Project Management Experience on Upgradation of Yangon Circular Railway Line

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Fellow Member and CEC of Fed. MES
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Agenda

1. Out line of the project
2. Back Ground
3. Implement -ation Details
4. Our Team
5. Summary

Out line of the project

Description of Project

Section 1. Outline of the Project

(1) Objective:
The objective of the Project is to improve the efficiency of passenger transport capacity, and the safe and comfortable public transport services of Yangon Circular Railway Line by rehabilitating and replacing the existing railway facilities and the rolling stock, thereby contributing to the social and economic development of Greater Yangon.

(2) Location:
Yangon City, Yangon Region

(3) Executing Agency:
Myanma Railways, Ministry of Rail Transportation

(4) Scope of the Work:
(a) Equipment Supply and Civil Works, and
(b) Consulting Services

The proceeds of the Loan are available for the above items (a) and (b).

Any balances remaining on the aforementioned items are to be financed by the Borrower.

Section 2. Limitation of Government Budget

Disbursement of the proceeds of the Loan shall be made within the limit of the Japanese Government's annual budgetary appropriations for JICA.

Allocation of Proceeds of Loan

Section 1. Allocation

Category	Amount of the Loan Allocated (in million Japanese Yen)	% of Expenditure to be Financed
(A) Equipment Supply and Civil Works	21,834	100%
(B) Consulting Services	1,940	100%
(C) Contingencies	1,092	—
Total	24,866	

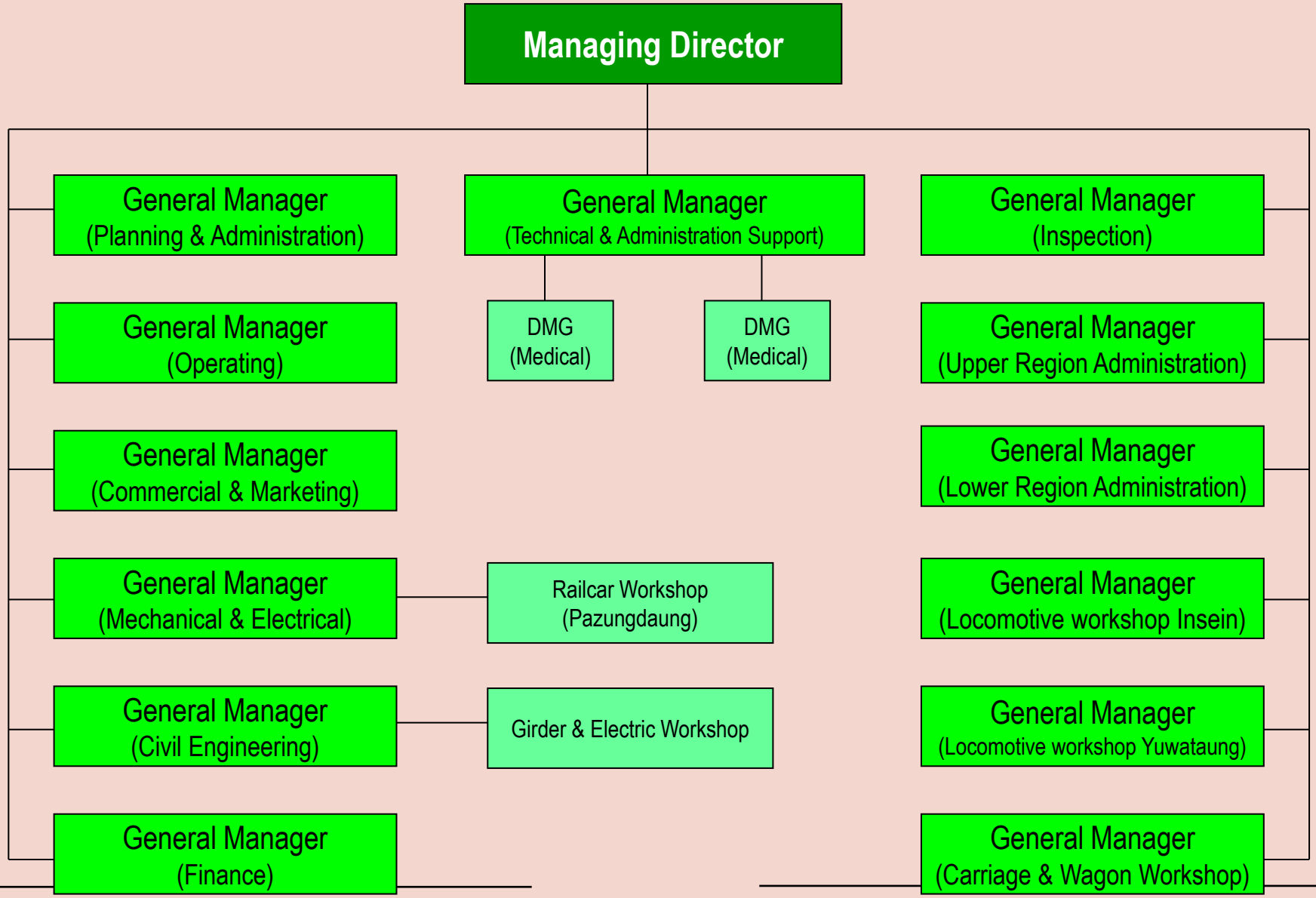
Note: Items not eligible for financing are as shown below.

