The Feedback Trust
Scottish Charity No. SC023568

Construction of a new school for the Ankarinomby Secondary School in Madagascar

(FF 441 - 01)

Final report

May 2019

Feedback Madagascar/Ny Tanintsika (FBM/NT) –

The Eagle Foundation

Contents

Introduction

The Eagle Foundation agreed to fund a total of £40,822 for the project to build a new school building for Ankarinomby Secondary School in Sahabe village, Andohanimananatanana neighbourhood, Ambohimahamasina 'commune' (municipality) in Ambalavao district, Haute Matsiatra region, SE Madagascar. This involved the construction of a total of six furnished classrooms, a 2-room school office, latrines/urinal, a rainwater catchment system, a hand-washing unit and a borehole equipped with hand-pump for drinking water purposes.

Ankarinomby Secondary School is located 100 km by road from Fianarantsoa; 56km south on the main road (RN7) to Ambalavao, then 39km on a secondary road southeast of Ambalavao to Ambohimahamasina, and the last stretch (5km) is only accessible by 4x4 vehicle, motorbike or lorry in the dry season. This school is the nearest secondary school to the rainforest of Ambohimahamasina, part of the new protected area 'COFAV' and particularly important due to its cultural significance as it is overlooked by the most sacred mountain in Madagascar: Ambondrombe. Legend has it that the spirits of all Malagasy people reside in Ambondrombe. Classrooms were previously borrowed from the local primary school, leading the community to request help numerous times since 2015 for the building of their own classrooms.

The funding agreement with the Eagle Foundation, dated 24th April 2018, was signed by the FBM UK administrator and the funds were received in the UK bank account on the 9th May 2018. This amounted to 175,513,273.66 MGA after transfer to Madagascar. The expected period of the project was from April to November 2018.

