	57	256	16.35	37.96732	01/03/2020	372	2	3
127	6041	ZA053	Hagaz	Enchinaq	300	1570	15.73	38.32682	26/02/2020	500	2	4
127	6041	ZA065	Keren	Jufa	170	745	15.75	38.46888	14/03/2020	400	2	5
127	6041	ZA048	Geleb	Habema	50	250	15.83	38.75315	25/02/2020	400	2	6
127	6041	ZA044	Elabered	Kerecha	101	600	15.7	38.70827	17/02/2020	400	2	7
127	6041	ZA043	Hagaz	Bosa-Begu	100	470	15.73	38.46433	26/02/2020	300	2	8
129	6043	ZA059	Halhal	Jengenait	228	1800	15.94	38.27981	05/03/2020	386	2	9
127	6041	ZA047	Hamelmalo	Shiranra	170	745	15.86	38.37806	20/02/2020	432	2	10
129	6043	ZA050	Hamelmalo	Ferhen	143	709	15.8	38.56108	26/02/2020	536	2	11
128	6042	ZA043	Adikekelez	Habrenkeka	50	305	15.65	38.71166	17/02/2020	398	2	12
129	6043	ZA064	Elabered	Yigar	43	201	15.73	38.60712	11/03/2020	500	2	13
128	6042	ZA052	Hagaz	Adialemin	83	357	15.73	38.46441	21/02/2020	400	2	14
128	6042	ZA054	Asmat	Hawatsi	80	380	16.14	38.13691	01/03/2020	408	2	15
129	6043	ZA061	Halhal	Hilet	360	1750	16.01	38.21315	05/03/2020	400	2	16
128	6042	ZA060	Halhal	Gerbet	280	1470	16	38.25826	05/03/2020	400	2	17
128	6042	ZA051	Hagaz	Dobiat	62	344	15.71	38.32415	27/02/2020	400	2	18
128	6042	ZA057	Halhal	Kertzet	536	2636	16.13	38.22351	03/03/2020	400	2	19
127	6041	ZA046	Hamelmalo	Libena	461	1935	15.88	38.36962	20/02/2020	443	2	20
128	6042	ZA056	Hamelmalo	Forto	68	376	15.75	38.46888	03/03/2020	428	2	21
127	6041	ZA045	Elabered	Derkunoq	57	262	15.67	38.47146	19/02/2020	372	2	22
129	6043	ZA067	Hamelmalo	Caedakirak	60	278	15.86	38.39485	17/03/2020	400	2	23
129	6043	ZA062	Hamelmalo	Gam	238	1114	15.91	38.43687	09/03/2020	400	2	24
128	6042	ZA058	Halhal	Gebeyalebu	300	1591	15.95	38.21762	05/03/2020	500	2	25

The final boreholes were surveyed during annual monitoring:

Enchinaq ZA053

Abdura ZA066

Hashishay 2 ZA026

Asmat ZA033

Hawish ZA04

Shindwa ZA040

Bambi ZA063

Jufa ZA065

Hamrehamareb ZA015

Bekushemnuk ZA020

Ghergher ZA927

For the WCFT, TPDDTEC v1 guidance on representativeness, sample sizing and variability from section II.4 is applicable:

Relevant Section	Requirement(s)	Compliance
2.7 – Representativeness	The [WCFT] must be designed to ensure monitoring is representative of typical technology and [water] use practices. Households must behave and consume [water] normally. [WCFTs] are always required so as to capture the potential use of the baseline technologies as backup, or potential introduction of an emitting backup technology introduced in parallel.	The WCFT survey introduction stresses the importance of normal household activity being maintained throughout the survey. The WCFT contains survey questions designed to capture any continued baseline practices, such as boiling water or collecting from unsafe sources.
2.7 – Sample Sizing and Statistical Estimate of the Fuel or Emission Savings	Sample sizes must be greater than 20.	The sample size for the WCFT was 39 meaning the 90/30 rule was used.

	The 90/30 rule is to be complied with when sample sizes are large enough.	
Annex 4	Applicable sections to WCFT within steps 1-8.	1. A random sampling method determined survey participants. 2. The test period selected (11/08/2020 – 19/08/2020) was an appropriate time of year where normal practices could be observed. 3. The WCFT survey introduction stresses the importance of normal household activity being maintained throughout the survey. 7. The WCFT results contain an outlier analysis

Furthermore, grievance expression process books placed at all boreholes have received only positive feedback and Vita field staff have not received any other feedback during this monitoring period from the borehole users on damage or breaking of boreholes therefore it can be assumed that the project is running as planned.

B.1.1. Forward Action Requests

>>

FAR 1 The PP is requested to submit the monitoring result for the failure days of the boreholes and consider them in the PTDs.

For those water points that were non-functioning while undergoing maintenance, downdays were accounted for in the ER's. Details can be found in a separate tab of the ER's and PTD's were adapted

accordingly. These days have been excluded from the total crediting days, within this monitoring period.

FAR 2 The PP shall monitor the "number of people using each borehole in the project" annually as required in the monitoring plan. If the number of actual people is less than the number available during registration, the amount of over issued VERs shall be compensated in the following issuance request.

The number of people using each borehole in the project was updated in August 2020 and will continue to be updated annually.

B.2. Post-Design Certification changes

>> NA

B.2.1. Temporary deviations from the approved Monitoring & Reporting Plan, methodology or standardized baseline

>>NA

B.2.2. Corrections

>> NA

B.2.3. Changes to start date of crediting period

The crediting periods for GS6041 and GS6042 have changed from the dates specified within the validated PDDs. There were insufficient boreholes to fill the VPAs back during the first phase of borehole rehabilitations. These were filled with boreholes which were rehabilitated from February 2020.

The updated crediting periods for the VPAs are:

GS6041: 18/02/2020.

GS6042: 18/02/2020

B.2.4. Permanent changes from the Design Certified monitoring plan, applied methodology or applied standardized baseline

>> NA

B.2.5. Changes to project design of approved project

>> NA

SECTION C. DESCRIPTION OF MONITORING SYSTEM APPLIED BY THE PROJECT

>> All surveys are administered by trained staff that are local to the area and conversant in the local dialects to ensure that the responses are consistent and not biased by any regional language barriers. Each participant is provided with a briefing on the purpose of the survey and is assured that no individual names are used in the analysis.

The results of the surveys are collated in excel spreadsheets by a minimum of two Eritrea Vita staff involved in typing up the monitoring data into excel and cross-checking the data. The excel data is then stored on a central server in an electronic format and sent to the UK head office for data analysis. The documentation procedure ensures a minimum chance of original data being lost – all original copies of our project documentation are retained in the Eritrean office and are available scanned upon request of the UK team. UK staff use scanned copies to check data input and quality control before submitting for verification.

In accordance with the Gold Standard methodology Technologies and Practices to Displace Decentralized Thermal Energy Consumption, the survey samples are randomly selected from the borehole user record and are determined in accordance with the required confidence/precision. The size of the sample is dependent on the methodological requirements and variance of the parameter being monitored to ensure the parameters measured satisfy 90/30 precision (90% confidence interval and 30% margin of error). The sample is reselected for every monitoring period to ensure the selection remains random.

Below is a summary of the key information that has been collected and monitored as part of this project;

Borehole database

The borehole installation/rehabilitation record includes the following information:

- Date of installation/rehabilitation
- Quantity of boreholes installed
- The total number of people obtaining their water from each borehole

The total number of households using each borehole has been determined through the lists supplied by the community group and or district water officer responsible for that borehole. Using this method, the total number of people using each borehole has been determined and hence a figure for person days can be calculated.

Ongoing Monitoring Studies

The following ongoing monitoring studies were conducted; the results are given in the parameter boxes tables in Section 6.

- **Water consumption field test** (Equation parameters Qp,y and Qp,rawboil,y) - Completed prior to first verification and then biennially after first verification.