(a) General administration expenses
(b) Taxes and duties
(c) Purchase of land and other real property
(d) Compensation
(e) Other indirect items

With regard to disbursement in any of Categories (A) and (B), the amount to be disbursed shall be calculated from the eligible expenditure by multiplying with the percentage of the respective Category stipulated in this section, unless otherwise agreed upon between JICA and the Borrower.

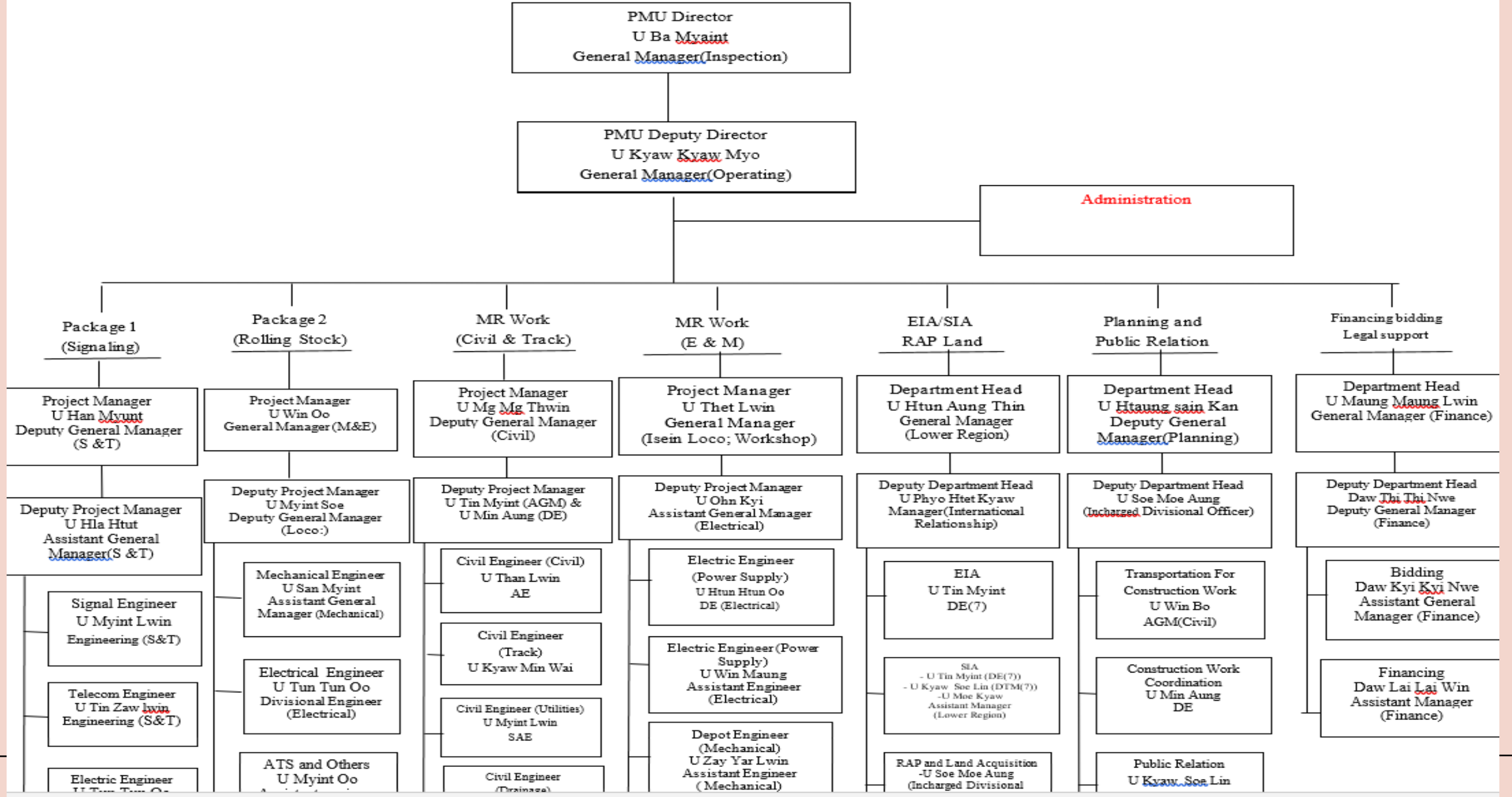
Attachment 4

Myanma Railway Organization Chart



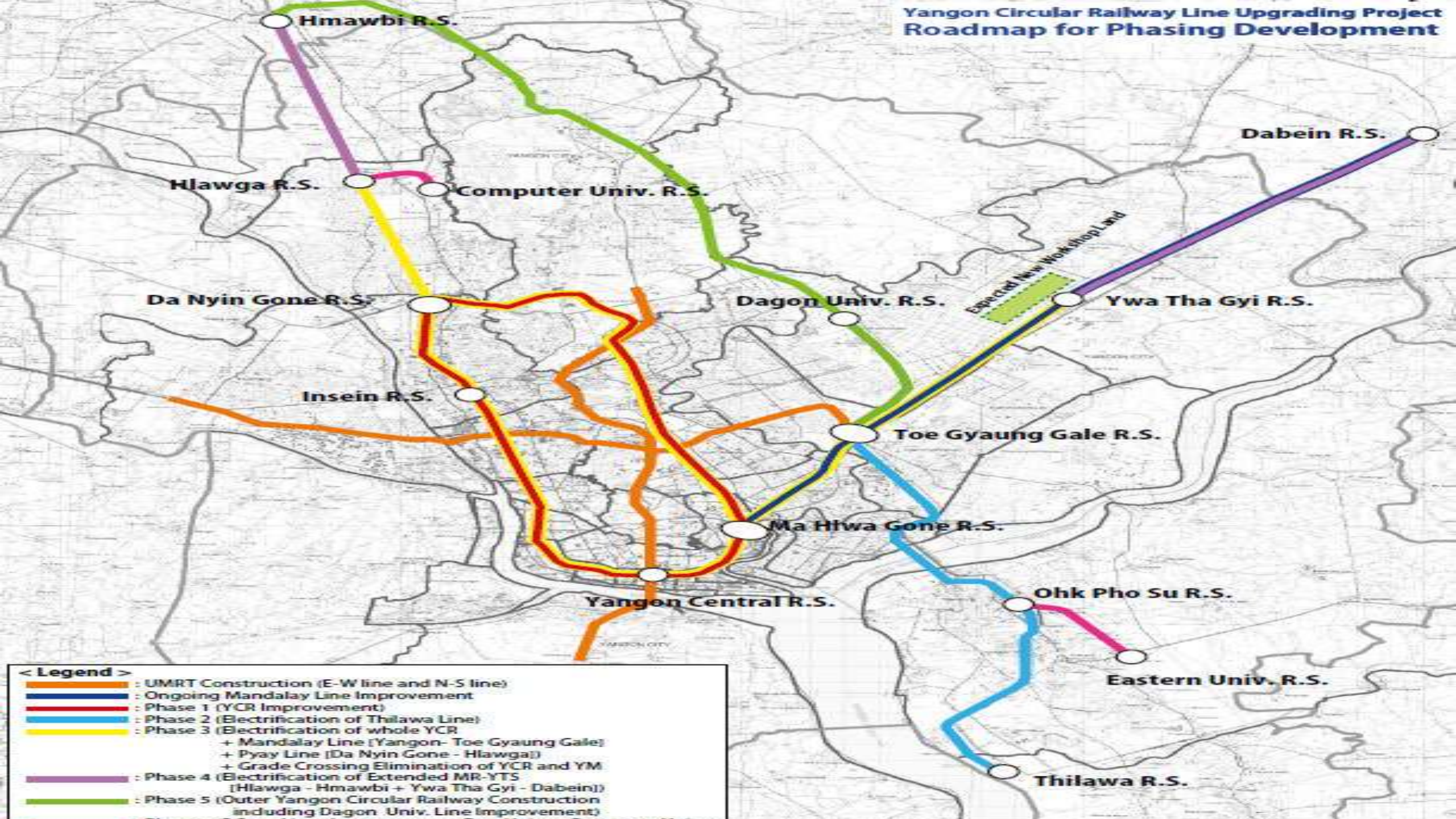
Note: Divisions (1- 11) are under General Managers

Yangon Circular Railway Line Upgrading Project
Project Management Unit (PMU)



Yangon Circular Railway Line Upgrading Project

Roadmap for Phasing Development



BACKGROUND

The Government of Myanmar (hereinafter referred to as "GOM") has received a loan from the Japan International Cooperation Agency (hereinafter referred to as "JICA") to finance the Yangon Circular Railway Line Upgrading Project (hereinafter referred to as the “Project”). Yangon Circular Railway Line (hereinafter referred to as “the YCR Line"), whose length is approximately 46km, is a part of the railway network in Myanma Railways (hereinafter referred to as “MR”). The main purpose of this Project is to improve the level of services of the whole Yangon Circular Railway Line as the first step towards the comprehensive modernization.

