資料

１．調査団員・氏名

(1) 第１次現地調査時（2019 年 2 月 15 日～2019 年 3 月 26 日）

	担　当	氏　名	所　属	派遣期間
(1)	総括／団長	梅永　哲	JICA 社会基盤・平和構築部 運輸交通・情報通信ｸﾞﾙｰﾌﾟ	3/ 4 - 3/13
(2)	協力企画	千田　華奈子	JICA 社会基盤・平和構築部 運輸交通・情報通信ｸﾞﾙｰﾌﾟ	3/ 4 - 3/10
(3)	業務主任／橋梁計画	森下　潤	(株)長大	2/15 - 3/13
(4)	副業務主任/橋梁設計	浜崎　大輔	(株)長大	2/15 - 3/13
(5)	自然条件調査/交通量調査	朴　俊豪	(株)長大	2/21 - 3/26
(6)	施工計画/調達事情/積算	内海　芳則	(株)長大	2/21 - 3/26
(7)	社会状況調査/環境社会配慮	山下　晃	(株)長大（環境社会基盤ｺﾝｻﾙﾀﾝﾄ）	2/24 - 3/13

(2) 第２次現地調査時［設計内容等の説明時］（2019 年 11 月）

	担　当	氏　名	所　属	派遣期間
(1)	業務主任／橋梁計画	森下　潤	(株)長大	11/12-11/22

２．調査行程

（1）第１次現地調査時（2019 年 2 月 15 日～2019 年 3 月 26 日）

		総括	企画調査員	業務主任/橋梁計画	副業務主任/橋梁設計	自然条件調査/交通量調査	施工計画/調達事情/積算	社会状況調査/環境社会配慮
		Team Leader	Planning Coodinator	Project Manager/ Bridge Planning	Co-Project Manager/ Bridge Design	Natural Condition Survey/ Traffic Survey	Constructino Planning/ Procurement Survey/ Cost Estimation	Environmental and Social Considerations
		Mr. Satoshi UMENAGA	Ms. Kanako SENDA	Mr. Jun MORISHITA	Mr. Daisuke HAMAZAKI	Mr. Joonho PARK	Mr. Yoshinori UCHIUMI	Mr. Akira YAMASHITA
14-Feb	Thu			Narita → Hong Kong → Johannesburg → Maputo Arrival : 10:40				
15-Feb	Fri			Meeting with ANE Meeting with JICA Mozambique Office				
16-Feb	Sat			Visit to Local Company (Env) Data Collection in ANE				
17-Feb	Sun			Data Collection				
18-Feb	Mon			Meeting with ANE Monitoring Dept. Visit to Local Company (Env/Geo)				
19-Feb	Tue			Data Collection in ANE Visit to Local Company (Geo)				
20-Feb	Wed			Cost Openning for Geological Survey ICR Explanation for ANE Visit to Local Company (Env)		Narita → Hong Kong → Johannesburg → Maputo Arrival : 10:40		
21-Feb	Thu			Deta Collection in ANE				
22-Feb	Fri			Visit to Local Company (Env) Cost Openning for Environmental Survey at JICA office Data Collection in ANE		Visit to INAM Visit to Weigh Bridge in Motola	Visit to Local Constractor	
23-Feb	Sat			Data Collection in ANE	Bridge Site Survey in Maputo			Narita → Hong Kong → Johannesburg → Maputo Arrival : 10:40
24-Feb	Sun			Documentation	Documentation	Documentation	Documentation	Document Arrangement
25-Feb	Mon			Meeting with ANE Monitoring Dept. Negotiation and Contract with Local Company (Env) Data Collection in ANE		Data Collection	Data Collection	Meeting with ANE Negotiation and Contract with Local Company (Env)
26-Feb	Tue			Meeting with ANE Monitoring Dept.	Flood Data Collection (Fews NET, INGC, CENOE)		Data Collection	Meeting with ANE Monitoring Dept.
27-Feb	Wed			Maputo → Pemba Arrival: 11:20				SEA Report Analisis
				Meeting with Traffic Survayer				
28-Feb	Thu			Site Survey Visit to Weigh Bridge in Sunate		Traffic Survey Rehearsal		Meeting with ANAC
1-Mar	Fri			Site Survey Traffic Survey				SEA Report Analisis / Meeting with Assistant
2-Mar	Sat			Site Survey Traffic Survey				SEA Report Analisis
3-Mar	Sun	Narita → Maputo		Pemba → Maputo Arrival: 16:30	Documentation	Documentation	Documentation	
4-Mar	Mon			Visit to Loca Company (Topo)	Overload Data Collection (ANE-Pemba) Visit to Weigh Bridge in Pemba		Data Collection	Drafting Meeting Memo with JICA
		Meeting with JICA Mozambique Office						Meeting with JICA
5-Mar	Tue	Maputo → Pemba Arrival: 11:35			River Data Collection (ARA-Norte)		Data Collection	Maputo → Pemba Arrival: 11:35
		Meeting with ANE-Pemba						Meeting with ANE-Pemba
6-Mar	Wed	Site Survey			River Data Collection (ARA-Norte)		Data Collection	Site Survey
7-Mar	Thu	Pemba → Maputo			Deta Collection		Data Collection	Reporting with Field Data
		Meeting with ANE						
8-Mar	Fri	Meeting with ANE			Deta Collection (ANE-Pemba)	Data Collection	Data Collection	Meeting with DPTADER
9-Mar	Sat	Documentation	Documentation	Documentation	Pemba → Maputo Arrival: 20:55			
10-Mar	Sun	Documentation		Documentation	Documentation	Documentation	Documentation	Documentation
11-Mar	Mon	MD Disicussion and Signing with ANE	Maputo → Narita	MD Disicussion and Signing with ANE		Data Collection (Visit INAM and CENOE)	Data Collection	MD Disicussion and Signing with ANE
				Team Meeting				
12-Mar	Tue	Report to EoJ		Documentation	Meeting with Env. Consultant	Data Collection (Visit INAM and CENOE)	Data Collection	Meeting with Env. Consultant
				Report to EoJ				Reporting
13-Mar	Wed	Maputo → Narita		Documentation	Meeting with UNESCO	Data Collection (Visit to INGC CENOE)	Data Collection	Meeting with UNESCO
14-Mar	Thu			Maputo → Johannesburg → Hong Kong → Haneda Departure: 16:05		Data Collection(ANE, CENOE)	Visit to Local Constractor	Maputo → Johannesburg → Hong Kong → Haneda Departure: 16:05
15-Mar	Fri					Data Collection(ANE)	Visit to Local Constractor	
16-Mar	Sat					Maputo → Pemba Arrival: 11:45		
17-Mar	Sun					Documentation		
18-Mar	Mon					Pemba → Maputo Arrival: 16:30	Meeting with ANE-Pemba	
19-Mar	Tue					Documentation	Site Inspection (Geo)	
20-Mar	Wed					Data Collection (ANE, CENOE)	Site Inspection (Topo, Geo)	
21-Mar	Thu					Data Collection (ANE, CENOE)	Site Inspection (Geo)	
22-Mar	Fri					Data Collection (ANE,Shipment Compny)	Site Inspection (Geo)	
23-Mar	Sat					Documentation	Site Inspection (Geo)	
24-Mar	Sun					Documentation	Documentation	
25-Mar	Mon					Data Collection	Site Inspection (Geo)	
26-Mar	Tue					Data Collection	Camp Yard (Phase-1)	
27-Mar	Wed					Maputo → Johannesburg → Hong Kong → Haneda Departure: 16:05	Camp Yard (Phase-1)	
28-Mar	Thu						Camp Yard (Phase-1)	
29-Mar	Fri						Camp Yard (Phase-1)	
30-Mar	Sat						Camp Yard (Phase-1)	
31-Mar	Sun						Pemba → Maputo Arrival: 16:30	
1-Apr	Mon						Maputo → Johannesburg → Hong Kong → Haneda	
2-Apr	Tue							
3-Apr	Wed							

(2) 第２次現地調査時　(2019 年 11 月)

		業務主任/橋梁計画
		Project Manager/ Bridge Planning
		Mr. Jun MORISHITA
12-Nov	Tue	成田→香港→南ア
13-Nov	Wed	南ア→マプト JICAモザンビーク事務所協議
14-Nov	Thu	ANE協議
15-Nov	Fri	ANE協議
16-Nov	Sat	資料整理
17-Nov	Sun	資料整理
18-Nov	Mon	ANE協議
19-Nov	Tue	T/N署名、JICAモザンビーク事務所へ報告
20-Nov	Wed	ANE協議
21-Nov	Thu	マプト→南ア→香港
22-Nov	Fri	香港→成田

３．関係者（面会者）リスト

表　関係者（面会者）リスト

Organization	Position / Occupation	Name
在モザンビーク日本大使館	特命全権大使	池田　敏雄
	参事官	三井　靖広
	一等書記官	庄司　義明
	一等書記官	花輪　晃二
	二等書記官	木原　弘一
	警備・領事担当(警備対策官)	宮前　靖明
	三等書記官	浦島　勝輝
	三等書記官	塩野　裕也
	開発協力班　経済協力調整員	大内　和美
JICA モザンビーク事務所	所長	遠藤　浩昭
	次長	青木　英剛
	次長	門脇　聡
	企画調査員	野中　博之
Administrasao Nacional De Estradas (ANE)	Director General	Mr. Cesar Macuacua
	Director of Projects	Mr. Cremildo Mucavele
	Civil Engineer	Mr. Evaristo Mussupai
	Civil Engineer	Ms. Violeta Ngale
	Civil Engineer	Ms. Esmirna Chambal
	Head of Monitoring Department	Ms. Emilia Tembe
	Officer of Monitoring Department	Mr. Virginia Albento Chiahungo
	Director of Administration and Finance	Roul Cossa
	Duputy Director of Contract Management	Mr. Antonio Devesse
Administrasao Nacional De Estradas Pemba (ANE)	Director General	Mr. Robate Tomás Jane
	Civil Engineer	Mr. Alfledo Cisanto António
	Civil Engineer	Mr. Cláudio Bento João

Institute Nacional de Meteoroloy (INAM)	Meteorologist of Research & Application Department	Mr. Gonzalves Junior
	Chef of Research Department	Mr. Isaias Gabriel A. Raiva, Msc
	Technician	Ms. Violeta Costantino Cambane
National Directorate of Water Department of Water Resources (Ministry of Public Works and Housing)	Hydro-Geologist	Mr. Egidio Lucas Govate
	Operational W. Resource Manager	Mr. Isac Filimone
National Institute of Disaster Management (INGC/CENOE)	Vice-director of INGC	Ms. Rita Almado
	Director of CENOE	Ms. Ana cristina
	Engineer	Mr. Cesar
Fews Net	Manager	Mr. Antonio Mavie
ARA-Norte	Director General	Mr. Eurico Felisberto Saize
	Technician	Mr. Cassiano Cosme Mpwachele
	Technician	Mr. Santos David Johane Gulia
Matola Weigh Bridge (ANE-TRAC)	Boane LCC Admin Controller	Mr. Herminio Lipanga
	LCC Manager	Mr. Bachir Calia
UNESCO Mozambique Office	Country Director,	Ms Anabela Rodrigues
National Administration of Conservation Areas (ANAC)	Director of Conservation and Community Development Service	Mr. Armindo Araman
Provincial Department for Land, Environmental and Rural Development (DPTADER)	Official of Environment Office	Mr. Mario Parwa
Road Fund	Chairman	Mr. Angelo Antonio Macuacua

４．討議議事録（M/D）

Minutes of Discussions
on the Preparatory Survey for the Project for
Construction of Bridges on N380 in Cabo Delgado Province (Phase 2)

In response to the request from the Government of the Republic of Mozambique (hereinafter referred to as "Mozambique"), Japan International Cooperation Agency (hereinafter referred to as "JICA") dispatched the Preparatory Survey Team for the Outline Design (hereinafter referred to as "the Team") of the Project for Construction of Bridges on N380 in Cabo Delgado Province (Phase 2) (hereinafter referred to as "the Project") to Mozambique. The Team held a series of discussions with the officials of the Government of Mozambique and conducted a field survey. In the course of the discussions, both sides have confirmed the main items described in the attached sheets.

Maputo, 11th March, 2019

Mr. Satoshi Umenaga	Mr. César Macuácua
Leader	Director General
Preparatory Survey Team	Administração Nacional de Estradas
Japan International Cooperation Agency	Republic of Mozambique
Japan	

ATTACHMENT

1. Objective of the Project

The objective of the Project is to secure smooth and safe connectivity at the whole of N380 by reconstructing four bridge, which are shown in Annex 1, hereby contributing to promotion of local economy.

2. Title of the Preparatory Survey

Both sides confirmed the title of the Preparatory Survey as "the Preparatory Survey for the Project for Construction of Bridges on N380 in Cabo Delgado Province (Phase 2)".

3. Project site

Both sides confirmed that the sites of the Project are located on N380 in Cabo Delgado Province, which is shown in Annex 1.

4. Responsible authority for the Project

Both sides confirmed the authorities responsible for the Project are as follows:

4-1. The Administração Nacional de Estradas (hereinafter referred to as "ANE") will be the executing agency for the Project (hereinafter referred to as "the Executing Agency"). The Executing Agency shall coordinate with all the relevant authorities to ensure smooth implementation of the Project and ensure that the undertakings for the Project shall be managed by relevant authorities properly and on time. The organization charts are shown in Annex 2.

4-2. The line ministry of the Executing Agency is the Ministério das Obras Públicas, Habitação e Recursos Hídricos. The Ministério das Obras Públicas, Habitação e Recursos Hídricos shall be responsible for supervising the Executing Agency on behalf of the Government of Mozambique.

5. Items requested by the Government of Mozambique

5-1. As a result of discussions, both sides confirmed that the items requested by the Government of Mozambique are as follows:

- Design and supervision
- Reconstruction of four Bridges (Muagamula, Muera I, Muera II, Mungoe) with approach roads

5-2. JICA will assess the feasibility of the above requested items through the survey and will report the findings to the Government of Japan. The final scope of the Project will be decided by the Government of Japan.

6. Procedures and Basic Principles of Japanese Grant

6-1. The Mozambique side agreed that the procedures and basic principles and basic principles of Japanese Grant as described in Annex 3 shall be applied to the Project.

As for the monitoring of the implementation of the Project, JICA requires Mozambique side to submit the Project Monitoring Report, the form of which is attached as Annex 4.

6-2. The Mozambique side agreed to take the necessary measures, as described in Annex 5, for smooth implementation of the Project. The contents of the Annex 5 will be elaborated and refined during the Preparatory Survey and be agreed in the mission dispatched for explanation of the Draft Preparatory Survey Report.

The contents of Annex 5 will be updated as the Preparatory Survey progresses, and eventually, will be used as an attachment to the Grant Agreement.

7. Schedule of the Survey

7-1. The Team will proceed with further survey in Mozambique until 26th March 2019.

7-2. JICA will prepare a draft Preparatory Survey Report in English and dispatch a mission to Mozambique in order to explain its contents around end of August 2019.

7-3. If the contents of the draft Preparatory Survey Report is accepted and the undertakings for the Project are fully agreed by the Mozambique side, JICA will finalize the Preparatory Survey Report and send it to Mozambique around November 2019.

7-4. The above schedule is tentative and subject to change.

8. Environmental and Social Considerations

8-1. The Mozambique side confirmed to give due environmental and social considerations before and during implementation, and after completion of the Project, in accordance with the JICA Guidelines for Environmental and Social Considerations (April, 2010).

https://www.jica.go.jp/english/our_work/social_environmental/guideline/pdf/gui

deline100326.pdf

8-2. The Project is categorized as "B" from the following considerations:
The project is not considered to be a large-scale road, is not located in a sensitive area, and has none of the sensitive characteristics under the JICA Guidelines for Environmental and Social Considerations (April, 2010), it is not likely to have a significant adverse impact on the environment. The guidelines can be downloaded at the following URL.
The Mozambique side confirmed to conduct the necessary procedures concerning the environmental assessment (including stakeholder meetings, Initial Environmental Examination (IEE) and information disclosure, etc.) and make IEE report of the Project. The IEE approval shall be received from the responsible authorities and submitted to JICA by end of June 2019. In addition, acquisition of environmental licence shall be done by end of July 2019.

9. Safety Measures
To avoid accidents on sites during the implementation of the Project, the Mozambique side agreed to cause the consultant and the contractor to enforce safety measures such as setting safety assurance to the site, providing information for security control to public, and deploying adequate security personnel, based on "The Guidance for the Management of Safety for Construction Works in Japanese ODA Projects" which has been published on JICA's URL below.
http://www.jica.go.jp/activities/schemes/oda_safety/ku57pq00001nz4eu-att/guidance_spa.pdf
The Team recommended to the Mozambique side to explain to the residents about the Project (necessity and significance, construction period, sites, impact etc.), so that consensus support can be obtained from them for the smooth implementation of the Project.

10. Other Relevant Issues
10-1. The Team explained a method of the preparatory survey based on an inception report submitted by the Team. The Mozambique side understood the contents and accepted the method.
10-2. The Mozambique side shall, at its own expense, provide the Team with the following items:
1) Necessary data, information and coordination with relevant agencies for the preparatory survey,

2) Answers to the questionnaire submitted by the Team,
3) Assignment of Counterpart personnel,
4) Security information in a timely manner,
5) Permissions of conducting field activities, such as topographic survey, geotechnical investigations, environmental and social considerations, a traffic volume survey, etc., by local consulting firsms entrusted by the Team and issuing identification cards for members of the said firms, and
6) Sourcing traffic safety through the field survey in cooperation with relevant authoritities (e.g. traffic police, etc.)

10-3. Misconduct

The team explained and the Mozambique side understood the preventive measures about fraudulent practices which would be stipulated in JICA's Grant Agreement.

10-4. Issuance of Work Permit and VISA

The Mozambique side agreed that ANE shall facilitate with concerned agencies including the Ministério do Trabalho, Emprego e Segurança Social and assist Japanese nationals/others from third countries who are involved in the Project to obtain VISA and work permit smoothly so that they can enter and stay in Mozambique without any hindrance at the Study and the Project implementation stage.

10-5. Proper Maintenance of Catipusse Bridge

Catipusse Baily Bridge will be used as the access road to the construction sites in the project. The Mozambique side shall conduct proper maintenance of the Catipusse Bridge.

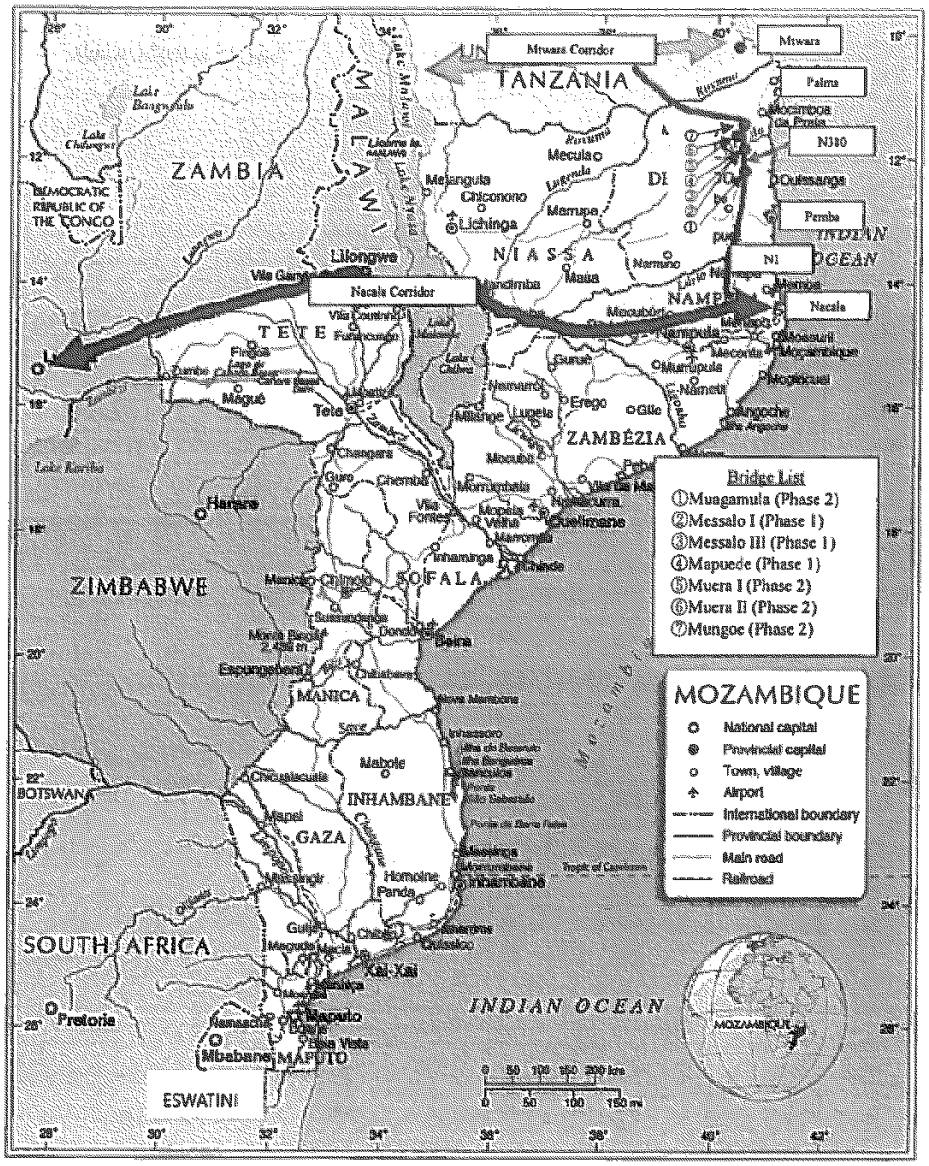
10-6. Maintenance of the Bridges

The Team explained the importance of maintenane of the bridges constructed by the Project considering the proper asset management impacts greatly on life-span of the facilities and its maintenance cost. The Mozambique side shall secure enough staff and budget necessary for approporiate maintenance of the bridges.