- **Quality of the treated water** - The quality of the treated water will be assessed to ensure that it is fit for human consumption. The parameters used to assess the water quality will be in line with Eritrean

standards for potable water and all parameters will be shown to be within levels considered acceptable for domestic human consumption.

- **Usage Survey** - As all boreholes have been installed within 1 year of the start of the crediting period and are expected to last the lifetime of the project, minimum samples of 30 for different aged technologies will not be necessary. Therefore the annual usage survey will be conducted using a minimum sample size of 100. The results from the usage survey are used to determine the proportion of beneficiaries that use the borehole which is factored into the emission reduction calculations.

- **Project Survey** – Conducted on 100 households, surveying end users currently using project technologies to explore changes in project scenario over time. Data collected during the project surveys explores the following characteristics:

    - General information - Name, address, telephone number etc.
    - Household socio-demographic information.
    - Water use and purification characteristics.
    - Sources and availability of fuel.

- **Leakage Assessment -** The PDD has described which sources of leakage detailed within the methodology are relevant to this project and which have been discounted.

The potential sources of leakage listed in the methodology have been investigated, and addressed below:

a) The displaced baseline technologies are reused outside the project boundary in place of lower emitting technology or in a manner suggesting more usage than would have occurred in the absence of the project.

In all cases the baseline technologies displaced are three stones; these have no market value and are not a product as such. There is nothing limiting the use of three stone cooking across the country (the technology is lowest rung on the energy ladder and the price is zero), which is why this cooking method is so widespread. In any case the primary purpose of these three rocks is for cooking so they will not be replaced/displaced in their entirety as a result of this project - which means they will not be reused outside the project boundary. This leakage source can therefore be discounted.

b) The non-renewable biomass or fossil fuels saved under the project activity are used by non-project users who previously used lower emitting energy sources.

There is no evidence to suggest significant (if any) use of renewable energy for purifying water in the project region as found in the Baseline Water Surveys. As solar purification devices are not used, renewable energy used for purifying water would likely be animal dung or crop residues which will be

used due to ease of availability/proximity to the home rather than due to a shortage of wood fuel, therefore it is an independent factor. This leakage source can therefore be discounted.

c) The project significantly impacts the NRB fraction within an area where other CDM or VER project activities account for NRB fraction in their baseline scenario.
As the majority of participants collect wood from within the project boundary, it is not expected that the NRB in other areas will be affected. There are currently no other CDM or VER projects in the project area.

d) The project population compensates for loss of the space heating effect of inefficient technology by adopting some other form of heating or by retaining some use of inefficient technology.
The space heating effect of boiling water for purification purposes will be minimal, as the predominant use of baseline technology is for cooking. Therefore it is highly unlikely that another technology will be used for heating when users no longer boil water.

e) By virtue of promotion and marketing of new technology with high efficiency, the project stimulates substitution within households who commonly used a technology with relatively lower emissions, in cases where such a trend is not eligible as an evolving baseline.
This project is not marketing efficient technology; it is eliminating the need for a fuel based technology to deliver pure water. Lower emission technology substitution within households is therefore not possible and this leakage source can therefore be discounted. Therefore, a value of 0 is applied for leakage.

Individual participants were selected from the borehole user data base using the random sampling process outlined in the monitoring plan. Sample sizes are in line with the Gold Standard requirements.

Cross Sampling

The project proponent has elected to cross-sample technologies across all its homogenous borehole VPAs located within Zoba Anseba (GS 5951-55, 6041-42). The samples for the survey listed below are randomly selected from the borehole information databases using the RSG procedure in line with the minimum sample size requirements as defined by the methodology. Cross sampling will be applied to the following surveys;

- Project Surveys- Completed annually,
- Usage Surveys- Completed annually,
- Water Consumption Field Tests- Completed biennially

SECTION D. DATA AND PARAMETERS

D.1. Data and parameters fixed ex ante or at renewal of crediting period

>>

Relevant SDG Indicator	SDG 13.B.1 (Climate Action), SDG 6.1.1 (Clean Water and Sanitation)
Data/parameter:	C_j
Unit	Percentage
Description	Portion of users of project safe water supply who were already in baseline using a non-boiling safe water supply.
Source of data	Baseline study.
Value(s) applied)	0.00%
Choice of data or measurement methods and procedures	The portion of safe water users is determined though the baseline project survey and refers to the number of users that already use safe water from water sources such as boreholes. Deemed valid by Methodology.
Purpose of data	Calculation of emission reductions and SDG 6 impact.
Additional comments	-

Relevant SDG Indicator	SDG 13.B.1 (Climate Action)
Data/parameter:	$EF_{b,co2}$
Unit	tco_2/TJ
Description	co_2 emission factor arising from use of fuels in baseline scenario
Source of data	IPCC default value
Value(s) applied)	112
Choice of data or measurement methods and procedures	Deemed valid by Methodology.
Purpose of data	Calculation of baseline emissions.
Additional comments	-

Relevant SDG Indicator	SDG 13.B.1 (Climate Action)
Data/parameter:	$EF_{b,non\ co2}$
Unit	tCO_2e/TJ
Description	Non-CO_2 (CH_4 and N_2O) emission factor arising from use of wood fuel in baseline scenario

<table>
<tr><td>Source of data</td><td>Default emissions factor:
http://www.ipcc.ch/publications_and_data/ar4/wg1/en/ch2s2-10-2.html#table-2-14
Global Warming Potential:
http://www.ipcc.ch/publications_and_data/ar4/wg1/en/ch2s2-10-2.html#table-2-14</td></tr>
<tr><td>Value(s) applied)</td><td>8.692</td></tr>
<tr><td>Choice of data
or measurement methods
and procedures</td><td>Deemed valid by Methodology

<table><tr><th>Gas</th><th>Default Emissions factor (kg_gas/TJ_{NCV})</th><th>GWP of gas</th><th>Default Emissions factor (kg_CO_2e/TJ_{NCV})</th><th>Default Emissions factor (t_CO_2e/TJ_{NCV})</th></tr><tr><td>CH_4</td><td>300</td><td>25</td><td>7,500</td><td>7.5000</td></tr><tr><td>N_2O</td><td>4</td><td>298</td><td>1,192</td><td>1.1920</td></tr><tr><td></td><td></td><td></td><td>Total</td><td>8.692</td></tr></table></td></tr>
<tr><td>Purpose of data</td><td>Calculation of emission reductions.</td></tr>
<tr><td>Additional comments</td><td>-</td></tr>
</table>

Relevant SDG Indicator	SDG 13.B.1 (Climate Action)
Data/parameter:	$EF_{p,co2}$
Unit	tCO_2/TJ
Description	CO_2 emission factor arising from use of wood fuel in project scenario
Source of data	Volume 2: 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Chapter 2, Table 2.5
Value(s) applied)	112
Choice of data or measurement methods and procedures	Deemed valid by Methodology.
Purpose of data	Calculation of emission reductions.
Additional comments	-

Relevant SDG Indicator	SDG 13.B.1 (Climate Action)
Data/parameter:	$EF_{p,non\ co2}$
Unit	tCO_2e/TJ
Description	Non-CO_2 (CH_4 and N_2O) emission factor arising from use of wood fuel in project scenario

<table>
<tr><td>Source of data</td><td>Default emissions factor:
http://www.ipcc.ch/publications_and_data/ar4/wg1/en/ch2s2-10-2.html#table-2-14
Global Warming Potential:
http://www.ipcc.ch/publications_and_data/ar4/wg1/en/ch2s2-10-2.html#table-2-14</td></tr>
<tr><td>Value(s) applied)</td><td>8.692</td></tr>
<tr><td>Choice of data
or measurement methods
and procedures</td><td>Deemed valid by Methodology