The Project consists of two components, one is the component covered by Japanese ODA loan (hereinafter referred as “Project components covered by Japanese ODA loan”) and the other is the components covered by MR (hereinafter referred as “Project components covered by MR”). “Project components covered by Japanese ODA loan” consists of installing new signalling system for the whole Yangon Circular Railway Line except the section between Yangon central station and Pu Zun Taung station (hereinafter referred to as “Signalling Works”), and procurement of new Diesel Electric Multiple Unit (hereinafter referred to as “Rolling Stock Procurement Works”).

MR shall carry out “Project components covered by MR” which
consists of the civil and track works (including high height station platform work, foot over bridge (FOB) work, etc.), power supply works, depot works, and the other necessary works including these designs in advance by Myanmar side for installation of the new signal system and Diesel Electric Multiple Unit (hereinafter referred to as “DEMU”).
The Project comprises the following components:
Package 1: Signalling Works
Package 2: Rolling Stock Procurement Works

2. OBJECTIVES OF CONSULTING SERVICES

The consulting services shall be provided by an international consulting firm (hereinafter referred to as "the Consultant") in compliance with the Guidelines for the Employment of Consultants under Japanese ODA Loans, April 2012.

The objective of the consulting services is to achieve the efficient and proper preparation and implementation of the Project through the following works:

(1) Service for Pre-Construction Stage

a. Tender Assistance including finalizing Tender Documents and Bidding Packages

(2) Service for Construction Stage

a. Supervision for Signalling Works and Rolling Stock Procurement Works

b. Training for Operation and Maintenance

c. Environmental and Social Consideration

(3) Services for Post-Construction Stage
a. Final Acceptance
b. Project Completion Report
(4) Facilitation of Implementation of Environmental and Social Management Plan (EMP), Environmental and Social Monitoring Plan (EMoP), Abbreviated Resettlement Plan (ARP), and HIV/AIDS Protection Plan (HAPP)
(5) Safety of the project
(6) Technology Transfer
(7) Advisory services to Project components covered by MR
(8) Advisory services to Passenger Service and Rail Business Performance Improvement

Diesel Electrical Multiple Unit (DEMU) for Yangon Circular Line and Yangon Mandalay Line Phase 2

