

# Initial Environmental Examination

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April 2019

## Myanmar: Rural Roads and Access Project – Ayeyarwady Region Project Component

### Appendixes to Initial Environmental Examination

Prepared by the Ministry of Construction of the Republic of the Union of Myanmar for the Asian Development Bank.

## CURRENCY EQUIVALENTS

(as of 31 January 2019)

Currency unit	–	kyat (MK)
MK1.00	=	\$0.00066
\$1.00	=	MK1512.35

## ABBREVIATIONS

asl	–	above sea level
CBD	–	Convention on Biological Diversity
CITES	–	Convention for International Trade of Endangered Species
CRRN	–	Core Rural Road Network
dBA	–	expression of the relative loudness of sounds in air as perceived by the human ear
DBST	–	Double Bitumen Surface Treatment
DRD	–	Department of Rural Development
DRRD	–	Department of Rural Road Development
LDP	–	Liability Defects Period
EC	–	Electrical Conductivity
ECD	–	Environmental Conservation Department
ECC	–	Environmental Compliance Certificate
EHS	–	Environment Health and Safety
EHSO	–	Environment Health and Safety Officer
EIA	–	Environmental Impact Assessment
EMP	–	Environmental Management Plan
ESIA	–	Environmental and Social Impact Assessment
TGAD	–	Township General Administration Department
IEE	–	Initial Environmental Evaluation
IESS	–	International Environment Safeguard Specialist
IFC	–	International Finance Corporation
ILO	–	International Labour Organization
MOECAP	–	Ministry of Environmental Conservation and Forestry
MONREC	–	Ministry of Natural Resources and Environmental Conservation
MOLFRD	–	Ministry of Livestock, Fisheries and Rural Development
MSD	–	Masonry side drain
NEQG	–	National Environmental Quality Guidelines
NESS	–	National Environment Safeguard Specialist
OSH	–	Occupational health & safety
PA	–	Protected area
PEA	–	Program Executing Agency
PenMac	–	Penetrated Macadam
PPTA	–	Project Preparation Technical Assistance
RDP	–	Rural Development Programme
PPE	–	Personal Protective Equipment
RW	–	Retaining Wall
RCSD	–	Reinforced concrete side drain
RoW	–	Right of Way
RRAP	–	Rural Road Access Programme

SPS – Safeguard Policy Statement  
UNFCCC – United Nations Framework Convention on Climate Change

#### NOTE

- (i) In this report, "\$" refers to United States dollars.

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# Appendix 1. Decision Letter by MONREC

The Government of the Republic of the Union of Myanmar

Ministry of Natural Resources and Environmental Conservation

Union Ministry Office

Registered No. (Forestry)- 3/(2)/16 (Gagyi)(1288/ 2018)

Date: 2018, April (19)

**Subject:** Confirmation for (ECD) comment/remark on Project Categorization Proposal for Rural Road Development Project funded by ADB loan in Magway region and Ayarwaddy region.

**Reference:** (1) Letter no., 173/ International- law/ ADB/ 2018 of Rural Road Development Department of Ministry of Construction, dated 15 March 2018

(2) Letter no. EIA- 1/ 7/ (452 (Fa)/ 2018 of Environmental Conservation Department dated 4 April 2018

According to Minister remarked on Submission letter (reference-2) for ECD comment on Project Categorization Proposal for Rural Road Development Project funded by ADB loan in Magway region and Ayarwaddy region, it is informed that the comments on Project Categorization Proposal for Rural Road Development Project is confirmed in accordance with the reference letter (2) submitted on 4<sup>th</sup> April 2018

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For Union Minister

Win Zaw, Deputy permanent Secretary

Director General

Environmental Conservation Department

Copy to - Ministry of Construction

ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်အစိုးရ  
သယံဇာတနှင့်သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာန  
ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာန  
ရုံးအမှတ် (၅၃)၊ နေပြည်တော်

စာအမှတ်၊ အီးအိုင်အေ- ၁ / ၇ ( ၁၄၆ / ၂၀၁၈ )  
ရက်စွဲ ၂၀၁၈ ခုနှစ် ဧပြီလ ရက်

သို့

ညွှန်ကြားရေးမှူးချုပ်  
ကျေးလက်လမ်းဖွံ့ဖြိုးရေးဦးစီးဌာန(ရုံးချုပ်)  
ဆောက်လုပ်ရေးဝန်ကြီးဌာန

အကြောင်းအရာ။ မကွေးတိုင်းဒေသကြီးနှင့် ဧရာဝတီတိုင်းဒေသကြီးအတွင်း ADB ချေးငွေဖြင့်ဆောင်ရွက်မည့်  
ကျေးလက်လမ်းများဖွံ့ဖြိုးရေးစီမံကိန်းအတွက် Project Categorization Proposal  
နှင့်ပတ်သက်၍ သဘောထားမှတ်ချက်ပြန်ကြားခြင်း

- ရည်ညွှန်းချက် ။ (၁) ဆောက်လုပ်ရေးဝန်ကြီးဌာန၊ ကျေးလက်လမ်းဖွံ့ဖြိုးရေးဦးစီးဌာန(ရုံးချုပ်)၏  
(၁၅- ၃-၂၀၁၈) ရက်စွဲပါစာအမှတ်၊ ၁၇၃/နိုင်ငံတကာ- ၂၀၁၈/ ADB  
/၂၀၁၈  
(၂) သယံဇာတနှင့်သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာန၊ ပြည်ထောင်စု  
ဝန်ကြီးရုံး၏ (၁၉-၄-၂၀၁၈) ရက်စွဲပါစာအမှတ်၊ (သစ်တော) ၃(၂) / ၁၆  
(ဃ)(၁၂၈၈/၂၀၁၈)

၁။ မကွေးတိုင်းဒေသကြီးနှင့် ဧရာဝတီတိုင်းဒေသကြီးအတွင်းရှိ မြို့နယ်(၄)မြို့နယ်၌ ကျေးလက်လမ်းများ  
ဖွံ့ဖြိုးရေးစီမံကိန်းအား ADB (Asian Development Bank) ချေးငွေဖြင့် အကောင်အထည်ဖော်  
ဆောင်ရွက်မည်ဖြစ်ရာ လမ်းများအဆင့်မြှင့်တင်တည်ဆောက်ခြင်းအတွက်ဒေါ်လာ(၆၂.၅) သန်း၊ ကျေးလက်  
လမ်းများ စီမံခန့်ခွဲမှုတိုးတက်ရေးအတွက်ဒေါ်လာ(၃.၈) သန်း၊ အခြားငွေကြေးဆိုင်ရာ ကိစ္စရပ်များအတွက်  
ဒေါ်လာ(၈၁)သန်းနှင့် စီမံကိန်းပြင်ဆင်ဆောင်ရွက်ခြင်းအတွက် ဒေါ်လာ(၂၁) သန်း၊ စီမံကိန်းတစ်ခုလုံးအား  
စုစုပေါင်းဒေါ်လာ(၇၆.၅) သန်း အကုန်ကျဆောင်ရွက်သွားရန် ညှိနှိုင်းထားပါကြောင်း၊ အဆိုပါစုစုပေါင်း  
ဒေါ်လာ(၇၆.၅) သန်းတွင် ADB ဘဏ်မှချေးငွေသန်း(၇၀)၊ ထောက်ပံ့ငွေ (၅.၈) သန်းနှင့် ပြည်ထောင်စု  
အစိုးရမှ ထောက်ပံ့ငွေဒေါ်လာ(၀.၇) သန်းဖြစ်ကြောင်း၊ ချေးငွေကာလမှာ (၃၂)နှစ်ဖြစ်ပြီး ဆိုင်းငံ့ကာလ  
(၈) နှစ်အတွင်း အတိုးနှုန်း(၁%)နှင့် ကျန်နှစ်များတွင်အတိုးနှုန်း (၁.၅%) ပေးဆောင်ရမည်ဖြစ်ကြောင်း၊  
ADB ချေးငွေဖြင့် အဆိုပါ(၄)မြို့နယ်၌ ဆောင်ရွက်မည့် ကျေးလက်လမ်းများဖွံ့ဖြိုးရေးစီမံကိန်းအား  
ဆောင်ရွက်ရမည့် ဆန်းစစ်ခြင်းအမျိုးအစားသတ်မှတ်ပေးပါရန် ကျေးလက်လမ်းဖွံ့ဖြိုးရေးဦးစီးဌာနမှ  
ရည်ညွှန်း(၁)ပါစာဖြင့် Project Categorization Proposal ပေးပို့လာခြင်းအပေါ် ပတ်ဝန်းကျင်ထိန်းသိမ်းရေး

ဦးစီးဌာနမှစစ်၍ သယ်ယူပို့ဆောင်ရေးနှင့်သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာန၊ ပြည်ထောင်စုဝန်ကြီးရုံးသို့ တင်ပြခဲ့ရာ ညွှန်ကြားမှုဦးစီးဌာန (၂) ဝါးဖြင့် သဘောထားမှတ်ချက်ပြန်ကြားခွင့်ပြုကြောင်း အကြောင်းကြားလာပါသည်။

၂။ အားလုံးဖြိုးရေးဘဏ်ချေးငွေဖြင့်ဆောင်ရွက်မည်ကျေးလက်လမ်းဖွံ့ဖြိုးရေးစီမံကိန်းတွင် မကွေးတိုင်းဒေသကြီးနှင့် ဧရာဝတီတိုင်းဒေသကြီးတို့မှ မြို့နယ် (၄) မြို့နယ်စီ ရွေးထားချယ်ပြီး ပထမအဆင့်အနေဖြင့် မကွေးတိုင်းဒေသကြီးအတွင်း မြို့သစ်မြို့နယ်နှင့်နတ်ဆောက်မြို့နယ်ရှိ ကျေးလက်လမ်းများကိုလည်းကောင်း၊ ဧရာဝတီတိုင်းဒေသကြီးအတွင်း မအူပင်မြို့နယ်နှင့် ပန်းတနော်မြို့နယ်ရှိ ကျေးလက်လမ်းများကိုလည်းကောင်း၊ စုစုပေါင်း လမ်းအရှည် (၂၄၅၆၀ ကီလိုမီတာ)အား ဆောက်လုပ်ရေးဝန်ကြီးဌာန၊ ကျေးလက်လမ်း ဖွံ့ဖြိုးရေး ဦးစီးဌာနကြီးကြပ်မှုဖြင့် အဆင့်မြင့်တင်အကောင်အထည်ဖော်ဆောင်ရွက်မည်ဖြစ်ကြောင်း ဖော်ပြထားပါသည်။

၃။ စီမံကိန်းတွင်ထည့်သွင်း ရွေးချယ်ထားသည့်လမ်းများ ဖောက်လုပ်ခြင်းနှင့် အဆင့်မြင့်တင်ခြင်း လုပ်ငန်းများကြောင့် လူမှုစီးပွားဘဏ္ဍာကိုးတက်မည်ဖြစ်သကဲ့သို့ ပတ်ဝန်းကျင်အပေါ် သက်ရောက်မှုလည်း ရှိမည်ဖြစ်ကြောင်း၊ လမ်းအဆင့်မြင့်တင်တည်ဆောက်ခြင်းတွင် အောက်ပါလုပ်ငန်းများ ပါဝင်ကြောင်း ဖော်ပြထားပါသည်-

- (က) လမ်းမြေနေရာ ဖယ်ရှားခြင်းအပါအဝင် လမ်းမြေသားဖယ်ထုတ်ခြင်း၊ မြေဖို့ခြင်း၊ မြေသား အမာခံပြုလုပ်ခြင်းနှင့် လမ်းပန်းသားဖော်ခြင်း၊
- (ခ) bae course နှင့် sub base ပြုလုပ်ခြင်း၊
- (ဂ) လမ်းဘေးရေမြောင်းတူးဖော်ခြင်း၊
- (ဃ) တံတားဖြတ်ရှိသည့်နေရာတွင်တံတားဆောက်လုပ်ခြင်း၊
- (င) လမ်းကမ်းပါးထိန်းနံရံတည်ဆောက်ခြင်း၊
- (စ) လမ်းအန္တရာယ်ကင်းစေမည့်အစီအမံများထည့်သွင်းဆောင်ရွက်ခြင်း၊

၄။ စီမံကိန်းလုပ်ငန်းများ အကြိုတည်ဆောက်ခြင်း၊ တည်ဆောက်ခြင်း၊ တည်ဆောက်ပြီးကာလ လမ်းအသုံးပြုခြင်းနှင့် ဆက်စပ်ဆောင်ရွက်ရသည့်အခြားလုပ်ငန်းများဆောင်ရွက်စဉ်အတွင်း လုပ်ငန်း ဆောင်ရွက်မှုစစ်ဆေးမှုစီစဉ်၊ သက်ရောက်မှုကြောင့်-

- (က) ဧရ၊ လေ၊ မြေ အရည်အသွေး၊ ဆူညံသံ၊ မြေမျက်နှာသွင်ပြင်စသည့် ရုပ်ပိုင်းဆိုင်ရာ ပတ်ဝန်းကျင် အခြေအနေ၊
  - (ခ) အပင်၊ တောရိုင်းတိရစ္ဆာန်၊ ရေနေသတ္တဝါနှင့်ရေဝပ်ဒေသစသည်တို့၏ ဂေဟစနစ်ဆိုင်ရာ အခြေအနေ၊
  - (ဂ) အလုပ်အကိုင်ရရှိမှု၊ ဒေသစီးပွားရေး၊ ရွေးဟောင်းယဉ်ကျေးမှုဆိုင်ရာ၊ မြေအသုံးချမှုနှင့် လုပ်ငန်းခွင်ဘေးကင်းလုံခြုံမှုအခြေအနေ၊
- စသည်တို့အပေါ် တိရိုက်နိုင်မှုများ ရှိ/မရှိ ယေဘုယျ ခြုံငုံဖော်ပြထားပါသည်။



၅။ ကျေးလက်လမ်းများဖွံ့ဖြိုးရေးစီမံကိန်းတွင် အောက်ဖော်ပြပါအတိုင်း ကျေးလက်လမ်းများကို အဆင့်မြှင့်တင် ဆောင်ရွက်မည်ဖြစ်ကြောင်းဖော်ပြထားပါသည်။

(က) မကွေးတိုင်းဒေသကြီး	လမ်းအရှည်(စန့်)
(၁) မြို့သစ်မြို့နယ်	၅၉.၀၀ ကီလိုမီတာ
(၂) နတ်မောက်မြို့နယ်	၆၁.၀၀ ကီလိုမီတာ
(ခ) ဧရာဝတီတိုင်းဒေသကြီး	
(၃) အူပင်မြို့နယ်	၅၃.၀၀ ကီလိုမီတာ
(၄) ပန်းတနော်မြို့နယ်	၇၂.၀၀ ကီလိုမီတာ
စုစုပေါင်း	၂၄၅.၀၀ ကီလိုမီတာ

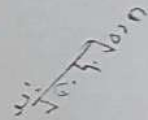
၆။ ကျေးလက်နေပြည်သူများ၏ လူမှုစီးပွားဘဝဖွံ့ဖြိုးမှု တိုးမြှင့်နိုင်ရေးနှင့် ဆင်းရဲမှုလျော့နည်းစေရေး ကိုအတွက် အခြေခံလိုအပ်ချက်ဖြစ်သောကျေးလက်လမ်းများကောင်းမွန်ပြီး ဆက်သွယ်သွားလာနိုင်စေရန် ADB ချေးငွေ၊ ထောက်ပံ့ငွေတို့ဖြင့် ဆောင်ရွက်မည့် ကျေးလက်လမ်းများအဆင့်မြှင့်တင်ခြင်း လုပ်ငန်း သည် အောက်ပါအချက်တို့ကြောင့် IEE ဆန်းစစ်ခြင်းဆောင်ရွက်ရန် လိုအပ်ကြောင်း စိစစ်တွေ့ရှိရ ပါသည်။

- (က) မြို့နယ်တစ်ခုချင်းစီ၌ လမ်းအပိုင်းတစ်ခုချင်းစီ အဆင့်မြှင့်တင်တည်ဆောက်ခြင်းဖြစ်သော်လည်း နယ်နိမိတ်ဆက်စပ်မြို့နယ်(၂)ခုစလုံး၌ စုစုပေါင်းလမ်းအရှည် ၅၀ ကီလိုမီတာအထက် မြို့နယ် အလိုက်ဆောင်ရွက်မှုဖြစ်ခြင်း၊
- (ခ) ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်းနောက်ဆက်တွဲ (က) ဇယားတွင် လမ်းများအဆင့်မြှင့်တင်ခြင်းနှင့်ပတ်သက်၍ လမ်းအရှည် ၅၀ ကီလိုမီတာနှင့် အထက်ကို IEE ဆန်းစစ်ခြင်းဆောင်ရွက်ရန်ဟုလည်းကောင်း၊ တိုင်းဒေသကြီး/ ပြည်နယ်/ ခရိုင်နှင့် မြို့ပြလမ်းမများ အသစ်ဖောက်လုပ်ခြင်း သို့မဟုတ် လမ်းသားတိုးချဲ့ခြင်းနှင့်ပတ်သက်၍ အရှည် ၅၀ ကီလိုမီတာနှင့်အထက် ၁၀၀ ကီလိုမီတာအောက်ကို IEE ဆန်းစစ်ခြင်းဆောင်ရွက်ရန်ဟု လည်းကောင်းသတ်မှတ်ထားခြင်း၊
- (ဂ) စီမံကိန်းတွင်ပါဝင်သည့် အဆင့်မြှင့်တင် တည်ဆောက်သောလမ်းများသည် ထိန်းသိမ်း သစ်တော ကြိုးဝိုင်းဧရိယာနှင့်လွတ်ကင်းသော်လည်း လမ်းဘေးဝဲယာ၌ စိုက်ပျိုး ခင်းများ၊ ကျေးလက်အိမ်ယာများနှင့် ရေဝပ်ဧရိယာအနီး မြေလွတ်မြက်ခင်းနေရာ၊ မွေးမြူရေးကန် စသည် တည်ရှိသော agroecosystem နေရာမျိုးတွင် ရှိနေခြင်းကြောင့် လုပ်ငန်းသုံးယာဉ်ယန္တရားများအသုံးပြုခြင်း၊ လိုအပ်သည့်မြေသားများတူးဖော်သယ်ယူခြင်း တို့ကြောင့် ကျေးလက်လမ်းတစ်လျှောက်ပတ်ဝန်းကျင်ဓာတ်ပစ္စည်းအသက်ရှောက်မှု နည်းနိုင် သမျှ နည်းအောင်လျော့ချရန်လိုအပ်ခြင်း၊

(ဃ) မကွေးတိုင်းဒေသကြီးနှင့် ဧရာဝတီတိုင်းဒေသကြီးတို့၏ ရာသီဥတု၊ မိုးရေချိန်၊ မြေမျက်နှာသွင်ပြင်အနေအထား၊ ဂေဟစနစ်တို့မှာ မတူညီခြင်း၊

၇။ သို့ဖြစ်ပါ၍ မကွေးတိုင်းဒေသကြီးနှင့် ဧရာဝတီတိုင်းဒေသကြီးအတွင်းရှိ မြို့နယ်(၄) မြို့နယ်မှ ကျေးလက်လမ်းများဖွံ့ဖြိုးရေးစီမံကိန်းအတွက် အဆိုပြုတင်ပြလာသည့် Project Categorization Proposal နှင့် ပတ်သက်၍ အောက်ပါအတိုင်း သဘောထားမှတ်ချက် ပြန်ကြားအပ်ပါသည် -

- (၁) မကွေးတိုင်းဒေသကြီးအတွင်း မြို့နယ်နယ်နိမိတ်ချင်းထိစပ်နေသော မြို့သစ်မြို့နယ်နှင့် နတ်ဆောက်မြို့နယ်ရှိ ကျေးလက်လမ်းများအဆင့်မြှင့်တင်ခြင်းလုပ်ငန်းများအတွက် ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း IEE အစီရင်ခံစာ (၁) စောင် ရေးဆွဲဆောင်ရွက်ရန်၊
- (၂) ဧရာဝတီတိုင်းဒေသကြီးအတွင်း မြို့နယ်နယ်နိမိတ်ချင်းထိစပ်နေသော မအူပင်မြို့နယ်နှင့် ပန်းတနော်မြို့နယ်ရှိ ကျေးလက်လမ်းများအဆင့်မြှင့်တင်ခြင်းလုပ်ငန်းများအတွက် ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း IEE အစီရင်ခံစာ (၁)စောင် ရေးဆွဲဆောင်ရွက်ရန်၊



(လှမောင်သိန်း)  
ညွှန်ကြားရေးမှူးချုပ်

မိတ္တူကိုင်

ညွှန်ကြားရေးမှူး၊ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာန၊ မကွေးတိုင်းဒေသကြီး  
ညွှန်ကြားရေးမှူး၊ ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာန၊ ဧရာဝတီတိုင်းဒေသကြီး  
ရုံးလက်ခံ၊ မျှောစာတွဲ၊ အမှုတွဲချုပ်



ပြည်ထောင်စုသမ္မတမြန်မာနိုင်ငံတော်အစိုးရ  
သယံဇာတနှင့်သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာန  
ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဦးစီးဌာန  
ရုံးအမှတ် (၅၃)၊ နေပြည်တော်



စာအမှတ်၊ အီးအိုင်အေ- ၁ / ၇ (၁၅၃(မ)) / ၂၀၁၈  
ရက်စွဲ ၂၀၁၈ ခုနှစ် ဧပြီလ ၉ ရက်

သို့

ပြည်ထောင်စုဝန်ကြီးရုံး  
သယံဇာတနှင့်သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးဝန်ကြီးဌာန  
ရုံးအမှတ် (၂၈)

အကြောင်းအရာ။ မကွေးတိုင်းဒေသကြီးနှင့် ဧရာဝတီတိုင်းဒေသကြီးအတွင်း ADB ချေးငွေဖြင့်ဆောင်ရွက်မည့်  
ကျေးလက်လမ်းများဖွံ့ဖြိုးရေးစီမံကိန်းအတွက် (Project Categorization Proposal)  
သဘောထားမှတ်ချက်ပြန်ကြားစွင့်ပြုပါရန်တင်ပြခြင်း

ရည်ညွှန်းချက် ။ ဆောက်လုပ်ရေးဝန်ကြီးဌာန၊ ကျေးလက်လမ်းဖွံ့ဖြိုးရေးဦးစီးဌာန၏ (၁၅-၃-၂၀၁၈)  
ရက်စွဲပါစာအမှတ်၊ ၁၇၃/နိုင်ငံတကာ- ဥပဒေ / ADB / ၂၀၁၈

၁။ မကွေးတိုင်းဒေသကြီးနှင့် ဧရာဝတီတိုင်းဒေသကြီးအတွင်းရှိ မြို့နယ် (၄) မြို့နယ်၌ ကျေးလက်လမ်းများ  
ဖွံ့ဖြိုးရေးစီမံကိန်းအား ADB (Asian Development Bank) ချေးငွေဖြင့် အကောင်အထည်ဖော်  
ဆောင်ရွက်မည်ဖြစ်ရာ လမ်းများအဆင့်မြှင့်တင်တည်ဆောက်ခြင်းအတွက်ဒေါ်လာ(၆၂၅)သန်း၊ ကျေးလက်  
လမ်းများ စီမံခန့်ခွဲမှုတိုးတက်ရေးအတွက်ဒေါ်လာ(၃၈)သန်း၊ အခြားငွေကြေးဆိုင်ရာကိစ္စရပ်များ အတွက်  
ဒေါ်လာ(၈၁) သန်းနှင့် စီမံကိန်းပြင်ဆင်ဆောင်ရွက်ခြင်းအတွက် ဒေါ်လာ(၂၁) သန်း၊ စီမံကိန်းတစ်ခုလုံးအား  
စုစုပေါင်းဒေါ်လာ(၇၆၅)သန်း အကုန်ကျခံဆောင်ရွက်သွားရန် ညှိနှိုင်းထားပါကြောင်း၊ အဆိုပါစုစုပေါင်း  
ဒေါ်လာ((၇၆၅)သန်းတွင် ADB ဘဏ်မှ ချေးငွေသန်း(၇၀)၊ ထောက်ပံ့ငွေ (၅.၈)သန်းနှင့် ပြည်ထောင်စု  
အစိုးရမှ ထောက်ပံ့ငွေဒေါ်လာ(၀.၇)သန်းဖြစ်ကြောင်း၊ ချေးငွေကာလမှာ (၃၂)နှစ်ဖြစ်ပြီး ဆိုင်းငံ့ကာလ  
(၈) နှစ်အတွင်း အတိုးနှုန်း(၁%)နှင့် ကျန်နှစ်များတွင်အတိုးနှုန်း (၁.၅%) ပေးဆောင်ရမည်ဖြစ်ကြောင်း၊  
ADB ချေးငွေဖြင့် အဆိုပါ(၄)မြို့နယ်၌ ဆောင်ရွက်မည့် ကျေးလက်လမ်းများဖွံ့ဖြိုးရေးစီမံကိန်းအား  
အမျိုးအစားခွဲခြားပေးပါရန် (Project Categorization Proposal) သဘောထားမှတ်ချက်အတွက် ရည်ညွှန်းပါ  
စာဖြင့် ညှိနှိုင်းမေတ္တာရပ်ခံလာပါသည်။