Project location

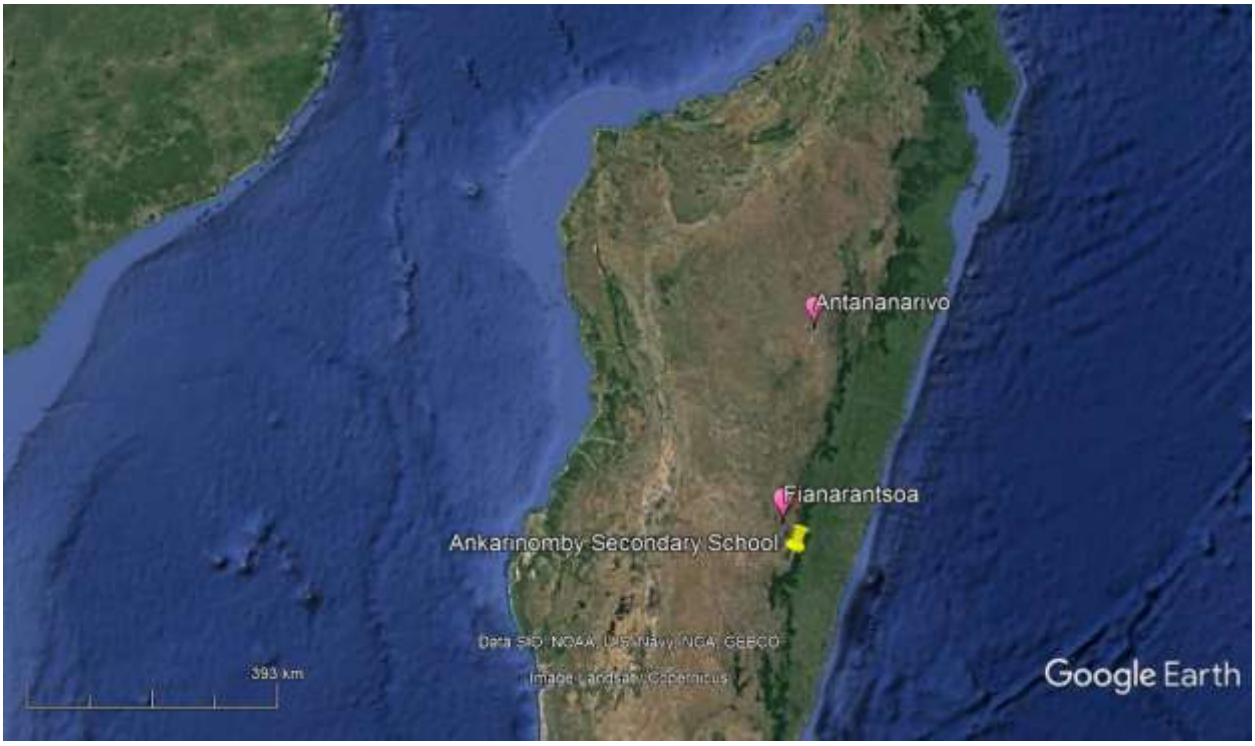


Figure 1: Map locating Ankarinomby Secondary School in relation to the capital city Antananarivo and FBM/NT's regional office in Fianarantsoa.

Figure 2: Map showing where the road is from Fianarantsoa via Ambalavao (the district centre) to Ankarinomby Secondary School.

Figure 3: Map showing the new Ankarinomby Secondary School in relation to the Primary School.

Latitude: 21°55'9.81"S Longitude: 47°12'2.12"E Altitude 996 m

Calendar of achievements

Activity	2018								2019	
	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb
Information letter delivered to all stakeholders announcing the project's acceptance & including details of community contributions.	X									
Initial meeting & preparations with local authorities & community in Sahabe concerning the project funding agreement, explanation of each stakeholder's role in the project, fixing of action plan, identification of construction site & designation of members of the local Committee to organisation & monitor works ("COST").		X								
Training of the COST committee to oversee work locally.		X								
Contracting with the stone/gravel/rock provider.		X								
Tender process for procurement of project materials.		X	X	X						
Contracting with the storekeeper.		X								
Obtaining local materials, particularly sand and bricks.			X	X	X					
Monitoring of community contributions to the project and preparatory activities.		X	X	X	X					
Meeting with community & local authorities to resolve issue of delays to community materials.			X							
Community levelling of the land for the building.			X	X						
Contracting with the transporter of materials.					X					
Transporting of materials.					X	X	X	X		
Signature of builders' contract					X					
Foundations ceremony with the community – the association of parents of pupils, teachers, the district-level education authorities & the municipality authorities in Ambohimahamasina.					X					
Installation of builders					X					
Building work (school building, impluvium and sanitation block).					X	X	X	X		
Putting-in-place the borehole & installation with a hand-pump.					X	X				
Training of the water management committee for the borehole.					X					
Training of the school's maintenance and repairs committee members.								X		
Regular monitoring of work and achievement of community contributions.				X	X	X	X	X		
Technical acceptance of works on the 22/12/2018, including provision of tool kit for the school.								X		

Figure 4: Reception of the tool kit by the school's maintenance and repairs committee.

Details on the project

After a 3-month preparatory phase, the foundations-laying ceremony, held on the 14th September 2018, was attended by the head of education in Ambalavao district, the head of education in the Ambohimahamasina municipality, the representative of the municipality authorities, the head-teachers of the Ankarinomby Secondary and Primary Schools, members of the parents' association, the elders of the area, the FBM/NT team, the builders and the local community.

Figure 5: Village elder making a blessing at the ceremony to lay the foundations in the presence of Ambalavao's head of education.

A work plan was drawn up with the municipality authorities, the chiefs of the three neighbourhoods served by the Secondary School, members of the parents association and COST committee members. This helped ensure that there was always sufficient local labour on the building site; everyday there were between 10 and

16 labourers who worked from these three areas. This meant that, despite the sometimes bad weather, the work was able to progress well. Regular monitoring and support trips were carried out by the FBM-NT regional team in Fianarantsoa to help resolve problems that arose, and to assess progress in collaboration with the local COST committee members as well as the local authorities. Members of the COST committee ensured the permanent monitoring of building work and materials, and checked that community contributions to the project were achieved on time. No major problems arose during the work, but there were at times slight delays to the supply of local materials and water required for the work.

The following were community contributions to the school building project:

- Levelling the land before building started.
- Housing the builders and providing the storeroom (this was a converted zebu pen!).
- Unloading the materials transported from Fianarantsoa.
- Unskilled labour - fetching water required during building, helping the builders, carrying sand and materials, and other needs.
- A third of the required building stones and gravel, and all of the sand.
- Round wood (for scaffolding).
- Planting a hedge around the school grounds: 'Radriaka' (*Lantana camara*) was used, and eucalyptus trees planted to define the boundaries of the grounds.