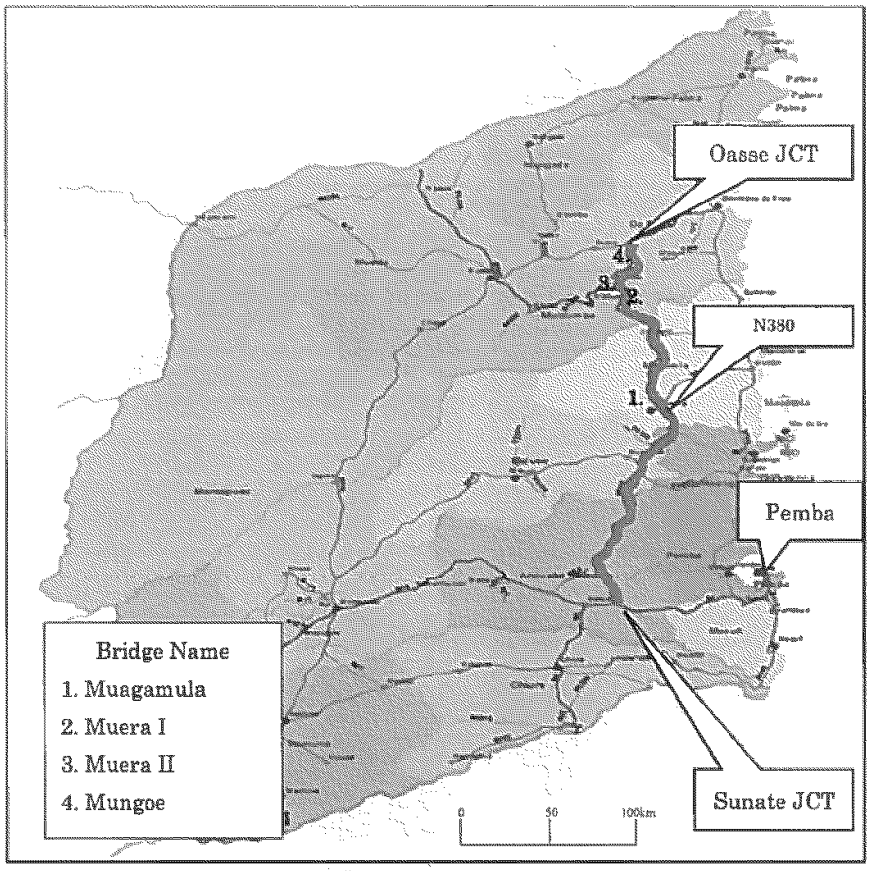
【Annex 1】 Project Site
【Annex 2】 Organization Chart
【Annex 3】 Japanese Grant (including Attachment 1, 2)
【Annex 4】 Project Monitoring Report (template)
【Annex 5】 Major Undertakings to be taken by the Government of Mozambique

Annex1

Project Site



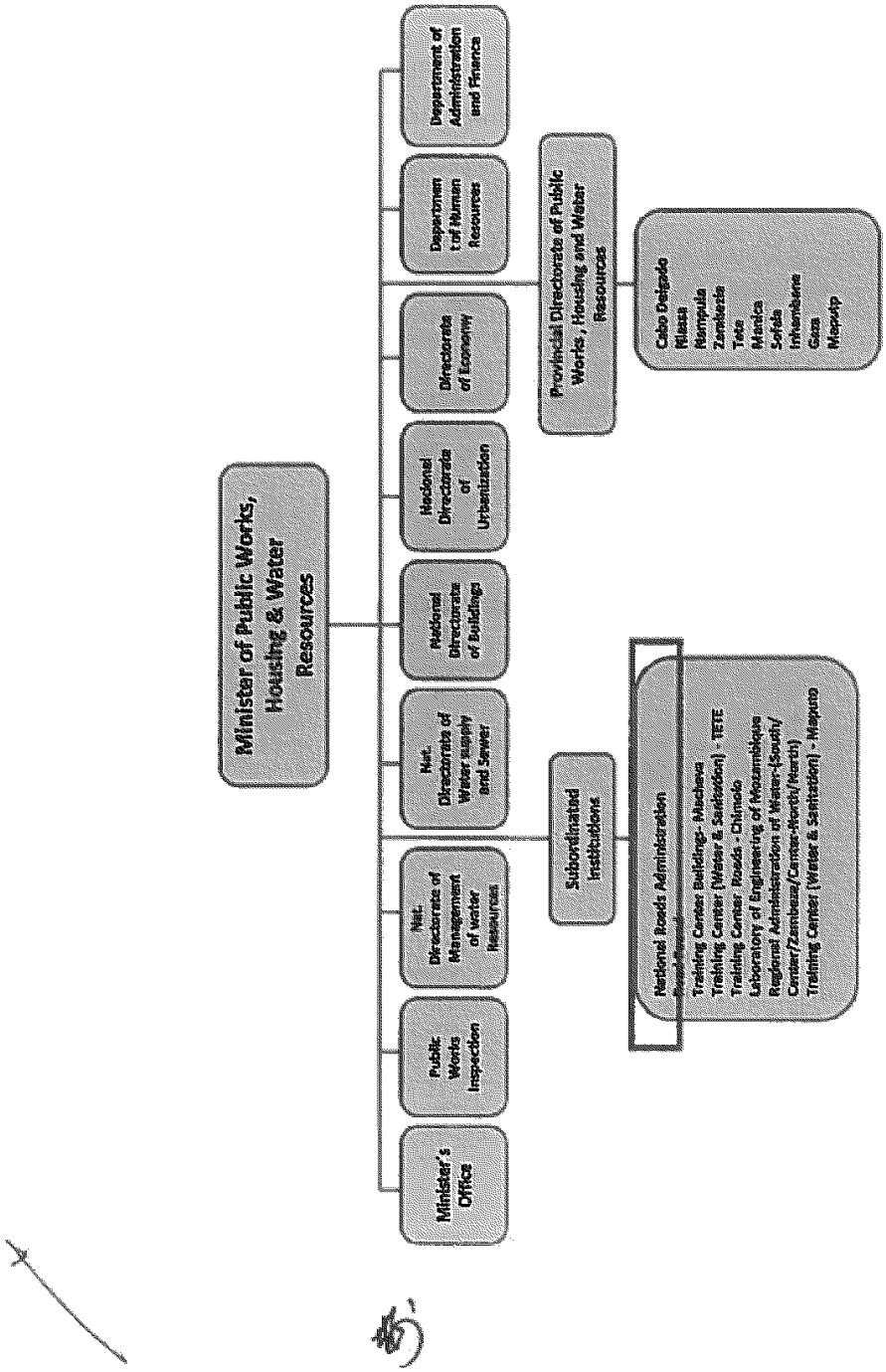
Location Map (Cabo Delgado Province)



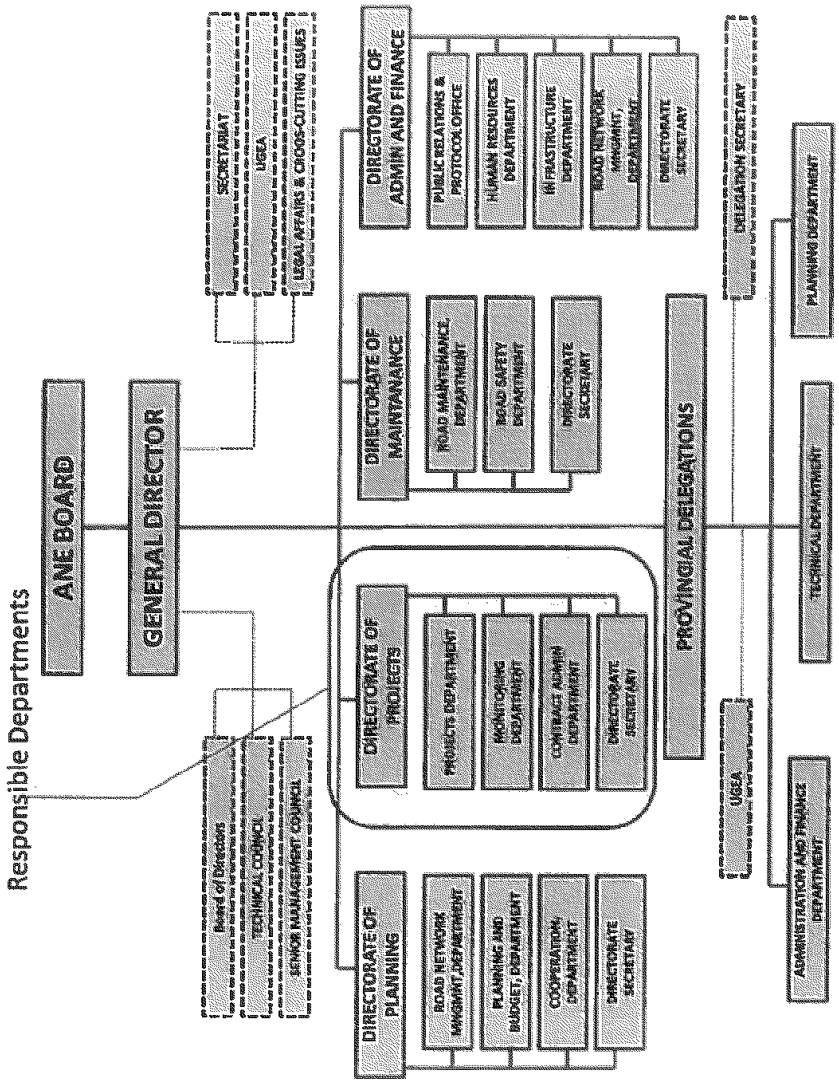
Annex 2

Organization Charts

1. Ministério das Obras Públicas, Habitação e Recursos Hídricos



2. Administração Nacional de Estradas　(National Roads Administration)



Annex 3

JAPANESE GRANT

The Japanese Grant is non-reimbursable fund provided to a recipient country (hereinafter referred to as "the Recipient") to purchase the products and/or services (engineering services and transportation of the products, etc.) for its economic and social development in accordance with the relevant laws and regulations of Japan. Followings are the basic features of the project grants operated by JICA (hereinafter referred to as "Project Grants").

1. Procedures of Project Grants

Project Grants are conducted through following procedures (See "PROCEDURES OF JAPANESE GRANT" for details):

(1) Preparation
- The Preparatory Survey (hereinafter referred to as "the Survey") conducted by JICA

(2) Appraisal
-Appraisal by the government of Japan (hereinafter referred to as "GOJ") and JICA, and Approval by the Japanese Cabinet

(3) Implementation

Exchange of Notes
-The Notes exchanged between the GOJ and the government of the Recipient

Grant Agreement (hereinafter referred to as "the G/A")
-Agreement concluded between JICA and the Recipient

Banking Arrangement (hereinafter referred to as "the B/A")
-Opening of bank account by the Recipient in a bank in Japan (hereinafter referred to as "the Bank") to receive the grant

Construction works/procurement
-Implementation of the project (hereinafter referred to as "the Project") on the basis of the G/A

(4) Ex-post Monitoring and Evaluation
-Monitoring and evaluation at post-implementation stage

2. Preparatory Survey

(1) Contents of the Survey

The aim of the Survey is to provide basic documents necessary for the appraisal of the the Project made by the GOJ and JICA. The contents of the Survey are as follows:

- Confirmation of the background, objectives, and benefits of the Project and also institutional capacity of relevant agencies of the Recipient necessary for the implementation of the Project.

- Evaluation of the feasibility of the Project to be implemented under the Japanese Grant from a technical, financial, social and economic point of view.
- Confirmation of items agreed between both parties concerning the basic concept of the Project.
- Preparation of an outline design of the Project.
- Estimation of costs of the Project.
- Confirmation of Environmental and Social Considerations

The contents of the original request by the Recipient are not necessarily approved in their initial form. The Outline Design of the Project is confirmed based on the guidelines of the Japanese Grant.

JICA requests the Recipient to take measures necessary to achieve its self-reliance in the implementation of the Project. Such measures must be guaranteed even though they may fall outside of the jurisdiction of the executing agency of the Project. Therefore, the contents of the Project are confirmed by all relevant organizations of the Recipient based on the Minutes of Discussions.

(2) Selection of Consultants

For smooth implementation of the Survey, JICA contracts with (a) consulting firm(s). JICA selects (a) firm(s) based on proposals submitted by interested firms.

(3) Result of the Survey

JICA reviews the report on the results of the Survey and recommends the GOJ to appraise the implementation of the Project after confirming the feasibility of the Project.

3. Basic Principles of Project Grants

(1) Implementation Stage

1) The E/N and the G/A

After the Project is approved by the Cabinet of Japan, the Exchange of Notes (hereinafter referred to as "the E/N") will be singed between the GOJ and the Government of the Recipient to make a pledge for assistance, which is followed by the conclusion of the G/A between JICA and the Recipient to define the necessary articles, in accordance with the E/N, to implement the Project, such as conditions of disbursement, responsibilities of the Recipient, and procurement conditions. The terms and conditions generally applicable to the Japanese Grant are stipulated in the "General Terms and Conditions for Japanese Grant (January 2016)."

2) Banking Arrangements (B/A) (See "Financial Flow of Japanese Grant (A/P Type)" for details)

a) The Recipient shall open an account or shall cause its designated authority to open an account under the name of the Recipient in the Bank, in principle. JICA will disburse the Japanese Grant in Japanese yen for the Recipient to

cover the obligations incurred by the Recipient under the verified contracts.

b) The Japanese Grant will be disbursed when payment requests are submitted by the Bank to JICA under an Authorization to Pay (A/P) issued by the Recipient.

3) Procurement Procedure

The products and/or services necessary for the implementation of the Project shall be procured in accordance with JICA's procurement guidelines as stipulated in the G/A.

4) Selection of Consultants

In order to maintain technical consistency, the consulting firm(s) which conducted the Survey will be recommended by JICA to the Recipient to continue to work on the Project's implementation after the E/N and G/A.

5) Eligible source country

In using the Japanese Grant disbursed by JICA for the purchase of products and/or services, the eligible source countries of such products and/or services shall be Japan and/or the Recipient. The Japanese Grant may be used for the purchase of the products and/or services of a third country as eligible, if necessary, taking into account the quality, competitiveness and economic rationality of products and/or services necessary for achieving the objective of the Project. However, the prime contractors, namely, constructing and procurement firms, and the prime consulting firm, which enter into contracts with the Recipient, are limited to "Japanese nationals", in principle.

6) Contracts and Concurrence by JICA

The Recipient will conclude contracts denominated in Japanese yen with Japanese nationals. Those contracts shall be concurred by JICA in order to be verified as eligible for using the Japanese Grant.

7) Monitoring

The Recipient is required to take their initiative to carefully monitor the progress of the Project in order to ensure its smooth implementation as part of their responsibility in the G/A, and to regularly report to JICA about its status by using the Project Monitoring Report (PMR).

8) Safety Measures

The Recipient must ensure that the safety is highly observed during the implementation of the Project.

9) Construction Quality Control Meeting

Construction Quality Control Meeting (hereinafter referred to as the "Meeting") will be held for quality assurance and smooth implementation of the Works at each stage of the Works. The member of the Meeting will be composed by the Recipient (or executing agency), the Consultant, the Contractor and JICA. The functions of the Meeting are as followings:

a) Sharing information on the objective, concept and conditions of design from the Contractor, before start of construction.

b) Discussing the issues affecting the Works such as modification of the design, test, inspection, safety control and the Client's obligation, during of construction.

(2) Ex-post Monitoring and Evaluation Stage

1) After the project completion, JICA will continue to keep in close contact with the Recipient in order to monitor that the outputs of the Project is used and maintained properly to attain its expected outcomes.

2) In principle, JICA will conduct ex-post evaluation of the Project after three years from the completion. It is required for the Recipient to furnish any necessary information as JICA may reasonably request.

(3) Others

1) Environmental and Social Considerations

The Recipient shall carefully consider environmental and social impacts by the Project and must comply with the environmental regulations of the Recipient and JICA Guidelines for Environmental and Social Considerations (April, 2010).

2) Major undertakings to be taken by the Government of the Recipient

For the smooth and proper implementation of the Project, the Recipient is required to undertake necessary measures including land acquisition, and bear an advising commission of the A/P and payment commissions paid to the Bank as agreed with the GOJ and/or JICA. The Government of the Recipient shall ensure that customs duties, internal taxes and other fiscal levies which may be imposed in the Recipient with respect to the purchase of the Products and/or the Services be exempted or be borne by its designated authority without using the Grant and its accrued interest, since the grant fund comes from the Japanese taxpayers.

3) Proper Use

The Recipient is required to maintain and use properly and effectively the products and/or services under the Project (including the facilities constructed and the equipment purchased), to assign staff necessary for this operation and maintenance and to bear all the expenses other than those covered by the Japanese Grant.

4) Export and Re-export

The products purchased under the Japanese Grant should not be exported or re-exported from the Recipient.