၂။ အာရှဖွံ့ဖြိုးရေးဘဏ်ချေးငွေဖြင့်ဆောင်ရွက်မည့်ကျေးလက်လမ်းဖွံ့ဖြိုးရေးစီမံကိန်းတွင် မကွေးတိုင်း  
ဒေသကြီးနှင့် ဧရာဝတီတိုင်းဒေသကြီးတို့မှ မြို့နယ် (၄) မြို့နယ်စီ ရွေးထားချယ်ပြီး ပထမအဆင့်အနေဖြင့်  
မကွေးတိုင်းဒေသကြီးအတွင်း မြို့သစ်မြို့နယ်နှင့်နတ်ခောက်မြို့နယ်ရှိ ကျေးလက်လမ်းများကိုလည်းကောင်း၊  
ဧရာဝတီတိုင်းဒေသကြီးအတွင်း မအူပင်မြို့နယ်နှင့် ပန်းတနော်မြို့နယ်ရှိ ကျေးလက်လမ်းများကိုလည်းကောင်း၊

င်းလမ်းအရှည် မိုင် ၁၅၂.၂၇ (၂၄၅၆၀ ကီလိုမီတာ)အား ဆောက်လုပ်ရေးဝန်ကြီးဌာန၊ ကျေးလက်လမ်း၊  
၊ ရေဦးစီးဌာနကြီးကြပ်မှုဖြင့် အဆင့်မြင့်တင်အကောင်အထည်ဖော် ဆောင်ရွက်မည်ဖြစ်ကြောင်း ဖော်ပြ  
ပါသည်။

၃။ စီမံကိန်းတွင်ထည့်သွင်း ရွေးချယ်ထားသည့်လမ်းများ ဖောက်လုပ်ခြင်းနှင့် အဆင့်မြင့်တင်ခြင်း၊  
လုပ်ငန်းများကြောင့် လူမှုစီးပွားဘဝဖွံ့ဖြိုးတိုးတက်မည်ဖြစ်သကဲ့သို့ ပတ်ဝန်းကျင်အပေါ် သက်ရောက်မှုလည်း  
ရှိမည်ဖြစ်ကြောင်း၊ လမ်းအဆင့်မြင့်တင်တည်ဆောက်ခြင်းတွင် အောက်ပါလုပ်ငန်းများ ပါဝင်ကြောင်း  
ဖော်ပြထားပါသည်။

- (က) လမ်းမြေနေရာ ဖယ်ရှားခြင်းအပါအဝင် လမ်းခြေသားဖယ်ထုတ်ခြင်း၊ မြေဖို့ခြင်း၊ မြေသား  
အမာမြေလုပ်ခြင်းနှင့် လမ်းပန်းသားဖော်ခြင်း၊
- (ခ) base course နှင့် sub base ပြုလုပ်ခြင်း၊
- (ဂ) လမ်းဘေးရေမြောင်းတူးဖော်ခြင်း၊
- (ဃ) တံတားဖြတ်ရှိသည့်နေရာတွင်တံတားဆောက်လုပ်ခြင်း၊
- (င) လမ်းကမ်းပါးထိန်းနံရံတည်ဆောက်ခြင်း၊
- (စ) လမ်းအန္တရာယ်ကင်းစေမည့်အစီအမံများထည့်သွင်းဆောင်ရွက်ခြင်း၊

၄။ စီမံကိန်းလုပ်ငန်းများ အကြိုတည်ဆောက်ခြင်း၊ တည်ဆောက်ခြင်း၊ တည်ဆောက်ပြီးကာလ  
လမ်းအသုံးပြုခြင်းနှင့် ဆက်စပ်ဆောင်ရွက်ရမည့်အခြားလုပ်ငန်းများဆောင်ရွက်စဉ်အတွင်း လုပ်ငန်း  
ဆောင်ရွက်မှုတစ်ခုချင်းစီ၏ သက်ရောက်မှုကြောင့်-

- (က) ရေ၊ လေ၊ မြေ အရည်အသွေး၊ ဆူညံသံ၊ မြေမျက်နှာသွင်ပြင်စသည့် ရုပ်ပိုင်းဆိုင်ရာ ပတ်ဝန်းကျင်  
အခြေအနေ၊
- (ခ) အပင်၊ တောရိုင်းတိရစ္ဆာန်၊ ရေနေသတ္တဝါနှင့်ရေငုပ်ဒေသစသည်တို့၏ ဂေဟစနစ်ဆိုင်ရာ  
အခြေအနေ၊
- (ဂ) အလုပ်အကိုင်ရရှိမှု၊ ဒေသစီးပွားရေး၊ ရှေးဟောင်းယဉ်ကျေးမှုဆိုင်ရာ၊ မြေအသုံးချမှုနှင့်  
လုပ်ငန်းခွင်သားကင်းလုံခြုံမှုအခြေအနေ၊

စသည်တို့အပေါ် ထိခိုက်နိုင်မှုများ ရှိ/မရှိ ယေဘုယျ မြှင့်ဖော်ပြထားပါသည်။

၅။ ကျေးလက်လမ်းဖွံ့ဖြိုးရေးစီမံကိန်းတွင် အောက်ဖော်ပြပါအတိုင်း ကျေးလက်လမ်းများကို  
အဆင့်မြင့်တင် ဆောင်ရွက်မည်ဖြစ်ပါသည်။

- |                        |                  |
|------------------------|------------------|
| (က) မကွေးတိုင်းဒေသကြီး | လမ်းအရှည်(မိုင်) |
| (၁) မြို့သစ်မြို့နယ်   | ၅၉.၈၀ ကီလိုမီတာ  |
| (၂) နတ်မောက်မြို့နယ်   | ၆၁.၈၀ ကီလိုမီတာ  |

- |                         |                 |
|-------------------------|-----------------|
| (ခ) စရာဝတီတိုင်းဒေသကြီး | ၅၃.၁၀ ကီလိုမီတာ |
| (၃) မအူပင်မြို့နယ်      | ၇၂.၀၀ ကီလိုမီတာ |
| (၄) ပန်းတနင်္သာမြို့နယ် | ၂၄၅ ကီလိုမီတာ   |
| စုစုပေါင်း              |                 |

၆။ ကျေးလက်နေပြည်သူများ၏ လူမှုစီးပွားဘဝဖွံ့ဖြိုးမှု တိုးမြှင့်နိုင်ရေးနှင့် ဆင်းရဲမွဲတေမှုနည်းစေရေး တို့အတွက် အခြေခံလိုအပ်ချက်ဖြစ်သော ကျေးလက်လမ်းများကောင်းမွန်ပြီး ဆက်သွယ်သွားလာနိုင်စေရန် ADB မျှော်မှတ် ထောက်ပံ့ငွေတို့ဖြင့် ကျေးလက်လမ်းများအဆင့်မြှင့်တင်ခြင်းလုပ်ငန်းသည်-

- (က) မြို့နယ်တစ်ခုချင်းစီ၌ လမ်းအပိုင်းတစ်ခုချင်းစီ အဆင့်မြှင့်တင်တည်ဆောက်ခြင်းဖြစ်သော်လည်း နယ်နိမိတ်ဆက်စပ်မြို့နယ်(၂)ခုစလုံး၌ စုစုပေါင်းလမ်းအရှည် ၅၀ ကီလိုမီတာအထက် မြို့နယ် အလိုက်ဆောင်ရွက်မှုဖြစ်ခြင်း၊
- (ခ) ယာ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ လုပ်ထုံးလုပ်နည်းဆောက်ဆက်တွဲ (က) ဝေးကွာလမ်းများအဆင့်မြှင့်တင်ခြင်းနှင့်ပတ်သက်၍ လမ်းအရှည် ၅၀ ကီလိုမီတာနှင့် အထက်ကို IEE ဆန်းစစ်ခြင်းဆောင်ရွက်ရန်ဟုလည်းကောင်း၊ တိုင်းဒေသကြီး/ ပြည်နယ်/ ခရိုင်နှင့် မြို့ပြလမ်းမများ အသစ်ဖောက်လုပ်ခြင်း သို့မဟုတ် လမ်းသားတိုးချဲ့ခြင်းနှင့်ပတ်သက်၍ အရှည် ၅၀ ကီလိုမီတာနှင့်အထက် ၁၀၀ ကီလိုမီတာအောက်ကို IEE ဆန်းစစ်ခြင်းဆောင်ရွက်ရန်ဟု လည်းကောင်းသတ်မှတ်ထားခြင်း၊
- (ဂ) စီမံကိန်းတွင်ပါဝင်သည့် အဆင့်မြှင့်တင် တည်ဆောက်သောလမ်းများသည် ထိန်းသိမ်းသစ်တော ကြိုးဝိုင်းစရိယာနှင့်လွတ်ကင်းသော်လည်း လမ်းဘေးဝဲယာ၌ ခိုက်ယှိုးခင်းများ၊ ကျေးလက်အိမ်ယာများနှင့် ရေဝပ်စရိယာအနီး မြေလွတ်မြက်ခင်းနေရာ၊ မွေးမြူရေးကန် စသည် တည်ရှိသော agroecosystem နေရာမျိုးတွင် ရှိနေခြင်းကြောင့် လုပ်ငန်းသုံးယာဉ်ယန္တရားများအသုံးပြုခြင်း၊ လိုအပ်သည့်မြေသားများတူးဖော်သယ်ယူခြင်း တို့ကြောင့် ကျေးလက်လမ်းတစ်လျှောက်ပတ်ဝန်းကျင်ဓာတ်စနစ်အားသက်ရောက်မှု နည်းနိုင်သမျှ နည်းအောင်လျှော့ချရန်လိုအပ်ခြင်း၊
- (ဃ) မကွေးတိုင်းဒေသကြီးနှင့် စရာဝတီတိုင်းဒေသကြီးတို့၏ ရာသီဥတု၊ မိုးရေချိန်၊ မြေမျက်နှာသွင်ပြင်အနေအထား၊ ဂေဟစနစ်တို့မှာ မတူညီခြင်း၊

၇။ ကျေးလက်လမ်းများဖွံ့ဖြိုးရေးစီမံကိန်းအတွက် Project Categorization Proposal သဘောထားမှတ်ချက်ကောင်းစံခြင်းနှင့်ပတ်သက်၍ ဆန်းစစ်ခြင်း ဆောင်ရွက်ရန်လိုအပ်သည့် စီမံကိန်းလုပ်ငန်း အမျိုးအစားအား အောက်ပါအတိုင်း သတ်မှတ်ပါသည်။ -



- (၁) ကျေးလက်ဒေသကြီးအတွင်း မြို့နယ်နယ်နိမိတ်တွင်းထိစပ်နေသော မြို့သစ်မြို့နယ်နှင့် နတ်ဆောက်မြို့နယ်ရှိ ကျေးလက်လမ်းများအဆင့်မြှင့်တင်ခြင်းလုပ်ငန်းများအတွက် ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း IEE အစီရင်ခံစာ (၁) စောင် ရေးဆွဲဆောင်ရွက်ပါရန်၊
- (၂) ကျေးလက်ဒေသကြီးအတွင်း မြို့နယ်နယ်နိမိတ်ချင်းထိစပ်နေသော မအူပင်မြို့နယ်နှင့် ပန်းကန်မြို့နယ်ရှိ ကျေးလက်လမ်းများအဆင့်မြှင့်တင်ခြင်းလုပ်ငန်းများအတွက် ကနဦးပတ်ဝန်းကျင်ဆန်းစစ်ခြင်း IEE အစီရင်ခံစာ (၁)စောင် ရေးဆွဲဆောင်ရွက်ပါရန်၊

၈။ သို့ဖြစ်ပါ၍ ADB ရေးဆွဲခြင်းအဆိုပါ (၄) မြို့နယ်ရှိ ဆောင်ရွက်မည့်ကျေးလက်လမ်းများဖွံ့ဖြိုးရေးစီမံကိန်းအား ပတ်ဝန်းကျင်ဆန်းစစ်ခြင်းဆိုင်ရာ အမျိုးအစားခွဲခြားပေးပါရန် (Project Categorization Proposal) သဘောထားမှတ်ချက်အတွက် ညှိနှိုင်းဆွဲချုပ်ရန်လျှောက်ထားသော အထက်ပါစီစစ် တင်ပြချက်များအပေါ် ဖြန့်ကြားခွင့်ပြုပါရန်နှင့်လမ်းညွှန်မှုပြုနိုင်ပါရန်တင်ပြအပ်ပါသည်။

၁၆.၁.၂၀၁၈

(လှမောင်သိန်း)

ညွှန်ကြားရေးမှူးချုပ်

မိတ္ထီလို

ရုံးလက်ခံ၊ မြေရာစာတွဲ၊ အမှုတွဲချုပ်

## Appendix 2 Types of Paving Considered for RRAP

### Flexible Pavements - DBST

Code	Description	Typical Application and Features
<b>DBST Type 1:</b>	Open Field Areas and Flat Terrain	<p>Suitable for open field areas and flat terrain. Theoretical elevation of road center line above the existing terrain guided by approximate geometry of MOC Rural Road Type (B) Standard Design. (See Annex I). Diagram in Annex II provides the road designer necessary guidance of how to establish the proposed levels of the road centerline in a step by step manner.</p> <p>Key features of this cross section are:</p> <ul style="list-style-type: none"> <li>• Nominal paved width of carriageway = 12' (or rounded to 3700 mm in metric system).</li> <li>• Shoulder width as per MOC Rural Road Type (B) = 4' (or 1150 mm in metric system).</li> <li>• Nominal crown width 20' (or rounded to 6000 mm in metric system)</li> <li>• Camber and shoulder cross fall = 3%</li> </ul> <p>In most cases under the prevailing conditions in both regions it will neither be necessary or possible to construct side drains for cross sections in open field areas because the terrain is predominantly flat. However in some specific cases side drains are needed. If applicable these side drains should be constructed at a distance of not nearer than 7000 mm from the road centerline and the site engineer has to set-out drain levels during implementation through a detailed survey to ensure the drains are built at a self-draining gradient, normally not less than 1%.</p>
<b>DBST Type 2:</b>	Open Field Areas and Flat Terrain – Including Oxcart Tracks (left & right)	<p>Suitable for open field areas and flat terrain with significant oxcart traffic in Magway Region. Establishing of levels in same manner as Type 1 Cross Section. Key features are:</p> <ul style="list-style-type: none"> <li>• Carriageway, shoulders and slope as Type 1.</li> <li>• Provision of a 10' (or 3000 mm in metric system) wide oxcart track at foot of slope.</li> </ul>
<b>DBST Type 3 (MSD)</b>	In Areas of Limited Space and with provision of <u>M</u> asonry <u>S</u> ide <u>D</u> rain	<p>Suitable for narrow village areas with possibility of constructing open self-draining side drains in stone masonry works.</p> <p>Key features are:</p>



		<ul style="list-style-type: none"> <li>• Nominal paved width of carriageway = 12' (or rounded to 3700 mm in metric system) as Cross Section Type 1.</li> <li>• Shoulder width variable form minimum 500 mm to maximum 1150 mm depending available space.</li> <li>• Outside dimension of masonry side drains 800 mm deep and 1000 mm wide</li> <li>• Range of resulting formation width therefore variable from min. 6700 mm to max. 8000 mm.</li> </ul>
<b>DBST Type 3 (RCSD)</b>	In Areas of Limited Space and with provision of <u>R</u> einforced <u>C</u> oncrete <u>S</u> ide <u>D</u> rain	<p>The second option of building lined side drains is by construction in Reinforced Concrete (RC). This is more expensive than drains constructed in stone masonry but may be necessary if:</p> <ol style="list-style-type: none"> <li>a) There are no high quality masonry stones are available in the area or,</li> <li>b) The drains have to be covered with concrete slabs because direct access by vehicles to the adjacent premises is required (e.g. parking lot in front of a store, loading area for a granary etc.)</li> </ol> <p>Otherwise similar features as Cross Section Type 3 (MSD) apply with following key features:</p> <ul style="list-style-type: none"> <li>• Nominal paved width of carriageway = 12' (or rounded to 3700 mm in metric system) as Cross Section Type 1.</li> <li>• Shoulder width variable form minimum 250 mm to maximum 1150 mm depending available space.</li> <li>• Outside dimension of concrete side drains 600 mm deep and 650 mm wide.</li> <li>• Range of resulting formation width therefore variable from min. 5500 mm to max. 7300 mm.</li> </ul>
<b>DBST Type 3 (RW)</b>	In Areas of Limited Space and with provision of <u>R</u> etaining <u>W</u> alls	<p>In cases of where it is not possible to construct side drains due to low longitudinal gradients a space saving option could be the provision of small retaining walls and reducing shoulder widths.</p> <p>Key features are:</p> <ul style="list-style-type: none"> <li>• Nominal paved width of carriageway = 12' (or rounded to 3700 mm in metric system) as Cross Section Type 1.</li> <li>• Shoulder width variable form minimum 250 mm to maximum 1150 mm depending available space.</li> <li>• Approximate outside dimension of masonry retaining wall of max. 1000 mm high and 650 mm wide.</li> </ul>

		<ul style="list-style-type: none"> <li>Range of resulting formation width therefore variable from min. 5100 mm to max. 7300 mm.</li> </ul>
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### Flexible Pavements – Penetration Macadam

Code	Description	Typical Application and Features
<b>PENMAC Type 1:</b>	Open Field Areas and Flat Terrain	Same application and geometric dimensions as DBST Type 1 but different pavement layers
<b>PENMAC Type 2:</b>	Open Field Areas and flat Terrain – Including Oxcart Tracks (left & right)	Same application and geometric dimensions as DBST Type 2 but different pavement layers
<b>PENMAC Type 3 (MSD)</b>	In Areas of Limited Space and with provision of <b>M</b> asonry <b>S</b> ide <b>D</b> rain	Same application and geometric dimensions as DBST Type 3 (MDS) but different pavement layers
<b>PENMAC Type 3 (RCSD)</b>	In Areas of Limited Space and with provision of <b>R</b> einforced <b>C</b> oncrete <b>S</b> ide <b>D</b> rain	Same application and geometric dimensions as DBST Type 3 (RCSD) but different pavement layers
<b>PENMAC Type 3 (RW)</b>	In Areas of Limited Space and with provision of <b>R</b> etaining <b>W</b> alls	Same application and geometric dimensions as DBST Type 3 (RW) but different pavement layers

### Rigid Pavements – Non Reinforced Concrete

Code	Description	Typical Application and Features
<b>Concrete Type 1:</b>	Open Field Areas and Flat Terrain	<p>Suitable for open field areas, flat terrain and high water table. High potential for application in cases of where the building high embankments is considered not desirable or on existing roads with large areas with existing stable road base.</p> <p>Theoretical elevation of road center line for vertical alignment design purpose we assumed in range of 200 mm to 300 mm above the present existing surface. However the determining of final road surface levels requires a full pavement design including insitu alignment soils investigations. In the absence of sufficient soils investigation results it is assumed additional material testing will be done prior or during the contractor's mobilization to site.</p>

		<p>Based on these, pavement designs will then be adjusted during construction accordingly.</p> <p>Key features are:</p> <ul style="list-style-type: none"> <li>• Nominal paved width of carriageway = 12' (or rounded to 3700 mm in metric system).</li> <li>• Shoulder width 1000 mm.</li> <li>• Nominal crown width 20' (or rounded to 5700 mm in metric system)</li> <li>• Camber and shoulder cross fall = 3%</li> </ul>
<b>Concrete Type 2:</b>	Open Field Areas and flat Terrain – Including Oxcart Tracks (left & right)	Not applicable
<b>Concrete Type 3 (MSD)</b>	In Areas of Limited Space and with provision of <u>M</u> asonry <u>S</u> ide <u>D</u> rain	<p>Suitable for narrow village areas with possibility of constructing open self-draining side drains in stone masonry works.</p> <p>Key features are:</p> <ul style="list-style-type: none"> <li>• Nominal paved width of carriageway = 12' (or rounded to 3700 mm in metric system) as Cross Section Type 1.</li> <li>• Shoulder width variable from minimum 500 mm to maximum 1000 mm depending available space.</li> <li>• Outside dimension of masonry side drains 800 mm deep and 1000 mm wide</li> <li>• Range of resulting formation width therefore variable from min. 6700 mm to max. 7700 mm.</li> </ul>
<b>Concrete Type 3 (RCSD)</b>	In Areas of Limited Space and with provision of <u>R</u> einforced <u>C</u> oncrete <u>S</u> ide <u>D</u> rain	<p>The second option of building lined side drains is by construction in Reinforced Concrete (RC). This is more expensive than drains constructed in stone masonry but may be necessary if:</p> <p>c) There are no high quality masonry stones are available in the area or,</p> <p>d) The drains have to be covered with concrete slabs because direct access by vehicles to the adjacent premises is required (e.g. parking lot in front of a store, loading area for a granary etc.)</p> <p>Otherwise similar features as Cross Section Type 3 (MSD) apply with following key features:</p> <ul style="list-style-type: none"> <li>• Nominal paved width of carriageway = 12' (or rounded to 3700 mm in metric system) as Cross Section Type 1.</li> <li>• Shoulder width variable from minimum 250 mm to maximum 1150 mm depending available space.</li> </ul>

		<ul style="list-style-type: none"> <li>• Outside dimension of concrete side drains 600 mm deep and 650 mm wide</li> <li>• Range of resulting formation width therefore variable from min. 5500 mm to max. 7000 mm.</li> </ul>
<b>Concrete Type 3 (RW)</b>	In Areas of Limited Space and with provision of <u>R</u> etaining <u>W</u> alls	<p>In cases of where it is not possible to construct side drains due to low longitudinal gradients a space saving option could be the provision of small retaining walls and reducing shoulder widths.</p> <p>Key features are:</p> <ul style="list-style-type: none"> <li>• Nominal paved width of carriageway = 12' (or rounded to 3700 mm in metric system) as Cross Section Type 1.</li> <li>• Shoulder width variable form minimum 250 mm to maximum 1150 mm depending available space.</li> <li>• Approximate outside dimension of masonry retaining wall of max. 1000 mm high and 650 mm wide.</li> <li>• Range of resulting formation width therefore variable from min. 5100 mm to max. 7000 mm.</li> </ul>

### Appendix 3. Socio-economic profile of the township of Maubin

Attributes	Description
Physical Attributes	<ul style="list-style-type: none"> <li>- Township Area Square miles - 515.38 Square miles (m<sup>2</sup>)</li> <li>- Above sea level - 13.62 feet</li> </ul>
Administrative Subdivision	<ul style="list-style-type: none"> <li>- Wards (12)</li> <li>- Village tracts (76), total of villages (442)</li> </ul>
Demographic Profile	<ul style="list-style-type: none"> <li>- Kachin (21.33 %), Chin (0.01 %), Myanmar (77.89 %), Rakhine (0.01 %), others (0.76 %)</li> <li>- Rural Population - under (18) - male (86,076), female (91,147)</li> <li>- Rural Population - over (18) -male (50,908), female (101,649)</li> <li>- Urban Population - under (18) - male (13,444), female (15,836)</li> <li>- Urban Population - over (18) - male (5,534), female (5,764)</li> </ul>
Occupation / Employment	<ul style="list-style-type: none"> <li>- Government staff - 2.3 %</li> <li>- Service -0.3 %</li> <li>- Agriculture -32.7 %</li> <li>- Livestock -8.7 %</li> <li>- Marketing-19.1 %</li> <li>- Industry -0.8 %</li> <li>- Fisheries -9.4 %</li> <li>- Casual workers -25.4 %</li> <li>- Others -1.3 %</li> </ul>
Income and Status of Employment	<ul style="list-style-type: none"> <li>- Yearly income of each people - 1497144 Kyats</li> <li>- Population of Workable Person - 189314</li> <li>- Population of unemployment- 29674 (15.67 %)</li> <li>- Population of workers – 159640</li> </ul>
Status Land occupation / ownership	<ul style="list-style-type: none"> <li>- Cultivated Land acre -419,904 Acre</li> <li>- Total Sown acre – 213,865 Acre</li> <li>- Land with ownership Form (7) -191,531 Acre</li> <li>- Every farmer has no Form (7).</li> <li>- Maximum acres possessed by a farmer -80 Acre</li> <li>- Minimum acres possessed by a farmer - 0.91 Acre</li> <li>- Total No of Farmers – 38,727</li> </ul>
Land Use Distribution	<ul style="list-style-type: none"> <li>- Cultivated Land- (419,904) Acre</li> <li>- Total Sown Acre - (213,865) Acre</li> <li>- Pasture land - (5,373) Acre</li> <li>- Vacant land - (64) Acre</li> <li>- Land with Form (7) - (191,531) Acre</li> <li>- Fallow land- (1,150) Acre</li> </ul>