【Yangon Circular Line】

【Yangon Mandalay Line Phase 2】

Metro Style seat arrangement

Ordinary Class

Upper Class

မြန်မာ့ MR မီးရထား

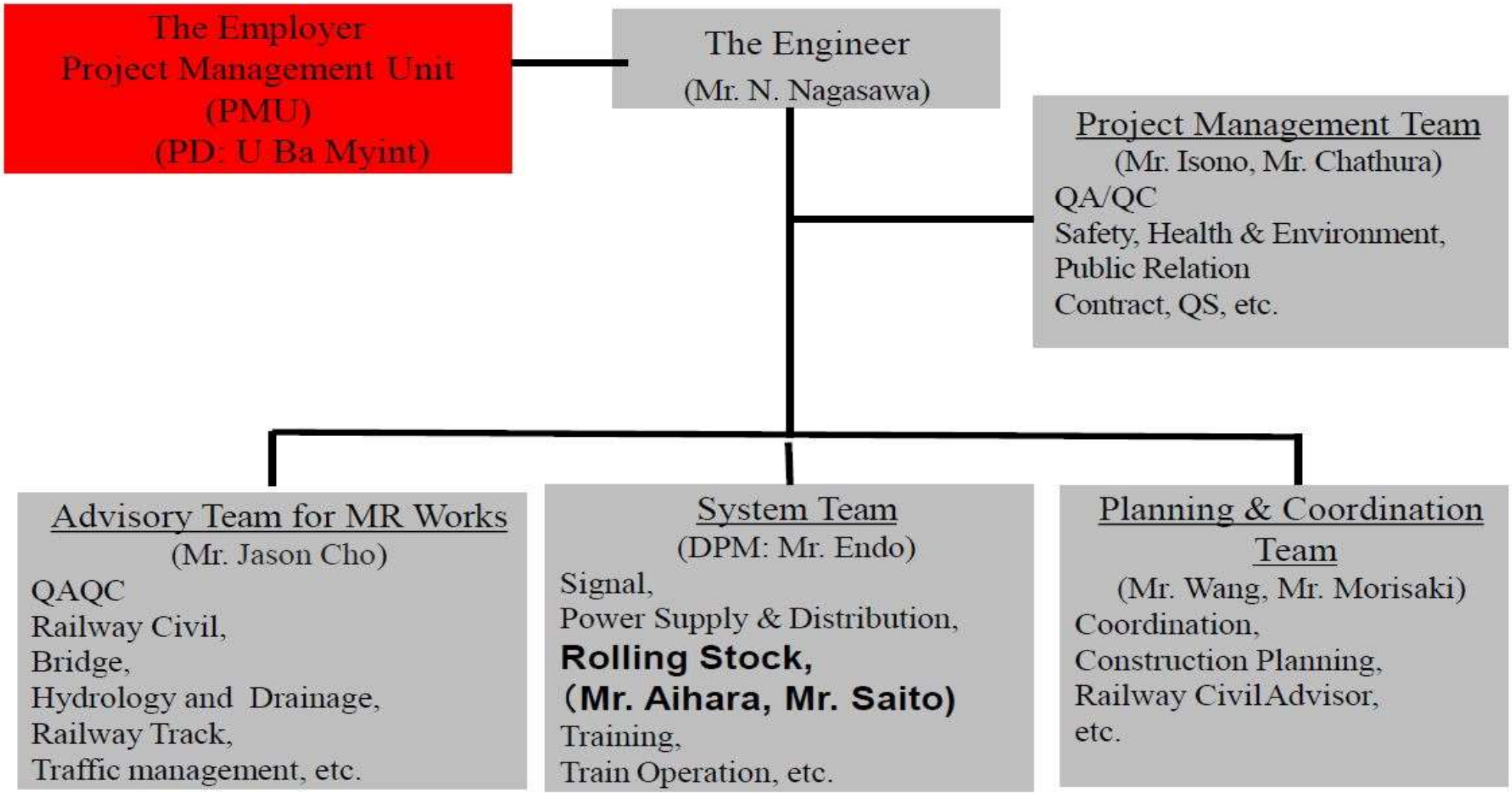
Mitsubishi Corporation

CAF

2-1. YCR Engineer's Organization

YCR-CMC & YM2-CMC

* Extracted from the "Contract for Consultants Services"

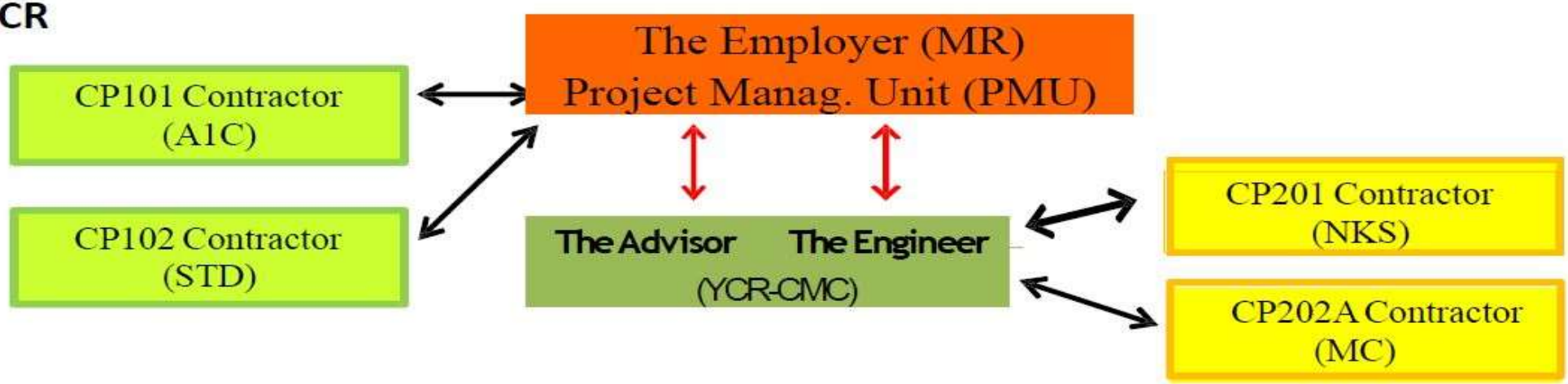


* Delegation by the Engineer will be notified to the Contractor and the Employer from time to time. (GC 3.2)

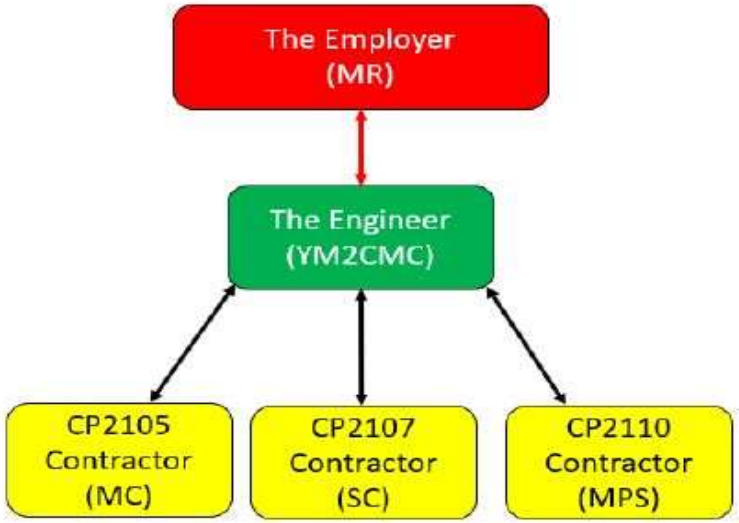
3. Communication Protocol (2)