Attachment I

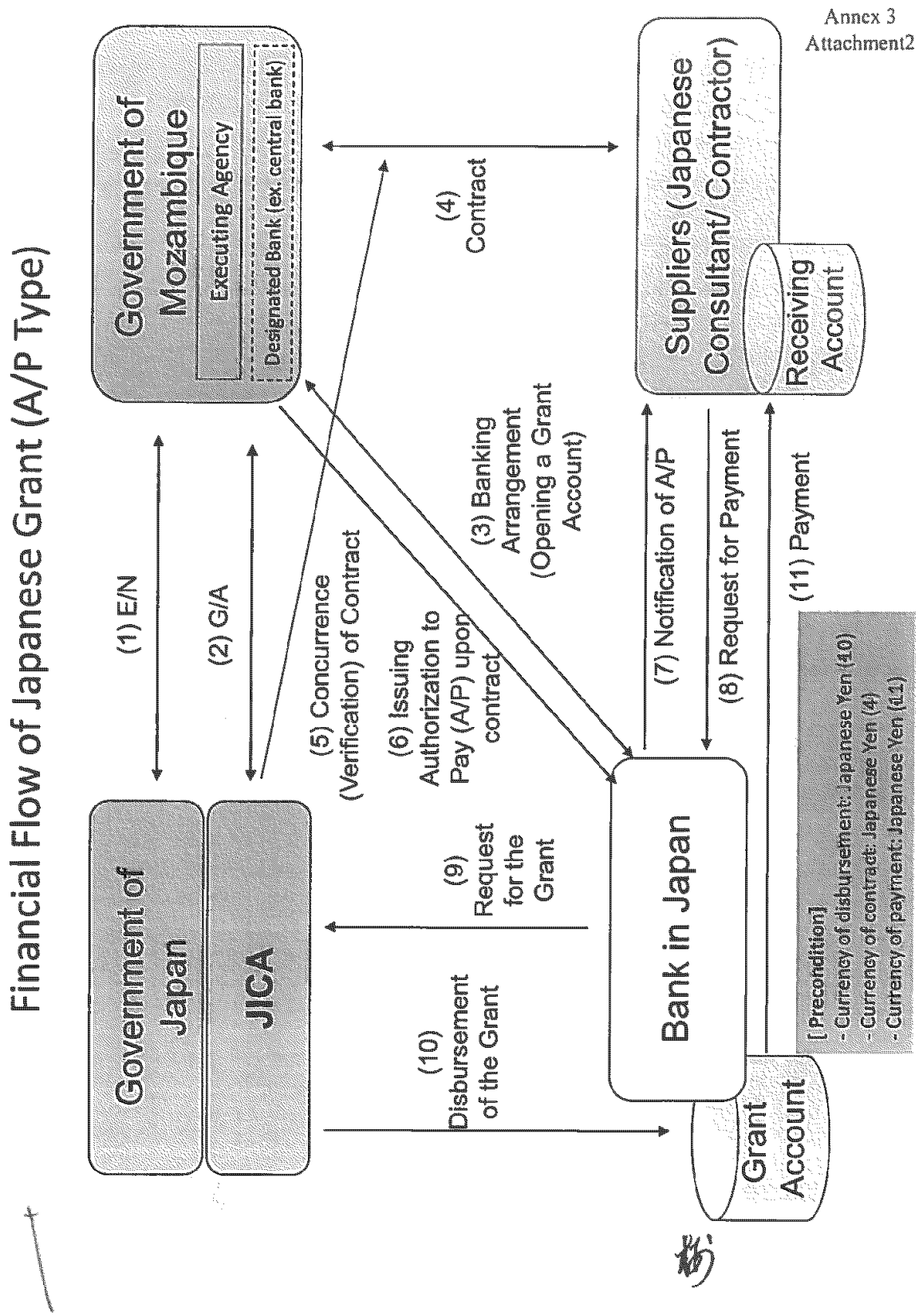
PROCEDURES OF JAPANESE GRANT

Stage	Procedures	Remarks	Recipient Government	Japanese Government	JICA	Consultants	Contractors	Agent Bank
Official Request	Request for grants through diplomatic channel	Request shall be submitted before appraisal stage.	x	x				
1. Preparation	(1) Preparatory Survey Preparation of outline design and cost estimate		x		x	x		
2. Appraisal	(2)Preparatory Survey Explanation of draft outline design, including cost estimate, undertakings, etc.		x		x	x		
	(3)Agreement on conditions for implementation	Conditions will be explained with the draft notes (E/N) and Grant Agreement (G/A) which will be signed before approval by Japanese government.	x	x (E/N)	x (G/A)			
	(4) Approval by the Japanese cabinet			x				
3. Implementation	(5) Exchange of Notes (E/N)		x	x				
	(6) Signing of Grant Agreement (G/A)		x		x			
	(7) Banking Arrangement (B/A)	Need to be informed to JICA	x					x
	(8) Contracting with consultant and issuance of Authorization to Pay (A/P)	Concurrence by JICA is required	x			x		x
	(9) Detailed Design (D/D)		x			x		
	(10) Preparation of bidding documents	Concurrence by JICA is required	x			x		
	(11) Bidding	Concurrence by JICA is required	x			x	x	
	(12) Contracting with contractor/supplier and issuance of A/P	Concurrence by JICA is required	x				x	x
	(13) Construction works/procurement	Concurrence by JICA is required for major modification of design and amendment of contracts.	x			x	x	
	(14) Completion certificate		x			x	x	
4. Ex-post monitoring & evaluation	(15) Ex-post monitoring	To be implemented generally after 1, 3, 10 years of completion, subject to change	x		x			
	(16) Ex-post evaluation	To be implemented basically after 3 years of completion	x		x			

Notes:

1. Project Monitoring Report and Report for Project Completion shall be submitted to JICA as agreed in the G/A.

2. Concurrence by JICA is required for allocation of grant for remaining amount and/or contingencies as agreed in the G/A.


Financial Flow of Japanese Grant (A/P Type)
Annex 3
Attachment2
Government of Japan
JICA
Government of Mozambique
Executing Agency
Designated Bank (ex. central bank)
Suppliers (Japanese Consultant/ Contractor)
Receiving Account
Bank in Japan
Grant Account
(1) E/N
(2) G/A
(3) Banking Arrangement (Opening a Grant Account)
(4) Contract
(5) Concurrence (Verification) of Contract
(6) Issuing Authorization to Pay (A/P) upon contract
(7) Notification of A/P
(8) Request for Payment
(9) Request for the Grant
(10) Disbursement of the Grant
(11) Payment
[Precondition]
- Currency of disbursement: Japanese Yen (10)
- Currency of contract: Japanese Yen (4)
- Currency of payment: Japanese Yen (11)

Annex 4
G/A NO. XXXXXXX
PMR prepared on DD/MM/YY

Project Monitoring Report
on
Project Name
Grant Agreement No. XXXXXXX
20XX, Month

Organizational Information

Signer of the G/A (Recipient)	Person in Charge	(Designation)
	Contacts	Address: Phone/FAX: Email:
Executing Agency	Person in Charge	(Designation)
	Contacts	Address: Phone/FAX: Email:
Line Ministry	Person in Charge	(Designation)
	Contacts	Address: Phone/FAX: Email:

General Information:

Project Title	
E/N	Signed date: Duration:
G/A	Signed date: Duration:
Source of Finance	Government of Japan: Not exceeding JPY _____ mil. Government of (_____): _____

G/A NO. XXXXXXX
PMR prepared on DD/MM/YY

1: Project Description

1-1 Project Objective

1-2 Project Rationale

- Higher-level objectives to which the project contributes (national/regional/sectoral policies and strategies)
- Situation of the target groups to which the project addresses

1-3 Indicators for measurement of "Effectiveness"

Quantitative indicators to measure the attainment of project objectives		
Indicators	Original (Yr)	Target (Yr)
Qualitative indicators to measure the attainment of project objectives		

2: Details of the Project

2-1 Location

Components	Original *(proposed in the outline design)*	Actual
1.		

2-2 Scope of the work

Components	Original* *(proposed in the outline design)*	Actual*
1.		

Reasons for modification of scope (if any).

(PMR)

G/A NO. XXXXXXX
PMR prepared on DD/MM/YY

2-3 Implementation Schedule

Items	Original		Actual
	(proposed in the outline design)	*(at the time of signing the Grant Agreement)*	

Reasons for any changes of the schedule, and their effects on the project (if any)

2-4 Obligations by the Recipient

2-4-1 Progress of Specific Obligations
See Attachment 2.

2-4-2 Activities
See Attachment 3.

2-4-3 Report on RD
See Attachment 11.

2-5 Project Cost

2-5-1 Cost borne by the Grant(Confidential until the Bidding)

Components			Cost (Million Yen)	
	Original *(proposed in the outline design)*	Actual *(in case of any modification)*	Original[1),2)] *(proposed in the outline design)*	Actual
	1.			
Total				

Note: 1) Date of estimation:
2) Exchange rate: 1 US Dollar = Yen

2-5-2 Cost borne by the Recipient

Components			Cost (1,000 Taka)	
	Original *(proposed in the outline design)*	Actual *(in case of any modification)*	Original[1),2)] *(proposed in the outline design)*	Actual
	1.			

G/A NO. XXXXXXX
PMR prepared on DD/MM/YY

Note: 1) Date of estimation:
2) Exchange rate: 1 US Dollar =

Reasons for the remarkable gaps between the original and actual cost, and the countermeasures (if any)

(PMR)

2-6 Executing Agency

- Organization's role, financial position, capacity, cost recovery etc,
- Organization Chart including the unit in charge of the implementation and number of employees.

Original *(at the time of outline design)* name: role: financial situation: institutional and organizational arrangement (organogram): human resources (number and ability of staff):
Actual *(PMR)*

2-7 Environmental and Social Impacts

- The results of environmental monitoring based on Attachment 5 (in accordance with Schedule 4 of the Grant Agreement).
- The results of social monitoring based on in Attachment 5 (in accordance with Schedule 4 of the Grant Agreement).
- Disclosed information related to results of environmental and social monitoring to local stakeholders (whenever applicable).

3: Operation and Maintenance (O&M)

3-1 Physical Arrangement

- Plan for O&M (number and skills of the staff in the responsible division or section, availability of manuals and guidelines, availability of spareparts, etc.)

Original *(at the time of outline design)*
Actual *(PMR)*

3-2 Budgetary Arrangement

- Required O&M cost and actual budget allocation for O&M

Original *(at the time of outline design)*

G/A NO. XXXXXXX
PMR prepared on DD/MM/YY

Actual *(PMR)*

4: Potential Risks and Mitigation Measures

- Potential risks which may affect the project implementation, attainment of objectives, sustainability
- Mitigation measures corresponding to the potential risks

Assessment of Potential Risks *(at the time of outline design)*

Potential Risks	Assessment
1. (Description of Risk)	Probability: High/Moderate/Low
	Impact: High/Moderate/Low
	Analysis of Probability and Impact:
	Mitigation Measures:
	Action required during the implementation stage:
	Contingency Plan (if applicable):
2. (Description of Risk)	Probability: High/Moderate/Low
	Impact: High/Moderate/Low
	Analysis of Probability and Impact:
	Mitigation Measures:
	Action required during the implementation stage:
	Contingency Plan (if applicable):
3. (Description of Risk)	Probability: High/Moderate/Low
	Impact: High/Moderate/Low
	Analysis of Probability and Impact:
	Mitigation Measures:
	Action required during the implementation stage:

G/A NO. XXXXXXX
PMR prepared on DD/MM/YY

	Contingency Plan (if applicable):
Actual Situation and Countermeasures	
(PMR)	

5: Evaluation and Monitoring Plan (after the work completion)

5-1 Overall evaluation

Please describe your overall evaluation on the project.

5-2 Lessons Learnt and Recommendations

Please raise any lessons learned from the project experience, which might be valuable for the future assistance or similar type of projects, as well as any recommendations, which might be beneficial for better realization of the project effect, impact and assurance of sustainability.

5-3 Monitoring Plan of the Indicators for Post-Evaluation

Please describe monitoring methods, section(s)/department(s) in charge of monitoring, frequency, the term to monitor the indicators stipulated in 1-3.

G/A NO. XXXXXXX
PMR prepared on DD/MM/YY

Attachment

1. Project Location Map
2. Specific obligations of the Recipient which will not be funded with the Grant
3. Monthly Report submitted by the Consultant

Appendix - Photocopy of Contractor's Progress Report (if any)
- Consultant Member List
- Contractor's Main Staff List

4. Check list for the Contract (including Record of Amendment of the Contract/Agreement and Schedule of Payment)
5. Environmental Monitoring Form / Social Monitoring Form
6. Monitoring sheet on price of specified materials (Quarterly)
7. Report on Proportion of Procurement (Recipient Country, Japan and Third Countries) (PMR (final)only)
8. Pictures (by JPEG style by CD-R) (PMR (final)only)
9. Equipment List (PMR (final)only)
10. Drawing (PMR (final)only)
11. Report on RD (After project)

7

Attachment 6

Monitoring sheet on price of specified materials

1. Initial Conditions (Confirmed)

	Items of Specified Materials	Initial Volume A	Initial Unit Price (¥) B	Initial total Price C=A×B	1% of Contract Price D	Condition of payment	
						Price (Decreased) E=C−D	Price (Increased) F=C+D
1	Item 1	●●t	●	●	●	●	●
2	Item 2	●●t	●	●	●		
3	Item 3						
4	Item 4						
5	Item 5						

2. Monitoring of the Unit Price of Specified Materials

(1) Method of Monitoring : ●●

(2) Result of the Monitoring Survey on Unit Price for each specified materials

	Items of Specified Materials	1st ●month, 2015	2nd ●month, 2015	3rd ●month, 2015	4th	5th	6th
1	Item 1						
2	Item 2						
3	Item 3						
4	Item 4						
5	Item 5						

(3) Summary of Discussion with Contractor (if necessary)

Attachment 7

Report on Proportion of Procurement (Recipient Country, Japan and Third Countries)
(Actual Expenditure by Construction and Equipment each)

	Domestic Procurement (Recipient Country) A	Foreign Procurement (Japan) B	Foreign Procurement (Third Countries) C	Total D
Construction Cost	(A/D%)	(B/D%)	(C/D%)	
Direct Construction Cost	(A/D%)	(B/D%)	(C/D%)	
others	(A/D%)	(B/D%)	(C/D%)	
Equipment Cost	(A/D%)	(B/D%)	(C/D%)	
Design and Supervision Cost	(A/D%)	(B/D%)	(C/D%)	
Total	(A/D%)	(B/D%)	(C/D%)	

Annex 5

Major Undertakings to be taken by the Government of Mozambique

1. Specific obligations of the Government of Mozambique which will not be funded with the Grant

(1) Before the Bidding

No.	Items	Deadline	In charge	Cost (US$)	Ref.
1	To approve IEE (Conditions of approval should be fulfilled, if any) and secure the necessary budget for implementation of countermeasures obligated in the IEE.	before signing of the G/A	ANE		
2	To open Bank Account (Banking Arrangement (B/A))	within 1 month after signing of the G/A	MEF		
3	To issue the Authorization to Pay (A/P) to a bank in Japan (the Agent Bank) for the payment to the Consultant	within 1 month after signing of the contract with the consultant	MEF		
4	To secure and clear the following lands 1) right of way for the Project 2) temporary construction yard and stock yard near the Project area 3) borrow pit and disposal site near the Project area	before notice of the bidding document(s)	ANE		
5	To submit Project Monitoring Report (with the result of Detailed Design (D/D)	before preparation of bidding document(s)	ANE		
6	To investigate and remove landmine	by end of August 2019	ANE		

Note : ANE- Administração Nacional de Estradas

MITESS- Ministério do Trabalho, Emprego e Segurança Social

MEF- Ministry of Economy and Finance

Annex 5

(2) During the Project Implementation

No.	Items	Deadline	In charge	Cost (US$)	Ref.
1	To issue A/P(s) to the Agent Bank in Japan for the payment(s) to the Supplier(s)	within 1 month after signing of the contract(s)	MEF		
2	To bear the following commissions to the Agent Bank in Japan for the banking services based upon the B/A	during the Project			
	1) Advising commission of A/P	within 1 month after signing of the contract(s)	MEF		
	2) Payment commission for A/P	every payment	MEF		
3	To ensure prompt unloading and customs clearance at the ports of disembarkation in recipient country and to assist the Supplier with internal transportation therein	during the Project	MEF/ANE		
4	To accord Japanese nationals and/or physical persons of third countries (main contractors, subcontractors, supplies and consultants) whose services may be required in connection with the supply of the products and the services such facilities as may be necessary for their entry into the country of the Recipient and stay therein for the performance of their work. The Recipient implements this project in accordance with Regulation of the Mechanisms and Procedures of Employment of foreign Workers stipulated in article 12 "Investment Projects" on the decree No. 37/2016, August 31, 2016. Working status for the Project shall be preceded as a contract for the investment Project approved by the Recipient Government stipulated in Article 12 on the degree No. 37/2016, August 31, 2016. The possible number of Japanese nationals and/or physical persons of third countries are 30 persons while the number of persons of Recipient country is 70. If the above number of Japanese nationals and/or physical persons of third countries exceed than the Project shall apply for Working Permit Authorization Regime stipulated in article 16, 17, 18 and 19 on the degree No. 37/2016, August 31, 2016.	during the Project	MITESS /ANE		

Annex 5

No.	Items	Deadline	In charge	Cost (US$)	Ref.
5	To ensure that customs duties, internal taxes and other fiscal levies which may be imposed in the country of the Recipient with respect to the purchase of the products and/or the services be exempted	during the Project	MEF/ANE/Road Fund		
6	To bear all the expenses, other than those covered by the Grant, necessary for the implementation of the Project	during the Project	ANE		
7	1) To submit Project Monitoring Report	every month	ANE		
	2) To submit Project Monitoring Report (Final)	within one month after signing of Certificate of Completion of the Work under the contract(s)	ANE		
8	To submit a report concerning completion of the Project	within six months after completion of the Project	ANE		
9	To provide facilities for the temporary road on the river of project sites				
	1) Bailey bridge The existing Bailey bridges at the project sites (Muagamula, Muera 1, Muera 2, Mungoe)	before start of the construction	ANE		
10	To secure the following lands - temporary construction yard and stock yard near the Project area - borrow pit and disposal site near the Project area	during the construction	ANE		
11	To take necessary measure for safety construction - traffic control - public notifications Securing safety for personnel involved in the Project	during the construction	ANE		
12	To implement Environmental Management Plan (EMP) and Environmental Monitoring Plan (EMoP)	during the construction	ANE		
13	To submit results of environmental monitoring to JICA, by using the monitoring form, on a quarterly basis as a part of Project Monitoring Report	during the construction	ANE		

Annex 5

(3) After the Project

No.	Items	Deadline	In charge	Cost	Ref.
1	To implement EMP and EMoP	for a period based on EMP and EMoP	ANE		
2	To submit results of environmental monitoring to JICA, by using the monitoring form, semi-annually - The period of environmental monitoring may be extended if any significant negative impacts on the environment are found. The extension of environmental monitoring will be decided based on the agreement between ANE and JICA.	for three years after the Project	ANE		
3	To maintain and use properly and effectively the facilities constructed and equipment provided under the Grant Aid 1) Allocation of maintenance cost 2) Operation and maintenance of structure 3) Routine check/Periodic inspection	After completion of the construction	ANE		

2. Other obligations of the Government of Mozambique funded with the Grant

No.	Items	Deadline	Amount (Million Japanese Yen)
1	To reconstruct bridges (Muagamula, Muera 1, Muera 2, Mungoe)		
2	To implement detailed design, bidding support and construction supervision (Consulting Service)		
3	Contingencies		
	Total		XXX

５．討議議事録（テクニカルノート）

(1) 第１回現地調査時

TECHNICAL NOTES

ON THE PREPARATORY SURVEY FOR THE PROJECT FOR CONSTRUCTION OF BRIDGES ON N380 IN CABO DELGADO PROVINCE (PHASE 2) IN THE REPUBLIC OF MOZAMBIQUE

The Preparatory Survey Team (hereinafter referred to as "the Team") has conducted a series of site surveys holding meetings with the National Road Administration (ANE) and the officials concerned of the Government of the Republic of Mozambique. ANE and the Team reviewed the survey results obtained by the middle of March and confirmed the main items of the Project for Construction of Bridges on N380 in Cabo Delgado Province (Phase 2) in the Republic of Mozambique (hereinafter referred to as "the Project) on the 12th of March 2019 as shown in the following.

Technical Notes

On the basis of discussions and field surveys done up to now, the Team and ANE have confirmed the following main items of the Project in accordance with Article 10, Other Relevant Issue of the Minutes of Discussions of the 11th March 2019.

1. Bridge Width

The width of bridges is 9.9 m with two traffic lanes including the sidewalks on both sides as shown in Figure 1.

2. Location of new bridges

New bridge locations are determined based on the alignment of approach roads and natural conditions as shown Table 1.

3. Bridge Length

The lengths of the bridges are determined considering the flood flow of each river and the construction cost. The lengths of bridges are shown in Table 1.

4. Standard of the bridge design

The Team shall design the new bridges based on the ANE's design standard, and supplement with Japanese design standards and relevant standard as below.

1) ANEs design standards, SATCC

2) Design specification of highway bridges issued by Japan Road Association (JRA)

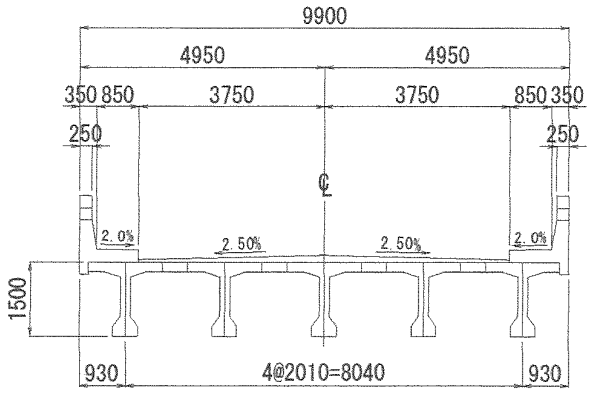


Figure 1. Bridge Width

Table 1. Bridge List

No.	Bridge Name	Length of Existing Bridge(m)	Planning of Bridge Length(m)	Span	Location of the New Bridge
1	Muagamula	33.5	35		Existing concrete bridge
2	Muera 1	44.5	50	2@25m	Existing bridge
3	Muera 2	20.0	25		Existing bridge
4	Mungoe	15.5	25		Existing bridge

If any special condition change is recognized necessary, some items may be revised accordingly with beforehand notice from the Team to ANE.