Annual Cropping	<ul style="list-style-type: none"> <li>- Single Cropping Acre - (53,422) Acre</li> <li>- Double Cropping Acre - (16,6297) Acre</li> <li>- Triple Cropping Acre - (1,330) Acre</li> </ul>
Land use; ownership	<ul style="list-style-type: none"> <li>- Cultivated Land acre -419,904 Acre</li> <li>- Total Sown acre – 213,865 Acre</li> <li>- Land with ownership Form (7) -191,531 Acre</li> <li>- Every farmer has no Form (7).</li> <li>- Maximum acres possessed by a farmer -80 Acre</li> <li>- Minimum acres possessed by a farmer - 0.91 Acre</li> <li>- Total No of Farmers – 38,727</li> </ul>
Learning Institutions	<ul style="list-style-type: none"> <li>- High Schools (14)</li> <li>- Middle Schools (23)</li> <li>- Primary Schools (283)</li> <li>- Total Male (32676)</li> <li>- Female (32393)</li> <li>- Monastic Schools (2)</li> <li>- University (3),</li> </ul>
School attendance:	<ul style="list-style-type: none"> <li>- Primary- 98.98 %</li> <li>- Middle - 98.57 %</li> <li>- High - 98.32 %</li> <li>- Percentage of passing in the matriculation in 2017 - 25.09 %</li> </ul>
Health Facilities	<ul style="list-style-type: none"> <li>- Government hospitals (3)</li> <li>- Private hospital (1)</li> <li>- Rural Health centre (12)</li> <li>- Rural Health Sub-centre (72)</li> <li>- Station Hospital (1)</li> <li>- Local Health centre (1)</li> </ul>
Reported Leading Diseases	<ul style="list-style-type: none"> <li>- Diarrhoea</li> <li>- Malaria</li> <li>- Dengue</li> <li>- Tuberculosis</li> <li>- HIV</li> </ul>

#### Appendix 4. Socio-economic profile of Pantanaw

Item / Issue	Comments / Outcome
Physical Attributes	<ul style="list-style-type: none"> <li>- Township Area Square miles - 498.52 Square miles (m<sup>2</sup>)</li> <li>- Above sea level - 17.91 feet</li> </ul>
Administrative Subdivision	-
Demographic Profile	<ul style="list-style-type: none"> <li>- Kachin (0.002 %), Kayar (-), Kayin (50.9 %), Chin (0.006 %), Myanmar (47.8 %), Mon (0.006 %), Rakhine (0.02 %), Shan (0.02 %), others (1.26 %)</li> <li>- Rural Population - 248822, Urban Population - 19506</li> <li>- Rural - over (18) - male (77169), female (80627)</li> <li>- Rural - under (18) - male (44819), female (46207)</li> <li>- Urban - over (18) - male (6164), female (7110)</li> <li>- Urban - under (18) - male (3029), female (3203)</li> <li>- Total population of Township - 268328, male (121988), female (126834)</li> <li>- Population of employable persons- 134185</li> <li>- Population of unemployment- 27954 (20.83 %)</li> </ul>
Employment	<ul style="list-style-type: none"> <li>- Government – 2,988</li> <li>- Services- 9,194</li> <li>- Agriculture – 45,334</li> <li>- Livestock – 4,005</li> <li>- Marketing – 12,985</li> <li>- Industry – 5,876</li> <li>- Fisheries - 520</li> <li>- Casual workers- 24,589</li> <li>- Others - 730</li> </ul>
Status of Working population	<ul style="list-style-type: none"> <li>- Population of Workable Person- 134185</li> <li>- Population of unemployment- 27954</li> <li>- Population in the work - 106231</li> <li>- Percentage of unemployment- 20.83 %</li> </ul>
Township economy	<ul style="list-style-type: none"> <li>- Main livelihood is the agriculture and livestock activities</li> <li>- Main product - Paddy, many kinds of beans, chilli, mat and betel vine</li> <li>- Export Products (Paddy, many kinds of beans, chilli, mat and betel vine)</li> <li>- Consumption (30%)</li> <li>- Sale (70%) Mainly export to Yangon</li> </ul>
Land use; ownership	<ul style="list-style-type: none"> <li>- Total cultivated acre - 361164 Acre</li> <li>- Acres having Form (7) - 160033 Acre</li> <li>- Each farmer has no Form (7).</li> </ul>

	<ul style="list-style-type: none"> <li>- Minimum acres possessed by a farmer - 2 Acre</li> <li>- Maximum acres possessed by a farmer - 15 Acre</li> <li>- Types of Land - paddy, farm, Kaing Land, garden and others</li> </ul>
Educational facilities	<ul style="list-style-type: none"> <li>- High Schools (10),</li> <li>- Middle Schools (14),</li> <li>- Basic Schools (290),</li> <li>- Monastic schools (5),</li> </ul>
School attendance	<ul style="list-style-type: none"> <li>- Total of Students - male (25202), female (25338)</li> <li>- Percentage of Passed Matriculation- (19.49 %),</li> <li>- School Age children studying - 96.38,</li> <li>- Percentage of children not studying the schools - 3.62 % (disable)</li> </ul>
Health Facilities	<ul style="list-style-type: none"> <li>- Government hospitals (5), Private Clinic (6), Rural Health centre (6), Rural Health Sub-centre (44), Health Care (doctor) (1:24248), nurse - (1:8891),</li> </ul>
Leading Diseases	<ul style="list-style-type: none"> <li>- Malaria (5)</li> <li>- Diarrhoea (2454)</li> <li>- Hepatitis (183)</li> <li>- Tuberculosis (436)</li> </ul>
Transport patterns and trends	<ul style="list-style-type: none"> <li>- Main made of transportation is Road transportation and can also be used the river transportation.</li> <li>- Intra township connection (10) roads and village to village (4) roads.</li> <li>- The Department of Rural Development had implemented the rural roads (bitumen, concrete and earthen roads) total (5/1.9) miles and the rural bridges (1 bridge over (300) feet and 3 bridges under (180) feet) in 2016-2017 fiscal year.</li> <li>- The roads are being proposed in a (5) year plan.</li> <li>- The upgrading of roads will be implemented by the Ministry of construction.</li> <li>- The (20) year urban area extension project is being drawn to extend the (162.25) acres from the western quarter of town to the Shwe Mya Tin Village for the future population.</li> <li>- The construction materials can be available at the Pantanaw and Kyaunggon townships and the sand, gravel and cement at the town.</li> </ul>



**ENVIRONMENTAL CHECKLIST**  
**RURAL ROADS & ACCESS PROJECT TA 9184 MYA**

**A. Location and Salient Details of Road Sub Project**

<b>Road Name</b>	<b>MBN004</b>	
<b>Township</b>	Maubin	
<b>Villages and (Village Tracks)</b>	Chaung Pyar Gyi (Aung Heik) San Lin Daunt (Kan Kone) San Lin Daunt (Nyaung Pin Ga Yet) Wet Su (Nyaung Pin Ga Yet) Nyaung Pin Ga Yet (Nyaung Pin Ga Yet) Bee Lin (Bee (Lin) Tar Pat (Seik Thar) Seik Thar (Seik Thar) Hnget Su (Seik Thar) Oke Hpo Su (Seik Thar) Kyon Nat Taw (Kyon Nat Taw) Kyon Nat Taw (Ah Thet Paing) (Kyon Nat Taw)	
<b>Total Length of the Road</b>	16.3 km	
<b>Start (Latitude, Longitude in Degrees Decimal)</b>	16°44'12.13"N	95°35'45.46"E
<b>End (Latitude, Longitude in Degrees Decimal)</b>	16°49'33.27"N	95°30'32.37"E

**B. Environmental Conditions**

**B.1 Climate**

Average Normal Temperature	High: 32°C Low:21°C
Annual Average Humidity	
Total Annual Rainfall	2887.7 mm
Rainy Season Period	Mid-May to October

**B.2 General Environmental Condition of the Road Corridor**

No.	Ecological Setting	Yes	No	Explanation
1.	Coastal area Mangrove (along roadside) <i>(Describe the alignment of the road with respect to the coastal wetland, either road traverses or proximal, if proximal, state nearest distance of road to wetland)</i>		•	
2	Are protected or endangered species associated with coastal wetlands present?		•	
4	Is freshwater endangered / protected wildlife species present within or near the		•	No known freshwater protected species near the road project;



	project road?			
5	<p>Description of terrain (elevation relief, hilly, mountainous; describe the topography, i.e. plain, undulating, rolling, rugged)</p> <p><i>(Describe the length of road within the different terrain classification)</i></p>			<p>Floodplain, general flat with subtle topographic variations due to floodplain features such as levees, abandoned river channels, etc. The elevation within the road corridor range from 2m to 11 m with elevation generally rising towards the northern end of the road. The influence of old river channels in development is ubiquitous with roads, farm outlines, settlements following the arcuate shapes of old meanders. The section of MBN 011 for one follows one of the abandoned meanders hence the arcuate shape.</p>
6	<p>Forest Area or Protected Area</p> <p><i>(Describe road alignment and with respect to forest, i.e. within the forest, or proximal, state the nearest distance of road to forest)</i></p>		•	
7	<p>Are there Wildlife species within the road corridor that are classified as protected or endangered?</p> <p><i>(Describe faunal wildlife associated with the corridor's ecologic setting, state if endangered species / protected species is present)</i></p>		•	<p>Bird species present in the corridor are those associated with open areas and human settlements. Among the avian species observed in Maubin are Myna, Crow, Drongo, Ringed dove, Sparrow, Munya, Swiflet, Kingfisher, Grey Heron, wild ducks, Kite, Egret. Volant mammals, e.g. bats are also observed. Presence of endangered wildlife in the area has not been reported. The sub-project is distant from the identified important bird area (IBA) in the coastal zone of the delta ...</p>

8.	Settlement / Built up	•		Settlements and individual houses line up MBN004. Within village settlements, light structures like fences, kiosk and approaches of footbridges are located along road's edge. Removal and transfer of some of these light structures are inevitable during construction.
9	Agricultural Land	•		Most of land area within road corridor is cultivated, paddy fields; with a few aquaculture ponds
19	Grazing grounds / Grassland		•	As interpreted from satellite imagers, there are no permanent grasslands in the project corridor where most of the land is cultivated; grasses seasonally thrive in fallow fields;
11	Brushland / woodlands	•		Woodlands in the project corridor is limited to those associated with settlements; these are usually composed of fruit bearing trees, bamboos, palms, ornamentals with other species used as fuel wood and source of lumber.
12	Bare Areas		•	No bare areas noted within the road corridor

### C. General Condition of the Road and Possible Concerns

(Note: Questions number 1, 4, 5, 7 and 8 must be answered after discussions with the local community people)

No.	Parameter/ Component	Yes	No	Explanation / Details
1.	Enumerate sections of the road prone to landslide, subsidence, risk of river bank erosion		•	
5.	Are water stagnation and drainage issues present on or along the road?		•	
6.	<i>Is road corridor prone to flooding?</i>		•	
7.	Enumerate the trees with a dbh of 30 cm or more within 10 m on either side from the center line of the road alignment?	•		(see survey map done)
	Are Historical sites or monuments present alongside the road?		•	
	Are there possible sources of road construction materials (fill materials and aggregates) near the road? Is borrow area or quarries present along the road? Commercial sources? Other?		•	Scarcity of aggregates in Maubin makes it feasible for the recycling of the old concrete cement pavement as crushed aggregate which was done in the Maubin-Pyapon Road. Old asphalt pavement and waste concrete were crushed and re-used in the road construction; Sources of aggregates will be from outside location

Sensitive Receptors Within 200 m (each side) from Existing Road Centerline				
1	Village settlements	•		Isolated houses line the roads, the following are the village settlements traversed by the road: 7+250 9+000 10+500 11+500 12+500 13+500 to 14+500
2	Freshwater wetland / or River near or within the road corridor.	•		The nearest river is a distributary of Ayeyarwady River located about 250 m at Km 15+700 near the end. Ponds, aquaculture and water supply impoundment are present at the following stations: Km0 to 0+800 Km1+200 Km1+900 Km2+800 Km7+900 Km8+100 Km8+300
3	Power and communication poles present along road	•		Power poles present left side of the road MBN011; right side MBN004;
4	Water supply facilities alongside the road	•		Km8+830 RS tube well
5	Irrigation crossing	•		Km4+170 Km5+900 Km7+300 Km9+130
6	Irrigation ditch alongside the roadside?	•		Irrigation at right side of the road from start Along MBN004 – an embankment parallels the road at start at the right side with power line in between road and embankment
7.	Religious features, i.e. monastery, pagoda, religious trees or shrines present alongside the road	•		Km15+150 LS Km13+800LS Km13+450LS Km13+000LS Km11+900LS

8	School located alongside the road or other community facility	•		Km3+950 LS Km 13+500 LS
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#### D. Public Consultation

##### E. MBN 004- Seik Thar- Kyone Nat Taw- Kywe Done Village

19.2.18

No.	Consultation Activities	Yes	No	Remarks
1.	Consultation with local community was conducted before finalizing the alignment.	•		<ul style="list-style-type: none"> <li>A consultation was held with the local community members, it was attended by (7) persons. The list of participants is attached.</li> </ul>
2.	Any suggestion received in finalizing the alignment	•		<ul style="list-style-type: none"> <li>Land owners are willing to donate their lands.</li> <li>Fencing and gate of Kyone Nat Taw Monastery would be relocated if the road width needed more space. Would like to know when the project will start?</li> <li>The village warmly welcome the project because this road will benefit 40,0000 of residents living along the road in terms of economic, education, and health.</li> <li>It will be a main road not only for our villages but also important for transportation of goods for neighboring villages</li> <li>The village people fully support the project.</li> </ul>
3.	If suggestions received, were they incorporated into the design?			There were no suggestions pertaining to design.

#### List Consultation Participants

##### MBN 004 Tar Part- Seik Thar- Kywe Done

	Names	Township	Position / Designation	Date
1	U Aye Thein	Maubin	Village Tract Leader	19 Feb18
2	U Tin Kyaing	Maubin	Village Leader	19 Feb18
3	U Aunt Sein	Maubin	Village Elder	19 Feb18
4	U Maung San	Maubin	Village Elder	19 Feb18
5	U Kyaw Oo	Maubin	Village Leader	19 Feb18
6	U Zaw Hoe	Maubin	Village Elder	19 Feb18
7	U Aye Aye	Maubin	Village Elder	19 Feb18

## F. Photographs

	
<p>Km0+300 deteriorated cement pavement</p>	<p>Km1+370 concreted section</p>
	
<p>Km 8+850 Water well at the road side</p>	<p>Km8+900 – houses and power poles at road left edge</p>
	
<p>Km 10+700 junction of MBN004 and MBN011</p>	<p>Km 10+700 parallel road embankment by irrigation department; dusty road condition, soil is generally sandy'</p>
	

Km 11+000 monastery and pagoda LS	Km 11 – sandy soil
	
Km 13+000 monastery	Km13+300 – transformer at the edge of road
	
Km 13+750	Km 14+500
	
Km 14+800 towards the end	Km 16+000 end section

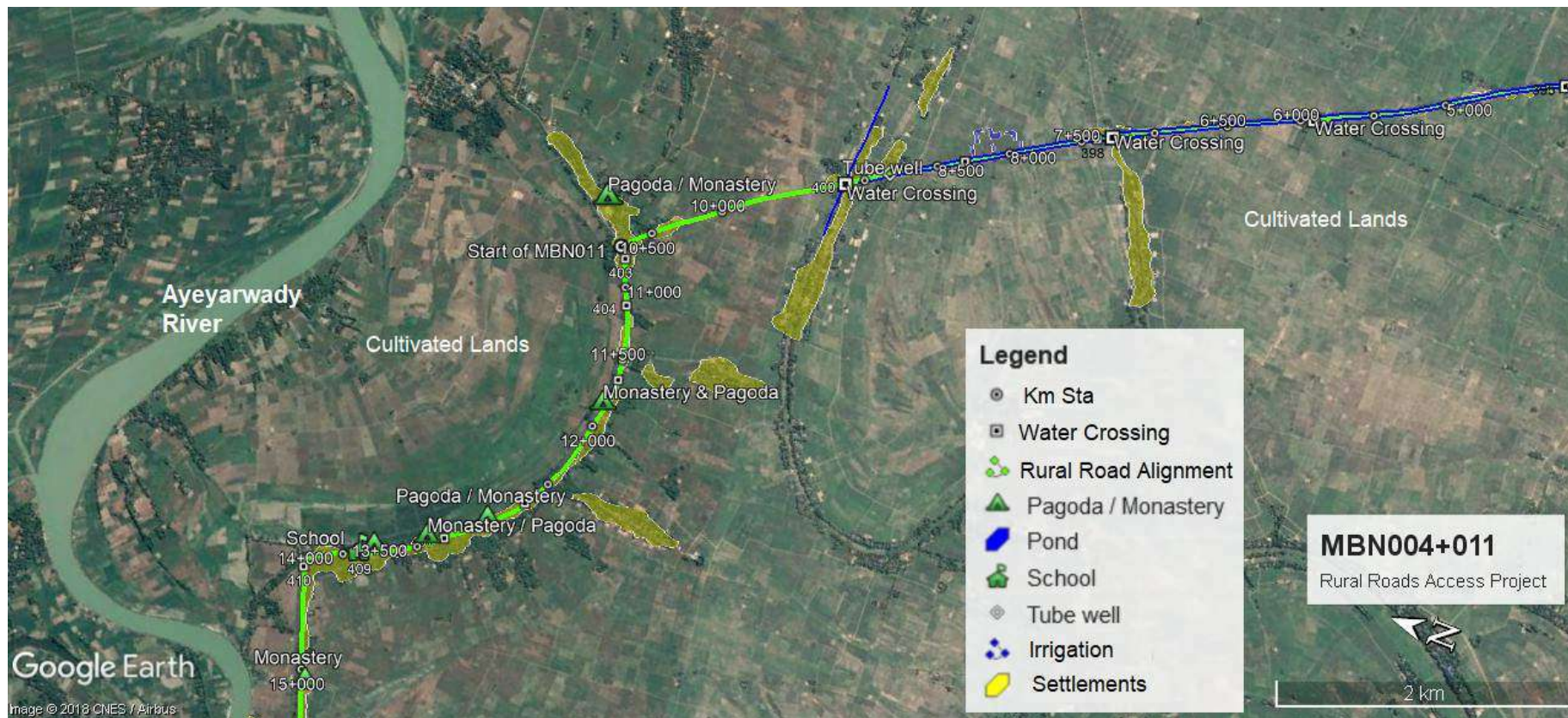




## G. Maps







**ENVIRONMENTAL CHECKLIST**  
**RURAL ROADS & ACCESS PROJECT TA 9184 MYA**

**A. Location and Salient Details of Road Sub Project**

<b>Road Name</b>	<b>MBN 005</b>	
<b>Township</b>	Maubin	
<b>Villages and (Village Tracks)</b>	Aung Heik (Aung Heik) Be Kone (Kan Kone) Sa Lint Daunt (Kan Kone) Sa Lint Daunt (Nyaung Pin Ga Yet) Kan Kone ( Wet Su) Wet Su (Nyaung Pin Ga Yet) Nyaung Pin Ga Yet (Nyaung Pin Ga Yet) Lein Kone (Kan Kone) Mya U Aung (Nyaung Pin Ga Yet) Kan Su (Kan Kone)	
<b>Total Length of the Road</b>	11.7 km	
<b>Start (Latitude, Longitude in Degrees Decimal MBN 055)</b>	16.736053°	95.606425°
<b>End (Latitude, Longitude in Degrees Decimal MBN 061)</b>	16.791573°	95.616185°

**B. Environmental Conditions**

**B.1 Climate**

Average Normal Temperature	High: 32°C Low:21°C
Annual Average Humidity	
Total Annual Rainfall	2887.7 mm
Rainy Season Period	Mid-May to October

**B.2 General Environmental Condition of the Road Corridor**

No.	Ecological Setting	Yes	No	Explanation
1.	Coastal area Mangrove (along roadside) <i>(Describe the alignment of the road with respect to the coastal wetland, either road traverses or proximal, if proximal, state nearest distance of road to wetland)</i>		•	
2	Are protected or endangered species associated with coastal wetlands present?		•	

3	Is freshwater wetland / or River present within the road corridor? Describe the position of the alignment with respect to wetland, cuts across or proximal, if proximal state nearest distance.	•		The road is located in the Ayeyarwaddy Delta and within 3 to 4 km of one of the distributary rivers, the Toe River. The road runs along the bank of one of the water channels used for navigation and irrigation
4	Are endangered / protected freshwater wildlife species present?		•	No known protected or endangered freshwater species
5	Describe the topography of the road corridor, i.e. elevation and relief (difference between highest and lowest elevation) plain, hilly, mountainous; describe the slope whether flat, undulating, rolling, steep; enumerate the section of the road on different topography			The Ayeyarwaddy Delta is low lying with subtle topographic highs and lows. The elevation of the road corridor of MBN005_041_066 is range from 3 m asl to 12 m asl. Average maximum slope of 4.3% to 5.5%, average slope of 0.9% to 1%. The subtle change in elevation is due to presence of abandoned river meanders, its natural levees and alluvial terraces, among others.
6	Forest Area or Protected Area (Describe road alignment and with respect to forest, i.e. within the forest, or proximal, state the nearest distance of road to forest)		•	
7	Are there protected wildlife species within the road corridor? (Describe faunal wildlife associated with the corridor's ecologic setting, state if endangered species / protected species is present)		•	No known protected wildlife species have been reported in this part of the delta.
8.	Settlement / Built up	•		Houses are spread all along the entire length of MBN005+041_066, along the road and across the irrigation and navigation channel
9	Agricultural Land			The delta region is widely cultivated for paddy rice; similarly, it is the dominant crop within the road corridor; small plots of orchards, banana plantations, individual fruit trees, small flower and vegetable farms are located within the settlements;
10	Grazing grounds / Grassland		•	
11	Brushland		•	
12	Bare Areas		•	

### C. General Condition of the Road and Possible Concerns

(Note: Questions number 1, 4, 5, 7 and 8 must be answered after discussions with the local community people)

No.	Parameter/ Component	Yes	No	Explanation / Details
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1.	Are sections of the road prone to landslide, subsidence, risk of river bank erosion?	•		Road is threatened by bank erosion, especially sections where roads run on the banks; erosion is due to boat wakes; It is noted that the band of vegetation that lines up the bank offers some protection from boat wakes.
2	Are water stagnation and drainage issues present on or along the road?		•	
3.	Is road corridor prone to flooding?		•	The road corridor is outside the inundation caused by Cyclone Nargis in 2008, the worst flood experienced in the delta. This confirmed by information gathered from residents.
4.	Enumerate the trees with a dbh of 30 cm or more within 10 m on either side from the center line of the road alignment?	•		Data with road survey group
5.	Are power and communication poles present along road?	□	•	
6	Are water supply facilities present alongside the road?	•		2+500 LS Dug well
7	Does the road cross irrigation ditches?	•		Yes numerous crossings
8	Is Irrigation ditch present along the roadside?	•		Yes, a canal parallels the road from MBN 041, 005 and 066.
9.	Are religious features, i.e. monastery, pagoda, religious trees or shrines present alongside the road?	•		MBN 005 Km 1+060 Pagoda left side End of MBN041 – Pagoda across the river is a grave MBN066 – 1+700 RS Pagoda; 3+300 RS Monastery
10	Are Historical sites or monuments present alongside the road?		•	
11	Enumerate schools located alongside the road or other community facility	•		2+500 San Lin Daunt Primary School, left side
12	Are there possible sources of road construction materials (fill materials and aggregates) near the road? Is borrow area or quarries present along the road? Commercial sources? Other?		•	
<b>Sensitive Receptors</b>				