Figure 6: Ankarinomby Secondary School's sanitation block.

Building work on the Ankarinomby Secondary School ended on the 21st December 2018 and the official verification of works was carried out the following day. This was attended by the head of education for Ambalavao district, the head of education for Ambohimahamasina municipality, the local municipality authorities, the head-teacher and teachers, students, members of the parents' association, the local population, FBM/NT and the builders. After assessing all aspects of the infrastructure, everybody was entirely happy with the builders' work. However, three remarks were made concerning outstanding work that should be completed as part of the community's contributions to the project, notably:

- Improve access to the sanitation block via making stairs.
- Plant grass or anti-erosive plants on the slope below the latrine.
- Completion of hedge-planting around the school grounds.

After various speeches in which profuse thanks were expressed to the Eagle Fondation, Feedback Madagascar / Ny Tanintsika, the builders and the COST committee, the keys to the building were handed over to the head-teacher together with the President of the association of parents of students.

Some materials were left for the school to use, including 6 spades, 5 shovels, 1 metal barrel, 4 jerry-cans and 5 window panes.

Figure 7: FBM Programme Coordinator handing-over keys to the school to the head of education for Ambalavao district.

Figure 8: Inspection of the school's hand-washing unit linked to the rainwater catchment tank, during the official verification of work.

Figure 9: Inspection of the rainwater collection tank by local authorities.

Figure 10: Local authorities and participants at the official verification of works outside the Ankarinomby Secondary School.

Training for members of the school Maintenance and Repairs Committee ('CER') was carried out in December 2018. The CER plays a crucial role for the sustainability of the school building, furniture, impluvium and sanitation block, regrouping members of the parents association, a teacher representative and one student per class. It works closely with the head-teacher and the president of the parents association to ensure regular maintenance and timely repairs to the infrastructure. A tool kit has already been provided to the school order to make repairs (handed over at the completion of works ceremony).

As stipulated in the contract signed between the Ankarinomby Secondary School and Feedback Madagascar-Ny Tanintsika, the head-teacher is required to send annual reports of the school's progress including any repairs carried out. The school took it on board to recruit a 24-hour guard for the school, who is paid by parents of pupils, to ensure its security.

Figure 11: Students lined up for the raising of the National flag.

Features of the new school building are as follows:

- Two buildings of 3 classrooms, each measuring 22.5m x 8m x 4.69m in total (height of the gable 1.4m).
- Stone foundations (depth 60cm, width 50cm) and fired brick walls with a reinforced concrete structure.
- Cement rendering on inside and outside walls (2cm thick).
- Cyclone-proof tin roofing, coloured dark green (sheeting thickness 4/10).
- A veranda to the front with rainwater canalisation features integrated.
- Double metal doors with hooks to hold them open on the outside, and each closed with 2 padlocks.
- Each classroom with 3 windows dimensions 1.8 x 1.2m. Windows with glass panes, opening to the inside with protection grill on the outside. Awnings to protect the posterior windows from the rain. Additional aeration above windows in each classroom.
- Reinforced concrete front and back guttering (integrated into the building design) links to a 7m³ water tank serving as a hand-washing station to the side of one of the buildings, which has 3 taps. This is located between the latrines and the school to promote hand-washing at key moments. The tank is equipped with a lockable manhole cover on the top and steps (between the tank and the school building) to be able to reach and refill during the dry season. A system was integrated to ensure the first rainwater (which would bring the dirt from the roof) is diverted from entering the tank via two PVC downpipes with removable stopper at the bottom.

Figure 12: Lockable lid of the rainwater catchment tank (top left), inspection of the back of one of the buildings (top right), explanation of the system to divert the first rainwater (below left) & outside the school (below right).