<table><tr><th>Gas</th><th>Default Emissions factor (kg_gas/TJ_{NCV})</th><th>GWP of gas</th><th>Default Emissions factor (kg_CO_2e/TJ_{NCV})</th><th>Default Emissions factor (t_CO_2e/TJ_{NCV})</th></tr><tr><td>CH_4</td><td>300</td><td>25</td><td>7,500</td><td>7.5000</td></tr><tr><td>N_2O</td><td>4</td><td>298</td><td>1,192</td><td>1.1920</td></tr><tr><td></td><td></td><td></td><td>Total</td><td>8.692</td></tr></table></td></tr>
<tr><td>Purpose of data</td><td>Calculation of emission reductions.</td></tr>
<tr><td>Additional comments</td><td>-</td></tr>
</table>

Relevant SDG Indicator	SDG 13.B.1 (Climate Action)
Data/parameter:	NCV_b
Unit	TJ/ton
Description	Net calorific value of the wood fuel used in the baseline
Source of data	http://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_1_Ch1_Introduction.pdf_Table 1.2
Value(s) applied)	0.0156
Choice of data or measurement methods and procedures	Deemed valid by Methodology.
Purpose of data	Calculation of emission reductions.
Additional comments	-

Relevant SDG Indicator	SDG 13.B.1 (Climate Action)
Data/parameter:	NCV_p
Unit	TJ/ton
Description	Net calorific value of the wood fuel used in the project

Source of data	http://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_1_Ch1_Introduction.pdf Table 1.2
Value(s) applied)	0.0156
Choice of data or measurement methods and procedures	Deemed valid by Methodology.
Purpose of data	Calculation of emission reductions.
Additional comments	-

Relevant SDG Indicator	SDG 13.B.1 (Climate Action)
Data/parameter:	$f_{NRB,i,y}$
Unit	Fractional non-renewability
Description	Non-renewability status of woody biomass fuel in scenario i during year y
Source of data	CDM Default stated in following document: https://cdm.unfccc.int/Panels/ssc_wg/meetings/037/ssc_37_an14.pdf
Value(s) applied)	0.97
Choice of data or measurement methods and procedures	Default values of fraction of non-renewable biomass as outlined by the UNFCCC CDM.
Purpose of data	Calculation of emission reductions.
Additional comments	-

Relevant SDG Indicator	SDG 13.B.1 (Climate Action), SDG 3.9.1 (Good Health and Well-Being)
Data/parameter:	$W_{b,y}$
Unit	T/litre
Description	Quantity of wood fuel that is used to treat 1 litre of water in the baseline scenario b during year y
Source of data	Baseline Water Boiling Test
Value(s) applied)	0.0004
Choice of data or measurement methods and procedures	The baseline water boiling test is used to determine the amount of wood used to purify 1 litre of water by boiling. This data is gathered according to: *Technologies and Practices to Displace Decentralized Thermal Energy Consumption* Version 1*, Draft General Guidelines On Sampling And Surveys*; EB37 Annex 27; and *Standard For Sampling And Surveys For CDM Project Activities and Programme of Activities* (Version 02); EB65 Annex 2. The value applied was derived from the BWBT but has been capped at 0.0004 in line with GS requirements.
Purpose of data	Calculation of emission reductions and impact on SDG 3.
Additional comments	-

Relevant SDG Indicator	SDG 13.B.1 (Climate Action), SDG 3.9.1 (Good Health and Well-Being)
Data/parameter:	$W_{p,y}$
Unit	T/litre
Description	Quantity of wood fuel that is used to treat 1 litre of water in the project scenario p during year y
Source of data	Baseline Water Boiling Test
Value(s) applied)	0.0004
Choice of data or measurement methods and procedures	The baseline water boiling test is used to determine the amount of wood used to purify 1 litre of water by boiling. This data is gathered according to: *Technologies and Practices to Displace Decentralized Thermal Energy Consumption* Version 1*, Draft General Guidelines On Sampling And Surveys*; EB37 Annex 27; and *Standard For Sampling And Surveys For CDM Project Activities and Programme of Activities* (Version 02); EB65 Annex 2. The value applied was derived from the WBT but has been capped at 0.0004 in line with GS requirements.
Purpose of data	Calculation of emission reductions.
Additional comments	-

Relevant SDG Indicator	SDG 13.B.1 (Climate Action)
Data/parameter:	Xboil Non Suppressed Demand
Unit	Percentage
Description	Percentage of premises that in the absence of the project activity would have used non-GHG emitting technologies like chlorine treatment techniques (if available) in the project boundary.
Source of data	Baseline study. Credible literature, studies, survey, reports, relevant to the project target area
Value(s) applied)	2%
Choice of data or measurement methods and procedures	Suppressed demand will be determined through a set of questions in the project survey that establish the method households use to purify their water, if any, and how they would choose to purify if they were not subject to monetary and access barriers. This is in line with the Gold Standard principles of suppressed demand outline in annex 2. A fixed suppressed demand baseline has been opted for, however, in the event the project surveys show a substantial change in fuel use characteristics, a new baseline shall be conducted.
Purpose of data	Calculation of emission reductions.
Additional comments	-

Relevant SDG Indicator	SDG 5.4.1 (Gender Equality)
Data/parameter:	$T_{b,y}$
Unit	Hours
Description	Baseline time spent collecting firewood per household per day
Source of data	Baseline survey

Value(s) applied)	2.26
Choice of data or measurement methods and procedures	Established through questions in the baseline on a representative sample of the end users.
Purpose of data	To measure the % decrease in hours spent collecting firewood, a responsibility falling disproportionately on women, as an indicator of reduced time poverty of women. For SDG 5 target.
Additional comments	-

Relevant SDG Indicator	SDG 3.9.1 (Good Health and Well-Being)
Data/parameter:	Pb,y
Unit	Kg/person
Description	Quantity of fuel that is consumed in the baseline scenario b during year y (kg/person-day)
Source of data	Baseline Survey
Value(s) applied)	3
Choice of data or measurement methods and procedures	Baseline Water Boiling Test Result.
Purpose of data	Calculating quantity of fuel used in the baseline scenario.
Additional comments	-

D.2. Data and parameters monitored

>>

Relevant SDG Indicator	SDG 13.B.1 (Climate Action), SDG 6.1.1 (Clean Water and Sanitation)
Data/parameter:	$N_{p,y}$
Unit	Project Technology Days
Description	Number of persons consuming water supplied by project scenario p through year y
Measured/calculated/default	N/A
Source of data	Borehole Project Database
Value(s) of monitored parameter	GS5951: 958,870 (Downdays: 5 days, 0.14%) GS5952: 743,383 (Downdays: 8 days, 0.30%) GS5953: 739,906(Downdays: 4 days, 0.12%) GS5954: 688,098(Downdays: 4 days, 0.16%) GS5955: 637,682 (Downdays: 5 days, 0.20%) GS 6041: 1,024,619 (Downdays: 12 days, 0.32%) GS 6042: 895,928 (Downdays: 4 days, 0.12%)

Monitoring equipment	Project Database
Measuring/reading/recording frequency:	Annual
Calculation method (if applicable):	Sum of the total number of people using each borehole in the project multiplied by the number of days crediting each borehole earns in a given monitoring period.
QA/QC procedures:	N/A
Purpose of data:	Calculation of emission reductions.
Additional comments:	-

Relevant SDG Indicator	SDG 13.B.1 (Climate Action), SDG 6.1.1 (Clean Water and Sanitation), SDG 3.9.1 (Good Health and Well-Being)
Data/parameter:	$U_{p,y}$
Unit	Percentage
Description	Usage rate in project scenario p through year y
Measured/calculated/default	N/A
Source of data	Usage Survey
Value(s) of monitored parameter	90%
Monitoring equipment	Usage Survey
Measuring/reading/recording frequency:	Annual (conducted 11/08/2020 – 19/08/2020)
Calculation method (if applicable):	The usage survey has been carried out by trained local staff to meet the specific requirements of the methodology. All data presented in excel is subject to checking and cross referencing of a sample of the raw data by CO2balance UK Ltd.
QA/QC procedures:	N/A
Purpose of data:	Calculation of usage.
Additional comments:	-