	Village Settlement			Houses are spread all along the entire length of MBN005+041_066, along the road and across the irrigation and navigation channel
	Monasteries / Pagodas			MBN 005 Km 1+060 Pagoda left side End of MBN041 – Pagoda across the river is a grave MBN066 – 1+700 RS Pagoda; 3+300 RS Monastery
	Schools			Km 2+500 San Lin Daunt Primary School, left side
	Irrigation Channel			Irrigation canal parallels the road from MBN 041, 005 and 066.
	Water Supply			Km 2+500 LS Dug well



## D. Public Consultation

MBN 05+041+066 – Aung Heik-Pa Le Gon-Sa Lin Daung Village, 24.10.17

No.	Consultation Activities	Yes	No	Remarks
1.	Consultation with local community was conducted before finalizing the alignment.	ü		A consultation was held with the local community members, it was attended by (15) persons. The list of participants is Attached.
2.	Any suggestion received in finalizing the alignment	ü		Road safety measures at school, curves and road intersections locations. The people fully support the project and warmly welcome the project. Monk is willing to donate the monastery land to help the community get wide access road. According to village development committee, garden trees in road area maybe be cut to give way to the road
3.	If suggestions received, were they incorporated into the design?	ü		Noted

	<u>MBN005, AungHeik-PaLeGon-SaLinDaung Village</u>			
1	J Moe Kyaw	Maubin	Village Tract Leader	24.10.17
2	J Win Aung	Maubin		24.10.17
3	J Lwin oo	Maubin		24.10.17
4	J Soe Than	Maubin		24.10.17
5	J San Maung	Maubin		24.10.17
6	J Sein Ka Lar	Maubin		24.10.17
7	J Thein Toe	Maubin		24.10.17
8	J Myo Myint	Maubin		24.10.17
9	J Myint Than Kyaw	Maubin		24.10.17
10	J Win Aye	Maubin		24.10.17
11	J Kyaw Thu Aung	Maubin		24.10.17
12	J Myo Min Aung	Maubin		24.10.17
13	J Zaw Htun	Maubin		24.10.17
14	J Thi Ha	Maubin		24.10.17
15	J Ko Naing	Maubin		24.10.17



## E. Photographs



Bridge crossing at Start of MBN005



Km



Km 1+090 Consultation at the Pagoda



Km2+300 pedestrian traffic during school dismissal



Km3+400 End of MBN005 and start of MBN041



Km 3+600 (MBN041) Old Rain tree at the edge of the road and foot of the box culvert



Km4+150, road bordered by banana plantation



Km 4+750 (MBN041) consultation with village chief



End of MBN041 leading to the water channel crossing to MBN061



Km 5+870 (MBN041) section in front of Pagoda



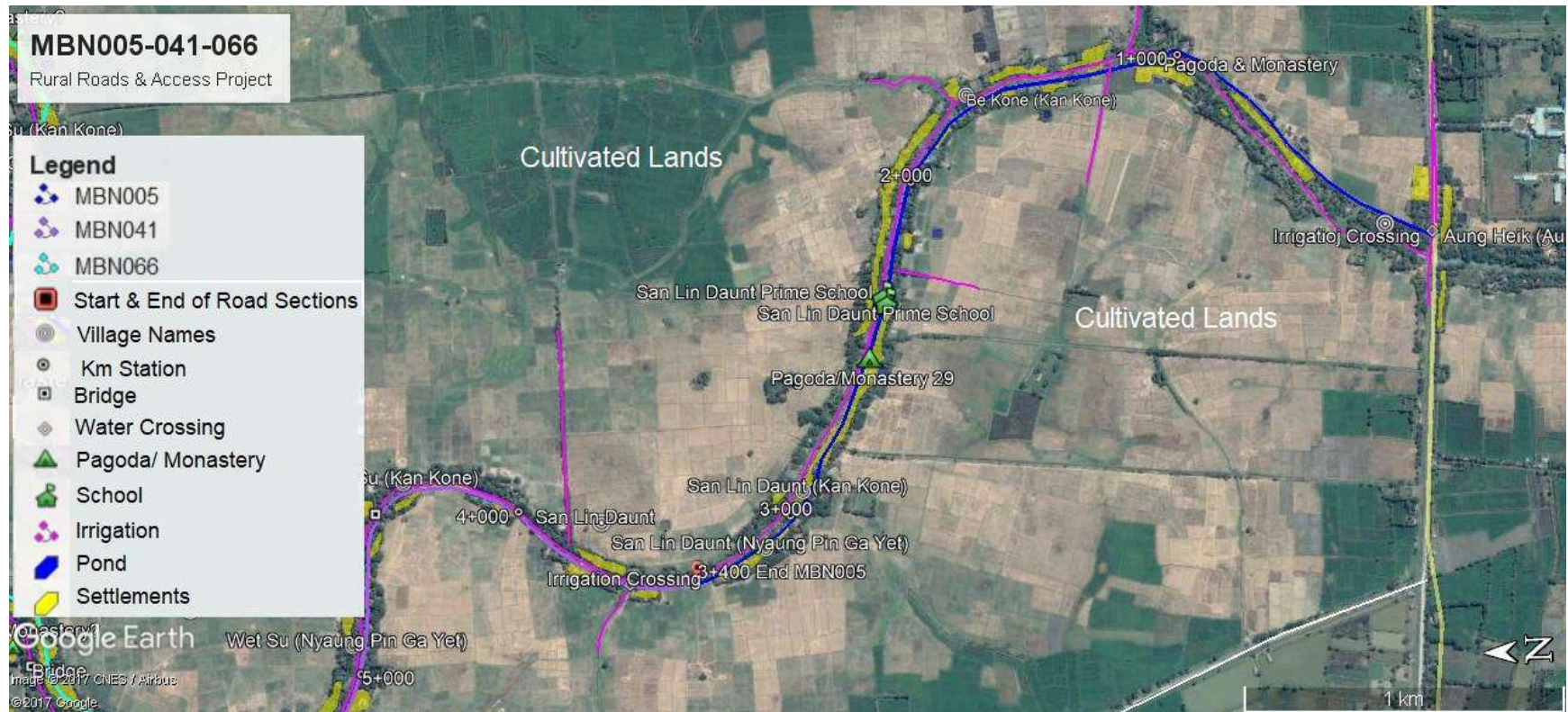
View of the start of MBN066 across the water channel



Km 1+360 (MBN066)

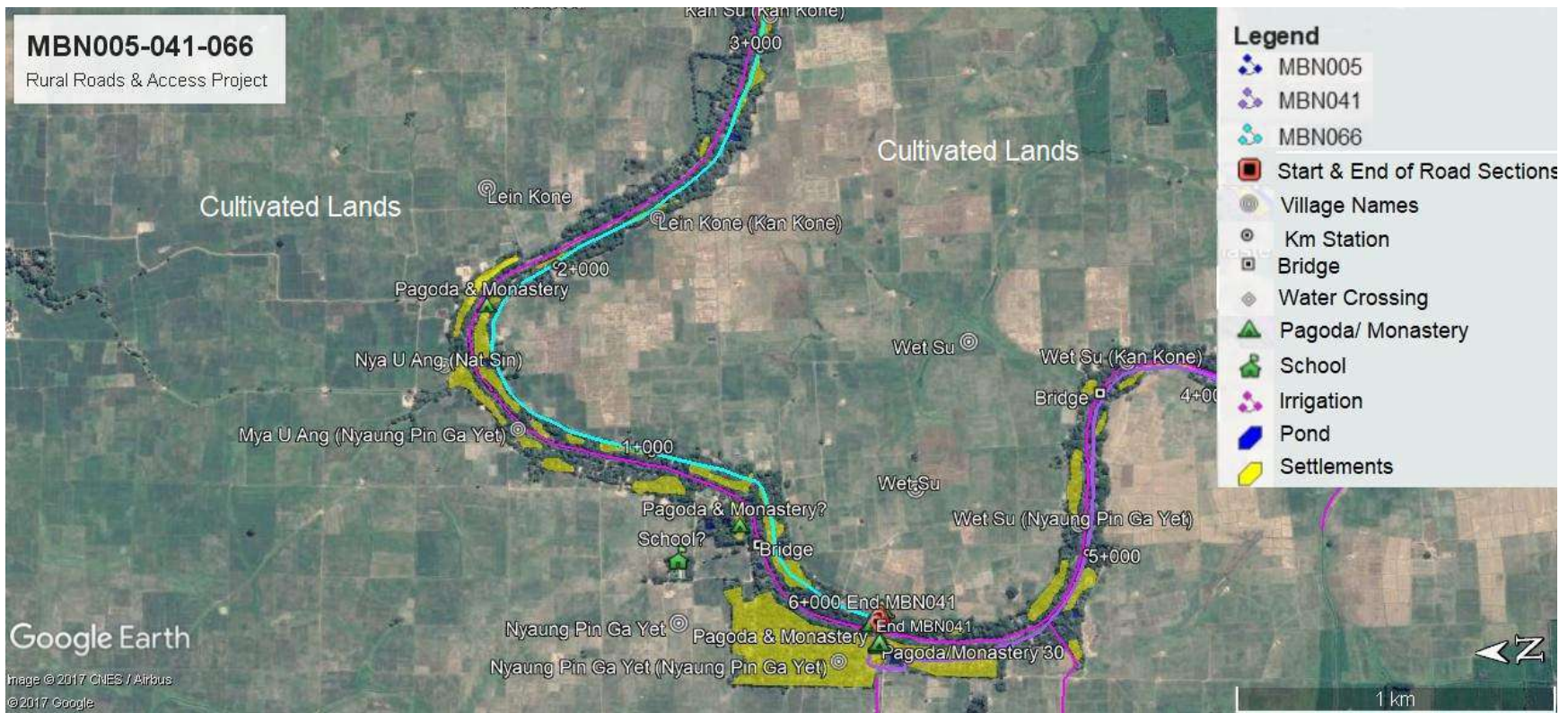


## F. Maps



**MBN005-041-066**

Rural Roads & Access Project





## MBN005-041-066

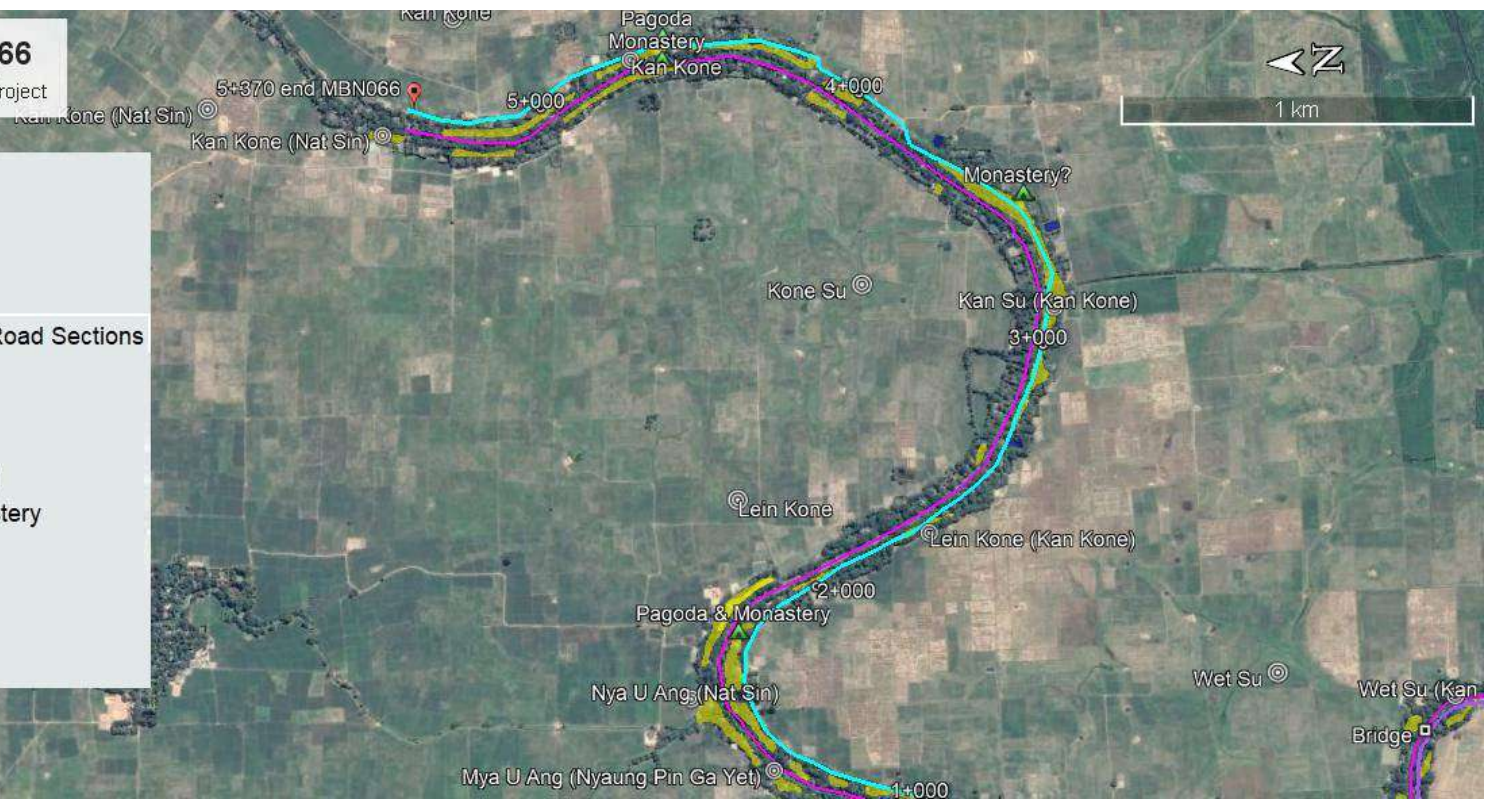
Rural Roads & Access Project

### Legend

- MBN005
- MBN041
- MBN066
- Start & End of Road Sections
- Village Names
- Km Station
- Bridge
- Water Crossing
- Pagoda/ Monastery
- School
- Irrigation
- Pond
- Settlements

Google Earth

Image © 2017 CNES / Airbus  
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**ENVIRONMENTAL CHECKLIST**  
**RURAL ROADS & ACCESS PROJECT TA 9184 MYA**

**A. Location and Salient Details of Road Sub Project**

Road Name	MBN019	
Township	Maubin	
Villages and (Village Tracks)	TaNi, GaLon, ShweTaChaung,KyonTa,ZiGon	
Total Length of the Road	9.9 Km	
Start (Latitude, Longitude in Degrees Decimal)	16.733792°	95.754876°
End (Latitude, Longitude in Degrees Decimal)	16.772773°	95.798373°

**B. Environmental Conditions**

**B.1 Climate**

Annual Average Temperature	High: 32°C Low:21°C
Annual Average Humidity	
Total Annual Rainfall	2887.7 mm
Rainy Season Period	Mid-May to October

**B.2 General Environmental Condition of the Road Corridor**

No.	Ecological Setting	Yes	No	Explanation
1.	Coastal area Mangrove (along roadside) <i>(Describe the alignment of the road with respect to the coastal wetland, either road traverses or proximal, if proximal, state nearest distance of road to wetland)</i>		•	
2	Are protected or endangered species associated with coastal wetlands present?		•	
3	Is freshwater wetland / or River present within the road corridor? Describe the position of the alignment with respect to wetland, cuts across or proximal, if proximal state nearest distance.	•		The starting point of the MBN019 is about 1 km away from Toe River, one of the distributaries of Ayeyarwaddy River. In addition, MBN019 is paralleled by a water channel used for navigation and irrigation
4	Are endangered / protected wildlife species associated with freshwater wetland or river present?		•	No known protected freshwater wildlife species in Toe River
5	Describe the topography of the road corridor, i.e. elevation and relief (difference between highest and lowest			The road corridor is located in the Ayeyarwaddy Delta, The delta is low lying with subtle

	elevation) plain, hilly, mountainous; describe the slope whether flat, undulating, rolling, steep; enumerate the section of the road on different topography			topographic variation due to presence of natural levees associated with old meanders and alluvial terraces; the elevation of the road corridor varies from 4 m asl to 13 m asl. The elevation is highest at the start and gradually declining towards the end of the road corridor where wetlands have almost been totally developed into aquaculture ponds
6	Forest Area or Protected Area (Describe road alignment and with respect to forest, i.e. within the forest, or proximal, state the nearest distance of road to forest)		•	
7	Are there protected wildlife species within the project corridor? (Describe faunal wildlife associated with the corridor's ecologic setting, state if endangered species / protected species is present)		•	No rare or threatened wildlife has been reported; villagers are not aware of any special wildlife species in the project area.
8.	Settlement / Built up	•		Low density settlements are intermittently located alongside the road from start to end. Higher density settlements are only present at the start of MBN019, near the Maubin-Pathein highway Houses are of concrete and tin roofing, wood and thatched materials.
9	Agricultural Land	•		Agriculture and aquaculture are the major land uses within the road corridor. From start to about Km 5+000, agriculture is dominant use with intermittent settlements. Paddy rice is the major crop with orchards, beans and vegetable cultivation around the settlements
10	Aquaculture ponds	•		From Km 5 onwards to the end of MBN019, fishponds line both sides of the road corridor.
11	Grazing grounds / Grassland		•	No significant grassland is present in the road corridor;
12	Brushland / Woodlands		•	The wooded areas along MBN019 are only those associated with the settlements and alongside water channels; these are mostly fruit bearing, ornamental tree species, rain tree, ficus, reforestation tree species (acacia and eucalyptus), bamboo, some coconut and betel palms.
13	Bare Areas		•	No bare areas noted

### C. General Condition of the Road and Possible Concerns

(Note: Questions number 1, 4, 5, 7 and 8 must be answered after discussions with the local community people)

No.	Parameter/ Component	Yes	No	Explanation / Details
-----	----------------------	-----	----	-----------------------

1.	Are sections of the road prone to landslide, subsidence, risk of river bank erosion? Enumerate the sections.	•		Erosion is noted to be prevalent at about Km 6+000, Km 9+000 upto the end of MBN019 where road is bordered by the water channel. As observed, boat wakes seem to be among the main causes of erosion as boat traffic is noted to be rather active. Eroded road edge and isolated individual large trees with the water channel indicate active erosion and bank retreat.
5.	Are water stagnation and drainage issues present on or along the road?	•		Low lying sections of the road like Km 6+000 and Km 7+780
6.	Is road corridor prone to flooding?	•		Overlay of the alignment of MBN019 on the satellite flood data of Nargis of 2008 showed that the northern segment of the road corridor was flooded; however, resident informants related that the road was not inundated during the Nargis flooding.of 2008
7.	Enumerate the trees with a dbh of 30 cm or more within 10 m on either side from the center line of the road alignment?	•		Tree data with road survey group
10.	Are power and communication poles present along road?	•		Yes, power line is present from start to end of MBN019. Power poles are lined at the RS at about 60 m interval.
	Are water supply facilities present alongside the road?		•	
	Does the road cross water channels / irrigation ditches?	•		Km 5+470 Km8+840 Km 9+230 Km10+000 end of MBN019
	Is Irrigation ditch present along the roadside?	•		From start to end, left side of the road is a water channel
10.	Are religious features, i.e. monastery, pagoda, religious trees or shrines present alongside the road?	•		Km 0+200 Km1+600 – across the water channel Km 7+310 – across the water channel
	Are Historical sites or monuments present alongside the road?		•	
	Are there schools or other community facilities located alongside the road?	•		Km 1+830 Km 5+520- across the water channel Km 9+120

	Are there possible sources of road construction materials (fill materials and aggregates) near the road? Is borrow area or quarries present along the road? Commercial sources? Other?		•	Under Study
	<b>Sensitive Receptors</b>			
	Village Settlements			Houses are present along the entire length of the road.
	Monasteries & Pagodas			Km 0+200 Km1+600 – across the water channel Km 7+310 – across the water channel
	Schools			Km 1+830 Km 5+520- across the water channel Km 9+120
	Aquaculture Ponds			Km 5+150 to the end
	Irrigation Crossings			Km 5+470 Km8+840 Km 9+230 Km10+000 end of MBN019
	Irrigation / Water Channel			From start to end, left side of the road is a water channel
	Trees			323 trees

### D. Public Consultation

MBN 019- Ta Ni-Galo-Shwe Ta Chaung- Kyon Ta- Zi Gon Village

24.10.17

No.	Consultation Activities	Yes	No	Remarks
1.	Consultation with local community was conducted before finalizing the alignment.			A consultation was held with the local community members, it was attended by (13) persons. The list of respondents follows:
2.	Any suggestion received in finalizing the alignment	ü		Road safety measures at school, curves and road intersections locations. Land owners are willing to donate their land to help the community get access road. Garden trees in road area will be cut. Villagers and shopkeepers said they do not care about damage to their fencing ,trees and/or to remove their shops
3.	If suggestions received, were they incorporated into the design?	ü		Noted

### List of Participants / Respondents

	<u>MBN019, Ta Ni-Galo-Shwe Ta Chaung- Kyon Ta- Zi Gon Village</u>			
1	U Win Aye	Maubin	Village Tract Leader	24.10.17
2	U Soe Lwin	Maubin	Chair, Road Committee	24.10.17
3	U Ohn Tint	Maubin	Village Elder	24.10.17
4	U Mya Aung	Maubin	Village Elder	24.10.17
5	U Htay Lwin	Maubin		24.10.17
6	U Sein Myint	Maubin		24.10.17
7	U Kyin Khaing	Maubin		24.10.17
8	U Myint Sein	Maubin		24.10.17
9	U Nay Myo Aung	Maubin	Clerk	24.10.17
10	J Ohn Hlaing	Maubin	M/C Spare Parts	24.10.17
11	J Win Hlaing	Maubin	Shopkeeper	24.10.17
12	Daw Than Than Htay	Maubin	Shop keeper	24.10.17
13	U Aye Win	Maubin	Fish farming	24.10.17





## A. Photographs



Courtesy call and consultation with village track officials 24 Oct 2017



Start of MBN019, intersection with main road



Km 1+000 houses and other structures at the road's edge



Km 5+460 box culvert crossing



Km 6+220, power poles and old Rain Tree on opposite sides of the road.