Mr. Jun Morishita
The Chief Consultant
Preparatory Survey Team
CHODAI Co., Ltd.

Mr. César Macuácua
Director General
National Roads Administration
Republic of Mozambique

(2) 第 2 回現地調査時

TECHNICAL NOTES

ON THE PREPARATORY SURVEY FOR THE PROJECT FOR CONSTRUCTION OF BRIDGES ON N380 IN CABO DELGADO PROVINCE (PHASE 2) IN THE REPUBLIC OF MOZAMBIQUE

The Preparatory Survey Team (hereinafter referred to as "the Team") has conducted a series of site surveys holding meetings with the National Road Administration (ANE) and the officials concerned of the Government of the Republic of Mozambique.

ANE and the Team reviewed the survey results obtained by the middle of November and confirmed the main items of the Project for Construction of Bridges on N380 in Cabo Delgado Province (Phase 2) in the Republic of Mozambique (hereinafter referred to as "the Project) on the 19th of November 2019 as shown in the following.

1. Design conditions and standard

The Team shall design the new bridges and approach roads based on the ANE's design standard, and supplement with Japanese design standards and relevant standard as below and shown in Table 1.

1) ANE's design standards
2) Southern Africa Transport and Communications Commission (SATCC)
3) Design specification of highway bridges issued by Japan Road Association (JRA) and others

The countermeasures of flood were designed to prevent the overflow and main girder damage on the bridge by flowing down the design discharge volume at the opening by the bridge as the ANE's design standards. Since the approach road connects the design road surface height of the new bridge and the existing road, overflow may occur in the existing road section. Therefore, the Team kindly request those roads maintenance management by ANE.

2. Bridge and road width

The width of bridges is 9.9 m with two traffic lanes including the sidewalks on both sides as shown in Figure 1. The width of roads is 10.6 m with two traffic lanes including the shoulders as shown in Figure 2.

3. Specifications of bridge and road

The lengths, span length and type of structures of each bridges were determined considering the flood flow of each river, site condition and the construction cost. The specifications of bridge and road are shown in Table 2.

4. Detour road during construction period

Detour road during construction period will be required due to the new bridges will be replaced on the same location of existing bridges. The detour road in river sections is planned as embankment structure with corrugated pipes for water flow or Bailey bridge. The bailey bridges are supposed to be provided by ANE, while those will be erected and removed by the contractor. The construction and maintenance of the detour road is carried out by the contractor, and the following matters require the assistance of ANE.

1) Notifying the police about road restrictions such as speed limit
2) Notification to citizens about the road restrictions during construction period
3) Responding to citizens in the event of a traffic accident or disaster

The plan of detour roads are shown in Figure 3, 4 and 5.

5. Timeline for the project implementation

The Team explained to the Mozambique side that the expected timeline for the project implementation is as attached in Table 3. However timing of cabinet approval is not yet fixed and dependent on security situation of project site.

6. Undertakings of the Project

Both sides confirmed the undertakings of the Project as described in Table 4, 5 and 6. With regard to exemption of customs duties, internal taxes and other fiscal levies as stipulated in No.3, No.5 and No.6 of Table 5, both sides confirmed that such customs duties, internal taxes and other fiscal levies, which shall be clarified in the bid documents by ANE during the implementation stage of the Project. The Mozambique side assured to take the necessary measures and coordination including allocation of the necessary budget which are preconditions of implementation of the Project. It is further agreed that the costs are indicative, i.e. at Outline Design level. More accurate costs will be calculated at the Detailed Design stage. Both sides also confirmed that the Table 4, 5 and 6 consider to use as an attachment of G/A. Both sides confirmed that ANE shall take necessary measures to ensure and maintain the security of the Project site and the persons related to the implementation of the Project, in cooperation with relevant authorities during the Project period. Such security measures shall reasonably reflect needs of the Consultant/the Contractor engaging in the Project, as shown in Table 5. Both sides agreed that in case the additional security cost would be necessary for the implementation of the Project, such cost shall be borne by the Recipient without using the Grant.

7. Environmental and Social Considerations

7-1 Environmental Checklist

The environmental and social considerations including major impacts and mitigation measures for the Project are summarized in the Environmental Checklist attached as Table 7. Both sides confirmed that in case of major modification of the content of the Environmental Checklist, the Mozambique side shall submit the modified version to JICA in a timely manner.

7-2 Environmental Issues

7-2-1 Environmental Impact Assessment (EIA)

Both sides confirmed the EIA report is not required for the Project in the country's legal system; however, a Simplified Environmental Impact Assessment (SEA) is necessary. Both sides confirmed that Mozambique side has obtained the environmental license on July 2019.

7-2-2 Environmental Management Plan and Environmental Monitoring Plan

Both sides confirmed Environmental Management Plan (EMP) and Environmental Monitoring Plan (EMoP) of the Project is as Figure 6, Figure 7 and Table 8, respectively. Both side agreed that environmental mitigation measures and monitoring shall be conducted based on the EMP and EMoP, which may be updated during the detailed design stage.

7-3 Environmental and Social Monitoring

7-3-1 Environmental Monitoring

Both sides agreed that the Mozambique side will submit results of environmental monitoring to JICA with PMR by using the monitoring form attached as Annex 1. The timing of submission of the monitoring form is described in Table 8.

8. Indicators of the Project Evaluation

Both sides agreed that key indicators for expected outcomes are as Table 9. The Mozambique side will be responsible for the achievement of agreed key indicators and shall monitor the progress based on those indicators.

Table 1. Bridge Road Design Conditions and Applied Standards

Item	Design Conditions	Applied Standards
Design discharge, return period	Return period based on hydrological analysis	- ANE's design standard
Pavement design	Design period	- ANE's design standard
Vertical clearance under bridge girders	According to the planed flow quantity	- River Management Facility Structure Ordinance (Japan River Association)
Live load	SATCC (NA, NB-36, NC) B live load	- SATCC - Specification for highway bridges (Japan Road Association)
Seismic load	Seismic coefficient = 0.1	- SATCC
Thermal load	+49° C～0°C	- SATCC

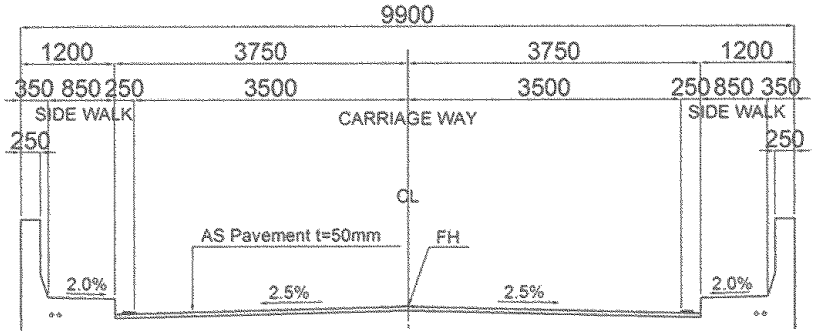


Figure 1. Bridge Width

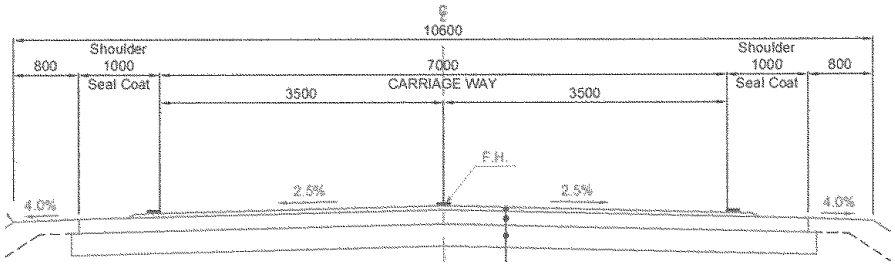


Figure 2. Road Width

Table 2. Specifications of bridges and roads

Item	Muagamula Bridge	Muera I Bridge	Muera II Bridge	Mungoe Bridge
Bridge location on N380	Macomia +12.8km	Macomia +85.7km	Macomia +85.9km	Macomia +99.2km
Bridge type	Concrete bridge			
Bridge length	35.0 m	50.0 m	25.0 m	

Span arrangement	1 span	2 span (25m+25m)	1 span	
Length of Bridge and Road	790 m	400 m	370 m	480 m
Superstructure type	Post-tension T girder			
Substructure type	2 inversed T type abutments	2 inversed T type abutments and a wall type pier	2 inversed T type abutments	
Foundation type	Cast-in-place concrete piles (CIP)			

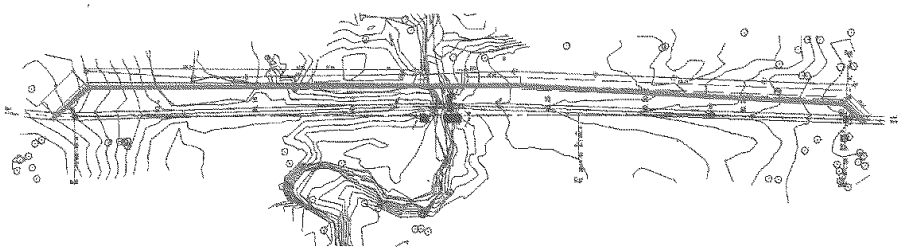


Figure 3. Plan of Detour Road of Muagamula Bridge

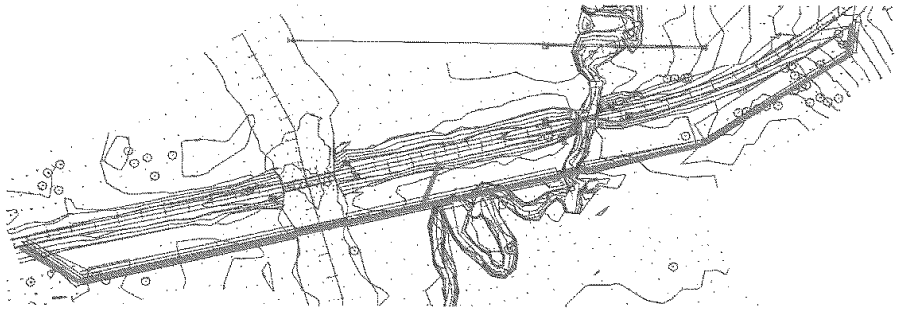


Figure 4. Plan of Detour Road of Muera I and Muera II Bridge

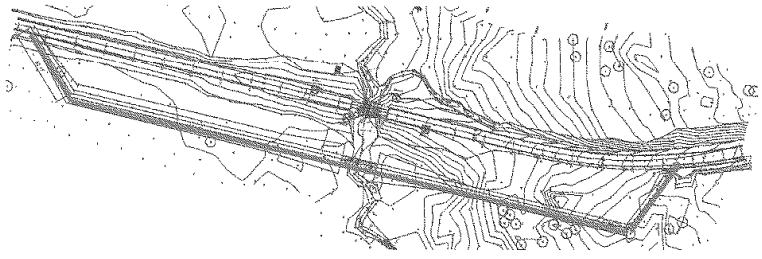


Figure 5. Plan of Detour Road of Mungoe Bridge

Table 3. Timeline for the Project Implementation

Project Implementation Schedule (tentative)

Item	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	….	34	35
Contract																			
Cabinet meeting	▽																		
Exchange of notes		▼																	
Grant agreement		▼																	
Consultant agreement				▼															
Detail design/ tender																			
Site survey			■	■				■											
Detail design			□	□	□	□	□												
Publication of tender									▽										
Distribution of document										▽									
Opening tender/ evaluation												▽							
Contract of construction												▽							
Contract verification													▽						
Commencement order														▽					
Construction (22 month)															■	■	■	■	■

Table 4. Major Undertakings to be taken by the Government of Mozambique (Before the Bidding)

No.	Items	Deadline	In charge	Cost (MZM)
1	To approve IEE (Conditions of approval should be fulfilled, if any) and secure the necessary budget for implementation of countermeasures obligated in the IEE.	End of July 2019	MITADER	2,000,000
2	To open Bank Account (Banking Arrangement (B/A))	within 1 month after signing of the G/A	MEF	2,217,000
3	To issue the Authorization to Pay (A/P) to a bank in Japan (the Agent Bank) for the payment to the Consultant	within 1 month after signing of the contract with the consultant	MEF	
4	To secure and clear the following lands 1) right of way for the Project 2) temporary construction yard and stock yard near the Project area 3) borrow pit and disposal site near the Project area	before notice of the bidding document(s)	ANE	
5	To submit Project Monitoring Report (with the result of Detailed Design (D/D)	before preparation of bidding document(s)	ANE	
6	To investigate and remove landmine	Consult with JICA after it is decided to start the Project.	ANE	1,300,000

Note : ANE- Administração Nacional de Estradas

MITADER- Ministério da Terra, Ambiente e Desenvolvimento Rural

MITESS- Ministério do Trabalho, Emprego e Segurança Social

MEF- Ministry of Economy and Finance

Table 5. Major Undertakings to be taken by the Government of Mozambique (During the Project Implementation)

No.	Items	Deadline	In charge	Cost (MZM)
1	To issue A/P(s) to the Agent Bank in Japan for the payment(s) to the Supplier(s)	within 1 month after signing of the contract(s)	MEF	
2	To bear the following commissions to the Agent Bank in Japan for the banking services based upon the B/A	during the Project		
	1) Advising commission of A/P	within 1 month after signing of the contract(s)	MEF	3,000
	2) Payment commission for A/P	every payment	MEF	970,000
3	To ensure prompt unloading and customs clearance at the ports of disembarkation in recipient country and to assist the Supplier with internal transportation therein	during the Project	MEF/ ANE	
4	To accord Japanese nationals and/or physical persons of third countries (main contractors, subcontractors, supplies and consultants) whose services may be required in connection with the supply of the products and the services such facilities as may be necessary for their entry into the country of the Recipient and stay therein for the performance of their work. The Recipient implements this project in accordance with Regulation of the Mechanisms and Procedures of Employment of foreign Workers stipulated in article 12 "Investment Projects" on the decree No. 37/2016, August 31, 2016. Working status for the Project shall be preceded as a contract for the investment Project approved by the Recipient Government stipulated in Article 12 on the degree No. 37/2016, August 31, 2016. The possible number of Japanese nationals and/or physical persons of third countries are 30 persons while the number of persons of Recipient country is 70. If the above number of Japanese nationals and/or physical persons of third countries exceed than the Project shall apply for Working Permit Authorization Regime stipulated in article 16, 17, 18 and 19 on the degree No. 37/2016, August 31, 2016.	during the Project	MITESS /ANE	

No.	Items	Deadline	In charge	Cost (MZM)
5	To ensure that customs duties, internal taxes and other fiscal levies which may be imposed in the country of the Recipient with respect to the purchase of the products and/or the services be exempted	during the Project	ANE/Road Fund	6,360,000
6	To bear all the expenses, other than those covered by the Grant, necessary for the implementation of the Project	during the Project	ANE	
7	1) To submit Project Monitoring Report	every month	ANE	
	2) To submit Project Monitoring Report (Final)	within one month after signing of Certificate of Completion of the Work under the contract(s)	ANE	
8	To submit a report concerning completion of the Project	within six months after completion of the Project	ANE	
9	To provide facilities for the temporary road on the river of project sites			
	1) Bailey bridge The existing Bailey bridges at the project sites (Muagamula, Muera 1, Muera 2, Mungoe)	before start of the construction	ANE	
10	To secure the following lands - temporary construction yard and stock yard near the Project area - borrow pit and disposal site near the Project area	during the construction	ANE	
11	To take necessary measure for safety construction - traffic control - public notifications Securing safety for personnel involved in the Project	during the construction	ANE	
12	To implement Environmental Management Plan (EMP) and Environmental Monitoring Plan (EMoP)	during the construction	ANE	
13	To submit results of environmental monitoring to JICA, by using the monitoring form, on a quarterly basis as a part of Project Monitoring Report	during the construction	ANE	

Table 6. After the Project of Major Undertakings to be taken by the Government of Mozambique

No.	Items	Deadline	In charge	Cost (MZM)
1	To implement EMP and EMoP	for a period based on EMP and EMoP	ANE	-
2	To submit results of environmental monitoring to JICA, by using the monitoring form, semi-annually - The period of environmental monitoring may be extended if any significant negative impacts on the environment are found. The extension of environmental monitoring will be decided based on the agreement between ANE and JICA.	for three years after the Project	ANE	-
3	To maintain and use properly and effectively the facilities constructed and equipment provided under the Grant Aid 1) Allocation of maintenance cost 2) Operation and maintenance of structure 3) Routine check/Periodic inspection	After completion of the construction	ANE	4,624,000 / year

Table 7. Environmental Check List

Environmental Check List: The Project for Construction of Bridges on N380, Mozambique

Category	Environmetal Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
1 Permits and Explanation	(1) EIA and Environmental Permits	(a) Have EIA reports been already prepared in official process? (b) Have EIA reports been approved by authorities of the host country's government? (c) Have EIA reports been unconditionally approved? If conditions are imposed on the approval of EIA reports, are the conditions satisfied? (d) In addition to the above approvals, have other required environmental permits been obtained from the appropriate regulatory authorities of the host country's government?	(a) Y (b) Y (c) Y (d) Y	(a) SEA (Simplified Environmental Assessment) reports have been prepared in line with official process. (b) SEA reports have been approved by an official authority (Provincial Directorate of Lands, Environment and Rural, DEPTADER) in Cabo Delgado Province) in June, 2019 (c) SEA reports have been approved without conditions (d) Nothing in particular, and all the required environmental permits have been obtained
	(2) Explanation to the Local Stakeholders	a) Have contents of the project and the potential impacts been adequately explained to the Local stakeholders based on appropriate procedures, including information disclosure? Is understanding obtained from the Local stakeholders? (b) Have the comment from the stakeholders (such as local residents) been reflected to the project design?	(a) Y (b) Y	(a) Stakeholder meetings for information disclosure have been held at each bridge site by National Road Administration (ANE). Local stakeholders principally understand the project outnline and its impact. (b) The comments from stakeholders have been recoreded in SEA reports and reflected to the project.
	(3) Examination of Alternatives	(a) Have alternative plans of the project been examined with social and environmental considerations?	(a) Y	(a) Several alternatives including "the case without project" have been examined with the traffic capacity and functions, construction cost, and social and environmental impact in the selection of the typical cross-section design and alignment of the new road section.
2 Pollution Control	(1) Air Quality	(a) Is there a possibility that air pollutants emitted from the project related sources, such as vehicles traffic will affect ambient air quality? Does ambient air quality comply with the country's air quality standards? Are any mitigating measures taken? (b) Where industrial areas already exist near the route, is there a possibility that the project will make air pollution worse?	(a) Y (b) N	(a) Vehicles traffic and construction vehicles may affect ambient air quality during both construction phase. For the cases where the air pollution exceeds standards, mitigation measures are considered. (b) There is no industrial areas already exist near the route.
	(2) Water Quality	(a) Is there a possibility that soil runoff from the bare lands resulting from earthmoving activities, such as cutting and filling will cause water quality degradation in downstream water areas? (b) Is there a possibility that surface runoff from roads will contaminate water sources, such as groundwater? (c) Do effluents from various facilities, such as parking areas/service areas comply with the country's effluent standards and ambient water quality standards? Is there a possibility that the effluents will cause areas not to comply with the country's ambient water quality standards?	(a) Y (b) N (c) N	(a) Turbid water will generate in the construction works. The turbid water will contaminate rivers and streams around the target road section temporarily. (b) Impact on water resources of runoff from road surface is unlikely to occur. (c) Development of parking or service areas which generate waste water in operation phase are not included in the project.
	(3) Wastes	(a) Are wastes generated from the project facilities, such as parking areas/service areas, properly treated and disposed of in accordance with the country's regulations?	(a) N	(a) Development of parking or service areas are not included in the project.
	(4) Noise and Vibration	a) Do noise and vibrations from the vehicle and train traffic comply with the country's standards?	(a) N	(a) Increasing of noise and vibration due to traffic at the bridge sites may unlikey occur.
3 Natural Environment	(1) Protected Areas	a) Is the project site located in protected areas designated by the country's laws or international treaties and conventions? Is there a possibility that the project will affect the protected areas?	(a) N	(a) There are no protected areas in the project site. However, Quirimbus National Park is located nearby project sites.
	(2) Ecosystem	(a) Does the project site encompass primeval forests, tropical rain forests, ecologically valuable habitats (e.g., coral reefs, mangroves, or tidal flats)? (b) Does the project site encompass the protected habitats of endangered species designated by the country's laws or international treaties and conventions? (c) If significant ecological impacts are anticipated, are adequate protection measures taken to reduce the impacts on the ecosystem? (d) Are adequate protection measures taken to prevent impacts, such as disruption of migration routes, habitat fragmentation, and traffic accident of wildlife and livestock? (e) Is there a possibility that installation of roads will cause impacts, such as destruction of forest, poaching, desertification, reduction in wetland areas, and disturbance of ecosystems due to introduction of exotic (nonnative invasive) species and pests? Are adequate measures for preventing such impacts considered? (f) In cases the project site is located at undeveloped areas, is there a possibility that the new development will result in extensive loss of natural environments?	(a) N (b) N (c) N (d) Y (e) N (f) N	(a) There are no ecological valuable habitats in the site. (b) The habitats of endangered species have not been identified in and around the site. (c) Significant ecological impact is unlikely to occur. (d) There is possibility of migration of wildlife crossing the bridge sites. (e) Because of improvement project of existing bridges, increase in destruction of forest and poaching is unlikely to occur. (f) Nothing in particular.
	(3) Hydrology	a) Is there a possibility that alteration of topographic features and installation of structures, such as tunnels will adversely affect surface water and groundwater flows?	(a) N	(a) Nothing in particular.
	(4) Topography and Geology	(a) Is there any soft ground on the route that may cause slope failures or landslides? Are adequate measures considered to prevent slope failures or landslides, where needed? (b) Is there a possibility that civil works, such as cutting and filling will cause slope failures or landslides? Are adequate measures considered to prevent slope failures or landslides? (c) Is there a possibility that soil runoff will result from cut and fill areas, waste soil disposal sites, and borrow sites? Are adequate measures taken to prevent soil runoff?	(a) N (b) N (c) N	(a)(b) Filling works are included in the construction. However, there are no soft ground to occur slope failures or landslides in and around the site. (c) Adequate filling works prevent accidental and sufficient soil runoff.