Relevant SDG Indicator	SDG 13.B.1 (Climate Action), SDG 3.9.1 (Good Health and Well-Being)
Data/parameter:	$Q_{p,y}$
Unit	Litres per person per day
Description	Quantity of safe water supplied in the project scenario p during the year y using the zero or low emissions clean water supply technology
Measured/calculated/default	7.5
Source of data	Water Consumption Field Test (WCFT)
Value(s) of monitored parameter	7.5
Monitoring equipment	WCFT Survey
Measuring/reading/recording frequency:	Biennial (conducted 11/08/2020 – 19/08/2020)

Calculation method (if applicable):	Method used similar to Kitchen Performance Test in which the volume of water consumed in each household is averaged over 3 days. Volume is capped at 7.5 litres per person per day as per the methodology. The WCFT will be carried out by trained local staff to meet the specific requirements of the methodology. All data presented in excel is subject to checking and cross referencing of a sample of the raw data by CO2balance UK Ltd.
QA/QC procedures:	N/A
Purpose of data:	Calculation of emission reductions.
Additional comments:	-

Relevant SDG Indicator	SDG 13.B.1 (Climate Action), SDG 3.9.1 (Good Health and Well-Being)
Data/parameter:	$Q_{p,cleanboil,y}$
Unit	Litres per person per day
Description	Quantity of safe water boiled in the project scenario p during the year y using the zero or low emissions clean water supply technology
Measured/calculated/default	N/A
Source of data	Water Consumption Field Test (WCFT)
Value(s) of monitored parameter	0
Monitoring equipment	WCFT Survey
Measuring/reading/recording frequency:	Biennial (conducted 11/08/2020 – 19/08/2020)
Calculation method (if applicable):	Method used similar to Kitchen Performance Test in which the volume of water consumed in each household is averaged over 3 days. The WCFT has been carried out by trained local staff to meet the specific requirements of the methodology. All data presented in excel is subject to checking and cross referencing of a sample of the raw data by CO2balance UK Ltd.
QA/QC procedures:	N/A
Purpose of data:	Calculation of emission reductions.
Additional comments:	-

Relevant SDG Indicator	SDG 13.B.1 (Climate Action)
Data/parameter:	$Q_{p,rawboil,\ y}$
Unit	Litres per person per day
Description	The raw of unsafe water that is still boiled after installation of the water treatment technology
Measured/calculated/default	N/A
Source of data	Water Consumption Field Test (WCFT)
Value(s) of monitored parameter	0

Monitoring equipment	WCFT Survey
Measuring/reading/recording frequency:	Biennial (conducted 11/08/2020 – 19/08/2020)
Calculation method (if applicable):	Method used similar to Kitchen Performance Test in which the volume of water consumed in each household is averaged over 3 days. The WCFT has been carried out by trained local staff to meet the specific requirements of the methodology. All data presented in excel is subject to checking and cross referencing of a sample of the raw data by CO2balance UK Ltd.
QA/QC procedures:	N/A
Purpose of data:	Calculation of emission reductions.
Additional comments:	-

Relevant SDG Indicator	SDG 6.1.1 (Clean Water and Sanitation)
Data/parameter:	Quality of Treated Water
Unit	Parameters as per national standards
Description	Performance of the treatment technology
Measured/calculated/default	N/A
Source of data	Laboratory Tests
Value(s) of monitored parameter	Pass
Monitoring equipment	Laboratory equipment
Measuring/reading/recording frequency:	Annual
Calculation method (if applicable):	The Water Resource Department from the Ministry of Land, Water & Environment has certified each water supply as in line with national standards.
QA/QC procedures:	N/A
Purpose of data:	To test water quality for safety of human consumption.
Additional comments:	-

Relevant SDG Indicator	SDG 13.B.1 (Climate Action)
Data/parameter:	$LE_{p,y}$
Unit	tCO2e per year
Description	Leakage in project scenario p during year y
Measured/calculated/default	0
Source of data	Baseline and Monitoring surveys
Value(s) of monitored parameter	0
Monitoring equipment	Desk based research
Measuring/reading/recording frequency:	Biennial

Calculation method (if applicable):	Assessed every two years using baseline and monitoring surveys.
QA/QC procedures:	N/A
Purpose of data:	Calculation of leakage.
Additional comments:	-

Relevant SDG Indicator	SDG 5.4.1 (Gender Equality)
Data/parameter:	$T_{p,y}$
Unit	hours
Description	Project time spent collecting firewood per household per day (hours)
Measured/calculated/default	0
Source of data	Project Survey
Value(s) of monitored parameter	2.34
Monitoring equipment	Project Survey
Measuring/reading/recording frequency:	Annual (conducted 11/08/2020 – 19/08/2020)
Calculation method (if applicable):	Assessed every year using Project Survey
QA/QC procedures:	N/A
Purpose of data:	Calculation of SDG 5.
Additional comments:	-

Relevant SDG Indicator	SDG 5.4.1 (Gender Equality)
Data/parameter:	$TR_{,y}$
Unit	hours
Description	Total reduction in time spent collecting firewood per day for project activity in year y (hours)
Measured/calculated/default	0
Source of data	Project Survey and baseline survey.
Value(s) of monitored parameter	-0.08
Monitoring equipment	Project Survey
Measuring/reading/recording frequency:	Annual
Calculation method (if applicable):	Assessed every year using Project Survey. Calculate the average amount of time spent collecting firewood in the project scenario and compare to the pre-project scenario
QA/QC procedures:	N/A
Purpose of data:	To quantify whether the project has contributed to a reduction in the amount of time spent collecting firewood compared to the pre-project scenario towards SDG 5 target.

Additional comments:	-

Relevant SDG Indicator	SDG 3.9.1 (Good Health and Well-Being)
Data/parameter:	HAPR,y
Unit	percentage
Description	Total reduction in Household Air Pollution for project activity in year y (%)
Measured/calculated/default	0
Source of data	Project Survey and baseline survey
Value(s) of monitored parameter	90%
Monitoring equipment	Project Survey
Measuring/reading/recording frequency:	Annual
Calculation method (if applicable):	Review the number of people using the borehole according to the household lists for each VPA and multiply by the usage rate to calculate the number of people now using a safe water source in order to calculate the amount of biomass that would have been burnt to purify the water in the baseline scenario. Deduct from this any individuals that still boil water in the project scenario.
QA/QC procedures:	N/A
Purpose of data:	To calculate the additional number of persons who have access to safe water in the project activity compared to the baseline scenario and to calculate from that the percentage decrease in biomass used to purify water through boiling for SDG 3 target.
Additional comments:	-

Relevant SDG Indicator	SDG 3.9.1 (Good Health and Well-Being)
Data/parameter:	Pp,y
Unit	Kg/person
Description	Quantity of fuel that is consumed in the project scenario p during year y (kg/person-day)
Measured/calculated/default	0
Source of data	Baseline and Project Surveys
Value(s) of monitored parameter	0
Monitoring equipment	Baseline Water Boiling Test
Measuring/reading/recording frequency:	Annual
Calculation method (if applicable):	Assessed every year using usage survey determining the number of people boiling water in the project scenario.
QA/QC procedures:	N/A
Purpose of data:	Calculation of SDG 3

Additional comments:	Monitoring date was 11-19th August 2020.