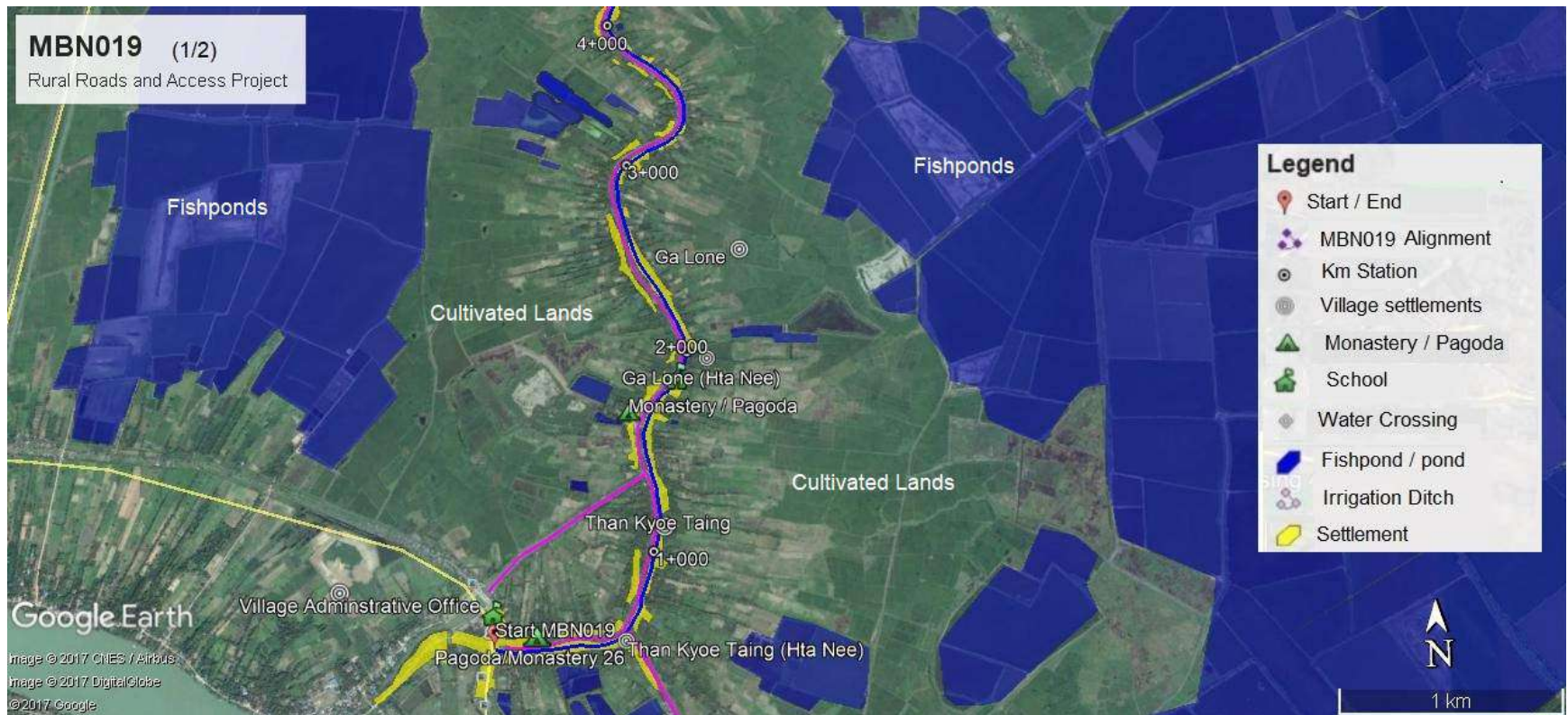


Km 6+500 active bank erosion has narrowed the existing road

	
<p>Km 7+780, water logged section (looking to end of road)</p>	<p>Km 8+230, road crowded by banana plants on one side, power poles and pond on the other</p>
	
<p>Km 8+420 The bigger boats ply the water channel to ferry fishpond and agriculture produce</p>	<p>Km 9+140 Bird's eye view, looking west (towards direction of beginning of road project)</p>
	
<p>Km 9+140, the Zee Gone Primary School located in swamp due to lack of dry land</p>	<p>End point of MBN019, water channel crossing</p>

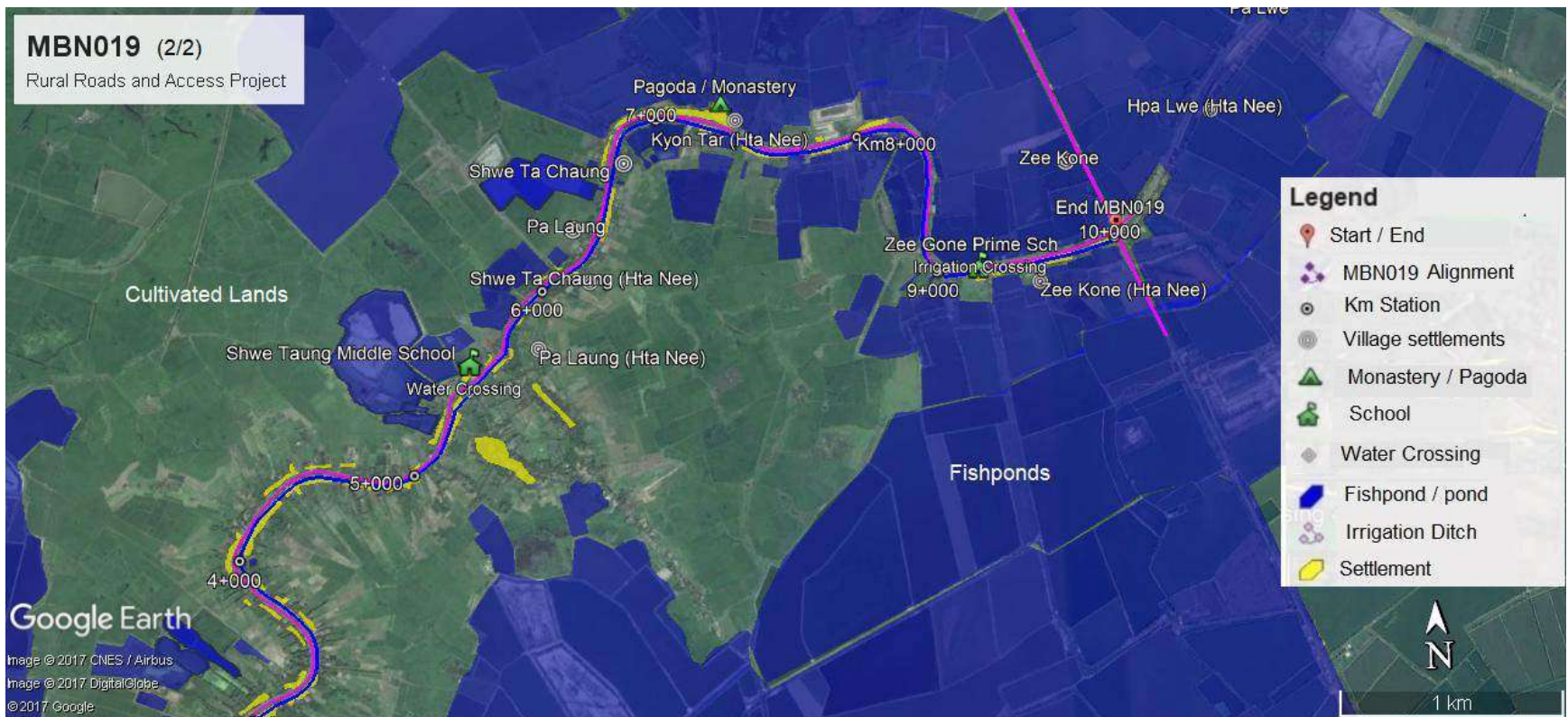


## B. Maps



## MBN019 (2/2)

Rural Roads and Access Project



**ENVIRONMENTAL CHECKLIST**  
**RURAL ROADS & ACCESS PROJECT TA 9184 MYA**

**A. Location and Salient Details of Road Sub Project**

<b>Road Name</b>	<b>MBN028</b>	
<b>Township</b>	Maubin	
<b>Villages and (Village Tracks)</b>	ShweDaungMaw, Chaukywa, thuHtayGon	
<b>Total Length of the Road</b>	12.0 km	
<b>Start (Latitude, Longitude in Degrees Decimal)</b>	16.725200°	95.485460°
<b>End (Latitude, Longitude in Degrees Decimal)</b>	95.485460°	95.446623°

**B. Environmental Conditions**

**B.1 Climate**

Annual Average Temperature <sup>1</sup>	High: 32°C Low:21°C
Annual Average Humidity	
Total Annual Rainfall	2887.7 mm
Rainy Season Period	Mid-May to October

**B.2 General Environmental Condition of the Road Corridor**

No.	Ecological Setting	Yes	No	Explanation
1.	Coastal area Mangrove (along roadside) <i>(Describe the alignment of the road with respect to the coastal wetland, either road traverses or proximal, if proximal, state nearest distance of road to wetland)</i>		•	
2	Are protected or endangered species associated with coastal wetlands present?		•	
3	Is freshwater wetland / or River present within the road corridor? Describe the position of the alignment with respect to wetland, cuts across or proximal, if proximal state nearest distance.	•		MBN028's start is about 600 m from a distributary of Ayeyarwaddy River while the end is about 50 m away. ;
4	Are endangered / protected wildlife species associated with freshwater wetland or river present?		•	

<sup>1</sup> Climate data measured at Pathein,



5	Description of terrain (elevation relief, hilly, mountainous; describe the topography, i.e. plain, undulating, rolling, rugged) <i>(Describe the length of road within the different terrain classification)</i>			The Ayeyarwaddy Delta has generally low elevation, but not flat. Maximum slope ranges from 4.4% to 4.3% while average slope is 0.8%. The subtle variation in topography is due to the presence of natural levees of abandoned river meanders (which is very common in the area) and alluvial terraces. The highest elevation in the road corridor is 13 m asl and the lowest is 4 m asl.
6	Forest Area or Protected Area <i>(Describe road alignment and with respect to forest, i.e. within the forest, or proximal, state the nearest distance of road to forest)</i>		•	
7	Are there protected wildlife species within the project corridor? <i>(Describe faunal wildlife associated with the corridor's ecologic setting, state if endangered species / protected species is present)</i>		•	Villagers are not aware of the presence of threatened wildlife species in the area; bird species present are those associated with open grassland, settlements and agricultural land; water fowls are also noted to be present.
8.	Settlement / Built up	•		Settlements are lined alongside the road from start to end; the location and distribution of the settlements are shown in the map; The settlements are generally low density except at the starting point, close to the main road.
9	Agricultural Land	•		The delta region is largely cultivated; paddy rice is the main crop with settlements lined along roads and waterways;
19	Grazing grounds / Grassland		•	The only significant grassland within the road corridor is the grassland in the wetland near the end of MBN028.
11	Brushland / Wood Lands	•		The wooded areas within the road corridor are those associated with the settlements. These woodlands consist of mixture of fruit bearing, reforestation species, ornamental, other tree species, bamboo and palms.
12	Bare Areas		•	

### C. General Condition of the Road and Possible Concerns

(Note: Questions number 1, 4, 5, 7 and 8 must be answered after discussions with the local community people)

No.	Parameter/ Component	Yes	No	Explanation / Details
1.	Enumerate sections of the road prone to landslide, subsidence, risk of river bank erosion		•	

2	Are water stagnation and drainage issues present on or along the road?	•		Yes, Km 11+200 to Km 11+380
3	Is road corridor prone to flooding?		•	
4.	Enumerate the trees with a dbh of 30 cm or more within 10 m on either side from the center line of the road alignment?	•		Tree data with the Road Survey Group
5.	Are power and communication poles present along road?	•		Yes, power line is present from start to finish, power poles on the left side of road at intervals of about 60 m
6	Are water supply facilities present alongside the road?	•		Community Water Supply a. Km 5+000 – LS Pond b. Km 11+870 RS Pond c. Km 7+470 LS Pond d. Km 8+350 Tank LS
7	Does the road cross irrigation ditches?	•		a. Km 5+360 b. Km 7+220 c. Km 10+110
8	Is Irrigation ditch present along the roadside?		•	
9.	Are religious features, i.e. monastery, pagoda, religious trees or shrines present alongside the road?	•		Monastery and Pagoda a. Km 1+500 LS b. Km5+590 c. Km6+600 RS d. Km7+710 L & RS e. Km8+330 LS f. Km9+590 g. Bodhi Tree Km 1+340
10	Are Historical sites or monuments present alongside the road?		•	
11	Are schools located alongside the road?	•		a. Km 6+540 LS b. Km *+570 LS c. Km 9+020 LS d. Km10+000 LS
12	Are there other community facilities alongside the road?	•		1. Village Admin Office, Km 8+570 & Km 9+080 LS 2. Cemetery at Km10+380 RS 3. Waiting shed with water drinking stations at: a. Km 3+870 LS b. Km 4+240 RS c. Km 9+900 d. Km 10+460 e. Km 11+710 RS

				f. Km 11+880 RS
13	Are there possible sources of road construction materials (fill materials and aggregates) near the road? Is borrow area or quarries present along the road? Commercial sources? Other?			Under study
	<b>Sensitive Receptors</b>			
	Settlements			Settlements and individual houses are scattered all along the road.
	Monasteries, Pagodas and religious shrines			Monasteries and Pagodas a. Km 1+500 LS b. Km5+590 c. Km6+600 RS d. Km7+710 L & RS e. Km8+330 LS f. Km9+590 g. Bodhi Tree Km 1+340
	Schools			a. Km 6+540 LS b. Km *+570 LS c. Km 9+020 LS d. Km10+000 LS
	Community Water Supply			Community Water Supply a. Km 5+000 – LS Pond b. Km 11+870 RS Pond c. Km 7+470 LS Pond d. Km 8+350 Tank LS
	Irrigation Crossing			a. Km 5+360 b. Km 7+220 c. Km 10+110
	Other Community Facilities			1. Cemetery at Km10+380 RS 2. Village Admin Office, Km 8+570 & Km 9+080 LS 3. Waiting shed with water drinking stations at: a. Km 3+870 LS b. Km 4+240 RS c. Km 9+900 d. Km 10+460 e. Km 11+710 RS f. Km 11+880 RS

## D. Public Consultation

No.	Consultation Activities	Yes	No	Remarks
1.	Consultation with local community was conducted before finalizing the alignment			<ul style="list-style-type: none"> <li>The participants expressed strong support for the project;</li> <li>People are willing to move fences, remove trees, move structures to give way to the road;</li> <li>Village will donate land if necessary</li> </ul>
2.	Any suggestion received in finalizing the alignment			None
3.	If suggestions received, were they incorporated into the design?			

### MBN028, Chauk Ywa- Nga Hpa Ein Village

	Name of Participants	Township	Position / Designation	Date
1	U Kyaw Lwin	Maubin	Village Leader	25.10.17
2	U Thant Zin Aung	Maubin	Village Leader	25.10.17
3	U Thar Yin	Maubin	Village Elder	25.10.17
4	U Kyaw Linn	Maubin	Village Elder	25.10.17
5	U Hla Myint Lay	Maubin	Village Elder	25.10.17
6	U Thein Myint	Maubin	Village Elder	25.10.17
7	U Aung Min	Maubin	Chair for Community Hall	25.10.17
8	U Tin Aye	Maubin	Village Elder	25.10.17
9	U Tun Kyaw Thu	Maubin	Village Elder	25.10.17
10	U Kyi Sein	Maubin	Village Elder	25.10.17
11	U Sit Oo	Maubin	Village Elder	25.10.17
12	U Tun Aung	Maubin	Villager	25.10.17
13	U Kyaw Oo	Maubin	Villager	25.10.17
14	U Ye Myint Zaw	Maubin	VT Clerk	25.10.17
15	<b>U Tun Tun Win</b>	Maubin	Villager	25.10.17
16	<b>U Hla Myint Gyi</b>	Maubin	Villager	25.10.17
17	Daw War War Win	Maubin	Shop Keeper	25.10.17
18	U Aung Myint Soe	Maubin	Farmer	25.10.17
19	U Thauung Shwe	Maubin	Villager	25.10.17
20	Daw Kyin Mya	Maubin	Villager	25.10.17
21	Daw Nan	Maubin	Villager	25.10.17



## E. Photographs



Km 0+000 – start of MBN028



Km 2+000 thatched house at the road's edge



Km 3+000 thickly vegetated roadsides



Km 3+880 drinking water station and rest area at roadside



Km4+140 Waiting shed & water station at road's edge  
RS



Km 5+050 Community Water supply pond LS





Km 7+180 RS, structure encroaching at road's edge



Km7+900 consultation at the Pagoda



Km 8+350 community pump and water tank



Km 9+000 student pedestrians during dismissal

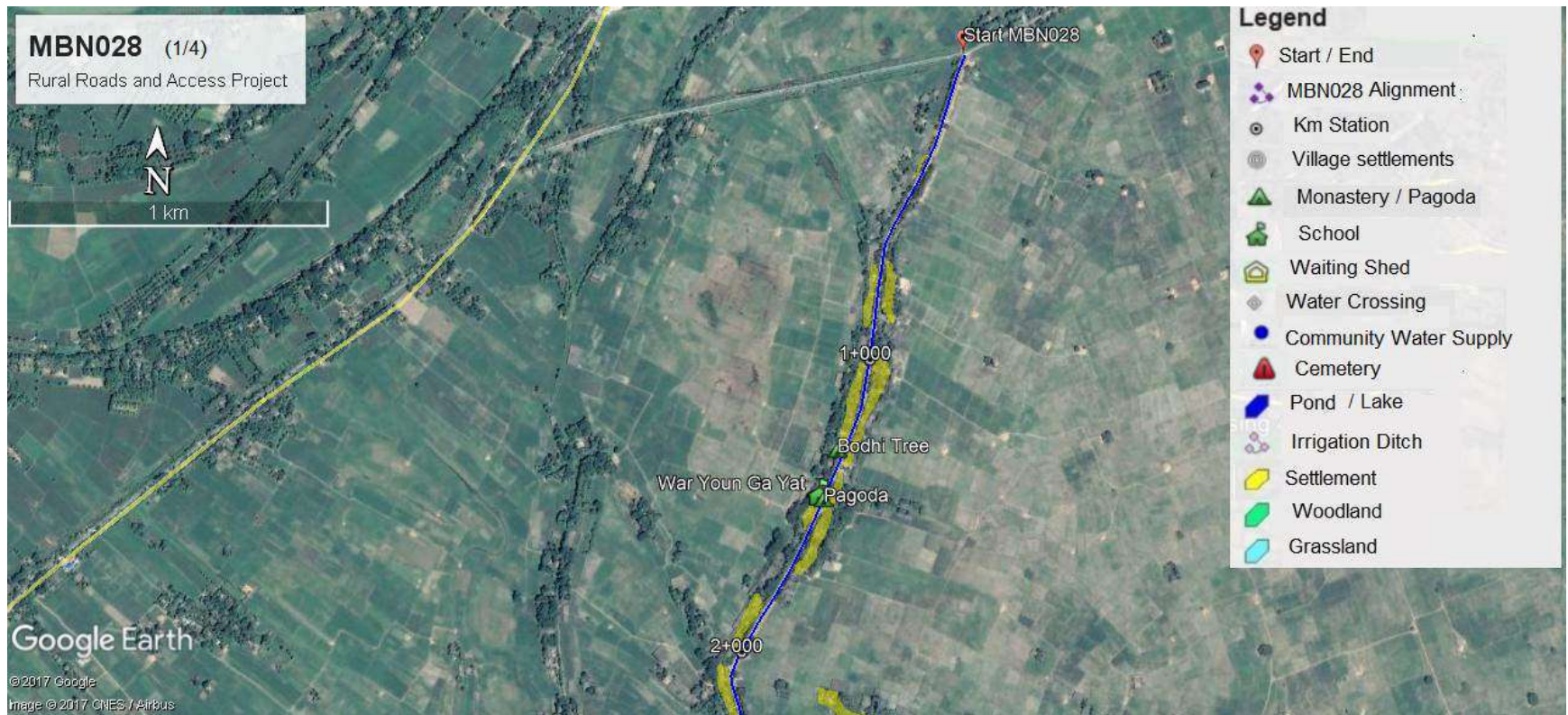


Km 9+370 Power line on the LS

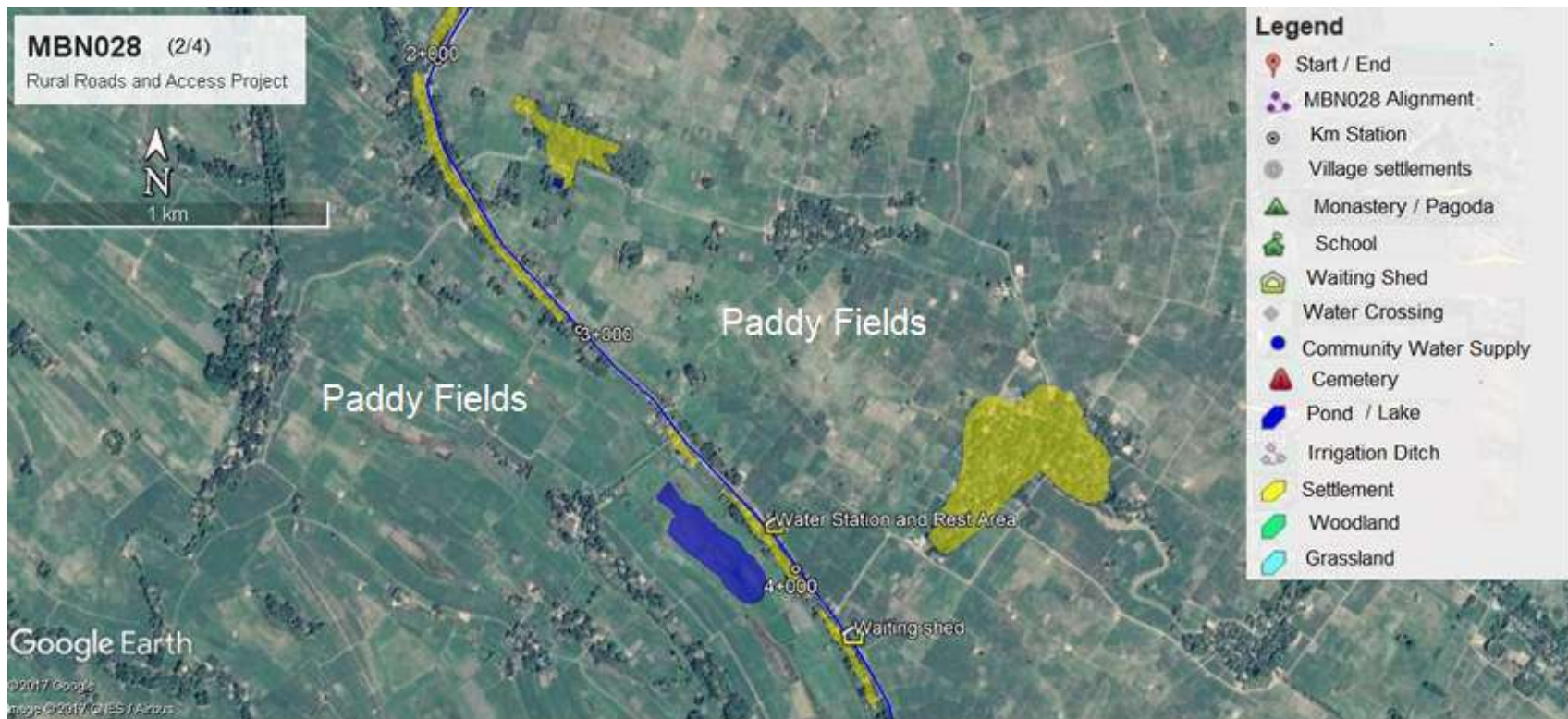


Near the end point of MBN028

## F. Maps













**ENVIRONMENTAL CHECKLIST**  
**RURAL ROADS & ACCESS PROJECT TA 9184 MYA**

**A. Location and Salient Details of Road Sub Project**

<b>Road Name</b>	<b>MBN039</b>	
<b>Township</b>	Maubin	
<b>Villages and (Village Tracks)</b>	Hteik Wa Su (Sun Thaik) Ku Lar Su )Sun Thaik) Ku Lar Su (Ngay Gyi Ga Yet) Hman Pin Ngar Ein Tan (Sun Thaik) Ngar Ein Tan (Hman Pin) Kan Su (Sun Thaik) Sin Gaun (Pe Kho Su) Sin Gaung (Hman Pin) Min Baw Su (Pe Kho Su) Tha Byu Kone (Thea Pyu) Thea Pyu (Thea Pyu) Ta Loke Su (Pe Kho Su) Wea Daunt (Thar Yar Kone)	
<b>Total Length of the Road</b>	12.1 Km	
<b>Start (Latitude, Longitude in Degrees Decimal)</b>	16°44'11.67"N	95°33'36.73"E
<b>End (Latitude, Longitude in Degrees Decimal)</b>	16°39'34.84"N	95°33'56.45"E

**B. Environmental Conditions**

**B.1 Climate**

Annual Average Temperature	High: 32°C Low:21°C
Annual Average Humidity	
Total Annual Rainfall	2887.7 mm
Rainy Season Period	Mid-May to October

**B.2 General Environmental Condition of the Road Corridor**

<b>No.</b>	<b>Ecological Setting</b>	<b>Yes</b>	<b>No</b>	<b>Explanation</b>
1.	Coastal area Mangrove (along roadside) <i>(Describe the alignment of the road with respect to the coastal wetland, either road traverses or proximal; if proximal, state nearest distance of road to wetland)</i>		•	No mangrove, mainly freshwater
2	Are protected or endangered species associated with coastal wetlands present?		•	Site is distant from coastline



3	Is freshwater wetland / or River present within the road corridor? Describe the position of the alignment with respect to wetland, cuts across or proximal, if proximal state nearest distance.	•		Yes, MBN 039 ends at the riverbank.
4	Are endangered / protected wildlife species associated with freshwater wetland or river present?		•	No known endangered freshwater species;
5	Description of terrain (elevation relief, hilly, mountainous; describe the topography, i.e. plain, undulating, rolling, rugged) (Describe the length of road within the different terrain classification)			MBN039 is located within the delta region. The road corridor has a very low relief, with elevation ranging from 6 m asl to 12 m asl. The land is seemingly flat but subtle landforms are present such as levees of ancient meanders, alluvial terraces and ponds. The development in this part of the delta is influenced by the geomorphology with development including road following the arcuate forms of abandoned ancient meanders.
6	Forest Area or Protected Area (Describe road alignment and with respect to forest, i.e. within the forest, or proximal, state the nearest distance of road to forest)		•	No protected areas in the road corridor
7	Are there protected wildlife species within the project area? (Describe faunal wildlife associated with the corridor's ecologic setting, state if endangered species / protected species is present)		•	The wildlife in the corridor particularly bird species as commonly those that thrive in open grassland, agricultural areas and edges of settlements. A number of waterfowls are present. The residents are not aware of any special or protected species in the corridor.
8.	Settlement / Built up	•		Houses are lined along most parts of the road with village settlements located at: Km 0+450 to 2+200 2+500 to 7+000 7+440 to 7+750 8+340 to 10+000 10+240 to 10+480
9	Agricultural Land	•		Extensive farming is done in the road corridor, paddy rice main crop
19	Grazing grounds / Grassland		•	There are not grasslands in the road corridor;
11	Brushland		•	No brushland, wooded areas are usually found within settlements;
12	Bare Areas		•	No bare areas, all lands planted / cultivated except for small areas.