4 Social Environment	(1) Resettlement	(a) Is involuntary resettlement caused by project implementation? If involuntary resettlement is caused, are efforts made to minimize the impacts caused by the resettlement? (b) Is adequate explanation on compensation and resettlement assistance given to affected people prior to resettlement? (c) Is the resettlement plan, including compensation with full replacement costs, restoration of livelihoods and living standards developed based on socioeconomic studies on resettlement? (d) Are the compensations going to be paid prior to the resettlement? (e) Are the compensation policies prepared in document? (f) Does the resettlement plan pay particular attention to vulnerable groups or people, including women, children, the elderly, people below the poverty line, ethnic minorities, and indigenous peoples? (g) Are agreements with the affected people obtained prior to resettlement? (h) Is the organizational framework established to properly implement resettlement? Are the capacity and budget secured to implement the plan? (i) Are any plans developed to monitor the impacts of resettlement? (j) Is the grievance redress mechanism established?	(a) N (b) N (c) N (d) N (e) N (f) N (g) N (h) N (i) N (j) N	(a)-(j) No resettlement is expected by the project.
	(2) Living and Livelihood	(a) Where roads are newly installed, is there a possibility that the project will affect the existing means of transportation and the associated workers? Is there a possibility that the project will cause significant impacts, such as extensive alteration of existing land uses, changes in sources of livelihood, or unemployment? Are adequate measures considered for preventing these impacts? (b) Is there any possibility that the project will adversely affect the living conditions of the inhabitants other than the target population? Are adequate measures considered to reduce the impacts, if necessary? (c) Is there any possibility that diseases, including infectious diseases, such as HIV will be brought due to immigration of workers associated with the project? Are adequate considerations given to public health, if necessary? (d) Is there any possibility that the project will adversely affect road traffic in the surrounding areas (e.g., increase of traffic congestion and traffic accidents)? (e) Is there any possibility that roads will impede the movement of inhabitants? (f) Is there any possibility that structures associated with roads (such as bridges) will cause a sun shading and radio interference?	(a) N (b) N (c) Y (d) Y (e) N (f) N	(a) Nothing in particular. (b) Nothing in particular. (c) Infectious diseases might be brought due to immigration of workers associated with the project. (d) There are possibilities of increasing of traffic accident. (e) Nothing in particular. (f) Nothing in particular.
	(3) Heritage	a) Is there a possibility that the project will damage the local archeological, historical, cultural, and religious heritage? Are adequate measures considered to protect these sites in accordance with the country's laws?	(a) N	(a) Nothing in particular.
	(4) Landscape	(a) Is there a possibility that the project will adversely affect the local landscape? Are necessary measures taken?	(a) N	(a) Nothing in particular.
	(5) Ethnic Minorities and Indigenous Peoples	(a) Are considerations given to reduce impacts on the culture and lifestyle of ethnic minorities and indigenous peoples? (b) Are all of the rights of ethnic minorities and indigenous peoples in relation to land and resources to be respected?	(a) N (b) N	(a) Nothing in particular. (b) Nothing in particular.
	(6) Working Conditions	(a) Is the project proponent not violating any laws and ordinances associated with the working conditions of the country which the project proponent should observe in the project? (b) Are tangible safety considerations in place for individuals involved in the project, such as the installation of safety equipment which prevents industrial accidents, and management of hazardous materials? (c) Are intangible measures being planned and implemented for individuals involved in the project, such as the establishment of a safety and health program, and safety training (including traffic safety and public health) for workers etc.? (d) Are appropriate measures being taken to ensure that security guards involved in the project not to violate safety of other individuals involved, or local residents?	(a) Y (b) Y (c) Y (d) Y	(a) Working conditions during the construction phase shall be comply with both domestic legal framework and international standards. (b) Working conditions during the construction phase shall be comply with both domestic legal framework and international standards. (c) Working conditions during the construction phase shall be comply with both domestic legal framework and international standards. (d) Working conditions during the construction phase shall be comply with both domestic legal framework and international standards.
5 others	(1) Impacts during Construction	(a) Are adequate measures considered to reduce impacts during construction (e.g., noise, vibrations, turbid water, dust, exhaust gases, and wastes)? (b) If construction activities adversely affect the natural environment (ecosystem), are adequate measures considered to reduce impacts? (c) If construction activities adversely affect the social environment, are adequate measures considered to reduce impacts?	(a) Y (b) Y (c) Y	(a) The adequate mitigation measures and monitoring plans to reduce impacts of pollution during the construction are prepared. (b) The construction activities to cause serious impact on ecosystem are not included in the project. However, if observed, necessary measures are prepared based on protected areas' regulations. (c) If observed any serious impats on social environment, necessary measures are prepared.
	(2) Monitoring	(a) Does the proponent develop and implement monitoring program for the environmental items that are considered to have potential impacts? (b) What are the items, methods and frequencies of the monitoring program? (c) Does the proponent establish an adequate monitoring framework (organization, personnel, equipment, and adequate budget to sustain the monitoring framework)? (d) Are any regulatory requirements pertaining to the monitoring report system identified, such as the format and frequency of reports from the proponent to the regulatory authorities?	(a) Y (b) Y (c) Y (d) Y	(a) The monitoring plans mentioned in the SEA reports including monitoring sheet will be implemented during the construction and operation phase. (b)(c)(d) The monitoring plan referring to the items, methods, frequencies framework and report system is proposed in the SEA reports and monitoring sheets.
Note	Reference to Checklist of Other Sectors	(a) Where necessary, pertinent items described in the Roads, Railways and Forestry Projects checklist should also be checked (e.g., projects including large areas of deforestation). (b) Where necessary, pertinent items described in the Power Transmission and Distribution Lines checklist should also be checked (e.g., projects including installation of power transmission lines and/or electric istribution facilities).	(a) N (b) N	(a) Nothing in particular. (b) Nothing in particular.
	Note on Using Environmental Checklist	(a) If necessary, the impacts to transboundary or global issues should be confirmed, if necessary (e.g., the project includes factors that may cause problems, such as transboundary waste treatment, acid rain, destruction of the ozone layer, or global warming).	(a) N	(a) Impacts to transboundary or global environmental issues are unlikely to occur.

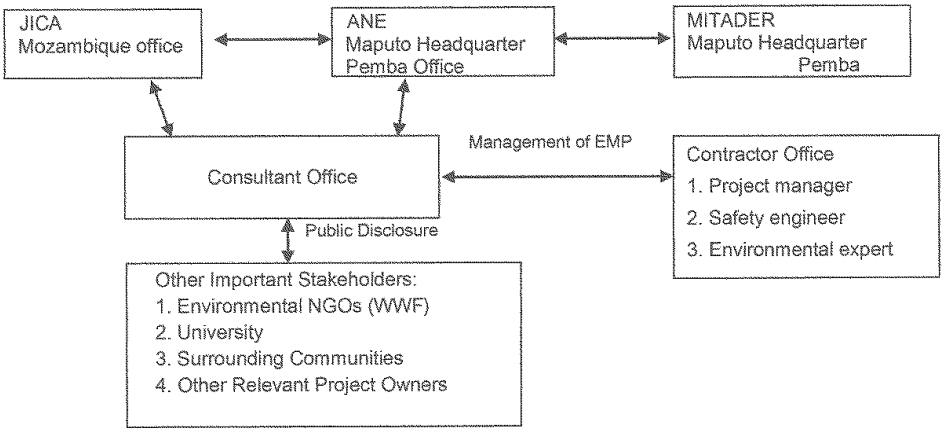


Figure 6. Organization system of Environmental Management Plan (EMP) (during works)

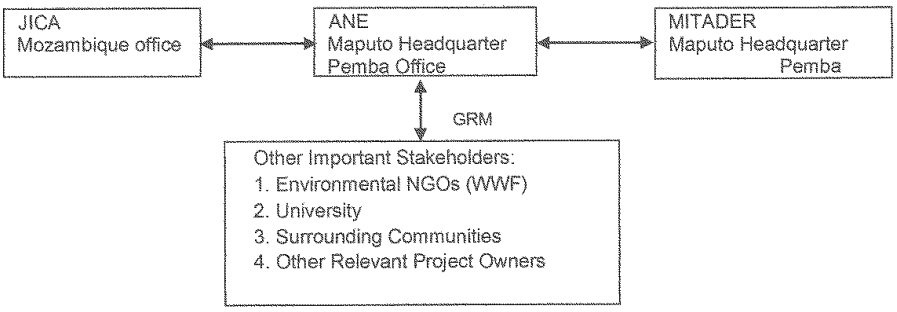


Figure 7. Organization system of Environmental Management Plan (EMP) (in service)

Table 8. Environmental Managment Plan (EMP)

Item	Monitoring	Location	Frequency	Responsible organization
During works				
Air pollution	SO_2, No_2, CO and Total Suspended Particles (TSP) by appropriate equipment and visual monitoring	Around the bridge sites	Monthly	Contractor
Water pollution	pH, turbidity, and erosion by appropriate equipment and/or visual monitoring	Upstream and downstream from the bridge	Monthly	Contractor
Waste	Record reviewing and visual monitoring for disposal method and water pollution	Around the bridge sites	Daily	Contractor
Soil pollution	Patrol (leaking oil from construction equipment or storage yard to ground)	Around the bridge sites	Daily or time of any changes	Contractor
Noise	Measure noise by equipment	Around the bridge sites	Daily or demand bases	Contractor
Protected Area	Confirm impact areas in the field, especially any change of construction	Around the bridge site	As needed	Contractor

	areas	(Muagamula Bridge only)		
Ecosystems	Monitoring if there is wild animal form Quirimbas National park. If roadkill on the bridge is observed, the incident shall be reported to relevant authorities, such as ANE, DEPTADER, etc. Any changes of flora including cutting tree is observed.	Around the bridge sites	Daily or as needed	Contractor
HIV/AIDS and other infections	Confirm the record of education program for labors and situation of infections.	Around the bridge sites	Every quarter or as needed	Contractor
Working Environment	Confirm the record of working environment and education and management on safety.	Around the bridge sites	Every day or month	Contractor
Accidents	Confirm the record of road safety and construction safety.	Around the bridge sites	At the beginning of construction and following every month	Contractor
In service				
Ecosystem	Monitor roadkill cases of large wild animals and regulate traffic or give education, if necessary.	Around the bridge sites	Time of accident or demand base	ANE
Accidents	Confirm and monitor the situation of traffic accident, and regulate traffic or give education, if necessary.	Around the bridge sites	Time of accident or demand base	ANE

Table 9. Quantitative Outputs of the Project Evaluation

Index	Initial Value (2019)	Target Value (3 years after completion)
Traffic volume (12 hours)	391	-
Travel time for heavy vehicles(Macomia-Oasse)	300 minutes	-
Passenger volume (paasenger/year) (12hour, 6:00-18:00)	496,000	-
freight flows (ton/year)	273,000	-

Mr. Jun Morishita
The Chief Consultant
Preparatory Survey Team
CHODAI Co., Ltd.

Mr. César Macuácua
Director General
National Roads Administration
Republic of Mozambique

ANNEX 1. Monitoring Form

Monitoring Form (A): Construction Phase

The latest results of the below monitoring items shall be submitted to JICA as part of Progress Report throughout the construction phase.

Name of the Project: The Project for Construction of Bridges on N380, Mozambique

1. Response/Actions to Comments and Guidance from Government Authorities and the Public

Monitoring Item	Monitoring Results during Report Period
Number and contents of formal comments made by the public	
Number and contents of responses from Government agencies	

2. Pollution

(1) Water Quality

Item*	Unit	Measured Value (Mean)	Measured Value (Max)	Country's Standards	Referred International Standards	Frequency
pH	-			6.5-8.5	6-9	At least every 1 months
COD	mg/L				125	At least every 1 months
Oil	Checking oil spillage from construction areas					At any time
If concern about contamination by visual monitoring, the following items will be implemented.						
TDS	mg/L			<500	-	At least every 1 months
OD	mg/L				4-5 (20°C)	At least every 1 months
BOD	mg/L				25	At least every 1 months
Phos.	mg/L				0.1	At least every 1 months
SS	mg/L				45	At least every 1 months
Coli.	MPN				Less than1100	At least every 1 months

* OD: Oxygen Demand, Coli.: TDS: Total Dissolved Solids, Total Coliforms, COD: Chemical Oxygen Demand, BOD: Biological Oxygen Demand, Phos.: Total Phosphorus, SS: Suspended Solid or Turbidity, Coli.: Coliform

(2) Air Quality

If there is concern about contamination by visual monitoring, the following items will be implemented.

Item*	Unit	Measured Value (Mean)	Measured Value (Max)	Country's Standards (No.67)	Referred International Standards (WHO)	Frequency
SO_2	$\mu g/m^3$			100 (24 hours)	125 (24 hours)	(1) Measurement: Monthly during the construction period or as needed, especially at the construction site of Muagamula Bridge where the baseline showed higher value than standards
NO_2	$\mu g/m^3$			190 (1 hour)	200 (1 hour)	
CO	$\mu g/m^3$			10,000 (8 hour in ave.)	-	
TSP	$\mu g/m^3$			150 (24hrs)	-	(1) Visual observation: Daily during the construction period (2) Measurement: Monthly during the construction period or as needed

* TSP: Total Suspended Particles

(3) Waste

Item	Unit	Measured Value (Mean)	Measured Value (Max)	Country's Standards	Referred International Standards	Frequency
Disposal Methods	Visual Observation					(1) Daily during the construction period
Water Pollution	Visual Observation / Measurement of major water quality elements, if any					(1) Daily during the construction period

(4) Soil Pollution

Monitoring Item	Method	Monitoring Results and Measures to be Taken	Frequency
Oil leaking	Visual Observation		Daily, or time of any changes

(5) Noise

Monitoring Item	Method	Monitoring Results and Measures to be Taken	Frequency
LAeq: Noise Level per 1 hour	Noise Measurement Equipment		Daily, or on demand base

3. Natural Environment

(1) Protected Area *This item is required only for the Muagamula Bridge Construction

Monitoring Item	Method	Monitoring Results and Measures to be Taken	Frequency
Protected Area (Construction border)	Visual Observation		Daily, or time of any changes

(2) Ecosystem

Monitoring Item	Method	Monitoring Results and Measures to be Taken	Frequency
Tree Cutting	Visual Observation		Daily, or time of any changes
Fauna and Flora, including road-kill	Visual Observation		Daily, or time of any changes

4. Social Environment and others

(1) HIV/AIDS

Monitoring Item	Method	Monitoring Results and Measures to be Taken	Frequency
Educational Activities	Number of events		Every quarter during construction period
Workers health condition	Observation and interview		If needed

(2) Working Environment

Monitoring Item	Method	Monitoring Results and Measures to be Taken	Frequency
Safety facilities and equipment	Visual Observation		Every day, especially during erection works
Safety management seminar	Visual Observation		Every month, especially during erection works

(3) Accidents

Monitoring Item	Method	Monitoring Results and Measures to be Taken	Frequency
Safety plan	Record of education at schools		At the beginning of construction and followed up
Medical facility	Visual Observation		At the beginning of construction and followed up
Signboards	Visual Observation		At the beginning of construction and followed up

(4) Remarks on other impacts
If unexpected impacts on social environment are expected beyond the original environmental management plan, such as temporal land use on private land for detours, contractor and/or consultant must report the situation immediately to ANE before relevant activities.

Monitoring Form (B): Operation Phase

The latest results of the below monitoring items shall be submitted to JICA on biannual or annual frequency for at least 5 years. If there is observed impacts beyond expectation, additional mitigation measures and/or extension of monitoring period shall be discussed.

Name of the Project: The Project for Construction of Bridges on N380, Mozambique

1. Response/Actions to Comments and Guidance from Government Authorities and the Public

Monitoring Item	Monitoring Results during Report Period
Number and contents of formal comments made by the public	
Number and contents of responses from Government agencies	

2. Pollution

Nothing in particular and demand-base, if needed.