- Two-tone colouring of school and sanitary block (interior and exterior); oil paint at the base up until a height of 1.5 metres to protect from dirt, and water-based paint higher-up.
- Cement ceilings (of classrooms and veranda) painted with oil paint.
- Concrete blackboard with concrete chalkboard and raised stage for the teacher and their desk.
- Concrete flooring.
- In-built shelving (1.8 x 0.6 x 0.5 metres) in each classroom made of cement breezeblocks, lockable with a wooden door to store books / materials or supplies.
- A sanitation block composed of five-compartment washable and 'fly-proof' latrines (long-drop toilets with a hole at least 4 metres deep) with separate girls/boys urinal behind. The urinals are roofed to prevent rainwater from entering the toilets (which might cause damage in the cyclone season) as urine is channelled directly into the latrine pit.
- 96 school desks with integrated benches (16 in each classroom), 6 tables and 6 chairs for teachers for the classrooms.
- Construction of a school office building measuring 7.58 x 4.64 m, made up of two rooms and with a veranda at the front. There is a 1-metre-wide corridor between the two rooms to separate the office

of the head-teacher from the teachers' room. This office is furnished with 2 cupboards, 1 office desk, 4 tables and 20 chairs. It is painted with the same colour-scheme as the classrooms.

- A sign was placed at the centre of one of the school buildings indicating the name of the partners in the project and with the awareness-raising message "Education is the best inheritance you can give".
- A borehole equipped with hand-pump, to provide clean drinking water for the school. However, due to the change in the school's location (further up the hill than originally expected), the borehole is now closer to the Ankarinomby Primary School than the Secondary School. However, all students can benefit from it by filling up water bottles before going to school in the morning.

Figure 13: Furniture in each classroom.

Figure 14: Admiring the school's new sanitation block.

Details on the borehole:

The preparation phase for the putting-in-place of the borehole involved meetings with beneficiaries, including establishing an action plan, particularly related to community contributions to the project. These were as follows:

- Providing somewhere secure for the drilling teams to stay during their work in the village, and someone to prepare their food.
- Providing somewhere secure to store the equipment and materials until the end of work.
- Fetching water throughout drilling work.
- Collecting and transporting sand.
- Transporting any materials by foot where transport is impossible to the point of drilling.
- Payment of the minimal financial contribution of 125,000 MGA.

There was also an election of three local technicians, responsible for repairs and maintenance of the borehole, who were then trained during the work. These were:

1- Alphonse RAKOTOZAFY (27 years old)
2- Tamazy RANDRIANARIVO (26 years old)
3- Jean Alphonse RAMANANDRAIBE (28 years old)

Logistical arrangements were made, including purchase of local materials required, housing for drilling teams, checking the suitability of the stock house, etc.

Awareness-raising on the 4 key WASH messages (Water-Sanitation-Hygiene) was carried out throughout, notably:

- Building and use of (hygienic) latrines
- Hand-washing with soap or ash
- Drinking safe water
- Menstrual hygiene

Previous water source

Regarding the drilling phase itself, the team arrived on site on the 13th September 2018 and started the preparation of work the following day, including levelling the land and initial drilling by hand to 1.5metres. The rota jetting technology was using to drill as from the 15th September, to a depth of 24.6 metres on the 17th September.

Other key dates:

- 1st chlorination: 21/09/18
- 2nd chlorination: 23/09/18
- 3rd chlorination: 24/09/18
- Technical acceptance: 26/09/18

Photos showing the process of borehole drilling can be found in Appendix.


Technical acceptance of work

A water management committee was established on the 19th September 2018 and named 'Tambatra' (meaning 'union'). Committee members were trained over 3 days, from the 28th to 30th November 2018, by FBM-NT Community Outreach worker Vonjy. It was decided that each parent of students would contributed 1,000 Ariary per year, and each villager using the borehole would contribute 5,000 Ariary/household/year to ensure its upkeep. The following people were trained:

- President : RAVAO
- Vice-president : RATSIMBAZAFY
- Secretary: Pierre
- Treasurer: Gabrielle
- Internal auditor: RAVOAVY
- Advisor: RANDRAMASY
- Advisor: VIVIANE

Training content:

- WASH and its links to nutrition, the environment and livelihoods.
- The roles and responsibilities of the different members of the committee, of FBM-NT and the local authorities.
- Types of management of water infrastructure, focusing on community management.
- Simplified management tools for accounting and reporting.
- Leadership, communication and conflict management.
- Water law in Madagascar.

Difficulties encountered

No major difficulties were encountered during the project. However, since the start of building work coincided with the rice-planting season, it was more challenging to organise the community contributions and particularly the presence of local labourers on a daily basis.