### C. General Condition of the Road and Possible Concerns

(Note: Questions number 1, 4, 5, 7 and 8 must be answered after discussions with the local community people)

No.	Parameter/ Component	Yes	No	Explanation / Details
-----	----------------------	-----	----	-----------------------

1.	Enumerate sections of the road prone to landslide, subsidence, risk of river bank erosion	•	□	Bank erosion affecting road Km5+000; long stretch of bank prone to erosion Very narrow road at Km 7 onwards due to bank erosion;
2.	Are water stagnation and drainage issues present on or along the road?		●□	
3.	<i>Is road corridor prone to flooding?</i>		●□	
4.	Enumerate the trees with a dbh of 30 cm or more within 10 m on either side from the center line of the road alignment?			Tree data are with the Road Survey Group
5.	Are power and communication poles present along road?		•	
6.	Are water supply facilities present alongside the road?		•	
7.	Does the road cross irrigation ditches?	•		Yes, one major crossing is at Km 2+260
8.	Is Irrigation ditch present along the roadside?	•		Irrigation and navigation channel present alongside the road; in the absence of the road, boat is conveniently used by the locals; but boat wakes contribute significantly to bank erosion;
9.	Are religious features, i.e. monastery, pagoda, religious trees or shrines present alongside the road?	•		Km 3+170 LS graves Km 7+700 Pagoda
10.	Are Historical sites or monuments present alongside the road?		•	
11.	Enumerate schools located alongside the road or other community facility	•		Km3+700 RS – school Approaches of numerous footbridges at the road's edge, LS likely to be affected by road construction
12.	Are there possible sources of road construction materials (fill materials and aggregates) near the road? Is borrow area or quarries present along the road? Commercial sources? Other?			Under study
	<b>Sensitive Receptors</b>			
	Village Settlements			Km 0+500 to 2+150 2+500 to 3+000 3+460 to 7+000 7+700 to 7+920 8+400 to 8+840 10+330 to 10+460

	Monasteries & Pagodas			Km 6+500 Pagoda
	School			Km3+700 RS – school
	Community Facilities			Graveyard- Km 3+170 Drinking water stand at Km1+900 RS Km6+600RS Km6+700
7.	Irrigation crossing			Major crossing is at Km 2+260
	Trees			The road survey has inventoried 248 trees alongside the road.

#### D. Public Consultation

No.	Consultation Activities	Yes	No	Remarks
1.	Consultation with local community was conducted before finalizing the alignment.	✓		
2.	Any suggestion received in finalizing the alignment			
3.	If suggestions received, were they incorporated into the design?			

#### List of Participants to the Public Consultation – MBN039

MBN 039 Swan Theik- Sin Gaung- Min Ball-Thae Phyu- Mhan Pin- Gna Ein Tan- Kalarsu village

	Name	Township	Designation	Date
1	U Maung Maung	Maubin	Village Tract Leader	19.2.18
2	Daw Shwe Zin Hteik	Maubin	Village Tract Leader	19.2.18
3	U Win Kyi	Maubin	Road Committee	19.2.18
4	U Hla Nyunt	Maubin	Road Committee	19.2.18
5	U Pyone	Maubin	Road Committee	19.2.18
6	U Mg Myint Aye	Maubin	Road Committee	19.2.18
7	U Thein Aye	Maubin	Road Committee	19.2.18
8	U Moe Thee	Maubin	Road Committee	19.2.18
9	U San Naing	Maubin	Road Committee	19.2.18
10	U Bo Bo	Maubin	Road Committee	19.2.18

#### E. Photos



Km 0+000 start of MBN 039



Km 0+500 MBn 039



Km3+320 irrigation ditch at LS of road, residences at the RS confines the narrow road opening



Km 3+720 Bridge



Km4+020 road within village, irrigation and light structures border the road



Km 3+900





Km5+600 bank erosion



Km4+870 – road bound by irrigation ditch LS; numerous foot bridge within the village



Km5+900 house between irrigation ditch and road, right on the road's edge



Km 5+900 houses at road's edge



Km7+480 highly eroded bank, narrowing the road, large fallen tree



Km 10+200 hauling of goods by boat through the channel





Km 11+100 – near the end



Km 11+000 near the end of MBN 039



Public consultation with village officials





## F. Maps





**MBN 039**

RRAP

**Legend**

- ◆ Bridge
- ⊙ Km Station
- MBN 039
- ▲ Monastery / Pagoda
- School
- Waterway
- Pond
- Settlement



2 km

Google Earth

© 2018 Google

Image © 2018 CNES / Airbus







**ENVIRONMENTAL CHECKLIST**  
**RURAL ROADS & ACCESS PROJECT TA 9184 MYA**

**A. Location and Salient Details of Road Sub Project**

<b>Road Name</b>	PTN 005, PTN 012	
<b>Township</b>	Pantanaw	
<b>Villages and (Village Tracks)</b>	Ma Yin Tone Ah Nauk (Taw Kyaung) Taw Kyaung(Taw Kyaung) Taw Kyaung (Taw Kyaung) Daunt Gyi (Ya Paw Gyi) Pyin Tow Gyi (Taw Kyaung) Tu Chaung East ( Shwe Kyaung Myauk)	
<b>Total Length of the Road</b>	14.9 km	
<b>Start (degrees, minutes, seconds)</b>	(PTN 005 & PTN 034) 16°57'14.76"N	95°31'26.53"E
	PTN 012 16°57'0.68"N	95°28'12.80"E
<b>End (degrees, minutes, seconds)</b>	PTN 005 16°57'3.75"N	95°28'15.14"E
	PTN 012 16°54'56.64"N	95°28'4.61"E
	PTN 034 16°56'11.76"N	95°30'54.92"E

**B. Environmental Conditions**

**B.1 Climate**

Annual Average Temperature	High: 32oC Low: 21oC
Annual Average Humidity	
Total Annual Rainfall	2477.7 mm
Rainy Season Period	Mid May to October

**B.2 General Environmental Condition of the Road Corridor**

<b>No.</b>	<b>Ecological Setting</b>	<b>Yes</b>	<b>No</b>	<b>Explanation</b>
1.	Coastal area Mangrove (along roadside) <i>(Describe the alignment of the road with respect to the coastal wetland, either road traverses or proximal, if proximal, state nearest distance of road to wetland)</i>		●	
2	Are protected or endangered species associated with coastal wetlands present?		●	No, the road corridor is distant from the coastline

3	Is freshwater wetland / or River present within the road corridor? Describe the position of the alignment with respect to wetland, cuts across or proximal, if proximal state nearest distance.	●		Yes, The Ayeyarwady River is less than 200 m from the start point of PTN005 at about Km 1+600 where PTN005 starts to trend more westerly, away from the river.; Numerous ponds, probably remnants of abandoned channels are present within the road corridor.
4	Are freshwater endangered / protected wildlife species present within or near the project site?		●	No known protected or endangered freshwater species within or near the project
5	Description of terrain (elevation relief, hilly, mountainous; describe the topography, i.e. plain, undulating, rolling, rugged) <i>(Describe the length of road within the different terrain classification)</i>	●		PTN005+012 are located in a floodplain of Ayeyarwady River. It is located upstream of the section of Ayeyarwady where it splits out into 9 distributary channels. This part of the floodplain is comparatively younger as abandoned meanders are still pronounced and abandoned channels have not yet been fully filled up by sediments. Ponds still occupy some of the abandoned channels. The elevation of the road corridor ranges from 6 m asl to 13 m asl. Subtle geomorphologic features give rise to topographic variation. These geomorphologic features include ancient levees, abandoned channels and ponds.
6	Forest Area or Protected Area <i>(Describe road alignment and with respect to forest, i.e. within the forest, or proximal, state the nearest distance of road to forest)</i>		●	There are no forests or protected areas within the road corridor.
7	Are there Wildlife species within the road corridor that are classified as protected or endangered? <i>(Describe faunal wildlife associated with the corridor's ecologic setting, state if endangered species / protected species is present)</i>		●	The wildlife present in the corridor, particularly the birds species are mostly those that are associated with open fields, farmlands and edge of dwellings. Water birds are also common in the corridor. The residents are not aware of the presence of any special or protected wildlife species in the corridor.
8.	Settlement / Built up	●		Settlements line the sides of PTN005. It is noted that village settlements along PTN005 is not dense. Houses are typically apart and spread out.; Settlements are also present along PTN034. There are no settlements along PTN012
9	Agricultural Land	●		Agriculture is the dominant land use in the road corridor; rice and other seasonal crops are the main crops;

19	Grazing grounds / Grassland	●		Grasslands, dominated by tall grasses, including herbaceous wetland grasses remain as patches; Grasslands were delineated in the map, but it could be that some of it could be fallow land; or for cultivation at the onset of the rainy season.
11	Brushland	●		The term wooded has been adopted, this includes fruit trees, banana and bamboo grooves; unlike in other locations where wooded areas are confined within village settlements, here in PTN005+012+034, patches of wooded land occur widely.
12	Bare Areas		●	There are no bare areas in the road corridor; all are vegetated either with crops or grasses.

### C. General Condition of the Road and Possible Concerns

(Note: Questions number 1, 4, 5, 7 and 8 must be answered after discussions with the local community people)

No.	Parameter/ Component	Yes	No	Explanation / Details
1.	Enumerate sections of the road prone to landslide, subsidence, risk of river bank erosion		●	
5.	Are water stagnation and drainage issues present on or along the road?	●		Drainage issues seem to be a problem in some sections as makeshift culverts have collapsed;
6.	<i>Is road corridor prone to flooding?</i>			Several sections are prone to flooding according to the hydrology survey. Flood prone areas indicated in the map.
7.	Enumerate the trees with a dbh of 30 cm or more within 10 m on either side from the center line of the road alignment?	●		Tree data are with the Road Survey Group
10.	Are power and communication poles present along road?	●		PTN 005 Power poles on right side from start to end, spaced every 60m. PTN 011 power poles RS: Power line ends at about Km3+800
	Are water supply facilities present alongside the road?		●	
	Does the road cross irrigation ditches?	●		Yes, numerous water crossing along PTN 005+012+034
	Is Irrigation ditch present along the roadside?	●		Km 6+000 to end of PTN005, LS a major irrigation and navigation channel;
10.	Are religious features, i.e. monastery, pagoda, religious trees or shrines present alongside the road?	●		Km0+420 – about 100 meters from PTN005 a pagoda; and graves at Km0+420 LS; Km3+240 PTN005 Pagoda LS

	Are Historical sites or monuments present alongside the road?		●	Km3+410 PTN005 – monument but away from road.
	Enumerate schools located alongside the road or other community facility	●		Km 1+380 PTN005 School RS Km 3+060 PTN005 School LS Km10+230 PTN005 School RS Km1+150 RS PTN034 School RS
	Are there possible sources of road construction materials (fill materials and aggregates) near the road? Is borrow area or quarries present along the road? Commercial sources? Other?			Under study
	<b>Sensitive Receptors</b>			
	Village settlements			PTN005 a. Km 0+000 to Km 3+500 b. Km 6+200 to Km 9+000 c. Km9+800 to end of PTN 005 PTN 012 Km0+000 to Km 0+200 PTN034 Km 0+000 to Km 2+000
10.	Monastery, pagoda, and / or shrines present alongside the road	●		PTN 005 a. Pagoda Km0+420 – about 100 meters from PTN005 b. Pagoda Km 1+080 LS c. Graves at Km0+420 RS; d. Pagoda Km3+240 LS e. Christian Church Km8+600 RS
	Schools			a. Km 1+380 PTN005 School RS b. Km 3+060 PTN005 School LS c. Km10+230 PTN005 School RS d. Km1+150 RS PTN034 School RS
	Water Pond			PTN 0005 – Km 1+850
	Irrigation Channel			PTN 005 Km 8+000 to End – LS major irrigation and navigation channel

#### D. Public Consultation

PTN 005-012 Gonmin Meinma Byay-Road, 20 Feb 2018

No.	Consultation Activities	Yes	No	Remarks
1.	Consultation with local community was conducted before finalizing the alignment	●		A consultation was held with the local community members, it was attended by (7) persons. The list of participants is Attached.
2.	Any suggestion received in finalizing the alignment		●	We fully support the project. Road side trees were cut when installation of power transmission line to our villages. We warmly welcome the project because this road is important for transportation

				of our (6) Village Tracts. It also has advantages to access the road all seasons.
3.	If suggestions received, were they incorporated into the design?			No

PTN 005- 005 Daung Gyi-Taw Kyaung -Pyin Tone Gyi-Tu Chaung -Gonmin , 20 Feb 2018

No.	Consultation Activities	Yes	No	Remarks
1.	Consultation with local community was conducted before finalizing the alignment	●		A consultation was held with the local community members, it was attended by (9) persons. The list of participants is attached
2.	Any suggestion received in finalizing the alignment		●	We fully support the project. Land owners are willing to donate their lands. Trees in road side area can be cleared. We warmly welcome the project because this road is important for transportation of goods. It also has many advantages in terms of economic, education, and health for villages along the road.
3.	If suggestions received, were they incorporated into the design?			For filling of earth to increase road level, good borrow soil is available at Pyin Tone Gyi Wet Land during dry season.

PTN 034 Htein Kone Village Road 20 Feb 2018

No.	Consultation Activities	Yes	No	Remarks
1.	Consultation with local community was conducted before finalizing the alignment	●		A consultation was held with the local community members, it was attended by (3) persons. The list of participants is attached
2.	Any suggestion received in finalizing the alignment	●		We fully support the project. Shopkeepers in the road sides will be relocated for earth filling and compacting. We warmly welcome the project because our living standard would be improved because of road project. We will involve in the project planning, execution and monitoring process
3.	If suggestions received, were they incorporated into the design?			Pits and trench along the road sides need filling for health of residents. Otherwise it will need retaining walls to reinforce.

**List of people who attended consultations**

PTN 005-012 Gonmin Meinma Byay-Road				
	NAME	TOWNSHIP	DESIGNATION	DATE
1	U Ye Min Hlaing	Pantanaw	Village Tract Leader	20.2.18
2	U Mya Aung	Pantanaw	Road Committee	20.2.18
3	U Soe Kyaing	Pantanaw	Road Committee	20.2.18
4	U Zaw Min Oo	Pantanaw	Road Committee	20.2.18
5	U Maung Swe	Pantanaw	Road Committee	20.2.18
6	U Kyaw Kyaw Lin	Pantanaw	Road Committee	20.2.18



7	U Maung Gyi	Pantanaw	Road Committee	20.2.18
<b>PTN 005- 005 Daung Gyi-Taw Kyaung -Pyin Tone Gyi-Tu Chaung -Gonmin</b>				
1	U Aung Kyi	Pantanaw	Village tract leader	20.2.18
2	U June Kyaw Lwin	Pantanaw	Village Leader(100 Households)	20.2.18
3	U Han Tin	Pantanaw	Village Elder	20.2.18
4	U Win Myint	Pantanaw	Village Elder	20.2.18
5	U Kyaw Htay	Pantanaw	Village Leader(100 Households)	20.2.18
6	U Naing Win	Pantanaw	Village Leader(100 Households)	20.2.18
7	U Htun Htun	Pantanaw	Chairman Road committee	20.2.18
8	U Thar Htoo	Pantanaw	Village Leader(100 Households)	20.2.18
9	U Tin Aung	Pantanaw	Village Elder	20.2.18
<b>PTN 034 Htein Kone Village Road</b>				
1	U Thant Lwin Naing	Pantanaw	Village Tract Leader	20.2.18
2	Daw Min Min Aye	Pantanaw	Staff VT Administration Office	20.2.18
3	U Saw Htun Oo	Pantanaw	Village Leader(100 Households)	20.2.18

## E. Photographs

	
<p>Km0+000 PTN 034/PTN005 Start</p>	<p>Start of PTN 034 houses at road's edge</p>
	
<p>Km 2+200 PTN 034, near the end</p>	<p>Km 0+250 PTN 005 Power Poles and Piper leaf plantation</p>
	
<p>PTN 005 Km0+400 graveyard both sides of road</p>	<p>PTN 005Km0+800 house LS very close to road edge</p>
	
<p>Km0+950 PTN005 – Road boxed in by power line on 1 side and dwellings and stores on other side</p>	<p>Km1+130 PTN005 narrow section within village settlement</p>



Km0+730 – houses and trees on the LS



Km1+134 – houses and fences lines the narrow road within this village settlement



Km4+800 PTN005 a narrow track



Km8+650 bridge, the lower bridge is prone to flooding but not the new higher bridge



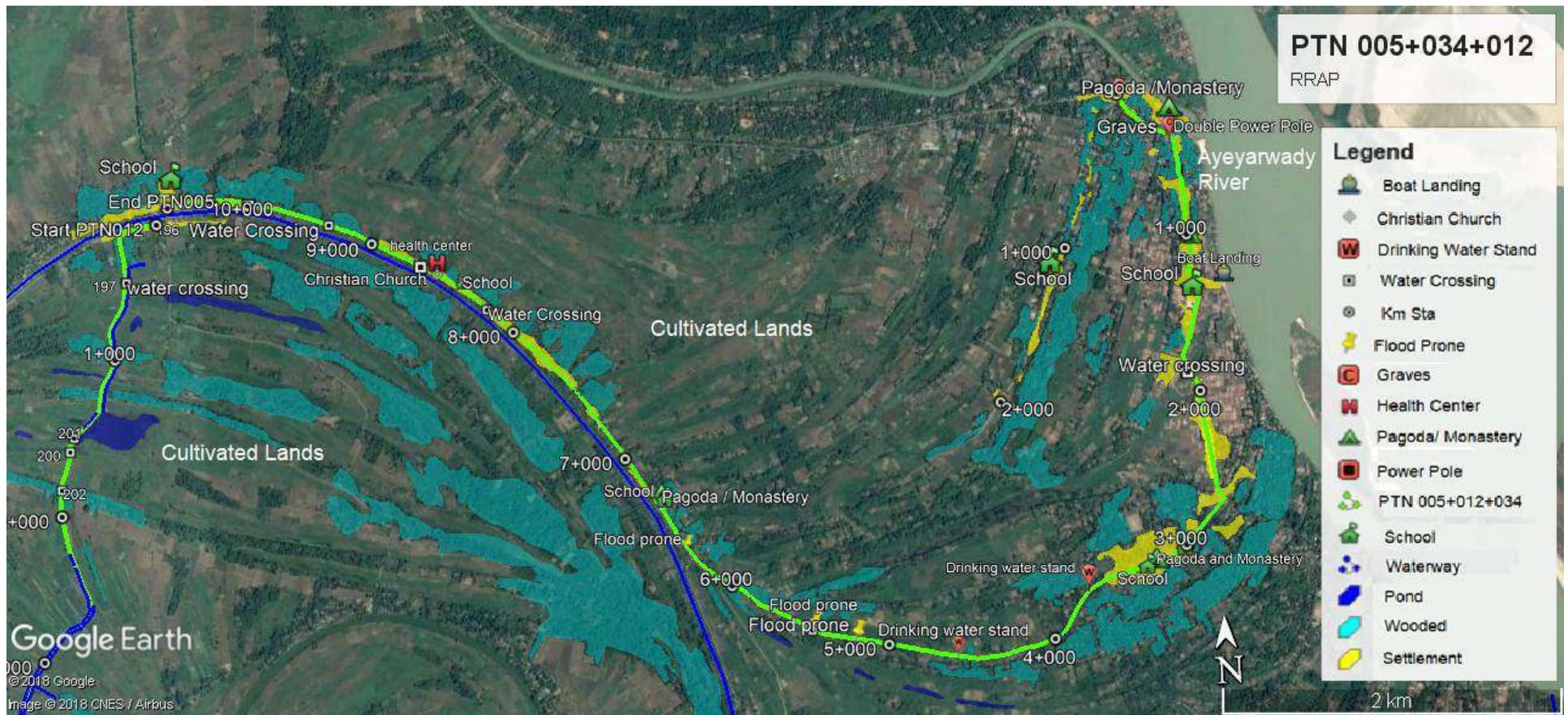
PTN005+012+034 Consultation Taw Kyaung Village



PTN005+012+034 Consultation



## F. Maps



**ENVIRONMENTAL CHECKLIST**  
**RURAL ROADS & ACCESS PROJECT TA 9184 MYA**

**A. Location and Salient Details of Road Sub Project**

<b>Road Name</b>	<b>PTN008</b>	
<b>Township</b>	Pantanaw	
<b>Villages and (Village Tracks)</b>	Tha Yet Taw (Inn Ta Kaw) Byant Gyi (Inn Ta Kaw) Byant Gyi ( Ah Lei Kone) Kan Chaung Kone (Kha Yae Gan) Ga Yet Kyaw (Kha Yae Gan) Ga Yet Kyaw (North) (Kha Yae Gan)	
<b>Total Length of the Road</b>	10.8 km	
<b>Start (Latitude, Longitude in Degrees Decimal)</b>	17.072625°	95.342795°
<b>End (Latitude, Longitude in Degrees Decimal)</b>	17.146067°	95.334782°

**B. Environmental Conditions**

**B.1 Climate**

Annual Average Temperature	High: 32oC Low: 21oC
Annual Average Humidity	
Total Annual Rainfall	2477.7 mm
Rainy Season Period	Mid May to October

**B.2 General Environmental Condition of the Road Corridor**

<b>No.</b>	<b>Ecological Setting</b>	<b>Yes</b>	<b>No</b>	<b>Explanation</b>
1.	Coastal area Mangrove (along roadside) <i>(Describe the alignment of the road with respect to the coastal wetland, either road traverses or proximal, if proximal, state nearest distance of road to wetland)</i>		•	
2	Are protected or endangered species associated with coastal wetlands present?		•	
3	Is freshwater wetland / or River present within the road corridor? Describe the position of the alignment with respect to wetland, cuts across or proximal, if proximal state nearest distance.	•		PTN 008 crosses a waterway at Km0+450; This waterway runs to the left of the road from Km4+500 to end of PTN008; distance from road to waterway varies from 50 to 200 m



4	Are endangered / protected wildlife species associated with freshwater wetland or river present?		•	No freshwater protected wildlife species in the waterways within the road corridor;
5	Describe the topography of the road corridor, i.e. elevation and relief (difference between highest and lowest elevation) plain, hilly, mountainous; describe the slope whether flat, undulating, rolling, steep; enumerate the section of the road on different topography	•		PTN 008 is in the delta region. The topography is generally flat with subtle topographic highs formed by natural levees associated with the abandoned river meanders; elevation of the road varies from 6 m asl to 18 m asl, giving a relief of 12 m; maximum slope range from 5.5% to 6.3%. Arcuate landforms which are the topographic expressions of abandoned ancient river meanders are quite common;
6	Forest Area or Protected Area (Describe road alignment and with respect to forest, i.e. within the forest, or proximal, state the nearest distance of road to forest)		•	
7	Are there protected wildlife species within the project area? (Describe faunal wildlife associated with the corridor's ecologic setting, state if endangered species / protected species is present)		•	
8.	Settlement / Built up	•		a. Km 0+000 to 0+350 b. Km1+420 to Km 1+900 c. Km2+040 to Km 4+270 d. Km4+320 to Km 5+250 LS e. Km5+880 to Km 8+900 LS f. Km9+250 LS g. Km9+540 to end
9	Agricultural Land	•		Agriculture is the dominant land use within the road corridor interspersed by settlements and woodlands and bamboo groves; major crop is paddy rice
19	Grazing grounds / Grassland		•	No permanent grassland noted in the corridor,
11	Brushland / Woodlands	•		Wooded areas are frequently surround the village settlements. These woodlands consist of mixture of bamboo groves and fruit trees; the largest aggregation of wooded area within the corridor is at Km 2+280 to Km 4+200.
12	Bare Areas		•	