3. Natural Environment

(1) Ecosystem

Monitoring Item	Method	Monitoring Results and Measures to be Taken	Frequency
Road-kill of wild animals	Visual Observation		At the beginning of operation, and once in a couple of years in following phases

4. Social Environment and others

(1) Accidents

Monitoring Item	Method	Monitoring Results and Measures to be Taken	Frequency
Safety plan	Record of education at schools		At the beginning of operation, and once in a couple of years in following phases
Medical facility	Visual Observation		At the beginning of operation, and once

			in a couple of years in following phases
Signboards	Visual Observation		At the beginning of operation, and once in a couple of years in following phases
Traffic accidents	Visual Observation		At the beginning of operation, and once in a couple of years in following phases

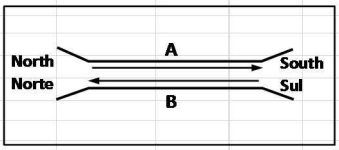
６．その他の資料・情報

6.1 交通量調査結果

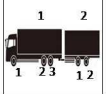
（１）ムアガムラ橋（平日、南下交通）

Bridge Name Muagamula

Location Map



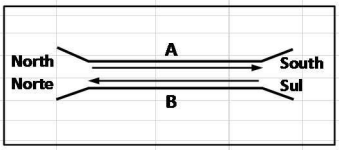
DATE : 01/03/2019
Surveyor : Maehude
Direction : A

		6:00-7:00	7:00-8:00	8:00-9:00	9:00-10:00	10:00-11:00	11:00-12:00	12:00-13:00	13:00-14:00	14:00-15:00	15:00-16:00	16:00-17:00	17:00-18:00	Total
Person [Pessoa]		4	10		1	5	2					2		24
Bicycle [Bicicleta]		1	1									1		3
Motorcycle [Motocicleta]		2	2	1	1		2		1	1	1	5		16
Passanger Car [Carro]				2	3	2	2				1	1		11
Pickup Truck [Picape]		4	2	9	10	4	8		7	3	2	3		52
Micro Bus & Van [Micro onibus & furgão]		2	3	1	1	2	2			1	2	2		16
Bus [Onibus]		5	3	2							1			11
Truck [Caminhão]			3	5	2	2			3					15
2-Axial Truck [Caminhão de carga]					3									3
3-Axial Truck [Caminhão de carga com 3-eixo]		2	2				1		1					6
4-Axial Truck [Caminhão de carga com 4-eixo]														0
Semi-Trailor [Semi-trailer (um trailer)]		1	1		1									3
Semi-Trailor (3-Axial) [Semi-trailer (trailer3-exio Caminhão&trailer)]					1			1			2			4
Full-Trailer (Dubble trailer) [Trailer completo (Dois trailer)]														0
Tracktor [Trator]														0
Total		21	27	20	23	15	17	1	12	5	9	14	0	164

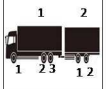
（2）ムアガムラ橋（平日、北上交通）

Bridge Name Muagamula

Location Map



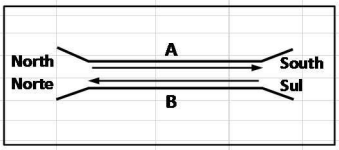
DATE : 01/03/2019
Surveyor : Maehude
Direction : B

		6:00-7:00	7:00-8:00	8:00-9:00	9:00-10:00	10:00-11:00	11:00-12:00	12:00-13:00	13:00-14:00	14:00-15:00	15:00-16:00	16:00-17:00	17:00-18:00	Total
Person [Pessoa]			3	3	3	7			2		3			21
Bicycle [Bicicleta]		1	1	1			1				1			5
Motorcycle [Motocicleta]		1		1			2			3	2	6		15
Passanger Car [Carro]			1	1	1	2	1		2		1	3		12
Pickup Truck [Picape]		16	4	3	6	4	4		1	5	11	3		57
Micro Bus & Van [Micro onibus & furgão]				3	5	1			2	1	1	2		15
Bus [Onibus]			1	1	1		2							5
Truck [Caminhão]		1	3		1	5			3	2				15
2-Axial Truck [Caminhão de carga]		1			2				1			1		5
3-Axial Truck [Caminhão de carga com 3-eixo]		1	1	1	1							3		7
4-Axial Truck [Caminhão de carga com 4-eixo]														0
Semi-Trailor [Semi-trailer (um trailer)]														0
Semi-Trailor (3-Axial) [Semi-trailer (trailer3-exio Caminhão&trailer)]					1									1
Full-Trailer (Dubble trailer) [Trailer completo (Dois trailer)]														0
Tracktor [Trator]														0
Total		21	14	14	21	19	10	0	11	11	19	18	0	158

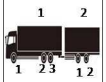
（3）ムアガムラ橋（休日、南下交通）

Bridge Name Muagamula

Location Map



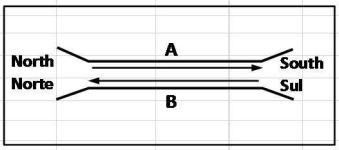
DATE : 02/03/2019
Surveyor : Maehude
Direction : A

		6:00-7:00	7:00-8:00	8:00-9:00	9:00-10:00	10:00-11:00	11:00-12:00	12:00-13:00	13:00-14:00	14:00-15:00	15:00-16:00	16:00-17:00	17:00-18:00	Total
Person [Pessoa]		12	9	7	1	2	3			1				35
Bicycle [Bicicleta]				1					1	1	1			4
Motorcycle [Motocicleta]			2	2	2	1			1	3	3			14
Passanger Car [Carro]		1		1	2				2					6
Pickup Truck [Picape]		2	4	5	1	10	12	1	1	1	4			41
Micro Bus & Van [Micro onibus & furgão]		3	4	3		1				1	1			13
Bus [Onibus]		1	4	1		1	1				2			10
Truck [Caminhão]			1	2	1	3			1	1	1			10
2-Axial Truck [Caminhão de carga]				1			6				1			8
3-Axial Truck [Caminhão de carga com 3-eixo]				1						1	1			3
4-Axial Truck [Caminhão de carga com 4-eixo]														0
Semi-Trailor [Semi-trailer (um trailer)]					1									1
Semi-Trailor (3-Axial) [Semi-trailer (trailer3-exio Caminhão&trailer)]								:		1				1
Full-Trailer (Dubble trailer) [Trailer completo (Dois trailer)]														0
Tracktor [Trator]														0
Total		19	24	24	8	18	22	1	6	10	14	0	0	146

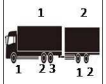
（4）ムアガムラ橋（休日、北上交通）

Bridge Name Muagamula

Location Map



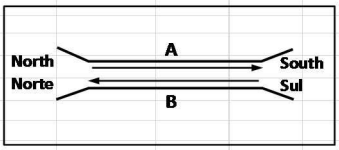
DATE : 02/03/2019
Surveyor : Maehude
Direction : B

		6:00-7:00	7:00-8:00	8:00-9:00	9:00-10:00	10:00-11:00	11:00-12:00	12:00-13:00	13:00-14:00	14:00-15:00	15:00-16:00	16:00-17:00	17:00-18:00	Total
Person [Pessoa]		10	3		4	5	5		5	5				37
Bicycle [Bicicleta]		1	1			1								3
Motorcycle [Motocicleta]			2	2	4	2	1			5				16
Passanger Car [Carro]			1	1			1			2	2			7
Pickup Truck [Picape]		5	5	1	6	6	3		1	1	1			29
Micro Bus & Van [Micro onibus & furgão]			2	4	3				1	1	1			12
Bus [Onibus]				2	1	2	1							6
Truck [Caminhão]					3		4				3			10
2-Axial Truck [Caminhão de carga]							2							2
3-Axial Truck [Caminhão de carga com 3-eixo]			1				1				1			3
4-Axial Truck [Caminhão de carga com 4-eixo]														0
Semi-Trailor [Semi-trailer (um trailer)]														0
Semi-Trailor (3-Axial) [Semi-trailer (trailer3-exio Caminhão&trailer)]				1	3	3		:		1				8
Full-Trailer (Dubble trailer) [Trailer completo (Dois trailer)]														0
Tracktor [Trator]														0
Total		16	15	11	24	19	18	0	7	15	8	0	0	133

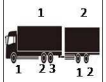
（5）ムエラII橋（平日、南下交通）

Bridge Name Mwela

Location Map



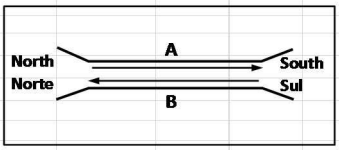
DATE : 01/03/2019
Surveyor : Ahide
Direction : A

		6:00-7:00	7:00-8:00	8:00-9:00	9:00-10:00	10:00-11:00	11:00-12:00	12:00-13:00	13:00-14:00	14:00-15:00	15:00-16:00	16:00-17:00	17:00-18:00	Total
Person [Pessoa]		12	4		2	5	9		2	1	7	4		46
Bicycle [Bicicleta]		2	1			1	1				4	2		11
Motorcycle [Motocicleta]		3	1			1	2		2		2	1		12
Passanger Car [Carro]		3	3	1		2	3	2	2		1		1	18
Pickup Truck [Picape]		10	2	2	2	1	4	6	3		3	2	6	41
Micro Bus & Van [Micro onibus & furgão]		3	1		1	4	3				1	1	1	15
Bus [Onibus]				1	1		2	1						5
Truck [Caminhão]		5	2	1		1	4		1		3			17
2-Axial Truck [Caminhão de carga]		1	1			2	1				1			6
3-Axial Truck [Caminhão de carga com 3-eixo]		1	3			2			1					7
4-Axial Truck [Caminhão de carga com 4-eixo]														0
Semi-Trailor [Semi-trailer (um trailer)]			1											1
Semi-Trailor (3-Axial) [Semi-trailer (trailer3-exio Caminhão&trailer)]		1	2											3
Full-Trailer (Dubble trailer) [Trailer completo (Dois trailer)]														0
Tracktor [Trator]														0
Total		41	21	5	6	19	29	9	11	1	22	10	8	182

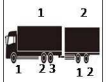
（6）ムエラ II 橋（平日、北上交通）

Bridge Name Mwela

Location Map



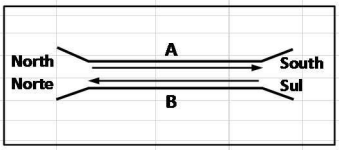
DATE : 01/03/2019
Surveyor : Ahide
Direction : B

		6:00-7:00	7:00-8:00	8:00-9:00	9:00-10:00	10:00-11:00	11:00-12:00	12:00-13:00	13:00-14:00	14:00-15:00	15:00-16:00	16:00-17:00	17:00-18:00	Total
Person [Pessoa]		8	4	3	3	2	2	4	4		3			33
Bicycle [Bicicleta]		3	1								3	1		8
Motorcycle [Motocicleta]		2	1	1	3	1	2	1		1		3		15
Passanger Car [Carro]		1	2		1	1	2			1	1	1		10
Pickup Truck [Picape]		5	4	7	2	5	6	3	2	4		2	2	42
Micro Bus & Van [Micro onibus & furgão]		3			2				2	3				10
Bus [Onibus]		5						1		1				7
Truck [Caminhão]		5	2	1	1			1	1	1	3			15
2-Axial Truck [Caminhão de carga]		1		1	1		2	1						6
3-Axial Truck [Caminhão de carga com 3-eixo]		3			1		1			1	1		2	9
4-Axial Truck [Caminhão de carga com 4-eixo]														0
Semi-Trailor [Semi-trailer (um trailer)]														0
Semi-Trailor (3-Axial) [Semi-trailer (trailer3-exio Caminhão&trailer)]		5					1			2			1	9
Full-Trailer (Dubble trailer) [Trailer completo (Dois trailer)]														0
Tracktor [Trator]														0
Total		41	14	13	14	9	16	11	9	14	11	7	5	164

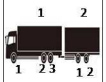
（7）ムエラ II 橋（休日、南下交通）

Bridge Name Mwela

Location Map



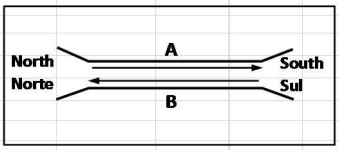
DATE : 02/03/2019
Surveyor : Ahide
Direction : A

		6:00-7:00	7:00-8:00	8:00-9:00	9:00-10:00	10:00-11:00	11:00-12:00	12:00-13:00	13:00-14:00	14:00-15:00	15:00-16:00	16:00-17:00	17:00-18:00	Total
Person [Pessoa]		11	6		4	7	5	3	2	2	5			45
Bicycle [Bicicleta]		2								1	1			4
Motorcycle [Motocicleta]		1		1	1	1		1	3					8
Passanger Car [Carro]		2		2	1		2		2		3			12
Pickup Truck [Picape]		1	3	2		4	5	2	7		3			27
Micro Bus & Van [Micro onibus & furgão]				2		5			2		1			10
Bus [Onibus]		1				1	1	1						4
Truck [Caminhão]		3	2			1	1		3	1	1			12
2-Axial Truck [Caminhão de carga]		1	1											2
3-Axial Truck [Caminhão de carga com 3-eixo]		3	1			2			1		3			10
4-Axial Truck [Caminhão de carga com 4-eixo]														0
Semi-Trailor [Semi-trailer (um trailer)]														0
Semi-Trailor (3-Axial) [Semi-trailer (trailer3-exio Caminhão&trailer)]		5			1	2	5		1		1			15
Full-Trailer (Dubble trailer) [Trailer completo (Dois trailer)]														0
Tracktor [Trator]														0
Total		30	13	7	7	23	19	7	21	4	18	0	0	149

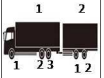
（8）ムエラ II 橋（休日、北上交通）

Bridge Name Mwela

Location Map



DATE : 02/03/2019
Surveyor : Ahide
Direction : B

		6:00-7:00	7:00-8:00	8:00-9:00	9:00-10:00	10:00-11:00	11:00-12:00	12:00-13:00	13:00-14:00	14:00-15:00	15:00-16:00	16:00-17:00	17:00-18:00	Total
Person [Pessoa]		8	3	4	1	1		3	4	3	6			33
Bicycle [Bicicleta]		2					2		1					5
Motorcycle [Motocicleta]		2	1	3			3		2	1	1			13
Passanger Car [Carro]		3	4	3	1	1	1	2		1	1			17
Pickup Truck [Picape]		4	3	2	9	7	2	3	2		3			35
Micro Bus & Van [Micro onibus & furgão]		4	2				2			1	2			11
Bus [Onibus]		6								1				7
Truck [Caminhão]		3		1	1	2	2		1					10
2-Axial Truck [Caminhão de carga]		1	2		1		1				2			7
3-Axial Truck [Caminhão de carga com 3-eixo]		2				6		1	1					10
4-Axial Truck [Caminhão de carga com 4-eixo]														0
Semi-Trailor [Semi-trailer (um trailer)]														0
Semi-Trailor (3-Axial) [Semi-trailer (trailer3-exio Caminhão&trailer)]		2	1					:			2			5
Full-Trailer (Dubble trailer) [Trailer completo (Dois trailer)]														0
Tracktor [Trator]														0
Total		37	16	13	13	17	13	9	11	7	17	0	0	153

6.2 地質調査結果（抜粋）

No.	Bridge Name	South	East
1	Muagamura (Bdg 2)	12° 8'13"S	40° 7'14 "E
2	Muera I (Bdg 6)	11°38'10"S	40° 0'56"E
3	Muera II (Bdg 7)	11°38'08"S	40° 01'3"E

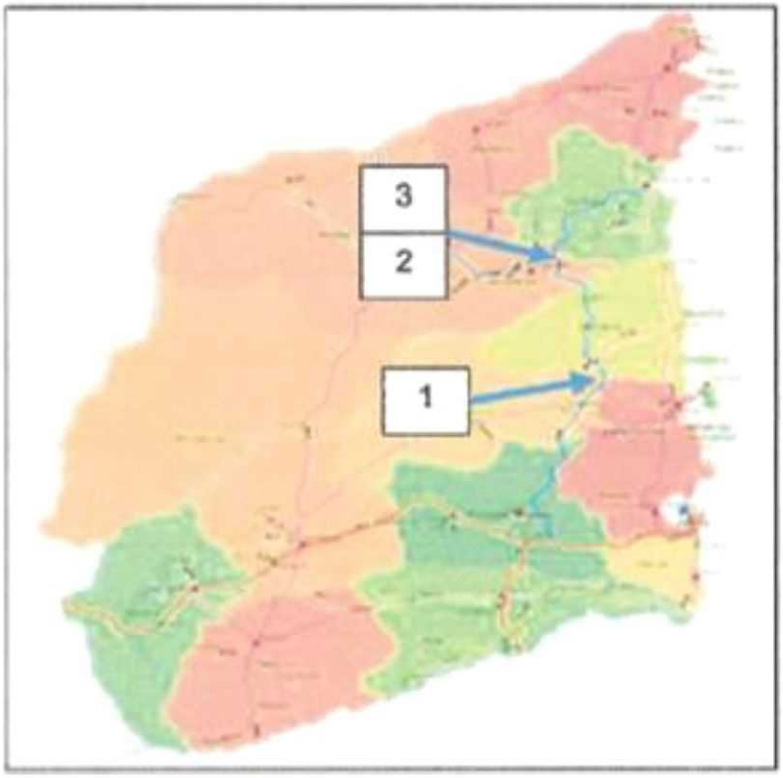
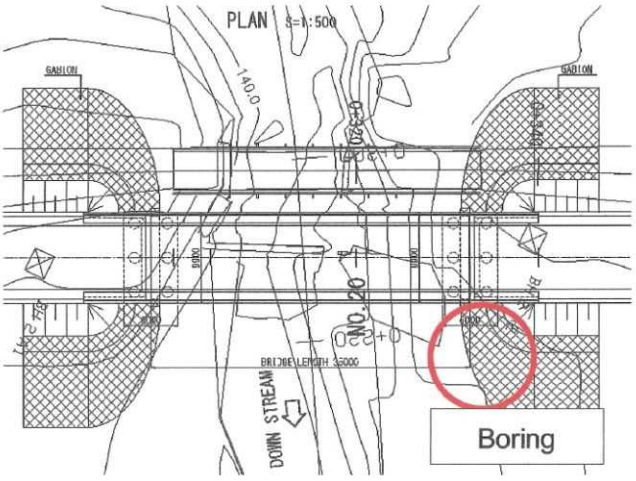


Figure 1　Project Location Map

Annex B.　Proposed Boring Location: Muagamura Bridge

1) Boring: one location at Abutment 2, downstream

2) Boring length: about 30m

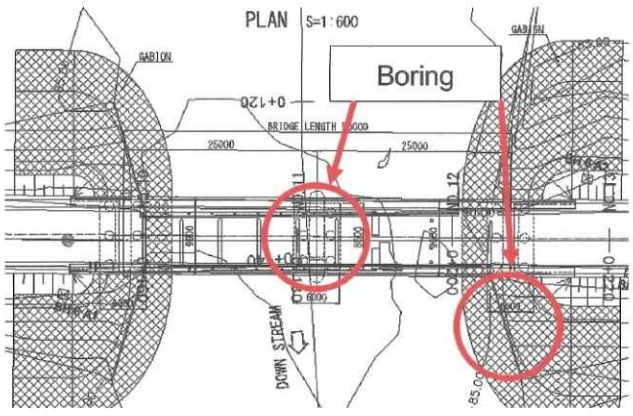


a)

Annex C.　Proposed Boring Locmation: Muera I Bridge

1) Boring: two locations at Pier and Abutment 2, downstream

2) Boring length: about 50m

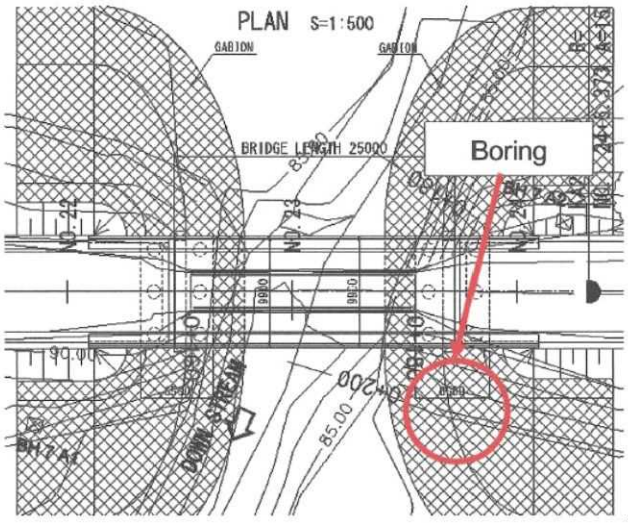


b)

Annex D.　Proposed Boring Location: Muera II Bridge

1) Boring: one location at Abutment 2, downstream

2) Boring length: about 20m



c)

Figure 7　Borehole Location, a) Muagamula (B2) b) Muera 1 (B6) c) Muera 2 (B7)

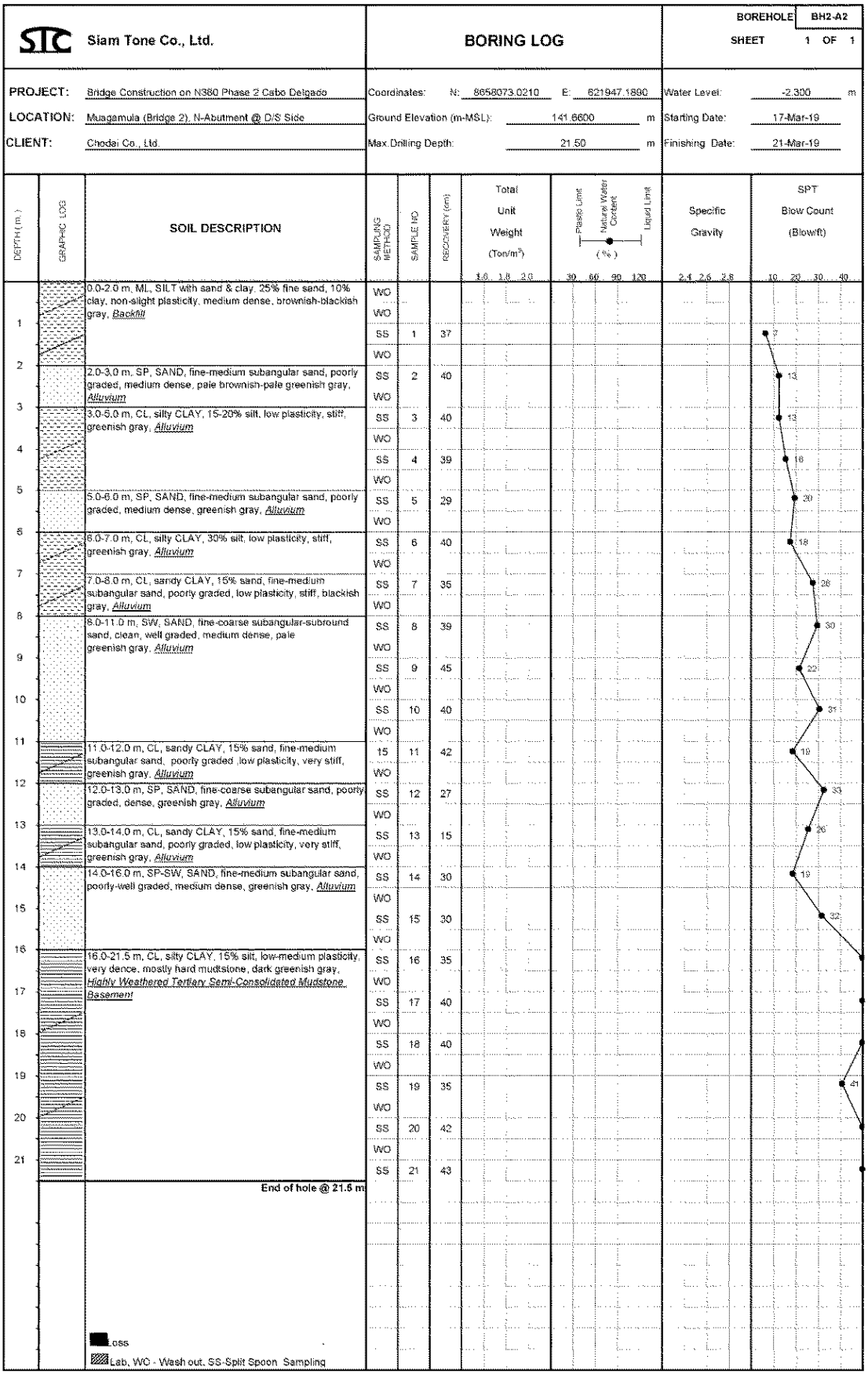


Figure 8.1 BH2-A2/1 at N-Abutment D/S Side of Muagamula Bridge (B2)