Relevant SDG Indicator	SDG 6.1.1 (Clean Water and Sanitation)
Data/parameter:	P_{access}
Unit	Number of people
Description	Number of additional persons having access to safe water in the project activity compared to the baseline scenario
Measured/calculated/default	0
Source of data	Project Survey and baseline survey
Value(s) of monitored parameter	GS5951: 2,483 GS5952: 1,924 GS5953: 1,915 GS5954: 1,781 GS5955: 1,651 GS 6041: 3,382 GS 6042: 2,957
Monitoring equipment	Project Survey, Usage Survey and Household list
Measuring/reading/recording frequency:	Annual
Calculation method (if applicable):	Assessed every year using Project Survey, Usage Survey and Household list. Review the number of people using the borehole according to the household lists for each VPA and multiply by the usage rate to calculate the number of people now using a safe water source.
QA/QC procedures:	N/A
Purpose of data:	To calculate the additional number of persons having access to safe water in the project activity compared to the baseline scenario for SDG 6 target.
Additional comments:	-

Relevant SDG Indicator	SDG 6.1.1 (Clean Water and Sanitation)
Data/parameter:	P,y
Unit	Number of people
Description	Number of persons having access to safe water in the project activity
Measured/calculated/default	0
Source of data	Usage Survey and Household List

Value(s) of monitored parameter	GS5951: 2,759 GS5952: 2,138 GS5953: 2,128 GS5954: 1,979 GS5955: 1,834 GS 6041: 3,758 GS 6042: 3,286
Monitoring equipment	Usage Survey and Household list
Measuring/reading/recording frequency:	Annual
Calculation method (if applicable):	Assessed every year using Project Survey, Usage Survey and Household list
QA/QC procedures:	N/A
Purpose of data:	Calculation of SDG 6
Additional comments:	-

D.3. Comparison of monitored parameters with last monitoring period

Data/Parameter	Value obtained in this monitoring period	Value obtained last monitoring period
$N_{p,y}$	GS5951: 958,870 GS5952: 743,383 GS5953: 739,906 GS5954: 688,098 GS5955: 637,682 GS 6041: 1,024,619 GS 6042: 895,928	GS5951: 1,245,435 GS5952: 1,268,375 GS5953: 1,232,240 GS5954: 1,262,460 GS5955: 1,254,140
$U_{p,y}$	90%	100%
$Q_{p,y}$	7.5	7.5
$Q_{p,cleanboil,y}$	0	0
$Q_{p,rawboil,y}$	0	0
Quality of Treated Water	Pass	Pass
$LE_{p,y}$	0	0
$T_{p,y}$	2.34	1.4
$TR_{,y}$	-0.08	0.86
HAPR,y	90%	100%

$P_{p,y}$	0	0
P_{access}	GS5951: 2,483 GS5952: 1,924 GS5953: 1,915 GS5954: 1,781 GS5955: 1,651 GS 6041: 3,382 GS 6042: 2,957	GS5951: 3,416 GS5952: 3,475 GS5953: 3,376 GS5954: 3,462 GS5955: 3,436
$P_{,y}$	GS5951: 2,759 GS5952: 2,138 GS5953: 2,128 GS5954: 1,979 GS5955: 1,834 GS 6041: 3,758 GS 6042: 3,286	GS5951: 3,416 GS5952: 3,475 GS5953: 3,376 GS5954: 3,462 GS5955: 3,436

D.4. Implementation of sampling plan

>>

For the surveys, households were selected at random from the household lists. First, the hand pumps were randomly selected for monitoring; secondly, households served by those hand pumps were randomly selected for surveying.

Sample sizes are chosen to meet the minimum requirements set in the methodology requirements.

WATER CONSUMPTION FIELD TEST

The Water Consumption Field Test was carried out on a randomly selected sample of 39 households from the borehole user list. This complies with the recommended minimum sample size of 30 in the Gold Standard requirements. Furthermore, the sample confidence interval is within 10% of the mean. Between 2-3 staff carried out the test over a period of four days (1 day preparation and 3 days measurement) following a similar method as the Kitchen Performance Test, and all tests were conducted between 11/08/2020 – 19/08/2020. The total litres of water consumed each day was measured and divided by the number of people consuming water in that day – this measurement was repeated over 3 consecutive days and an overall average per household was calculated. The results showed that on average 11.26 litres of non-boiled clean water used only for drinking, hand washing and food preparation (capped at 7.5l) and 0 litres of boiled clean water is consumed per person per day. The total amount of water credited for in this monitoring period is equal to the average amount of clean non-boiled water consumed per person per day (7.5l), minus the average amount of boiled clean water consumed per person per day (0).

USAGE SURVEY

The usage survey establishes the proportion of beneficiaries that use the boreholes, a key parameter in the emission reduction calculations. Age-wise sampling was used to meet the methodological requirements of a minimum of 30 samples for each age group of technologies included within these VPAs. 50 households using 2-3 year aged technologies and 60 households using 0-1 year old technologies were randomly selected. Therefore, the annual usage survey has been conducted using a minimum sample size of 100.

The first usage surveys in this monitoring period were carried out by field staff between the 11/08/2020 – 19/08/2020. The households that participated in the survey were randomly selected from the borehole user lists. The results confirmed that 100% of the respondents and their family members use the boreholes that were rehabilitated by Vita. However, this has been capped at 90% to capture the impact of seasonality on the usage.

PROJECT SURVEY ANALYSIS

Project surveys were conducted by 2-3 staff between 11/08/2020 – 19/08/2020 on 110 randomly selected households from across the homogenous VPAs in Zoba Anseba to explore changes in the project scenario (demographics, water use and purification practices etc) over time.

Data collected during the project surveys includes the following:

- General information - Name, address, telephone number etc.
- Household socio-demographic information.
- Water use and purification characteristics.
- Sources and availability of fuel.

SECTION E. CALCULATION OF SDG IMPACTS

E.1. Calculation of baseline value or estimation of baseline situation of each SDG Impact

>> Details of equations used to estimate baseline values for SDG outcomes appear below. Calculation is provided in the corresponding Emission Reductions calculations in the 'SDG Calculations' Sheet.

Outcomes for SDG 3 (Good Health and Wellbeing):

Providing access to safe water and removing the need to boil, reduces the amount of non-renewable biomass burned. Therefore, the amount of safe water provided can be taken as a proxy indicator of how these VPAs contribute towards the SDG 3 target of substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination.

The quantity of biomass used in the baseline is calculated as follows:

$P_{b,y} = W_{b,y} * Q_{p,y}$

3 = 0.4 * 7.5

Where:

$P_{b,y}$ Quantity of fuel that is consumed in the baseline scenario b during year y (kg/person-day)

$W_{b,y}$ Quantity of wood fuel or fossil fuel required to boil 1 litre of water using technologies representative of baseline scenario b during year y

$Q_{p,y}$ Quantity of safe water supplied in the project scenario p during year y, using the "zero or low" emissions' clean water supply technology

Outcome for SDG 5 (Gender Equality):

The average time spent gathering firewood ($T_{b,y}$) per household in hours will be taken as a proxy contribution towards the SDG target. The baseline parameter for time spent collecting firewood per household per day is monitored in the baseline project survey.

$T_{b,y}$ = 2.26 (Baseline survey)

Outcomes for SDG 6 (Clean Water and Sanitation):

The outcome for SDG 6 is quantified as the additional number of persons having access to safe water in the project activity compared to the baseline scenario. The baseline parameter for this SDG includes C_j which is the portion of users of the project technology j who in the baseline were already consuming safe water without boiling it (expressed as a percentage).