Figure 15: Delighted students outside their new school (above) & borehole (below).

Project beneficiaries

The following table provides data on project beneficiaries, based on the current school year 2018-2019:

Class	6ème	5ème	4ème	3ème
Girls	33	33	25	28
Boys	29	26	16	38
Total	**62**	**59**	**41**	**66**
	228			

Other direct beneficiaries are the 11 teaching staff of the Secondary School (2 male civil servants and 9 teachers paid by the parents association of which 6 male and 3 female).

In addition, direct beneficiaries are the primary school pupils at Ankarinomby Primary School who used to share their school building with the secondary school, numbering 217, and its 7 teachers (of which just one civil servant). They also benefit directly from clean drinking water via use of the borehole.
5 villagers from one household also benefit directly from use of the borehole.

Other indirect beneficiaries include the other primary schools located in the 3 northern neighbourhoods (Fokontany) of Ambohimahamasina served by this Secondary School: Andohanimananatanana (Tsangamasy Primary: 82 pupils, 3 teachers all parent-paid), Tsarafara (Sahamaina Primary: 271 pupils, 7 teachers of which just 1 civil servant) and Soatsihagnino (Ambatovony Primary: 290 pupils and 8 teachers of which just 1 civil servant). Pupils from these four primary schools all aim to continue their studies at the Ankarinomby Secondary School.

The Ambohimahamasina municipality comprises 32 primary schools (22 state, 10 private), 7 of which are located in these 3 neighbourhoods, and the aim is to increase the rate of enrolment into secondary school.

Figure 16: Children outside the new school classrooms.

Figure 17: Visiting the school office.

Figure 18: From left to right: teachers' room, entrance corridor and head-teacher's office.

Figure 19: The head-teacher with the tool kit (above) and (below) views from his office windows.

Expenditure summary

Items	Budget (£)	Funds received (MGA)	Expenditure (£)	Difference with amount received (£)
Materials for the new school buildings (6 classrooms), School Office (2 rooms) Latrines/ urinal (5 compartments), Hand-washing unit & Borehole	22,928	98,577,343.83	95,723,730.00	2,853,613.83
Transport costs (building materials and furniture)	2,036	8,752,421.30	8,704,000.00	48,421.30
Labour costs	7,632	32,813,902.30	32,610,304.00	203,598.30
School furniture (not including transport costs)	1,690	7,268,092.54	6,950,000.00	318,092.54
Monitoring & evaluation costs	754	3,243,002.42	3,642,058.14	-399,055.72
Water supply (Borehole)	2,976	12,795,937.57	12,667,070.00	128,867.57
Administration/ overheads	2,806	12,062,573.72	11,865,920.72	196,653.00
Total	**40,822**	**175,513,273.66**	**172,163,082.86**	**3,350,190.80**

Figure 20: Students at Ankarinomby Secondary School.

Current situation

	Situation pre-project	Expected situation post-project	Real situation post-project
Number of existing parent-built classrooms	None (the 2 classrooms were destroyed by Cyclone Ava in 2018).	6 classrooms functional.	6 classrooms functional.
Number of classrooms currently borrowed	5 classrooms borrowed from the primary school	No need to borrow classrooms.	No need to borrow classrooms.
School office	Shared with the office for the Primary School.	One school office for the Secondary School; a room for the head-teacher and a room for teachers.	One school office for the Secondary School; a room for the head-teacher and a room for teachers.
WASH (Water – Sanitation – Hygiene)	Uses the Primary School latrines. Water is fetched from a spring, open to contamination.	A sanitation block of 5-compartment latrines and boys/girls urinals will be built, along with a hand-washing unit. A borehole installed with a hand-pump will be put in place nearby (below the school).	A sanitation block of 5-compartment latrines and boys/girls urinals, along with a hand-washing unit. A borehole installed with a hand-pump that serves the Secondary and Primary schools.

Figure 21: View of Ankarinomby Secondary School with Angavoa mountain-face behind.

Conclusion

This project to build the Ankarinomby Secondary School was a big success, with no major problems encountered throughout. The community and local leaders showed proof of solidarity and determination, making efforts to find solutions to any problems encountered. Everyone is very excited by the new school building which is well known as being the best in the area. Pupils and teachers are alike were delighted to start using their new school buildings as from the start of the new year in January 2019.