3.1 Project Communication Protocol

YCR



YM2



Communication Tool	Status
Letter	Official
E-mail	Unofficial
Phone	Unofficial
Meeting/Verbal	Unofficial
MoM (with Signatures)	Official

4. Contractor's Submittals (1)

YCR-CMC & YM2-CMC

◆ Refer to Clause A9 of the GS Appendix-9

A9 Submittal Required

(1) In accordance with the GS, the Contractor shall submit, but not be limited to, the following plans within time specified in the Table.

Table A9-1: Submission of Plans

No.	Plan	To be submitted within	Sub-Clauses in GS
1	Project Management Plan	45days after the Commencement Date	2.2.2
2	Interface Management Plan	45days after the Commencement Date	2.3.3
3	Detailed Time Programme	60days after the Commencement Date	2.4.2
4	Quality Assurance Management Plan	45 days after the Commencement Date	2.5.3
5	System Safety Assurance Management Plan	45 days after the Commencement Date	2.6.2
6	Reliability, Availability and Maintainability Management Plan	90 days after the Commencement Date	2.7.1
7	Site Safety Assurance Management Plan	60 days after the Commencement Date	2.8.3

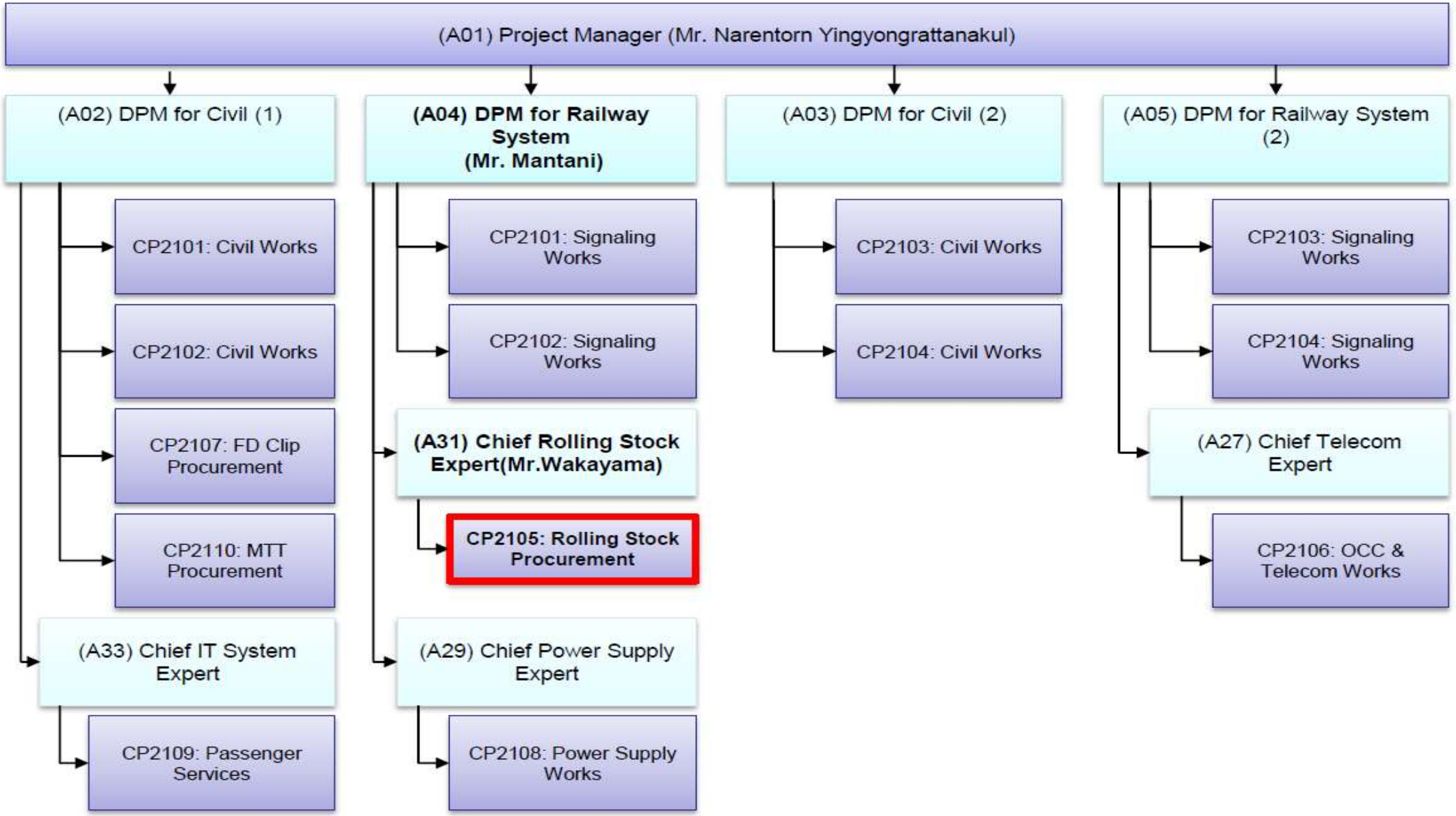
4. Contractor's Submittals (2)