C_j = 0 (Baseline survey)

Outcomes for SDG 13 (Climate Action):

CO2 emission reductions are the indicator to demonstrate that the project has raised capacity for effective climate change-related planning and management. This outcome is measured using the emission reduction calculations. The baseline indicators are detailed in Section D.1 and are as follows:

Baseline Emissions:

$$BE_{b,y} = B_{b,y} * \left(\left(fNRB_y * EF_{b,fuel,co2} \right) + EF_{b,fuel,nonco2} \right) * NCV_{b,fuel}$$

GS5951: 5540 = 3,027 * ((0.97 * 112) + 8.692) * 0.0156

GS5952: 4284 = 2341 * ((0.97 * 112) + 8.692) * 0.0156

GS5953: 4272 = 2334 * ((0.97 * 112) + 8.692) * 0.0156

GS5954: 3970 = 2169 * ((0.97 * 112) + 8.692) * 0.0156

GS5955: 3677 = 2009 * ((0.97 * 112) + 8.692) * 0.0156

GS6401: 5635 = 3079 * ((0.97 * 112) + 8.692) * 0.0156

GS6402: 4901= 2678 * ((0.97 * 112) + 8.692) * 0.0156

Where:

$$B_{b,y} = (1 - C_j) * N_{j,y} * W_{b,y} * (Q_{p,y} + Q_{p,rawboil,y})$$

GS5951: 3,027= (1 – 0) * 1,009,164 * 0.0004 * (7.5 + 0)

GS5952: 2341 = (1 – 0) * 780,566 * 0.0004 * (7.5 + 0)

GS5953: 2334 = (1 – 0) * 778,046 * 0.0004 * (7.5 + 0)

GS5954: 2169 = (1 – 0) * 723,114 * 0.0004 * (7.5 + 0)

GS5955: 2009 = (1 – 0) * 669,744 * 0.0004 * (7.5 + 0)

GS6401: 3079 = (1 – 0) * 1,026,336 * 0.0004 * (7.5 + 0)

GS6402: 2678 = (1 – 0) * 892,909 * 0.0004 * (7.5 + 0)

Where:

$N_{j,y}$	Number of person.days consuming water supplied by project scenario p through year y
C_j	Expressed as a percentage, the portion of users of the project technology j who in the baseline were already consuming safe water without boiling it
$B_{b,y}$	Quantity of fuel consumed in baseline scenario b during the year y in tons
$Q_{p,y}$	Quantity of safe water in litres consumed in the project scenario p and supplied by project technology per person per day
$Q_{p,rawboil,y}$	Quantity of raw water boiled in the project scenario p per person per day
$W_{b,y}$	Quantity of fuel in tons required to treat 1 litre of water using technologies representative of baseline scenario b during the project year y, as per Baseline Water Boiling Test

E.2. Calculation of project value or estimation of project situation of each SDG Impact

>> Details of equations used to calculate project value for SDG outcomes appear below. Calculation is provided in the corresponding Emission Reductions calculations in the 'SDG Calculations' Sheet.

Outcomes for SDG 3 (Good Health and Wellbeing):

Providing access to safe water and removing the need to boil, reduces the amount of non-renewable biomass burned. Therefore, the amount of safe water provided can be taken as a proxy indicator of how these VPAs contribute towards the SDG 3 target of substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination. Calculations are as follows:

$HAPR_y = ((P_{b,y} – P_{p,y}) / P_{b,y}) * U_{p,y}$

90% = ((0.003 – 0) / 0.003) * 0.9

Where:

$HAPR_y$ Total reduction in Household Air Pollution for project activity in year y (%)

$P_{b,y}$ Quantity of fuel that is consumed in the baseline scenario b during year y (kg/person-day)

$P_{p,y}$ Quantity of fuel that is consumed in the project scenario p during year y (kg/person-day)

$U_{p,y}$ Usage rate in project scenario p during year y

$P_{b,y} = W_{b,y} * Q_{p,y}$

0.003 = 0.4 * 7.5

Where :

$W_{b,y}$ Quantity of wood fuel or fossil fuel required to boil 1 litre of water using technologies representative of baseline scenario b during year y

$Q_{p,y}$ Quantity of safe water supplied in the project scenario p during year y, using the “zero or low” emissions’ clean water supply technology

$P_{p,y} = W_{b,y} * Q_{p,cleanboil,y}$

0 = 0.4 * 0

Where :

$W_{b,y}$ Quantity of wood fuel or fossil fuel required to boil 1 litre of water using technologies representative of baseline scenario b during year y

$Q_{p,cleanboil,y}$ Quantity of safe water boiled in the project scenario p during year y, after installation of the project technology

Outcome for SDG 5 (Gender Equality):

The overall reduction in time spent collecting firewood in the project activity is calculated as follows:

$TR_y = T_{b,y} - T_{p,y}$

-0.08 = 2.26 – 2.34

Where:

TR_y	Total reduction time spent collecting firewood per day for project activity in year y (hours)
$T_{b,y}$	Baseline time spent collecting firewood per household per day (hours)
$T_{p,y}$	Project time spent collecting firewood per household per day (hours)

Outcomes for SDG 6 (Clean Water and Sanitation):

The outcome for SDG 6 is quantified as the additional number of persons having access to safe water in the project activity compared to the baseline scenario. Calculations are as follows:

$$P_{access} = P_y * (1 - C_j) * U_{p,y}$$

GS5951: 2,483 = 2,759* (1 – 0) * 0.9

GS5952: 1,924= 2,138* (1 – 0) * 0.9

GS5953: 1,915= 2,128 * (1 – 0) * 0.9

GS5954: 1,781= 1,979* (1 – 0) * 0.9

GS5955: 1,651 = 1,834 * (1 – 0) * 0.9

GS6401: 3,382= 3,758* (1 – 0) * 0.9

GS6402: 2,957 = 3,286* (1 – 0) * 0.9

Where:

P_{access}	Number of additional persons having access to safe water in the project activity compared to the baseline scenario.

P_y	Number of persons having access to safe water in the project activity.
C_j	Expressed as a percentage, the portion of users of the project technology j who in the baseline were already consuming safe water without boiling it.
$U_{p,y}$	Usage rate in project scenario p during year y

Outcome for SDG 13 (Climate Action):

CO2e emission reductions are the indicator to demonstrate that the project has raised capacity for effective climate change-related planning and management contributing to SDG 13. The emissions reductions for the current monitoring period can be found in the corresponding Emission reductions excel document and in section E.3 below.

E.3. Calculation of leakage

The project does not result in leakage and therefore the value is 0 as can be seen in the assessment on pg. 15 – 16.

E.4. Calculation of net benefits or direct calculation for each SDG Impact

SDG	SDG Impact	Baseline estimate	Project estimate	Net benefit
SDG 3 Good Health and Well-being	Variation in household smoke (All VPAs)	0% reduction in exposure to Household Air Pollution due to boiling water	90% reduction in exposure to Household Air Pollution due to no longer boiling water	90% additional reduction in exposure to Household Air Pollution due to no longer boiling water
SDG 5 Gender Equality	Variation of time spent on firewood collection	2.26 hours spent collecting firewood per household per day	2.34 hours spent collecting firewood per household per day	0.08 decrease in hours spent collecting firewood

SDG 6 Clean Water and Sanitation	People gain access to safe water	0 people with access to safe water	People with access to safe water: GS5951: 2,483 GS5952: 1,924 GS5953: 1,915 GS5954: 1,781 GS5955: 1,651 GS 6041: 3,382 GS 6042: 2,957	Additional people with access to safe water: GS5951: 2,483 GS5952: 1,924 GS5953: 1,915 GS5954: 1,781 GS5955: 1,651 GS 6041: 3,382 GS 6042: 2,957
SDG 13 Climate Action	Emission reductions	GS5951: 6,955 tCO2-e GS5952: 5,604 tCO2-e GS5953: 5,381 tCO2-e GS5954: 5,586 tCO2-e GS5955: 5,368 tCO2-e GS6041: 8,004 tCO2-e GS6042: 7,707 tCO2-e	GS5951: 0 tCO2-e/y GS5952: 0 tCO2-e/y GS5953: 0 tCO2-e/y GS5954: 0 tCO2-e/y GS5955: 0 tCO2-e/y GS6041: 0 tCO2-e/y GS6042: 0 tCO2-e/y	Reduced emissions GS5951: 4641 tCO2-e GS5952: 3597 tCO2-e GS5953: 3581 tCO2-e GS5954: 3329 tCO2-e GS5955: 3086 tCO2-e GS 6041: 4959 tCO2-e GS 6042: 4337 tCO2-e

E.5. Comparison of actual SDG Impacts with estimates in approved PDD

SDG	Values estimated in ex ante calculation of approved PDD for this monitoring period	Actual values[1] achieved during this monitoring period
SDG 3 Good Health and Well-being	80% reduction in exposure to Household Air Pollution due to boiling water	90% reduction in exposure to Household Air Pollution due to boiling water

[1] Whenever emission reductions are capped, both the original and capped values used for calculations must be transparently reported. Use brackets to denote original values.