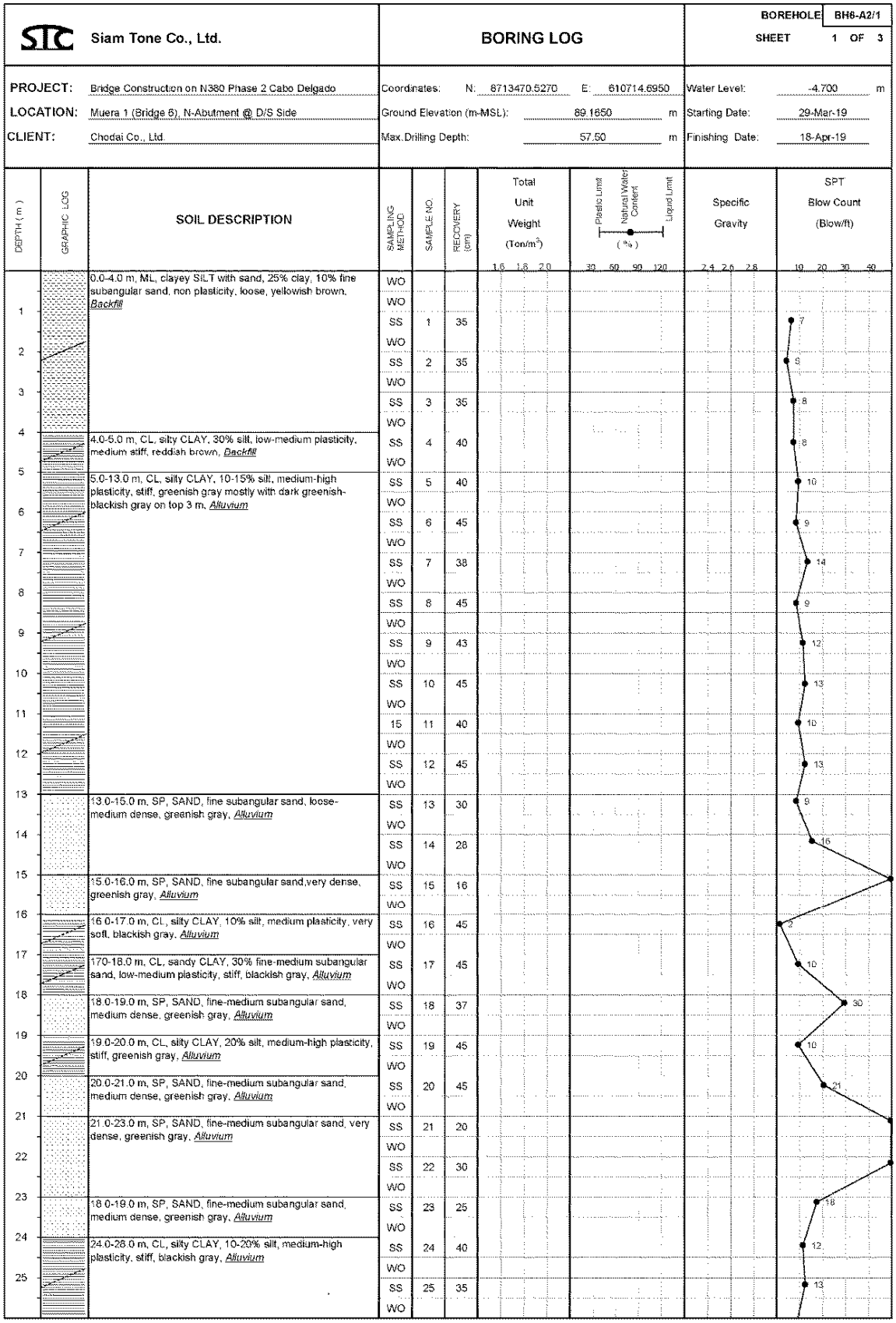


Figure 8.2.1 BH6-A2/1 at N-Abutment D/S Side of Muera I Bridge (B6)

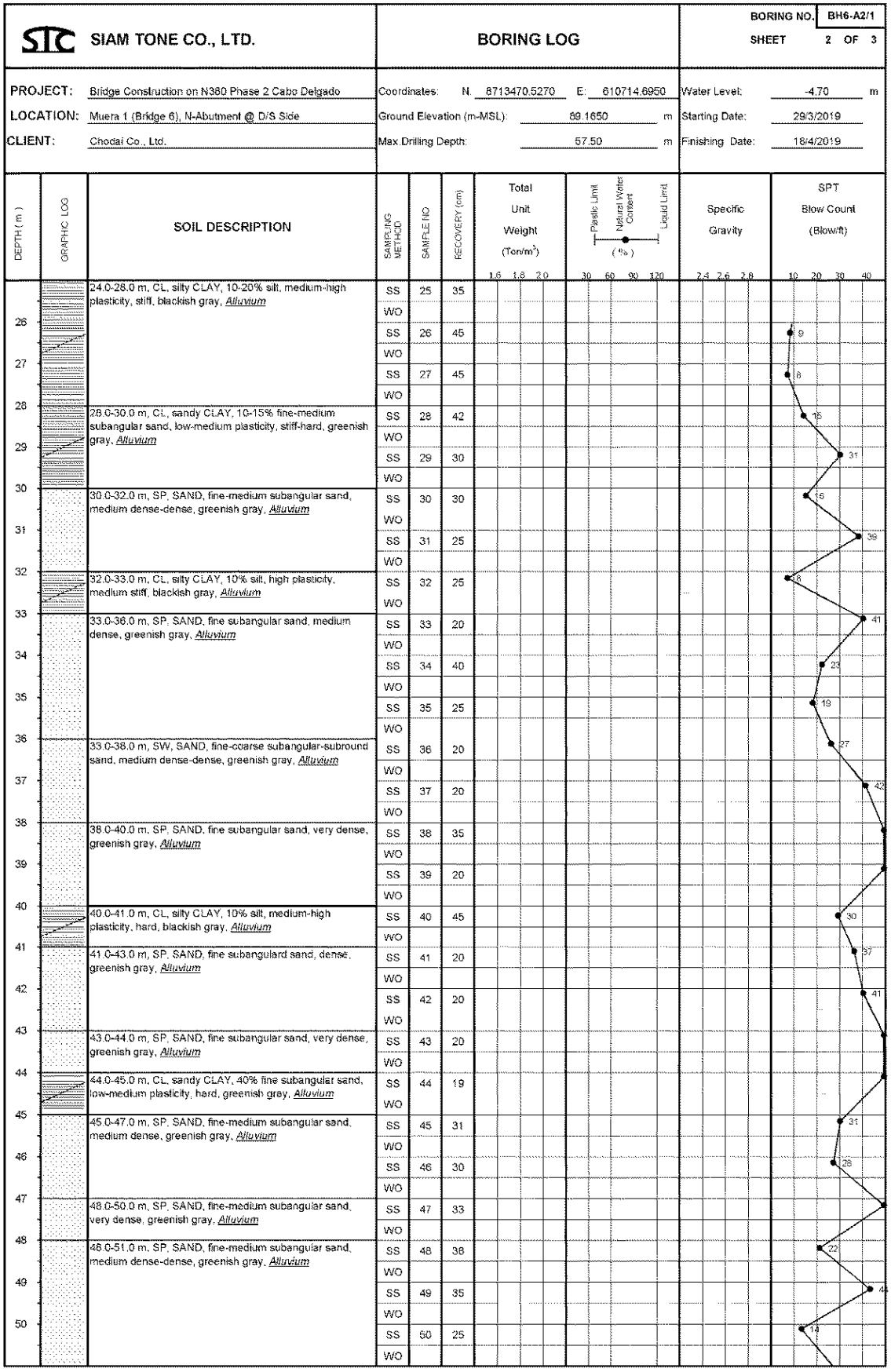


Figure 8.2.2 BH6-A2/1 at N-Abutment D/S Side of Muera I Bridge (B6)

SIAM TONE CO., LTD.

BORING LOG

BORING NO. BH6-A2/1
SHEET 3 OF 3

PROJECT: Bridge Construction on N380 Phase 2 Cabo Delgado
LOCATION: Muera 1 (Bridge 6), N-Abutment @ D/S Side
CLIENT: Chodai Co., Ltd.

Coordinates: N: 8713470.5270 E: 610714.6950
Ground Elevation (m-MSL): #REF! m
Max.Drilling Depth: 57.50 m

Water Level: -4.70 m
Starting Date: 29/3/2019
Finishing Date: 18/4/2019

DEPTH (m)	GRAPHIC LOG	SOIL DESCRIPTION	SAMPLING METHOD	SAMPLE NO	RECOVERY (cm)	Total Unit Weight (Ton/m³) 1.6 1.8 2.0	Plastic Limit / Natural Water Content / Liquid Limit (%) 30 60 90 120	Specific Gravity 2.4 2.6 2.8	SPT Blow Count (Blow/ft) 10 20 30 40
		48.0-51.0 m, SP, SAND, fine-medium subangular sand, medium dense-dense, greenish gray, *Alluvium*	SS	50	25				
			WO						
51		51.0-52.0 m, CL, silty CLAY, 40% silt, low-medium plasticity, hard, blackish gray, *H-C Weathered Tertiary Semi-Consolidated Siltstone Basement*	SS	51	30				30
			WO						
52		52.0-57.5 m, CL, sandy CLAY, 45-49% fine-medium subangular sand, non-low plasticity, hard, greenish gray, *Highly-Completely Weathered Tertiary Semi-Consolidated Siltstone Basement*	SS	52	20				50/17
			WO						
53			SS	53	25				50/20
			WO						
54			SS	54	30				50/11
			WO						
55			SS	55	20				50/6
			WO						
56			SS	56	22				50/15
			WO						
57			SS	57	20				50/12
		End of hole @ 57.5 m							

Loss
Lab, WO - Wash out, SS-Split Spoon Sampling

Figure 8.2.3 BH6-A2/1 at N-Abutment D/S Side of Muera I Bridge (B6)

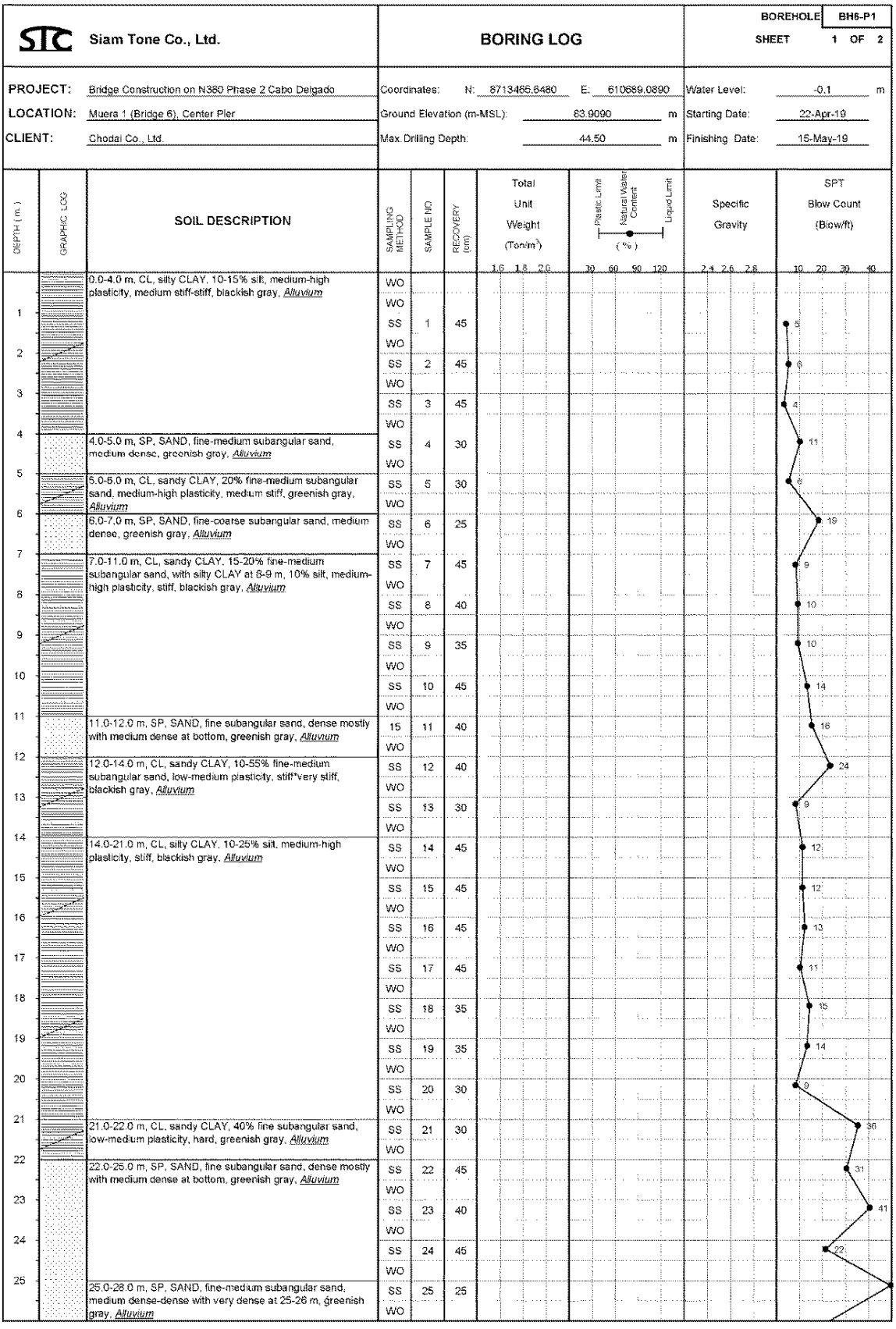


Figure 8.3.1 BH6-P1 at Central Pier of Muera I Bridge (B6)

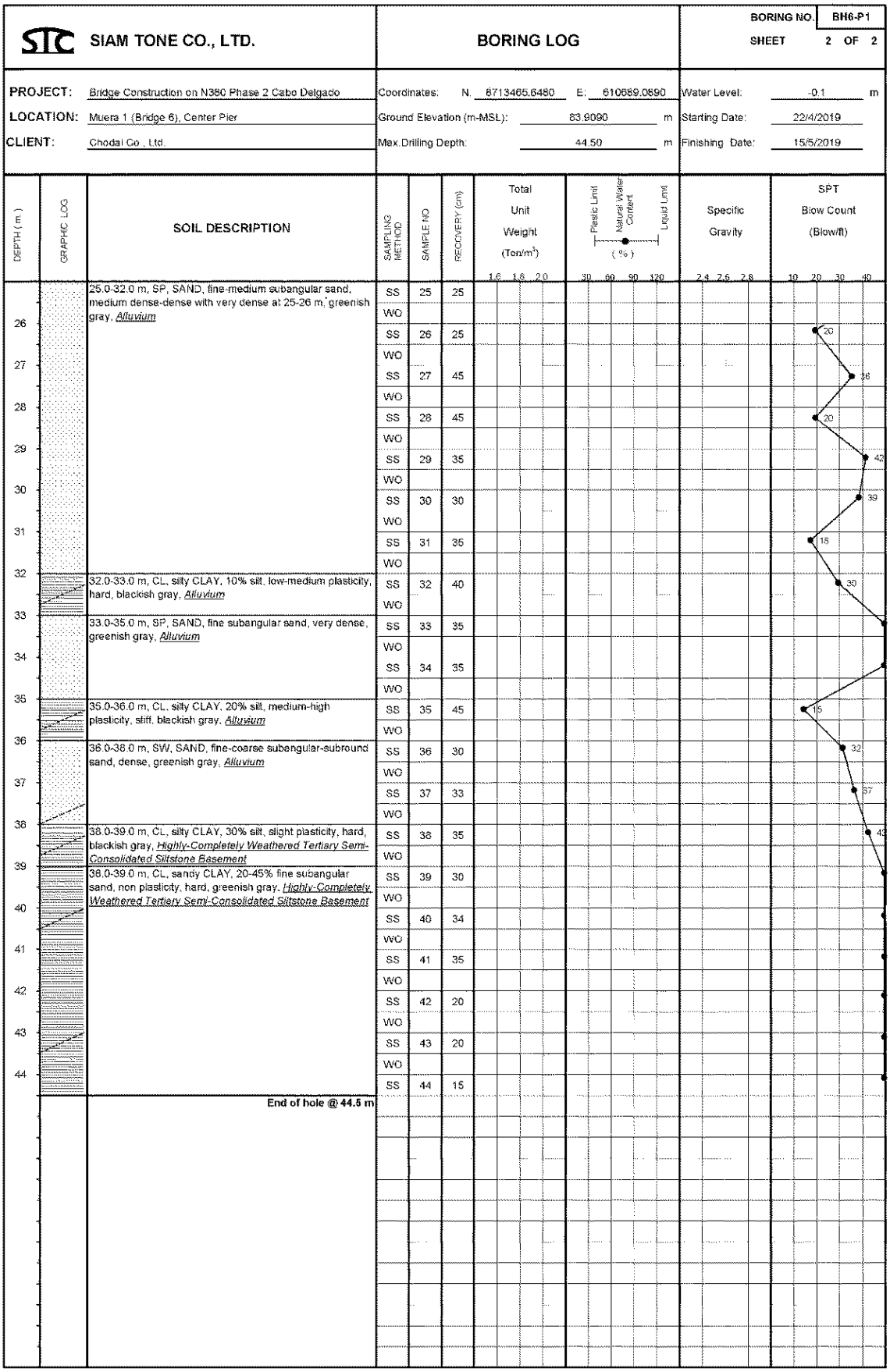


Figure 8.3.2 BH6-P1 at Central Pier of Muera I Bridge (B6)