- Refer to Clause A6 of the GS Appendix-6.4

8	Software Quality Assurance Management Plan	90 days after the Commencement Date	2.9.1
9	Environmental Management Plan (shall include Noise and Vibration Analysis Report)	90 days from the Commencement Date	2.10.2
10	Inspection, Testing and Commissioning Management Plan	150 days after the Commencement Date	2.11.1/4.11.1
11	Drawing and CAD Procedure	45 days after the Commencement Date	3.3.2
12	Detailed Training Plan	6 months prior to the Commencement of Training	10.1.5
13	Plan for Site Facilities	12 months prior to arrival to Site of first train set	11.3.1
14	Proposed Plan (Provisional) for Use of Employer's Equipment	12 months prior to arrival to Site of first train set	11.5.4
15	Not used.	-	-
16	Not used.	-	-

2-2. YM2 Engineer's Organization

YCR-CMC & YM2-CMC



Implementation Details

Description of Project

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Procurement Procedure

Section 1. Guidelines to be used for procurement under the Loan

(1) Procurement of all goods and services, except consulting services, to be financed out of the proceeds of the Loan shall be in accordance with the Guidelines for Procurement under Japanese ODA Loans dated April 2012 (hereinafter referred to as the "Procurement Guidelines").

(2) Employment of consultants to be financed out of the proceeds of the Loan shall be in accordance with the Guidelines for the Employment of Consultants under Japanese ODA Loans dated April 2012 (hereinafter referred to as the "Consultant Guidelines").

Section 2. Eligible Source Country(ies)

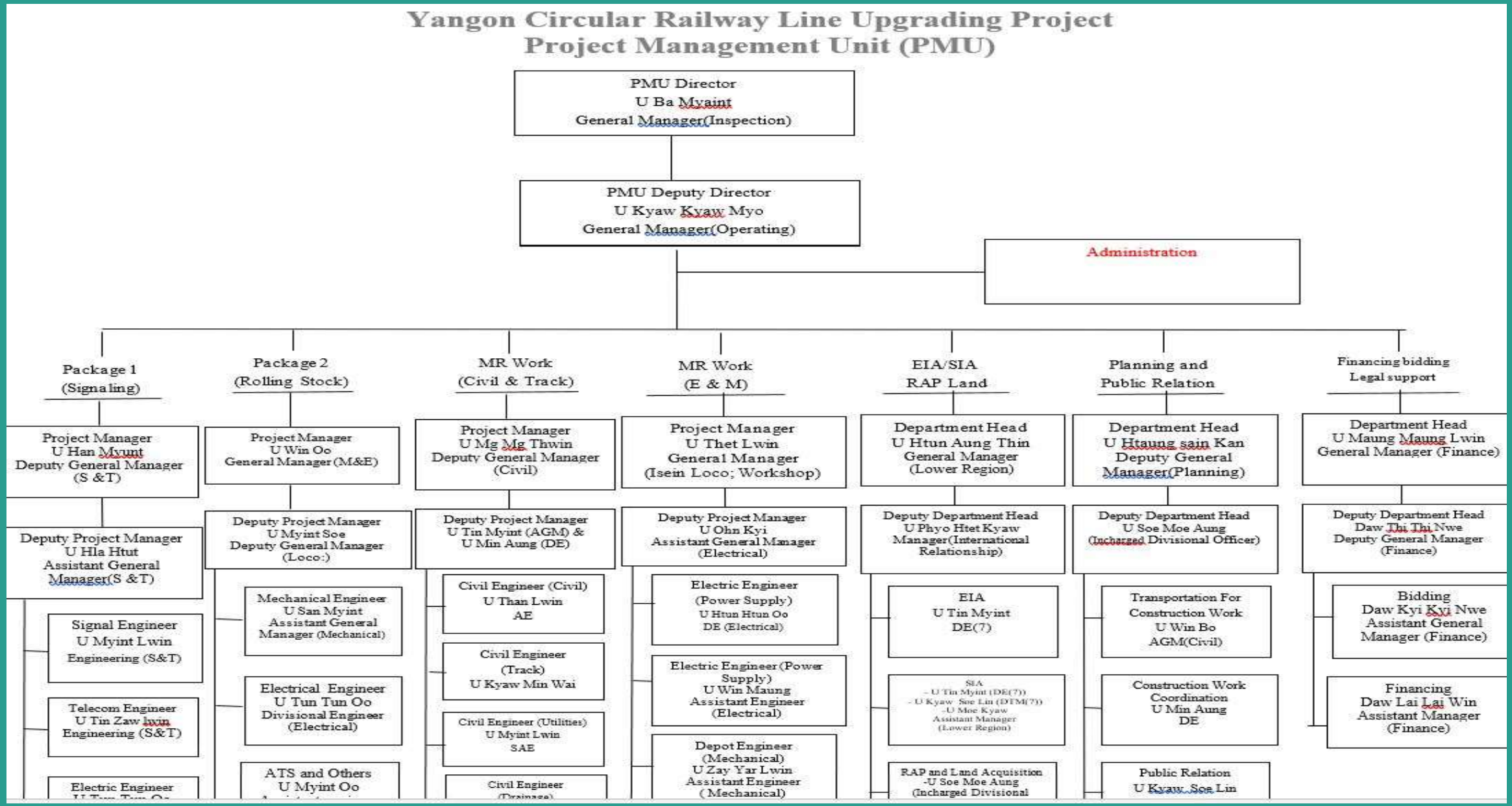
The Eligible Source Country(ies) for procurement of all goods and services (including consulting services) to be financed out of the proceeds of the Loan are all countries and areas.