SDG 5 Gender Equality	At least 0.5 hours per trip per household time saved	Time spent collecting firewood has decreased during this monitoring period by 0.08 hours
SDG 6 Clean Water and Sanitation	Number of additional persons with access to safe water: GS5951: 1,919 GS5952: 1,543 GS5953: 1,481 GS5954: 1,538 GS5955: 1,478 GS 6041: 2,932 GS 6042: 2,855 Total from Annex = 13,746	Actual persons with access to safe water: GS5951: 2,483 GS5952: 1,924 GS5953: 1,915 GS5954: 1,781 GS5955: 1,651 GS 6041: 3,382 GS 6042: 2,957
SDG 13 Climate Action	Ex-ante Emission Reductions of: GS5951: 10,000 tCO2-e GS5952: 10,000 tCO2-e GS5953: 10,000 tCO2-e GS5954: 10,000 tCO2-e GS5955: 10,000 tCO2-e GS6041: 10,000 tCO2-e GS6042: 10,000 tCO2-e	Actual emission reductions GS5951: 4641 tCO2-e GS5952: 3597 tCO2-e GS5953: 3581 tCO2-e GS5954: 3329 tCO2-e GS5955: 3086 tCO2-e GS 6041: 4959 tCO2-e GS 6042: 4337 tCO2-e

E.5.1. Explanation of calculation of value estimated ex ante calculation of approved PDD for this monitoring period

The Ex-ante estimations for SDGs 3,5 and 6 are taken from the transition Annex (101.5-Transition-Annex-Eritrea_Boreholes_20180403_v.3_CLEAN.pdf). The project started before GS4GG was implemented so the SDGs calculations for each single VPA were not included at that time. In the transition Annex, the values estimated for each SDG are reported as such:

SDG 3 = 80% reduction in exposure to Household Air Pollution due to boiling water

SDG 5 = 0.5 hours per trip per household time saved

SDG 6 = 13,746 number of additional persons with access to safe water

Regarding SDG 13, the ex-ante Emission Reductions can be found in the approved VPA-DD are capped at 10,000 tCO2e

E.6. Remarks on increase in achieved SDG Impacts from estimated value in approved PDD

>>

These projects were design certified prior to transition to Gold Standard for the Global Goals, hence all ex-ante estimates of SDG outcomes are derived from the relevant transition annex. All SDG targets were either met or exceeded and had positive SDG impacts.

SDG 3

For SDG 3, in the project scenario there was a 90% reduction in exposure to Household Air pollution arising from smoke emitted from boiling water. This is due to no one boiling the borehole water in the project because it is safe for human consumption as determined by annual water quality tests. This not only frees up time spent previously boiling water but also reduces the negative health implications of smoke related illnesses which are disproportionally suffered by women and children. This impacts positively towards SDG 3 good health and wellbeing.

SDG 5

Time spent collecting firewood decreased by 0.08 hours (4.8mins). This is a decrease on the ex-ante estimate of 0.5 hours' time saving. It may have not met the target due to travelling further to collect wood due to local deforestation and wood resource depletion.

Women and children are experiencing on average an increase in time spent collecting firewood as they travel further to collect wood for cooking due to local deforestation and wood resource depletion (as compared to the baseline) which is an epidemic in Eritrea. The Usage survey confirms that 90% of the participants do not treat or process their water for purification purposes in the project, confirming that firewood collection is not associated with boiling water in the project. The projects SDG 5 target - to reduce the time spent collecting water and firewood for the purpose of water purification. This has been achieved.

SDG 6

All project participants now have access to safe water in the project. In the baseline, all participants collected water from unsafe sources such as rivers, streams and open wells, and had to boil their water in

order to make it safe to drink. In the project, 100% of participants now collect their water from a rehabilitated borehole, no longer requiring them to boil water for purification and positively contributing towards SDG 6 clean water and sanitation. However, this figure is capped at 90% in the ER sheets to capture impact of seasonality on the usage.

SDG 13

For SDG 13, the ex-ante estimation was 10,000 emission reductions per year per VPA. However, the number of users per borehole has been capped at 300 and is lower than expected and also the Wby has been capped at 0.0004 hence there are less than 10,000 tCO2-e/y per VPA. Although this does not meet the target of 10,000 tCO2-e/y, the projects are still achieving a large number of emission reductions during this monitoring period which would not be possible without the project contributing positively to SDG 13 climate action.

SECTION F. SAFEGUARDS REPORTING

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Safeguarding principles	Assessment questions	Assessment of relevance to the project (Yes/potentially/no)	Justification	Monitoring
1 Human Rights	a. The Project Developer and the Project shall respect internationally proclaimed human rights and shall not be complicit in violence or human rights abuses of any kind as defined in the Universal Declaration of Human Rights. b. The Project shall not discriminate with regards to participation and inclusion.	No	The project will adhere to all human rights requirements including respecting internationally proclaimed human rights and Universal Declaration of Human Rights and will not discriminate in any way.	During all trainings, it will be emphasised that project beneficiaries should support vulnerable or less mobile community members to access water

2 Gender Equality and Women's Rights	The Project shall not directly or indirectly reinforce gender-based discrimination and shall not lead to/contribute to adverse impacts on gender equality and/or the situation of women. Specifically, this shall include (not exhaustive):			SDG 5 Tp,y TR,y The time spent collecting wood fuel is monitored in the project survey. The project aims to reduce the burden on the whole community of traveling far to collect wood and in particular to women who perform the majority of unpaid domestic work.
	(a) Sexual harassment and/or any forms of violence against women – address the multiple risks of gender-based violence, including sexual exploitation or human trafficking.	No	The burden on the whole community of travelling far to collect water and gather firewood for water purification will be reduced. This will also mitigate the social isolation of spending a long time collecting these resources	During this MP the impact to SDG5 was negative probably due travelling further to collect wood due to local deforestation and wood resource depletion.
	(b) Slavery, imprisonment, physical and mental drudgery, punishment or coercion of women and girls.	No	The project will decrease the drudgery by reducing time spent on water and firewood collection	
	(c)Restriction of women's rights or access to resources (natural or economic).	No	The project will increase women's access to resources such as water by making safe water	

			available in the community. The project will increase women's ability to use, develop and protect natural resources by making safe water more readily available and enabling women to participate in project decision-making.		
	(d) Recognise women's ownership rights regardless of marital status – adopt project measures where possible to support to women's access to inherit and own land, homes, and other assets or natural resources. Projects shall apply the principles of non-discrimination, equal treatment, and equal pay for equal work, specifically:	No	The project will decrease the workload of women in collecting water and firewood, thereby allowing more time to engage in other activities.		
	(a) Where appropriate for the implementation of a Project, paid, volunteer work or community contributions will be organised to provide the conditions for equitable participation of men and women in the identified tasks/activities.	Yes	Equal participation of women and men in decision making will be encouraged by promoting their equal membership on water point committees (WPCs). These WPCs will be trained to facilitate the participation of		