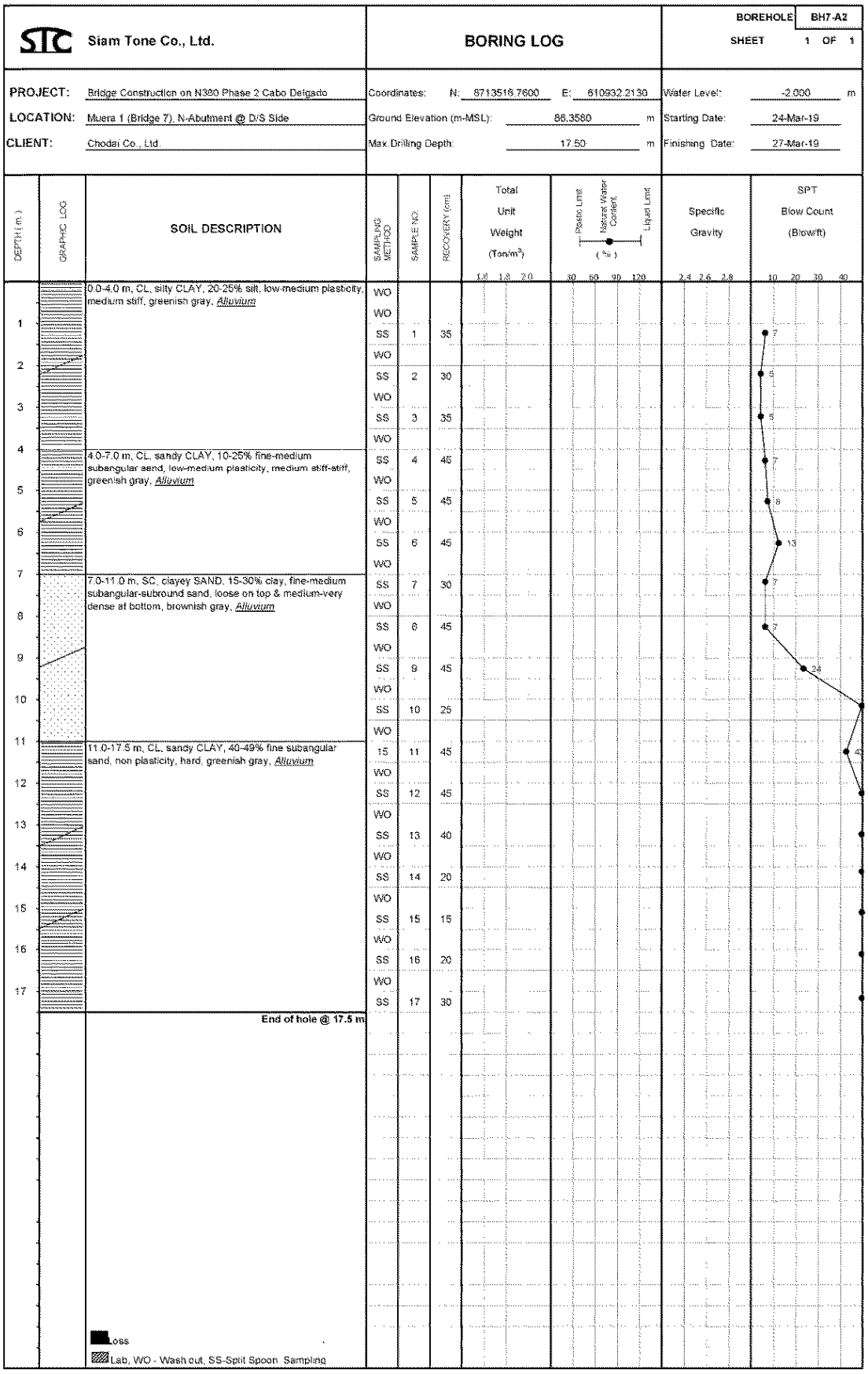


Figure 8.4 BH7-A2/1 at N-Abutment D/S Side of Muera II Bridge (B7)

6.3 環境モニタリングフォームとチェックリスト

(1) モニタリングフォーム

Monitoring Form (A): Construction Phase

The latest results of the below monitoring items shall be submitted to JICA as part of Progress Report throughout the construction phase.

Name of the Project: The Project for Construction of Bridges on N380, Mozambique

1. Response/Actions to Comments and Guidance from Government Authorities and the Public

Monitoring Item	Monitoring Results during Report Period
Number and contents of formal comments made by the public	
Number and contents of responses from Government agencies	

2. Pollution

(1) Water Quality

Item*	Unit	Measured Value (Mean)	Measured Value (Max)	Country's Standards	Referred International Standards	Frequency
pH	-			6.5-8.5	6-9	At least every 1 months
COD	mg/L				125	At least every 1 months
Oil	Checking oil spillage from construction areas					At any time
If concern about contamination by visual monitoring, the following items will be implemented.						
TDS	mg/L			<500	-	At least every 1 months
OD	mg/L				4-5 (20℃)	At least every 1 months
BOD	mg/L				25	At least every 1 months
Phos.	mg/L				0.1	At least every 1 months
SS	mg/L				45	At least every 1 months
Coli.	MPN				Less than1100	At least every 1 months

* OD: Oxygen Demand, Coli.: TDS: Total Dissolved Solids, Total Coliforms, COD: Chemical Oxygen Demand, BOD: Biological Oxygen Demand, Phos.: Total Phosphorus, SS: Suspended Solid or Turbidity, Coli.: Coliform

(2) Air Quality

If there is concern about contamination by visual monitoring, the following items will be implemented.

Item*	Unit	Measured Value (Mean)	Measured Value (Max)	Country's Standards (No.67)	Referred International Standards (WHO)	Frequency
SO_2	μg/m³			100 (24 hours)	125 (24 hours)	(1) Measurement: Monthly during the construction period or as needed, especially at the construction site of Muagamula Bridge where the baseline showed higher value than standards
NO_2	μg/m³			190 (1 hour)	200 (1 hour)	
CO	μg/m³			10,000 (8 hour in ave.)	-	
TSP	μg/m³			150 (24hrs)	-	(1) Visual observation: Daily during the construction period (2) Measurement: Monthly during the construction period or as needed

* TSP: Total Suspended Particles

(3) Waste

Item	Unit	Measured Value (Mean)	Measured Value (Max)	Country's Standards	Referred International Standards	Frequency
Disposal Methods	Visual Observation					(1) Daily during the construction period
Water Pollution	Visual Observation / Measurement of major water quality elements, if any					(1) Daily during the construction period

(4) Soil Pollution

Monitoring Item	Method	Monitoring Results and Measures to be Taken	Frequency
Oil leaking	Visual Observation		Daily, or time of any changes

(5) Noise

Monitoring Item	Method	Monitoring Results and Measures to be Taken	Frequency
LAeq: Noise Level per 1 hour	Noise Measurement Equipment		Daily, or on demand base

3. Natural Environment

(1) Protected Area *This item is required only for the Muagamula Bridge Construction

Monitoring Item	Method	Monitoring Results and Measures to be Taken	Frequency
Protected Area (Construction border)	Visual Observation		Daily, or time of any changes

(2) Ecosystem

Monitoring Item	Method	Monitoring Results and Measures to be Taken	Frequency
Tree Cutting	Visual Observation		Daily, or time of any changes
Fauna and Flora, including road-kill	Visual Observation		Daily, or time of any changes

4. Social Environment and others

(1) HIV/AIDS

Monitoring Item	Method	Monitoring Results and Measures to be Taken	Frequency
Educational Activities	Number of events		Every quarter during construction period
Workers health condition	Observation and interview		If needed

(2) Working Environment

Monitoring Item	Method	Monitoring Results and Measures to be Taken	Frequency
Safety facilities and equipment	Visual Observation		Every day, especially during erection works
Safety management seminar	Visual Observation		Every month, especially during erection works

(3) Accidents

Monitoring Item	Method	Monitoring Results and Measures to be Taken	Frequency
Safety plan	Record of education at schools		At the beginning of construction and followed up
Medical facility	Visual Observation		At the beginning of construction and followed up
Signboards	Visual Observation		At the beginning of construction and followed up

(4) Remarks on other impacts

If unexpected impacts on social environment are expected beyond the original environmental management plan, such as temporal land use on private land for detours, contractor and/or consultant must report the situation immediately to ANE before relevant activities.

Monitoring Form (B): Operation Phase

The latest results of the below monitoring items shall be submitted to JICA on biannual or annual frequency for at least 5 years. If there is observed impacts beyond expectation, additional mitigation measures and/or extension of monitoring period shall be discussed.

Name of the Project: The Project for Construction of Bridges on N380, Mozambique

1. Response/Actions to Comments and Guidance from Government Authorities and the Public

Monitoring Item	Monitoring Results during Report Period
Number and contents of formal comments made by the public	
Number and contents of responses from Government agencies	

2. Pollution

Nothing in particular and demand-base, if needed.

3. Natural Environment

(1) Ecosystem

Monitoring Item	Method	Monitoring Results and Measures to be Taken	Frequency
Road-kill of wild animals	Visual Observation		At the beginning of operation, and once in a couple of years in following phases

4. Social Environment and others

(1) Accidents

Monitoring Item	Method	Monitoring Results and Measures to be Taken	Frequency
Safety plan	Record of education at schools		At the beginning of operation, and once in a couple of years in following phases
Medical facility	Visual Observation		At the beginning of operation, and once in a couple of years in following phases
Signboards	Visual Observation		At the beginning of operation, and once in a couple of years in following phases
Traffic accidents	Visual Observation		At the beginning of operation, and once in a couple of years in following phases

(2) チェックリスト

Environmental Check List: The Project for Construction of Bridges on N380, Mozambique

Category	Environmetal Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
1 Permits and Explanation	(1) EIA and Environmental Permits	(a) Have EIA reports been already prepared in official process? (b) Have EIA reports been approved by authorities of the host country's government? (c) Have EIA reports been unconditionally approved? If conditions are imposed on the approval of EIA reports, are the conditions satisfied? (d) In addition to the above approvals, have other required environmental permits been obtained from the appropriate regulatory authorities of the host country's government?	(a) Y (b) Y (c) Y (d) Y	(a) SEA (Simplified Environmental Assessment) reports have been prepared in line with official process. (b) SEA reports have been approved by an official authority (Provincial Directorate of Lands, Environment and Rural, DEPTADER) in Cabo Delgado Province) in June, 2019 (c) SEA reports have been approved without conditions (d) Nothing in particular, and all the required environmental permits have been obtained
	(2) Explanation to the Local Stakeholders	a) Have contents of the project and the potential impacts been adequately explained to the Local stakeholders based on appropriate procedures, including information disclosure? Is understanding obtained from the Local stakeholders? (b) Have the comment from the stakeholders (such as local residents) been reflected to the project design?	(a) Y (b) Y	(a) Stakeholder meetings for information disclosure have been held at each bridge site by National Road Administration (ANE). Local stakeholders principally understand the project outnline and its impact. (b) The comments from stakeholders have been recoreded in SEA reports and reflected to the project.
	(3) Examination of Alternatives	(a) Have alternative plans of the project been examined with social and environmental considerations?	(a) Y	(a) Several alternatives including "the case without project" have been examined with the traffic capacity and functions, construction cost, and social and environmental impact in the selection of the typical cross-section design and alignment of the new road section.
2 Pollution Control	(1) Air Quality	(a) Is there a possibility that air pollutants emitted from the project related sources, such as vehicles traffic will affect ambient air quality? Does ambient air quality comply with the country's air quality standards? Are any mitigating measures taken? (b) Where industrial areas already exist near the route, is there a possibility that the project will make air pollution worse?	(a) Y (b) N	(a) Vehicles traffic and construction vehicles may affect ambient air quality during both constrcution phase. For the cases where the air pollution exceeds standards, mitigation maeasures are considered. (b) There is no industrial areas already exist near the route.
	(2) Water Quality	(a) Is there a possibility that soil runoff from the bare lands resulting from earthmoving activities, such as cutting and filling will cause water quality degradation in downstream water areas? (b) Is there a possibility that surface runoff from roads will contaminate water sources, such as groundwater? (c) Do effluents from various facilities, such as parking areas/service areas comply with the country's effluent standards and ambient water quality standards? Is there a possibility that the effluents will cause areas not to comply with the country's ambient water quality standards?	(a) Y (b) N (c) N	(a) Turbid water will generate in the construction works. The turbid water will contaminate rivers and streams around the target road section temporarily. (b) Impact on water resources of runoff from road surface is unlikely to occur. (c) Development of parking or service areas which generate waste water in operation phase are not included in the project.
	(3) Wastes	(a) Are wastes generated from the project facilities, such as parking areas/service areas, properly treated and disposed of in accordance with the country's regulations?	(a) N	(a) Development of parking or service areas are not included in the project.
	(4) Noise and Vibration	a) Do noise and vibrations from the vehicle and train traffic comply with the country's standards?	(a) N	(a) Increasing of noise and vibration due to traffic at the bridge sites may unlikey occur.
3 Natural Environment	(1) Protected Areas	a) Is the project site located in protected areas designated by the country's laws or international treaties and conventions? Is there a possibility that the project will affect the protected areas?	(a) N	(a) There are no protected areas in the project site. However, Quirimbus National Park is located nearby project sites.
	(2) Ecosystem	(a) Does the project site encompass primeval forests, tropical rain forests, ecologically valuable habitats (e.g., coral reefs, mangroves, or tidal flats)? (b) Does the project site encompass the protected habitats of endangered species designated by the country's laws or international treaties and conventions? (c) If significant ecological impacts are anticipated, are adequate protection measures taken to reduce the impacts on the ecosystem? (d) Are adequate protection measures taken to prevent impacts, such as disruption of migration routes, habitat fragmentation, and traffic accident of wildlife and livestock? (e) Is there a possibility that installation of roads will cause impacts, such as destruction of forest, poaching, desertification, reduction in wetland areas, and disturbance of ecosystems due to introduction of exotic (nonnative invasive) species and pests? Are adequate measures for preventing such impacts considered? (f) In cases the project site is located at undeveloped areas, is there a possibility that the new development will result in extensive loss of natural environments?	(a) N (b) N (c) N (d) Y (e) N (f) N	(a) There are no ecological valuable habitats in the site. (b) The habitats of endangered species have not been identified in and around the site. (c) Significant ecological impact is unlikely to occur. (d) There is possibility of migration of wildlife crossing the bridge sites. (e) Because of improvement project of existing bridges, increase in destruction of forest and poaching is unlikely to occur. (f) Nothing in particular.
	(3) Hydrology	a) Is there a possibility that alteration of topographic features and installation of structures, such as tunnels will adversely affect surface water and groundwater flows?	(a) N	(a) Nothing in particular.
	(4) Topography and Geology	(a) Is there any soft ground on the route that may cause slope failures or landslides? Are adequate measures considered to prevent slope failures or landslides, where needed? (b) Is there a possibility that civil works, such as cutting and filling will cause slope failures or landslides? Are adequate measures considered to prevent slope failures or landslides? (c) Is there a possibility that soil runoff will result from cut and fill areas, waste soil disposal sites, and borrow sites? Are adequate measures taken to prevent soil runoff?	(a) N (b) N (c) N	(a)(b) Filling works are included in the construction. However, there are no soft ground to occur slope failures or landslides in and around the site. (c) Adequate filling works prevent accidental and sufficient soil runoff.

4 Social Environment	(1) Resettlement	(a) Is involuntary resettlement caused by project implementation? If involuntary resettlement is caused, are efforts made to minimize the impacts caused by the resettlement? (b) Is adequate explanation on compensation and resettlement assistance given to affected people prior to resettlement? (c) Is the resettlement plan, including compensation with full replacement costs, restoration of livelihoods and living standards developed based on socioeconomic studies on resettlement? (d) Are the compensations going to be paid prior to the resettlement? (e) Are the compensation policies prepared in document? (f) Does the resettlement plan pay particular attention to vulnerable groups or people, including women, children, the elderly, people below the poverty line, ethnic minorities, and indigenous peoples? (g) Are agreements with the affected people obtained prior to resettlement? (h) Is the organizational framework established to properly implement resettlement? Are the capacity and budget secured to implement the plan? (i) Are any plans developed to monitor the impacts of resettlement? (j) Is the grievance redress mechanism established?	(a) N (b) N (c) N (d) N (e) N (f) N (g) N (h) N (i) N (j) N	(a)-(j) No resettlement is expected by the project.
	(2) Living and Livelihood	(a) Where roads are newly installed, is there a possibility that the project will affect the existing means of transportation and the associated workers? Is there a possibility that the project will cause significant impacts, such as extensive alteration of existing land uses, changes in sources of livelihood, or unemployment? Are adequate measures considered for preventing these impacts? (b) Is there any possibility that the project will adversely affect the living conditions of the inhabitants other than the target population? Are adequate measures considered to reduce the impacts, if necessary? (c) Is there any possibility that diseases, including infectious diseases, such as HIV will be brought due to immigration of workers associated with the project? Are adequate considerations given to public health, if necessary? (d) Is there any possibility that the project will adversely affect road traffic in the surrounding areas (e.g., increase of traffic congestion and traffic accidents)? (e) Is there any possibility that roads will impede the movement of inhabitants? (f) Is there any possibility that structures associated with roads (such as bridges) will cause a sun shading and radio interference?	(a) N (b) N (c) Y (d) Y (e) N (f) N	(a) Nothing in particular. (b) Nothing in particular. (c) Infectious diseases might be brought due to immigration of workers associated with the project. (d) There are possibilities of increasing of traffic accident. (e) Nothing in particular. (f) Nothing in particular.
	(3) Heritage	a) Is there a possibility that the project will damage the local archeological, historical, cultural, and religious heritage? Are adequate measures considered to protect these sites in accordance with the country's laws?	(a) N	(a) Nothing in particular.
	(4) Landscape	(a) Is there a possibility that the project will adversely affect the local landscape? Are necessary measures taken?	(a) N	(a) Nothing in particular.
	(5) Ethnic Minorities and Indigenous Peoples	(a) Are considerations given to reduce impacts on the culture and lifestyle of ethnic minorities and indigenous peoples? (b) Are all of the rights of ethnic minorities and indigenous peoples in relation to land and resources to be respected?	(a) N (b) N	(a) Nothing in particular. (b) Nothing in particular.
	(6) Working Conditions	(a) Is the project proponent not violating any laws and ordinances associated with the working conditions of the country which the project proponent should observe in the project? (b) Are tangible safety considerations in place for individuals involved in the project, such as the installation of safety equipment which prevents industrial accidents, and management of hazardous materials? (c) Are intangible measures being planned and implemented for individuals involved in the project, such as the establishment of a safety and health program, and safety training (including traffic safety and public health) for workers etc.? (d) Are appropriate measures being taken to ensure that security guards involved in the project not to viorate safety of other individuals involved, or local residents?	(a) Y (b) Y (c) Y (d) Y	(a) Working conditions during the construction phase shall be comply with both domestic legal framework and international standards. (b) Working conditions during the construction phase shall be comply with both domestic legal framework and international standards. (c) Working conditions during the construction phase shall be comply with both domestic legal framework and international standards. (d) Working conditions during the construction phase shall be comply with both domestic legal framework and international standards.
5 others	(1) Impacts during Construction	(a) Are adequate measures considered to reduce impacts during construction (e.g., noise, vibrations, turbid water, dust, exhaust gases, and wastes)? (b) If construction activities adversely affect the natural environment (ecosystem), are adequate measures considered to reduce impacts? (c) If construction activities adversely affect the social environment, are adequate measures considered to reduce impacts?	(a) Y (b) Y (c) Y	(a) The adequate mitigation measures and monitoring plans to reduce impacts of pollution during the construction are prepared. (b) The construction activities to cause serious impact on ecosystem are not included in the project. However, if observed, necessary measures are prepared baesd on protected areas' regulations. (c) If observed any serious impats on social environment, necessary measures are prepared.
	(2) Monitoring	(a) Does the proponent develop and implement monitoring program for the environmental items that are considered to have potential impacts? (b) What are the items, methods and frequencies of the monitoring program? (c) Does the proponent establish an adequate monitoring framework (organization, personnel, equipment, and adequate budget to sustain the monitoring framework)? (d) Are any regulatory requirements pertaining to the monitoring report system identified, such as the format and frequency of reports from the proponent to the regulatory authorities?	(a) Y (b) Y (c) Y (d) Y	(a) The monitoring plans mentioned in the SEA reports including monitoring sheet will be implemented during the construction and operation phase. (b)(c)(d) The monitoring plan referring to the items, methods, frequencies framework and report system is proposed in the SEA reports and monitoring sheets.
Note	Reference to Checklist of Other Sectors	(a) Where necessary, pertinent items described in the Roads, Railways and Forestry Projects checklist should also be checked (e.g., projects including large areas of deforestation). (b) Where necessary, pertinent items described in the Power Transmission and Distribution Lines checklist should also be checked (e.g., projects including installation of power transmission lines and/or electric istribution facilities).	(a) N (b) N	(a) Nothing in particular. (b) Nothing in particular.
	Note on Using Environmental Checklist	(a) If necessary, the impacts to transboundary or global issues should be confirmed, if necessary (e.g., the project includes factors that may cause problems, such as transboundary waste treatment, acid rain, destruction of the ozone layer, or global warming).	(a) N	(a) Impacts to transboundary or global environmental issues are unlikely to occur.