### C. General Condition of the Road and Possible Concerns

No.	Parameter/ Component	Yes	No	Explanation / Details
1.	Enumerate sections of the road prone to landslide, subsidence, risk of river bank erosion		•	
2	Are water stagnation and drainage issues present on or along the road?		•	
3.	Is road corridor prone to flooding?		•	Overlay of the PTN008 alignment on the flood map of Cyclone Nargis in 2008 showed the road to be above the flood level;
4.	Enumerate the trees with a dbh of 30 cm or more within 10 m on either side from the center line of the road alignment?	•		Tree data with Road survey group
5.	Are power and communication poles present along road?	•		All the villages traversed by PTN008 are connected to grid from the start to Km 9+000. Electric posts are lined at the left side of the road at intervals of about 60 m.
6	Are water supply facilities present alongside the road?		•	
7	Does the road cross irrigation ditches?		•	
8	Is Irrigation ditch present along the roadside?	•		A waterway runs to the left of the road from Km4+500 to end of PTN008; distance from road to waterway varies from 50 to 200 m; A major water crossing at Km0+400.
9.	Are religious features, i.e. monastery, pagoda, religious trees or shrines present alongside the road?	•		a. Km2+700 RS b. Km3+430 RS c. Km6+450 LS d. Km7+120 LS e. Km8+040 LS f. Km9+620 RS Buddha Shrine & Bodhi Tree
10	Are Historical sites or monuments present alongside the road?		•	
11	Enumerate schools located alongside the road or other community facility	•		a. Km2+070 LS b. Km 4+620 LS c. Km6+410 LS Health Center d. Km7+950 RS

				e. Km 9+550LS
12	Are there possible sources of road construction materials (fill materials and aggregates) near the road? Is borrow area or quarries present along the road? Commercial sources? Other?		•	Under study
	<b>Sensitive Receptors</b>			
	Settlements			a. Km 0+000 to 0+350 b. Km1+420 to Km 1+900 c. Km2+040 to Km 4+270 d. Km4+320 to Km 5+250 LS e. Km5+880 to Km 8+900 LS f. Km9+250 LS g. Km9+540 to end
	Monasteries, Pagoda and shrines			a. Km2+700 RS b. Km3+430 RS c. Km6+450 LS d. Km7+120 LS e. Km8+040 LS f. Km9+620 RS Buddha Shrine & Bodhi Tree
	Schools			a. Km2+070 LS b. Km 4+620 LS c. Km7+950 RS d. Km 9+550LS
	Waterway			A waterway runs to the left of the road from Km4+500 to end of PTN008; distance from road to waterway varies from 50 to 200 m

#### D. Public Consultation

No.	Consultation Activities	Yes	No	Remarks
1.	Consultation with local community was conducted before finalizing the alignment			A consultation was held with the local community members, it was attended by (8) persons. The list of participants follows
2.	Any suggestion received in finalizing the alignment			Land owners are willing to donate their lands. We warmly welcome the project because this road connects with Yangon_ Patheingyi Union Road, Kyohn Pyaw, Kyong Gon and Kyohn Da Ni. It will be a main road in our area and important for transportation of goods. It also has many advantages in terms of economic, education, and health. This kind of project has never been in our dream

				before. Would like to know when the project will start? We fully support the project. We (committee members) will involve in the project planning, execution and monitoring; building a co-operative relation to achieve the aim.
3.	If suggestions received, were they incorporated into the design?			No

#### List of Consulted Individuals

	<b>PTN 008 Inn Ma -Inntakaw - Khayae Gan Road</b>	<b>Township</b>	<b>Positions</b>	<b>Date</b>
1	U Than Myint	Pantanaw	Village Tract Leader	26.10.17
2	U Win Bo	Pantanaw	Road Committee	26.10.17
3	U Mae Aye	Pantanaw	Village Tract Leader	26.10.17
4	U Htay Aung	Pantanaw	NLD Party	26.10.17
5	U Kyi Sein	Pantanaw	Road Committee	26.10.17
6	U Gar Sein	Pantanaw	Road Committee	26.10.17
7	U Kyaw Soe	Pantanaw	Road Committee	26.10.17
8	U Lin Zaw Htwe	Pantanaw	Road Committee	26.10.17

## E. Photographs



Start PTN008



Km0+740



Km1+000 Busy traffic during rice harvest



Km1+630



Km 3+000 Road used for drying rice



Km4+000 Use of road for rice drying is common





Km5+270



Km 6+240 Consultation Ga Yet Kyaw Village



Km9+400



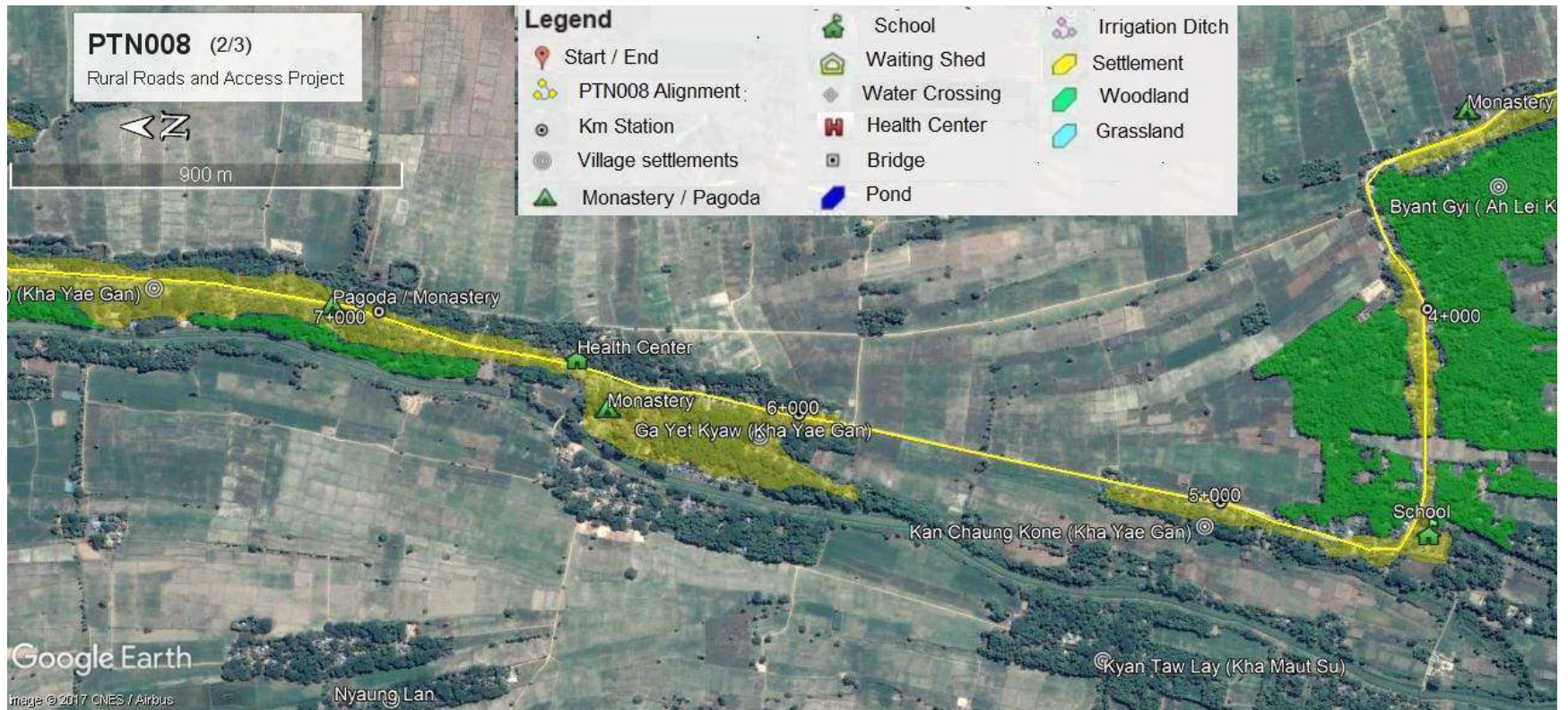
End of PTN008



## F. Maps







PTN008 (3/3)

Rural Roads and Access Project



1 km

Google Earth

Image © 2017 CNES / Airbus

### Legend

Start / End

PTN008 Alignment

Km Station

Village settlements

Monastery / Pagoda

School

Waiting Shed

Water Crossing

Health Center

Bridge

Pond

Irrigation Ditch

Settlement

Woodland

Grassland

School

Pagoda / Monastery 8+000

Ga Yet Kyaw (North) (Kha Yae Gan)

Pagoda / Monastery 7+000

9+000

End 9+500

School  
Buddha Shrine & Bodhi Tree

Nyaung Lan



**ENVIRONMENTAL CHECKLIST**  
**RURAL ROADS & ACCESS PROJECT TA 9184 MYA**

**A. Location and Salient Details of Road Sub Project**

Road Name	PTN011	
Township	Pantanaw	
Villages and (Village Tracks)		
Total Length of the Road	10.0 km	
Start (Latitude, Longitude in Degrees Decimal)	17.027596°	95.384663°
End (Latitude, Longitude in Degrees Decimal)	17.071581°	95.352186°

**B. Environmental Conditions**

**B.1 Climate**

Annual Average Temperature	High: 32oC Low:21oC
Annual Average Humidity	
Total Annual Rainfall	2477.7 mm
Rainy Season Period	Mid May to October

**B.2 General Environmental Condition of the Road Corridor**

No.	Ecological Setting	Yes	No	Explanation
1.	Coastal area Mangrove (along roadside) (Describe the alignment of the road with respect to the coastal wetland, either road traverses or proximal, if proximal, state nearest distance of road to wetland)		●	
2	Are protected or endangered species associated with coastal wetlands present?		●	
3	Is freshwater wetland / or River present within the road corridor? Describe the position of the alignment with respect to wetland, cuts across or proximal, if proximal state nearest distance.	●		Km 0+200 to Km 1+000 is along the bank of a waterway
4	Are endangered / protected wildlife species associated with freshwater wetland or river present?		●	
5	Describe the topography of the road corridor, i.e. elevation and relief			The road is located on a delta and the topography is generally a plain interrupted by

	(difference between highest and lowest elevation) plain, hilly, mountainous; describe the slope whether flat, undulating, rolling, steep; enumerate the section of the road on different topography			subtle topographic highs, remnants of natural levees of abandoned river meanders; maximum slope range from 5.1% to 8.3 with average slope of 1.1% to 1.3%. Elevation is very low, lowest at 5 m asl with highest elevation of 18 m asl.; arcuate topographic features formed by river channel migration are ubiquitous in the areas surrounding of the project road.
6	Forest Area or Protected Area (Describe road alignment and with respect to forest, i.e. within the forest, or proximal, state the nearest distance of road to forest)		●	
7	Are there protected wildlife species within the project corridor? (Describe faunal wildlife associated with the corridor's ecologic setting, state if endangered species / protected species is present)		●	The wildlife present in the corridor, particularly the birds species are mostly those that are associated with open fields, farmlands and edge of dwellings. Water birds are also common in the corridor. The residents are not aware of the presence of any special or protected wildlife species in the corridor.
8.	Settlement / Built up	●		Village settlements traversed by the road as follows: Start point Km0+120 to 0+590 Km1+180 to 1+740 Km2+670 to 3+000 Km3+420 to 3+810 Km3+880 to 4+100 Km4+390 to 5+210 Km 5+480 to 5+880 Km6+660 to 7+660 Km8+150 to 8+360 End point of PTN011
9	Agricultural Land	●		PTN is located in an agricultural area where the main crop is paddy rice which is intercropped with beans and other seasonal crops; agricultural land makes up the road corridor interspersed by settlements.
19	Grazing grounds / Grassland		●	No grassland within the road corridor; fallow land serves are grazing land.
11	Brushland / Woodlands	●		Woodlands commonly surround the village settlements; the woodlands consists of fruit bearing, trees, ornamental trees and bamboo groves; common tree species is Samanea sp. and common palm is the Tody Palm (Borassus flabillifer)

12	Bare Areas		●	
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### C. General Condition of the Road and Possible Concerns

(Note: Questions number 1, 4, 5, 7 and 8 must be answered after discussions with the local community people)

No.	Parameter/ Component	Yes	No	Explanation / Details
1.	Are sections of the road prone to landslide, subsidence, risk of river bank erosion?		●	
2.	Are water stagnation and drainage issues present on or along the road?		●	
3.	Is road corridor prone to flooding?		●	Overlay of PTN alignment over satellite map of Nargis flood of 2008 showed road outside of flooded areas.
4.	Are there trees with a dbh of 30 cm or more within 10 m on either side from the center line of the road alignment?	●		
5..	Are power and communication poles present along road?	●		Power poles start to 1+420 RS 60 m interval Km9+680 to end LS
6.	Are water supply facilities and water ponds present alongside the road, within road corridor?	●		Km 1+000 LS water pond Km 1+400 to 1+900 LS Km2+850 RS 200 m away from road Km3+910 LS 200 m from road
7.	Does the road cross irrigation ditches?	●		Km5+620 Km8+140 Km9+090
8.	Is Irrigation ditch present along the roadside?		●	
9	Water Crossings	●		
10.	Are religious features, i.e. monastery, pagoda, religious trees or shrines present alongside the road?	●		Km 0+550 LS Km1+590 RS Km2+400 RS Km8+190 RS
11	Are Historical sites or monuments present alongside the road?		●	
12	Are schools and / or other community facilities present along the road? Within the road corridor?	●		Km9+650 Health Center Km9+930 Village Track Administration Office Km10+000 School, RS Km 4+810 LS Km2+800

13	Are there possible sources of road construction materials (fill materials and aggregates) near the road? Is borrow area or quarries present along the road? Commercial sources? Other?		●	Sand from river maybe available; under study
	<b>Sensitive Receptors</b>			
	Village Settlements			Km0+120 to 0+590 Km1+180 to 1+740 Km2+670 to 3+000 Km3+420 to 3+810 Km3+880 to 4+100 Km4+390 to 5+210 Km 5+480 to 5+880 Km6+660 to 7+660 Km8+150 to 8+360
	Monasteries & Pagodas and other religious features			Km 0+550 LS Km1+590 RS Km2+400 RS Km8+190 RS
	Schools			Km10+000 School, RS Km 4+810 LS Km2+800
	Ponds and Waterways			Km 1+000 LS water pond Km 1+400 to 1+900 LS Km2+850 RS 200 m away from road Km3+910 LS 200 m from road
	Community Facilities			Km9+650 Health Center Km9+930 Village Track Administration Office

#### D. Public Consultation

No.	Consultation Activities	Yes	No	Remarks
1.	Consultation with local community was conducted before finalizing the alignment.	●		A consultation was held with the local community members, it was attended by (14) persons. The list of participants is Attached.
2.	Any suggestion received in finalizing the alignment	●		No suggestions were given by the respondents only comments on road safety measures at school, curves and road intersections locations. The expressed full support the project and welcome the project because it has many advantages in terms of economic, education, and health. It was asked when the Government will get the loan?



3.	If suggestions received, were they incorporated into the design?	•	Noted
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PTN011, Ka Nyin Ngu- Kayin Pat Taw- Inn Ta Kaw Village

	<b>Name</b>	<b>Location</b>	<b>Position / Designation</b>	<b>Date</b>
	U Myint San	Pantanaw	Village Tract Leader	26.10.17
	U San Hlaing	Pantanaw	Development assistant	26.10.17
	U Win Tin	Pantanaw	Village Elder	26.10.17
	U Win Kyaing	Pantanaw	Village Elder	26.10.17
	U Than Htwe	Pantanaw	Village Elder	26.10.17
	U Nyi Nyi Aung	Pantanaw	Village Elder	26.10.17
	U Maung Thet	Pantanaw	Village Elder	26.10.17
	U Win Bo	Pantanaw	Village Elder	26.10.17
	U Myat Tun	Pantanaw	Village Elder	26.10.17
	U Than Naing	Pantanaw	Village Elder	26.10.17
	U Myint Thein	Pantanaw	Village Elder	26.10.17
	U Wai Lin Phyo	Pantanaw	Village Elder	26.10.17
	U Aung Win	Maubin	Village Tract Leader	26.10.17
	Daw Aye Aye Naing	Maubin	Shopkeeper	26.10.17



## E. Photographs

	
Start	Km0+950
	
Km1+000	Km2+000
	
Km3+400	Km4+740



Km6+160



Km8+150



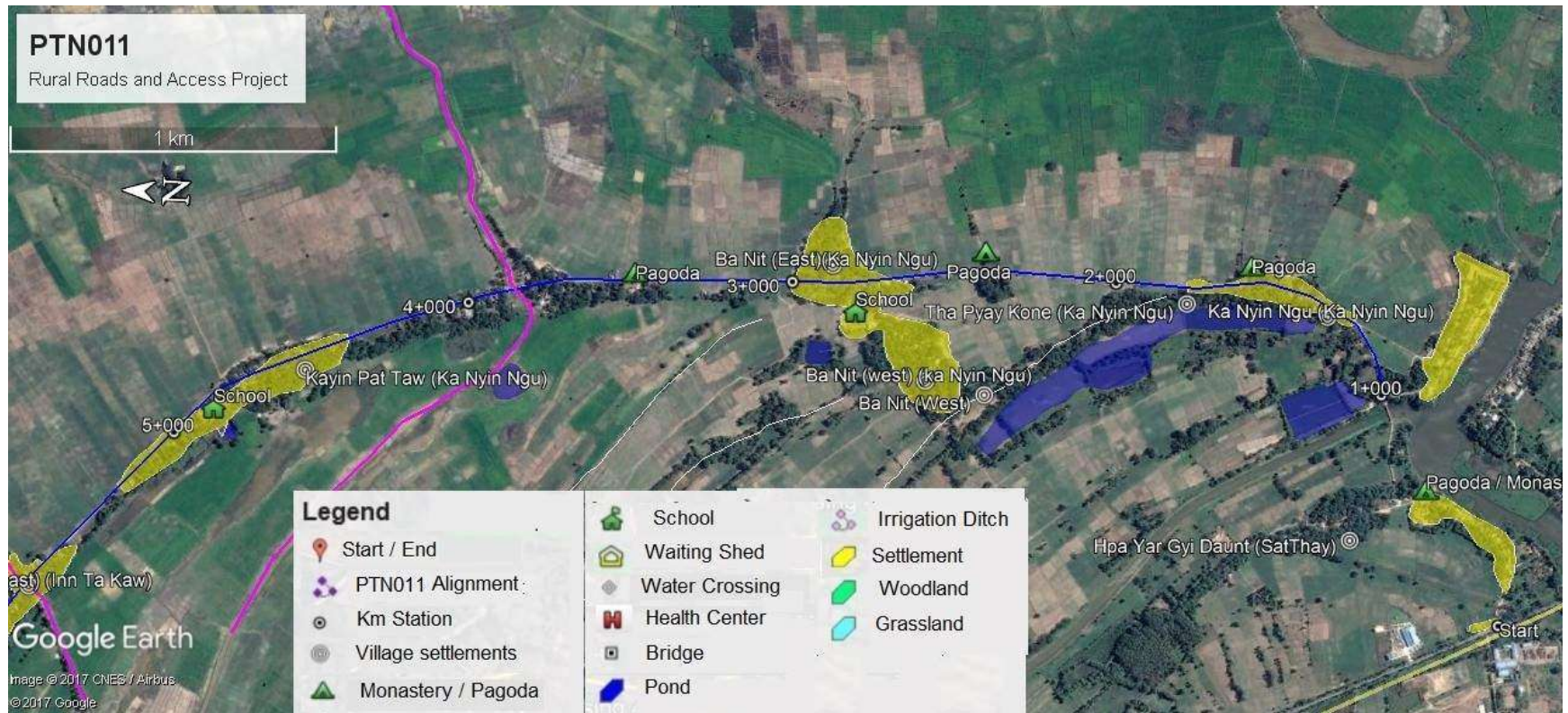
Km9+000



End of PTN011



## F. Maps



# PTN011

Rural Roads and Access Project

1 km



Google Earth

Image © 2017 CNES / Airbus  
© 2017 Google

Inn Ta Kaw (east) (Inn Ta Kaw)

5+000

6+000

4+000

3+000

Pagoda

Kayin Pat Taw (Ka Nyin Ngu)

School

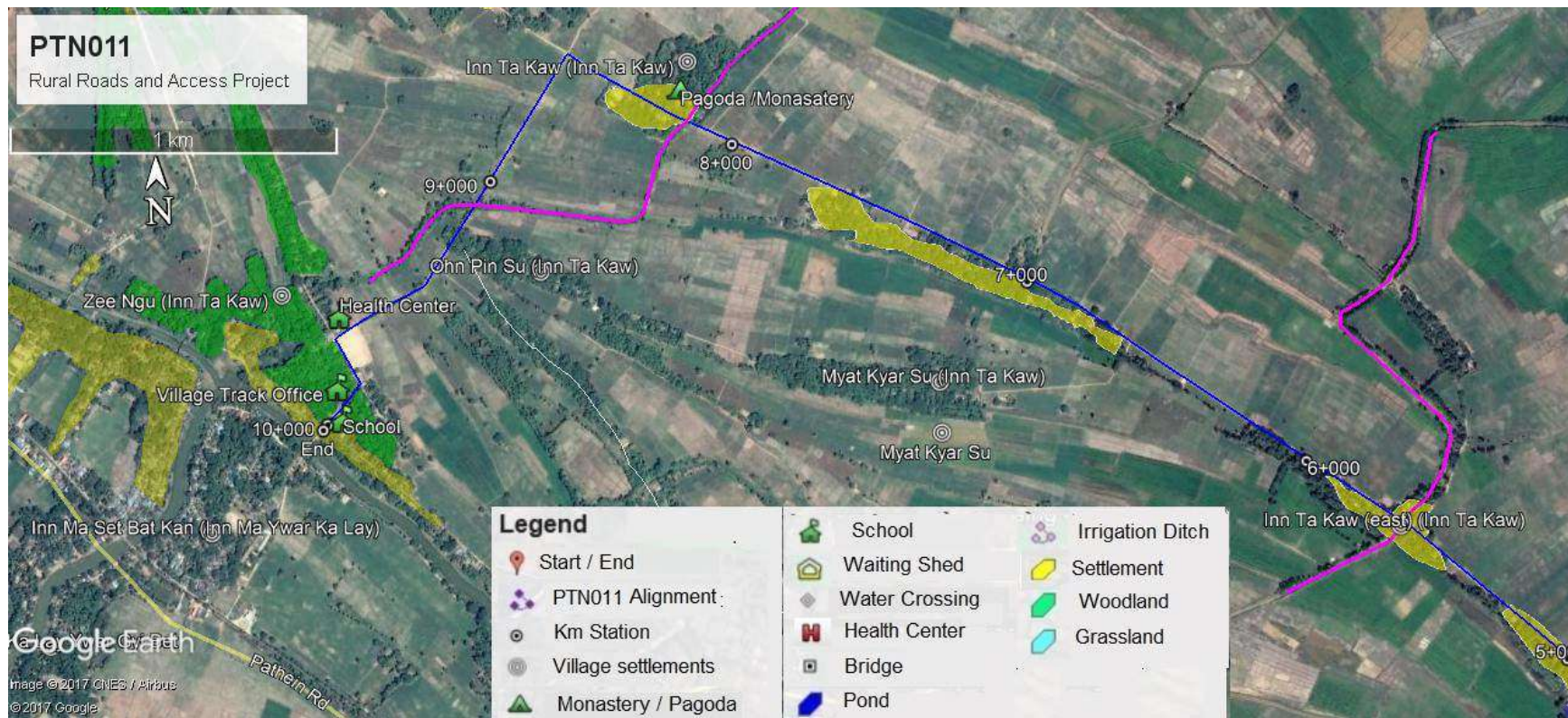
## Legend

- Start / End
- PTN011 Alignment
- Km Station
- Village settlements
- Monastery / Pagoda

- School
- Waiting Shed
- Water Crossing
- Health Center
- Bridge
- Pond

- Irrigation Ditch
- Settlement
- Woodland
- Grassland





**ENVIRONMENTAL CHECKLIST**  
**RURAL ROADS & ACCESS PROJECT TA 9184 MYA**

**A. Location and Salient Details of Road Sub Project**

Road Name	PTN019	
Township	Pantanaw	
Villages and (Village Tracks)	Mayan Thayat Ngu, Asugyi-Kyon Pa Taw	
Total Length of the Road	14.1 km	
Start (Latitude, Longitude in Degrees Decimal)	16.975915°	95.354299°
End (Latitude, Longitude in Degrees Decimal)	16.892334°	95.377704°

**B. Environmental Conditions**

**B.1 Climate**

Annual Average Temperature	High: 32oC Low:21oC
Annual Average Humidity	
Total Annual Rainfall	2477.7 mm
Rainy Season Period	Mid May to October