Thank-you the Eagle Foundation for funding this project!

Figure 22: Community members overjoyed at the completion of their new school.

Appendix 1: Photos showing the evolution of the building work

Members of the community preparing their contributions to the project.

The levelled land just before the start of building work.

Construction of one school building underway:

Building of the school office underway:

Snack-time for the building team.

Sign for Ankarinomby School (above), awareness-raising with pupils (below left).

Appendix 2: Photos showing the installation of the borehole.

The village elders made a blessing before the start of drilling.

Drilling using the rota jetting technology (adding polymer).

Preparation of the sand filter pack, which was placed in the open space surrounding the well casing.

Inserting the PVC well casing.

Borehole development using a rope-pump. This was alternated with use of the moto-pump.


Measuring the depth of the borehole (left) & beneficiaries carrying materials to site (right).



Building the surface structure: a concrete pedestal, sanitary apron, a soakaway ('sump') and a painted fence. The fence serves to prevent animals from entering the well area.

Installing the Canzee hand-pump on the borehole.

Handing over tools to the local maintenance technicians (above) & locking the pump when not in use (below).

The local maintenance technicians (above) & the drilling team (below).

Training of the water management committee.

Students washing feet near to the borehole, with yam field in the foreground.

Primary School pupils and teacher also delighted with the new clean drinking water source.

Appendix 3: Thank-you letter from the community & school

Ambohimahamasina, le 04 Février 2019

LES EQUIPES DE L'EDUCATION NATIONALE
AMBOHIMAHAMASINA

EAGLE FONDATION / FEED BACK
MADAGASCAR / NY TANINTSIKA

OBJET: LETTRE DE REMERCIEMENT

Madame,

Nous les PARENTS D'ELEVES DU CEG ANKARINOMBY, LE DIRECTEUR, LES ENSEIGNANTS, LE CHEF ZAP AMBOHIMAHAMASINA vous remercions lors de la construction de bâtiments scolaires avec impluvium et latrine de 5 compartiments avec pisoir.

De plus, nous remercions encore pour la construction du bureau de 2 salles avec matériaux dont 2 armoires, 20 chaises et 5 tables.

En outre, nous remercions aussi les différents matériaux pour les 6 salles de classe dont 96 tables bancs, 6 tables du maître, 6 chaises et 6 armoires fixes.

Enfin, nous remercions aussi de nous avoir donné les KITS complets de l'entretien.

Nous sommes vraiment satisfaits à notre collaboration, nous vous prions de bonne continuation à vos responsabilités et nous vous bénissons.

FRAM
Rabialahy André

Les Enseignants
RASOLONDRAIBE H-S Angelot
RANDRIAMAHOLOLONIAINA Henri Fidèle
RASOAMBARY Marie Noeline
ANDRIAMAHAFALY Jean Modeste.
RAZOHOTSY Jean Pierre

Le Directeur
RAZAFIMAHALAZA Daniel

Le Chef ZAP

Appendix 4: Thank-you letter from the district education authorities

REPOBLIKAN'I MADAGASIKARA

MINISTERE DE L'EDUCATION NATIONALE
ET DE L'ENSEIGNEMENT TECHNIQUE
ET PROFESSIONNEL

SECRETARIAT GENERAL

DIRECTION REGIONALE DE L'EDUCATION
NATIONALE ET DE L'ENSEIGNEMENT TECHNIQUE
ET PROFESSIONNEL
HAUTE MATSIATRA

CIRCONSCRIPTION SCOLAIRE AMBALAVAO

LE CHEF DE LA CIRCONSCRIPTION SCOLAIRE
D'AMBALAVAO

à

L'EAGLE FONDATION/FBM/NY TANINTSIKA

Objet : Lettre de remerciement

Dans le cadre de partenariat public et privée, je tiens à remercier chaleureusement au nom de Ministère de l'Education Nationale et de l'Enseignement Technique et Professionnel, l'EAGLE/FONDATION FBM/NY TANINTSIKA pour ses actions de bien faisant envie de réaliser la construction des nouveaux bâtiments scolaires dans le CEG Ankarinomby, ZAP Ambohimahamasina, CISCO Ambalavao.