			members depending on their specific circumstances. They will also assist all communities members to provide feedback on the project, regardless of their situation.	
	(b) Introduce conditions that ensure the participation of women or men in Project activities and benefits based on pregnancy, maternity/paternity leave, or marital status.	Yes	The project aims to benefit the whole community equally and women's equal participation in the LSC and water point committees is encouraged	
	(c) Ensure that these conditions do not limit the access of women or men, as the case may be, to Project participation and benefits.	Yes	The project will encourage equal participation of men and women.	
	3.2.3 The Project shall refer to the country's national gender strategy or equivalent national commitment to aid in assessing gender risks.	Yes	The analysis of the project is in line with the country gender strategy is in section A.8. of the PDD	
3 Community Health, Safety and Working Conditions	The Project shall avoid community exposure to increased health risks and shall not adversely affect the health of the workers and the community.	Yes	The project will reduce the community exposure to water borne illness through the provision of a safe water source, and will reduce the risk	SDG 3, 6 and 13 Np,y Qp,y Qp,cleanboil,y Quality of Treated Water

			of household air pollution by removing the need for households to boil water for purification.	HAPR,y Paccess P,y Pp,y Incidences of water borne illnesses are monitored through the annual Monitoring Project Survey. A WASH programme is carried out by the project including WASH training at the beginning of the project, as well as subsequent WASH follow-up training
4.1 Sites of Cultural and Historical Heritage	Does the Project Area include sites, structures, or objects with historical, cultural, artistic, traditional or religious values or intangible forms of culture (e.g., knowledge, innovations, or practices)?	No	The project area does not include sites or structures of historic and cultural value. Project activities do not compromise historic, cultural or religious practices.	
4.2 Forced Eviction and Displacement	Does the Project require or cause the physical or economic relocation of peoples (temporary or permanent, full or partial)?	No	The project will not impact the physical or economic relocation of peoples. The focus of the project is rehabilitating and installing water point infrastructure only.	

4.3 Land Tenure and Other Rights	Does the Project require any change to land tenure arrangements and/or other rights?	No	The project will not impact on land tenure arrangements or rights.	
4.4 Indigenous Peoples	Are indigenous peoples present in or within the area of influence of the Project and/or is the Project located on land/territory claimed by indigenous peoples?	No	The project will take place on land owned either by the county government or by local people for which their permission will first be sought.	
5 Corruption	The Project shall not involve, be complicit in or inadvertently contribute to or reinforce corruption or corrupt Projects.	No	The project shall ensure that all forms of corruption are avoided. Project beneficiaries are able to contact the project developer and implementer through the continuous grievance mechanism to report any form of corruption.	
6.1 Labour Rights	The Project Developer shall ensure that there is no forced labour and that all employment is in compliance with national labour and occupational health and safety laws, with obligations under international law, and consistency with the principles and standards embodied in the International Labour Organization (ILO) fundamental conventions. Where	No	The project will adhere to labour laws and requirements	

	these are contradictory and a breach of one or other cannot be avoided, then guidance shall be sought from Gold Standard. Child labour, as defined by the ILO Minimum Age convention is not allowed. The Project Developer shall use adequate and verifiable mechanisms for age verification in recruitment procedures. Exceptions are children for work on their families' property as long as: (a) Their compulsory schooling (minimum of 6 schooling years) is not hindered, AND (b) The tasks they perform do not harm their physical and mental development, AND (c) The opinions and recommendations of an Expert Stakeholder shall be sought and demonstrated as being included in the project design.	No	The projects will not use child labour	
6.2 Negative Economic Consequences	Does the project cause negative economic consequences during and after project implementation, e.g., for vulnerable and marginalised social	Yes	The project is not expected to have any negative economic impacts or cause any risks.	To ensure long term sustainability of the water points, and avoid unexpected breakdowns and spending, training was conducted at the beginning of the

	groups in targeted communities?			project on conducting minor maintenance. The project is expected to benefit all members of the community
7.1 Emissions	Will the Project increase greenhouse gas emissions over the Baseline Scenario?	Yes	The project will reduce greenhouse gas emissions compared to the baseline scenario.	SDG 13 The ERs are monitored during the MP. During this MP a large number of emission reductions were achieved
7.2 Energy Supply	Will the Project use energy from a local grid or power supply (i.e., not connected to a national or regional grid) or fuel resource (such as wood, biomass) that provides for other local users?	No	Only hand pumped boreholes that use no electricity are included in the project. The project will reduce fuel use due to reducing the need for water purification by boiling	
8.1 Impact on natural water patterns/flows	Will the Project affect the natural or pre-existing pattern of watercourses, ground-water and/or the watershed(s) such as high seasonal flow variability, flooding potential, lack of aquatic connectivity or water scarcity?	No	There will be no significant change in the volume of water consumed by the households.	
8.2 Erosion and/or water body instability	Could the Project directly or indirectly cause additional erosion and/or water body instability or disrupt the	No	The water is taken from boreholes at household usage levels. Therefore it is extremely unlikely that there will be	

	natural pattern of erosion?		additional erosion and/or water body instability or disruption of the natural pattern of erosion.	
9.1 Landscape modification and soil	Does the Project involve the use of land and soil for production of crops or other products?	No	No crops or other products will be produced in the project.	
9.2 Vulnerability to Natural Disaster	Will the Project be susceptible to or lead to increased vulnerability to wind, earthquakes, subsidence, landslides, erosion, flooding, drought or other extreme climatic conditions?	No	There will be no impact by the project to natural disasters.	
9.3 Genetic Resources	Could the Project be negatively impacted by the use of genetically modified organisms or GMOs (e.g., contamination, collection and/or harvesting, commercial development)?	No	No GMOs will be used in the project and the boreholes would not be affected by GMOs as they are all protected.	
9.4 Release of pollutants	Could the Project potentially result in the release of pollutants to the environment?	No	As safe ground water is used, there is no risk or releasing pollutants to the environment.	
9.5 Hazardous and Non-hazardous Waste	Will the Project involve the manufacture, trade, release, and/ or use of hazardous and non-hazardous chemicals and/or materials?	No	The project does not deal with hazardous or non-hazardous chemicals and/or materials.	
9.6 Pesticides and fertilizers	Will the Project involve the application of pesticides and/or fertilisers?	No	No pesticides and/or fertilisers will be used in the project.	

9.7 Harvesting of forests	Will the Project involve the harvesting of forests?	No	As the project reduces the consumption of firewood, there is a positive impact on forests.	
9.8 Food	Does the Project modify the quantity or nutritional quality of food available such as through crop regime alteration or export or economic incentives?	No	The project has no impact on the quantity or nutritional quality of food.	
9.9 Animal Husbandry	Will the Project involve animal husbandry?	No	The project will not involve animal husbandry.	
9.10 High Conservation Value Areas and Critical Habitats	Does the Project physically affect or alter largely intact or High Conservation Value (HCV) ecosystems, critical habitats, landscapes, key biodiversity areas or sites identified?	No	The project rehabilitates water points and decreases the consumption of firewood, having a positive impact on conserving forest ecosystems.	
9.11 Endangered Species	Are there any endangered species identified as potentially being present within the Project boundary (including those that may route through the area)?	No	The project is not envisaged to have any impact on their habitat as it only affects borehole infrastructure.	
	Does the Project potentially impact other areas where endangered species may be present through transboundary affects?	No	The project only impacts borehole infrastructure and does not impact other areas where endangered species are present.	

SECTION G. STAKEHOLDER INPUTS AND LEGAL DISPUTES

G.1. List all Inputs and Grievances which have been received via the Continuous Input and Grievance Mechanism together with their respective responses/mitigations.

>> No Stakeholder feedback or comments have been received during this monitoring period

G.2. Report on any stakeholder mitigations that were agreed to be monitored.

>>NA

G.3. Provide details of any legal contest that has arisen with the project during the monitoring period

>>NA

Revision History

Version	Date	Remarks
1.1	14 October 2020	Hyperlinked section summary to enable quick access to key sections Improved clarity on Key Project Information Section for POA monitoring Forward action request section Improved Clarity on SDG contribution/SDG Impact term used throughout Clarity on safeguard reporting Clarity on design changes Leakage section added for VER/CER projects Addition of Comparison of monitored parameters with last monitoring period Provision of an accompanying Guide to help the user understand detailed rules and requirements
1.0	10 July 2017	Initial adoption