**B.2 General Environmental Condition of the Road Corridor**

No.	Ecological Setting	Yes	No	Explanation
1.	Coastal area Mangrove (along roadside) <i>(Describe the alignment of the road with respect to the coastal wetland, either road traverses or proximal, if proximal, state nearest distance of road to wetland)</i>		●	The road is distant from coastline
2	Are protected or endangered species associated with coastal wetlands present?		●	
3	Is freshwater wetland / or River present within the road corridor? Describe the position of the alignment with respect to wetland, cuts across or proximal, if proximal state nearest distance.		●	Only small waterways
4	Are endangered / protected wildlife species associated with freshwater wetland or river present?		●	No known protected freshwater wildlife species.
5	Describe the topography of the road corridor, i.e. elevation and relief (difference between highest and lowest	●		PTN019 is located in the Ayeyarwaddy Delta. The delta is generally flat with subtle elevation changes created by elevated alluvial terraces



	elevation) plain, hilly, mountainous; describe the slope whether flat, undulating, rolling, steep; enumerate the section of the road on different topography			and the natural levees of abandoned river channels, a geomorphologic feature which is common in the delta region; the highest elevation of PTN019 is 18 m asl, while the lowest point is 2 m asl. Maximum slope varies from 4.6% to 6.4% while minimum average slope is 0.8% to 0.9%
6	Forest Area or Protected Area (Describe road alignment and with respect to forest, i.e. within the forest, or proximal, state the nearest distance of road to forest)		●	
7	Are there protected wildlife species within the project area? (Describe faunal wildlife associated with the corridor's ecologic setting, state if endangered species / protected species is present)		●	
8.	Settlement / Built up	●		PTN019 traverses some well developed settlements. The settlements alongside the road are located at: <ul style="list-style-type: none"> <li>a. Km 0+000 to 0+100</li> <li>b. Km 1+000 to 1+280</li> <li>c. Km1+500 to 1+690</li> <li>d. Km1+820 to 2+000</li> <li>e. Km2+060 to 2+160</li> <li>f. Km 2+360 to 3+350</li> <li>g. Km 3+410 to 3+880</li> <li>h. Km 4+000 to 4+010</li> <li>i. Km 4+240 to 4+350</li> <li>j. Km 5+340 to 5+700</li> <li>k. Km 5+740 to 6+410</li> <li>l. Km 6+480 to 6+940 – sparse housing</li> <li>m. Km 7+080 to 7+640</li> <li>n. Km 7+760 to 9+910</li> <li>o. Km 9+360 to 10+500</li> <li>p. Km 10+630 to 10+710</li> <li>q. Km 13+680 to 13+730</li> <li>r. Km 13+840 to 13+940</li> </ul>
9	Agricultural Land	●		PTN019 corridor is largely cultivated with paddy rice as main crop. Mostly, the paddy fields is separated from the road by the row of settlements and woodlands.
19	Grazing grounds / Grassland		●	No natural grasslands are located along the road corridor; the grasslands are fallow lands which are grouped under cultivated lands

11	Brushland / Woodland	●		Wide areas of woodlands borders the road and envelope the settlements; the woodlands consist of bamboos, fruit trees, palms and other tree species such as rain tree, ficus etc.
12	Bare Areas		●	

### C. General Condition of the Road and Possible Concerns

(Note: Questions number 1, 4, 5, 7 and 8 must be answered after discussions with the local community people)

No.	Parameter/ Component	Yes	No	Explanation / Details	
1.	Are sections of the road prone to landslide, subsidence, risk of river bank erosion	●		Low to moderate risk of bank erosion exist in some sections of PTN019 specifically sections where road shoulder is right next to irrigation ditch; one such area is at Km5+500, see photo.	
2	Are water stagnation and drainage issues present on or along the road?		●		
3.	Is road corridor prone to flooding?		●	The road in general is not prone to flooding; the road was not flooded during the Nargis flooding of 2008.	
4.	Enumerate the trees with a dbh of 30 cm or more within 10 m on either side from the center line of the road alignment?	●		175 trees	
5.	Are power and communication poles present along road?	●		Power poles from start of PTN019 to 11+150; power poles are positioned at the left side of the road at about every 60 m apart.	
6.	Are there other infrastructures alongside or connected to the road?	●		Numerous bridges across the irrigation channel connecting PTN019 to communities at the other side of the channel;	
				Km1+210 Km1+870 Km2+620 Km3+220 Km3+040 Km 3+930 Km 5+040 Km 5+690 Km5+800 Km 5+220 Km 6+110	Km 6+310 Km6+600 Km 7+160 Km7+310 Km8+940 Km9+440 Km 9+660 Km10 +270 Km 10+730 Km 10+930 Km 11+100
7	Are water supply facilities present alongside the road?		●		

8	Does the road cross irrigation ditches?		●	
9	Is Irrigation ditch present along the roadside?	●		Irrigation channel is located at the right side of the road from start to Km 11+500; the distance of channel from road's edge ranges from 1m to 200 m
10.	Are religious features, i.e. monastery, pagoda, religious trees or shrines present alongside the road?	●		The mosque and monasteries alongside PTN019 are: a. Km2+160 monastery b. Km3_530 mosque c. Km7+140 monastery d. Km 9+360 RS Shrine and Bodhi Tree (Ficus)
11	Are Historical sites or monuments present alongside the road?		●	
12	Are schools and other community facilities located alongside the road?	●		Km3+350 Km8+510
13	Are there possible sources of road construction materials (fill materials and aggregates) near the road? Is borrow area or quarries present along the road? Commercial sources? Other?		●	
<b>Sensitive Receptors</b>				
	Village Settlements			a. Km 0+000 to 0+100 b. Km 1+000 to 1+280 c. Km1+500 to 1+690 d. Km1+820 to 2+000 e. Km2+060 to 2+160 f. Km 2+360 to 3+350 g. Km 3+410 to 3+880 h. Km 4+000 to 4+010 i. Km 4+240 to 4+350 j. Km 5+340 to 5+700 k. Km 5+740 to 6+410 l. Km 6+480 to 6+940 – sparse housing m. Km 7+080 to 7+640 n. Km 7+760 to 9+910 o. Km 9+360 to 10+500 p. Km 10+630 to 10+710 q. Km 13+680 to 13+730 r. Km 13+840 to 13+940
	Monasteries, Pagodas and other religious features			a. Km2+160 monastery b. Km3_530 mosque c. Km7+140 monastery

				d. Km 9+360 RS Shrine and Bodhi Tree (Ficus)	
	Schools			Km3+350 Km8+510	
	Irrigation Channel/ Waterway			Irrigation channel is located at the right side of the road from start to Km 11+500; the distance of channel from road's edge ranges from 1m to 200 m	
	Trees			175 trees according to road survey	
	Other infrastructures alongside or connected to the road			Numerous bridges across the irrigation channel connecting PTN019 to communities at the other side of the channel;	
				Km1+210 Km1+870 Km2+620 Km3+220 Km3+040 Km 3+930 Km 5+040 Km 5+690 Km5+800 Km 5+220 Km 6+110	Km 6+310 Km6+600 Km 7+160 Km7+310 Km8+940 Km9+440 Km 9+660 Km10 +270 Km 10+730 Km 10+930 Km 11+100

#### D. Public Consultation

PTN 019- Kyon Tai Kale VT - Nga Kyin Chaung Mayan Thayet Ngu-Asugi-Kyon Pa Taw Village 27.10.17

No.	Consultation Activities	Yes	No	Remarks
1.	<p>Consultation with local community was conducted before finalizing the alignment.</p> <p><i>(Attach list of people met and dates)</i></p>	✓		
2.	Any suggestion received in finalizing the alignment	✓		<p>Road safety measures at school, curves and road intersections locations.</p> <p>Garden trees in road area will be cut</p> <p>Would like to know when will project start.</p> <p>They are ready to remove fencing of betel-leaves farms or residential area.</p> <p>Protection against overloaded vehicles should be provided.</p>
3.	If suggestions received, were they incorporated into the design?	✓		



	<b><u>PTN019 Kyon Tai Kale VT - Nga Kyin Chaung Mayan Thayet Ngu-Asugi-Kyon Pa Taw Village</u></b>	<b>Location</b>	<b>Position / Designation</b>	<b>Date</b>
1	U Khin Maung Win	Pantanaw	Village Leader	27.10.17
2	U Sein Min	Pantanaw		27.10.17
3	U Tin oo	Pantanaw		27.10.17
4	U Soe Lin Aung	Pantanaw		27.10.17
5	U Than Naing	Pantanaw		27.10.17
6	U Min Zaw	Pantanaw	VT Leader	27.10.17
7	U Myint Aung	Pantanaw	Village Elder	27.10.17
8	U Kyaw San	Pantanaw	Village Elder	27.10.17
9	U Myint San	Pantanaw	Village Leader(100HH)	27.10.17
10	U Myint Shwe	Pantanaw		27.10.17
11	U Myint Aung	Pantanaw		27.10.17
12	U Htay Zaw Oo	Pantanaw		27.10.17
13	U Than Myint	Pantanaw		27.10.17

## E. Photographs



Start of PTN019



Km0+150 PTN019 through woodlands



Km1+000 water logged section



Km2+430 typical situation in settlement, fence and power poles at road's edge



Km 3+040



Km3+350 School, lean-to store at road's edge



Km 5+500, Irrigation channel at road's edge, bank erosion hazard



Km 6+240 Road bordered by fences on both sides



Km9+360 Shrine and Bodhi Tree RS



Km 11+760 paved section of PTN019 funded by donation from a monk



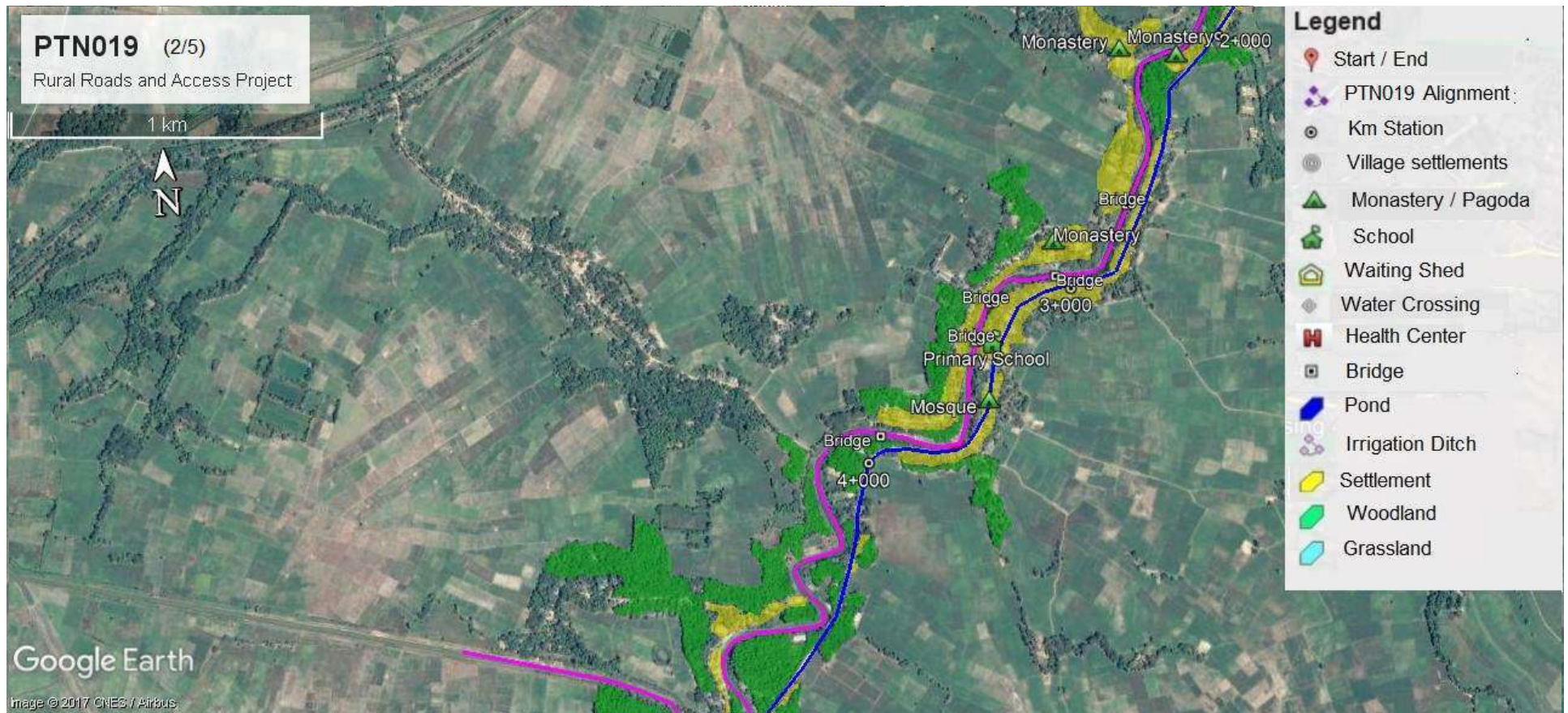
Km 12+370 paved section, ponds alongside the road all cultivated



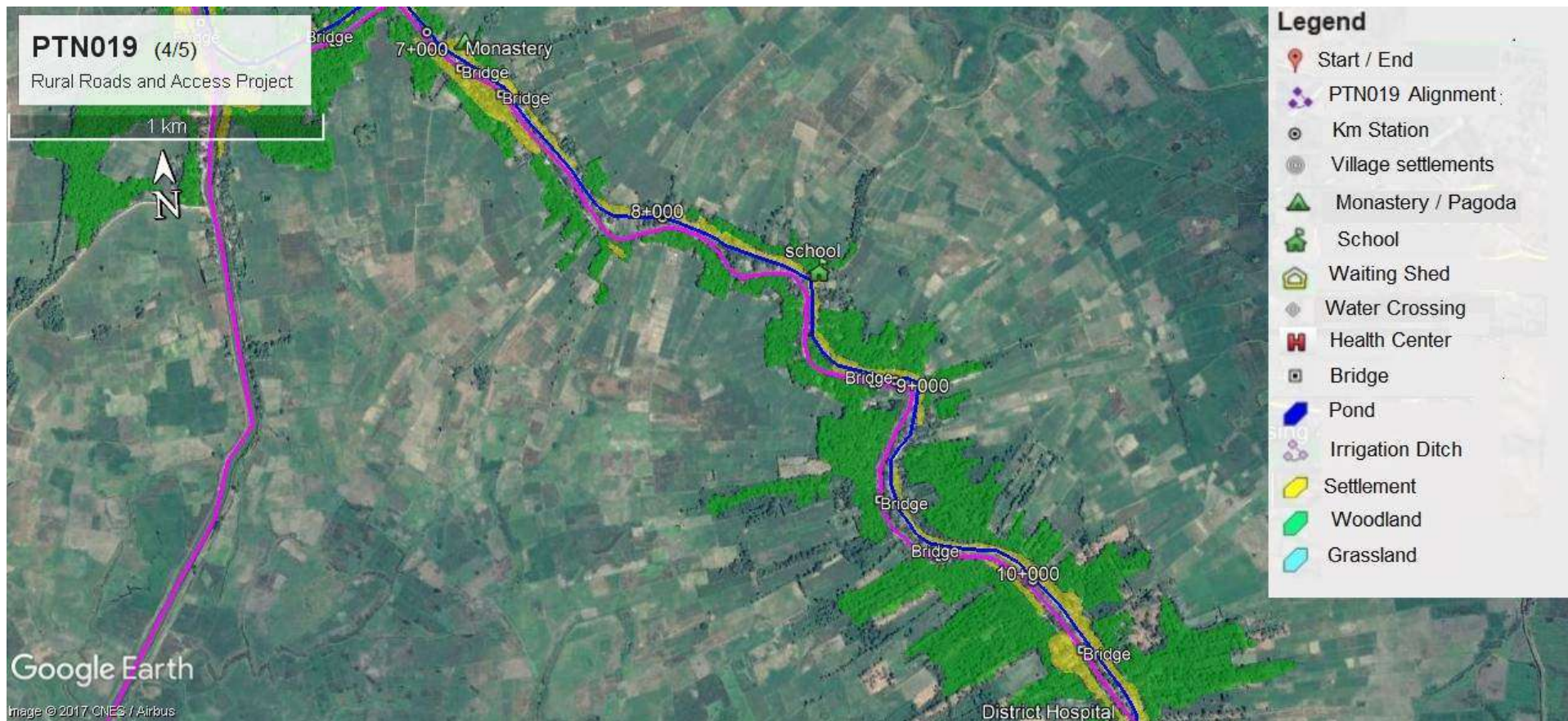
End of PTN019 connecting to the Pathwe-Shwelaung Road



## F. Maps









# PTN019 (5/5)

Rural Roads and Access Project

1 km



Google Earth

Image © 2017 CNES / Airbus

District Hospital

School

Bridge

Bridge

11+000

Bridge

12+000

Water Crossing

13+000

14+000

14+130 End

## Legend

- Start / End
- PTN019 Alignment
- Km Station
- Village settlements
- Monastery / Pagoda
- School
- Waiting Shed
- Water Crossing
- Health Center
- Bridge
- Pond
- Irrigation Ditch
- Settlement
- Woodland
- Grassland

**ENVIRONMENTAL CHECKLIST**  
**RURAL ROADS & ACCESS PROJECT TA 9184 MYA**

**A. Location and Salient Details of Road Sub Project**

<b>Road Name</b>	PTN031	
<b>Township</b>	Pantanaw	
<b>Villages and (Village Tracks)</b>	Ma Yan-Pi Tauk Su-Tha Yet Taw -Yone Chaung-Kyon Tha Hmyin-Kyon Tha Naung-Aye Pon Su	
<b>Total Length of the Road</b>	4.6 km	
<b>Start (Latitude, Longitude in Degrees Decimal)</b>	16.975943°	95.358896°
<b>End (Latitude, Longitude in Degrees Decimal)</b>	16.943655°	95.355861°

**B. Environmental Conditions**

**B.1 Climate**

Annual Average Temperature	High: 32°C Low: 21°C
Annual Average Humidity	
Total Annual Rainfall	2477.7 mm
Rainy Season Period	Mid May to October

**B.2 General Environmental Condition of the Road Corridor**

No.	Ecological Setting	Yes	No	Explanation
1.	Coastal area Mangrove (along roadside) <i>(Describe the alignment of the road with respect to the coastal wetland, either road traverses or proximal, if proximal, state nearest distance of road to wetland)</i>		•	PTN031 is distant from the coast.
2	Are protected or endangered species associated with coastal wetlands present?		•	
3	Is freshwater wetland / or River present within the road corridor? Describe the position of the alignment with respect to wetland, cuts across or proximal, if proximal state nearest distance.		•	The road is distant from river; only ponds and irrigation channels located near or within the project corridor;
4	Are endangered / protected wildlife species associated with freshwater wetland or river present?		•	
5	Describe the topography of the road corridor, i.e. elevation and relief			PTN 031 is located in the Ayeyarwaddy Delta

	(difference between highest and lowest elevation) plain, hilly, mountainous; Describe the slope whether flat, undulating, rolling, steep; enumerate the section of the road on different topography			where the topography is generally low elevation with subtle landforms. The relief of the road is 11 m with 5 m as the lowest elevation and 16 m asl, the highest elevation. Elevated terraces and natural levees of abandoned river channels create subtle topographic highs in the road corridor;
6	Forest Area or Protected Area (Describe road alignment and with respect to forest, i.e. within the forest, or proximal, state the nearest distance of road to forest)		•	
7	Are there protected wildlife species within the project area? (Describe faunal wildlife associated with the corridor's ecologic setting, state if endangered species / protected species is present)		•	
8.	Settlement / Built up	•		a. Km 0+000 to 0+290 – sparse houses L & RS b. Km 0+490 sparse houses LS c. Km 0+760 sparse houses L & RS d. Km 3+120 to 3+260 RS sparse houses e. Km3+520 to 3+750 L & RS f. Km 4+000 to end – sparse houses
9	Agricultural Land	•		Agriculture is dominant land use in the road corridor, major crop is paddy rice interspersed by woodlands and settlements.
19	Grazing grounds / Grassland		•	No grasslands recognized in the road corridor; fallow lands (classified under agricultural land) are used for grazing.
11	Brushland / Wood Land	•		Large patches of dense wooded areas are present along the road corridor, commonly enveloping settlements; The wooded areas consist of a mixture of bamboo groves, coconut palms, rain tree, fruit trees(commonly mangoes and tamarind), reforestation species and other tree species; Distribution of wooded areas along the road corridor is shown in Maps
12	Bare Areas			

### C. General Condition of the Road and Possible Concerns

(Note: Questions number 1, 4, 5, 7 and 8 must be answered after discussions with the local community people)

No.	Parameter/ Component	Yes	No	Explanation / Details
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1.	Are sections of the road prone to landslide, subsidence, risk of river bank erosion? If yes, enumerate the sections.		•	
2	Are water stagnation and drainage issues present on or along the road?	•		Km 0+000 to 1+300 water logged, not passable even to motorcycles during rainy season; Km2+640 to 2+700 water logged Km3+680 to 4+040 intermittent water logged sections.
3.	Is road corridor prone to flooding?		•	Plot of the PTN031 alignment on the flood map of Cyclone Nargis (2008) showed the road to be outside flood prone areas;
4.	Enumerate the trees with a dbh of 30 cm or more within 10 m on either side from the center line of the road alignment?	•		Data with survey group
5.	Are power and communication poles present along road?		•	The villages traversed by PTN031 are not electrified;
6	Are water supply facilities present alongside the road?	•		Community pump and tank at Km 4+000 Dug wells at Km 0+490RS, Km 0+920 RS, Km3+580 LS and Km 4+400 RS
7	Does the road cross irrigation ditches?		•	
8	Is Irrigation ditch present along the roadside?		•	
9	Are religious features, i.e. monastery, pagoda, religious trees or shrines present alongside the road?	•		Monastery at Km4+200 RS
10	Are Historical sites or monuments present alongside the road?		•	
11	Are there schools located alongside the road?	•		Km2+860 RS Km4+340 RS
12	Are there community facilities located alongside the road?	•		Waiting sheds Km2+800, Km3+590 RS Health Center Km 4+170 LS
13	Are there possible sources of road construction materials (fill materials and aggregates) near the road? Is borrow area or quarries present along the road? Commercial sources? Other?			Under study
<b>Sensitive Receptors</b>				

	Village Settlements			<ul style="list-style-type: none"> <li>a. Km 0+000 to 0+290 – sparse houses L &amp; RS</li> <li>b. Km 0+490 sparse houses LS</li> <li>c. Km 0+760 sparse houses L &amp; RS</li> <li>d. Km 3+120 to 3+260 RS sparse houses</li> <li>e. Km3+520 to 3+750 L &amp; RS</li> <li>f. Km 4+000 to end – sparse houses</li> </ul>
	Monasteries & Pagodas and other religious features			Km4+200 RS
	Schools			Km2+860 RS Km4+340 RS
	Community facilities			Waiting sheds Km2+800, Km3+590 RS Health Center Km 4+170 LS

## D. Public Consultation

PTN 031- Pi Tauk Su-Kyon Tha Naung-Yone Chaung-Aye Pon Su Village

27.10.17

No.	Consultation Activities	Yes	No	Remarks
1.	Consultation with local community was conducted before finalizing the alignment.  <i>(Attach list of people met and dates)</i>	<input type="checkbox"/>	<input type="checkbox"/>	A consultation was held with the local community members, it was attended by (6) persons. The list of participants follows:
2.	Any suggestion received in finalizing the alignment	<input type="checkbox"/>	<input type="checkbox"/>	Road safety measures at school, curves and road intersections locations. We fully support the project. We warmly welcome the project. Protection against overloaded vehicles should be provided.
3.	If suggestions received, were they incorporated into the design?	<input type="checkbox"/>	<input type="checkbox"/>	Noted

PTN031, Pi Tauk Su-Kyon Tha Naung-Yone Chaung-Aye Pon Su Village

	Name	Location	Designation / Position	Date
	J Sein Sa Tin	Pantanaw	Village Leader(100HH)	27.10.17
	J Win Kyi	Pantanaw		27.10.17
	J Phoe Than	Pantanaw		27.10.17
	J Tun Mhwe	Pantanaw		27.10.17
	J Min Min Tun	Pantanaw		27.10.17
	J Aung Zaw Myint	Pantanaw		27.10.17





## E. Photographs



Start of PTN031, wooded area with intermittent houses



Km 0+510 Water logged within wooded area



Km1+850



Km 2+340, house right on edge of road;



Km2+700 Waiting shed on road's edge



Km2+800 – Drying of unhusked rice on the road





Km 3+800 Piper betle plantation alongside water logged section of the road where the village has installed bamboo laden pathway



Km 4+000 community water pump and tank



Km 4+300 near PTN031's end



Km 4+340 School House

## F. Maps





## PTN031

Rural Roads and Access Project

### Legend

- Start / End
- PTN031 Alignment
- Km Station
- Village settlements
- Monastery / Pagoda
- School
- Waiting Shed
- Water Crossing
- Health Center
- Dug Well
- Pond
- Irrigation Ditch
- Settlement
- Brushland
- Grassland