Voici la récapitulation de dotation et de nouvelles salles de classes construits :

- 2 bâtiments de 3 salles de chaque
- 16 tables bancs/salle =96
- 1 table pour prof. + 1 chaise/salle
- Impluvium pour lave main avec 3 robinets
- 1 latrine à 5 compartiments avec pissoir (fille-garçon)
- 1 bureau de salles équipé de 2 armoires + 1 table de bureau + 3 tables + 20 chaises
- Un buffer avec outillage : (scie, tenaille, pince, marteau, tourne en vice, truelle)

Ensuite, cette nouvelle construction nous aide à résoudre les problèmes d'infrastructure dans la zone enclavée et aussi un moyen important pour encourager la population dans le monde rural d'insérer et de réinsérer 100% des enfants à l'école.

Pour terminer, je félicite particulièrement Le Responsable de l'ONG Ny Tanintsika pour ses efforts octroyés dans la réalisation des activités relatives au développement de l'éducation dans notre CISCO. Je souhaite également de bonne succès et de bonne continuation pour l'équipe de l'ONG Ny Tanintsika.

Vive la collaboration entre la CISCO et l'EAGLE FONDATION/FBM/NY TANINTSIKA.

Merci de votre considération.

CIRCONSCRIPTION SCOLAIRE AMBALAVAO

LE CHEF DE LA CIRCONSCRIPTION SCOLAIRE

RAMANANDRAIBE Jean Charles
Professeur Certifié

Appendix 5: Technical acceptance document for the borehole

PROCES VERBAL DE RECEPTION PROVISOIRE DES TRAVAUX

Projet de : Mise en place d'un forage FPMH

PV DE RECEPTION PROVISOIRE

Maître d'ouvrage : Commune

Financement : Eagle

Maitre d'ouvrage délégué :

Titulaire : ONG Ny Tanintsika

ETAIENT PRESENTS

- RABETSARAFI[illegible]oine
- 1er ADJOINT
- RALAIARIMANANA Pakelson
- [illegible] Venance
- RASABOTSILAHY Jean Baptiste
-
-

L'an deux mille dix huit, une commission composée des membres cités ci-dessus s'est rendue sur le site du Projet de mise en place d'un forage équipé d'une pompe Canzee F.P.M.H Energie Pompe Motrice Humaine en vue de procéder à la réception Technique provisoire des travaux dudit chantier.

Après la visite des travaux, la commission a constaté que les travaux ont été exécutés dans le délai contractuel et répondent dans l'ensemble des exigences du Marchés et sont conformément aux règles de l'art.

La réception provisoire des travaux a donc été prononcée à la date ci-dessus mentionnée.

Néanmoins, la commission a émis les réserves suivantes :

- Analyse de l'eau
-
-
-
-

Le titulaire est invité à exécuter les travaux nécessaires.

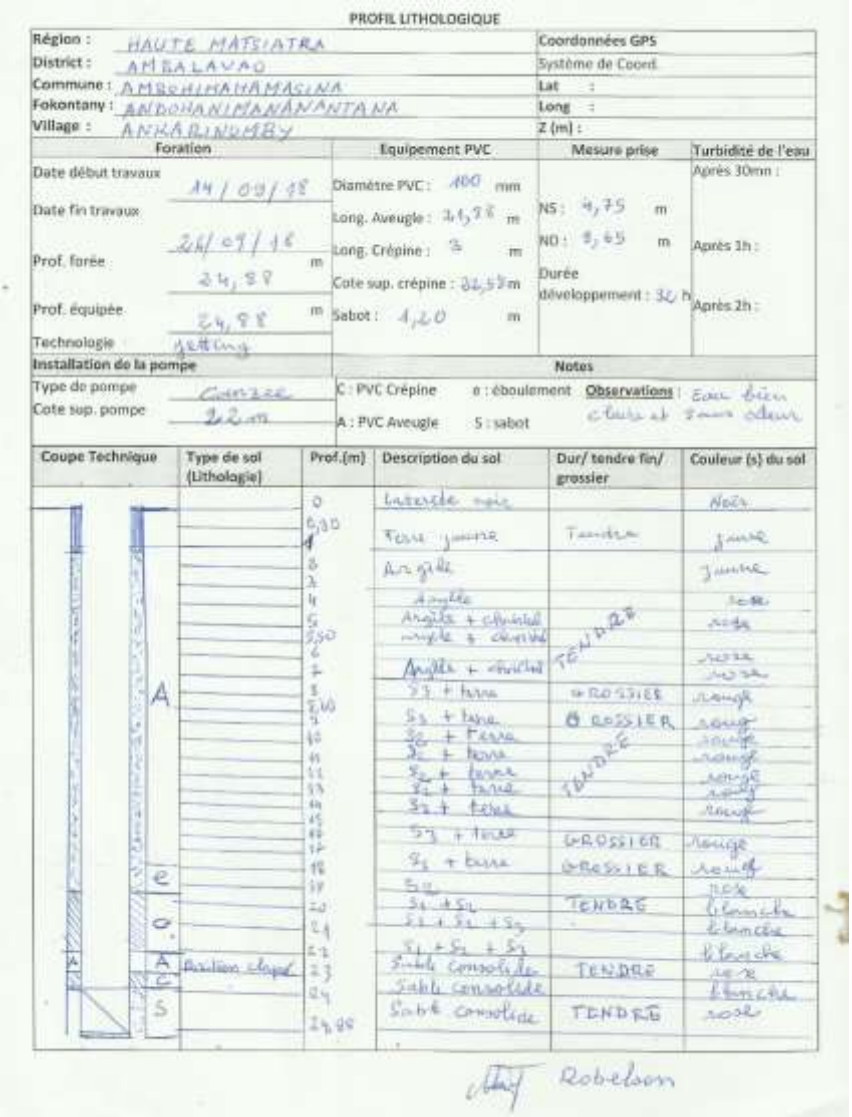
Ont signé

Pour le Maitre d'ouvrage | Pour Le Maître d'ouvrage délégué | Le Fokontany | Bénéficiaires

RABETSARAFI[illegible]oine
1er ADJOINT AU MAIRE

RALOHOISY Venance

Appendix 6 : Lithological Profile of the Borehole



PROFIL LITHOLOGIQUE

Région : HAUTE MATSIATRA — Coordonnées GPS
District : AMBALAVAO — Système de Coord.
Commune : AMBOHIMAHAMASINA — Lat :
Fokontany : ANDOHANIMANANANTANA — Long :
Village : ANKARINOMBY — Z (m) :

Foration	Equipement PVC	Mesure prise	Turbidité de l'eau
Date début travaux : 14/09/18	Diamètre PVC : 100 mm		Après 30mn :
Date fin travaux : 26/09/18	Long. Aveugle : 21,28 m	NS : 4,75 m	
Prof. forée : 24,98 m	Long. Crépine : 3 m	ND : 8,65 m	Après 1h :
Prof. équipée : 24,98 m	Cote sup. crépine : 22,53 m	Durée développement : 32 h	Après 2h :
Technologie : Jetting	Sabot : 1,20 m		

Installation de la pompe
Type de pompe : Cuvette
Cote sup. pompe : 22 m

Notes
C : PVC Crépine — e : éboulement — Observations : Eau bien claire et sans odeur
A : PVC Aveugle — S : sabot

Coupe Technique	Type de sol (Lithologie)	Prof.(m)	Description du sol	Dur/ tendre fin/ grossier	Couleur (s) du sol
A		0	Latérite noire		Noir
		0,50	Terre jaune	Tendre	jaune
		1	Argile		jaune
		2	Argile		noir
		3	Argile + sable	TENDRE	noir
		4	Argile + sable		noir
		5	S3 + terre	GROSSIER	rouge
		5,50	S3 + terre	GROSSIER	rouge
		6	S2 + terre	TENDRE	rouge
		7	S2 + terre		rouge
		8	S2 + terre		rouge
		9	S3 + terre	GROSSIER	rouge
		10	S3 + terre	GROSSIER	rouge
		11	S1		noir
		12	S1 + S2	TENDRE	blanche
		13	S1 + S2 + S3		blanche
		14	Sable consolidé	TENDRE	rose
		15	Sable consolidé		blanche
		16	Sable consolidé	TENDRE	rose
		24,98			

Robelson

Soil samples taken during drilling