Section 3. Eligible Nationality

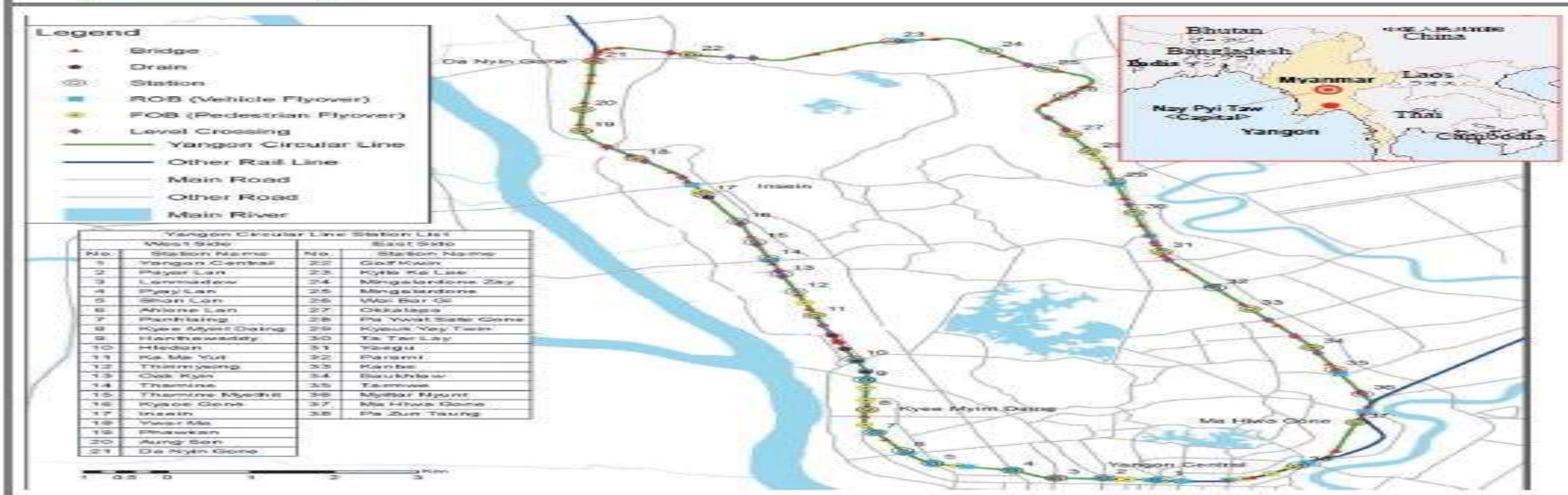
(1) The Eligible Nationality of the Supplier(s) shall be the following:
(a) Japan in the case of the prime contractor; and
(b) All countries and areas in the case of the sub-contractor(s)

(2) With regard to Section 3. (1) above, in case where the prime contractor is a joint venture, such joint venture will be eligible provided that the nationality of the lead partner is Japan, that the nationality of the other partners is Japan and/or the Republic of the Union of Myanmar and that the total share of work of Japanese partners in the joint venture is more than fifty percent (50%) of the contract amount.

Yangon Circular Railway Line Upgrading Project
Project Management Unit (PMU)



Republic of the Union of Myanmar

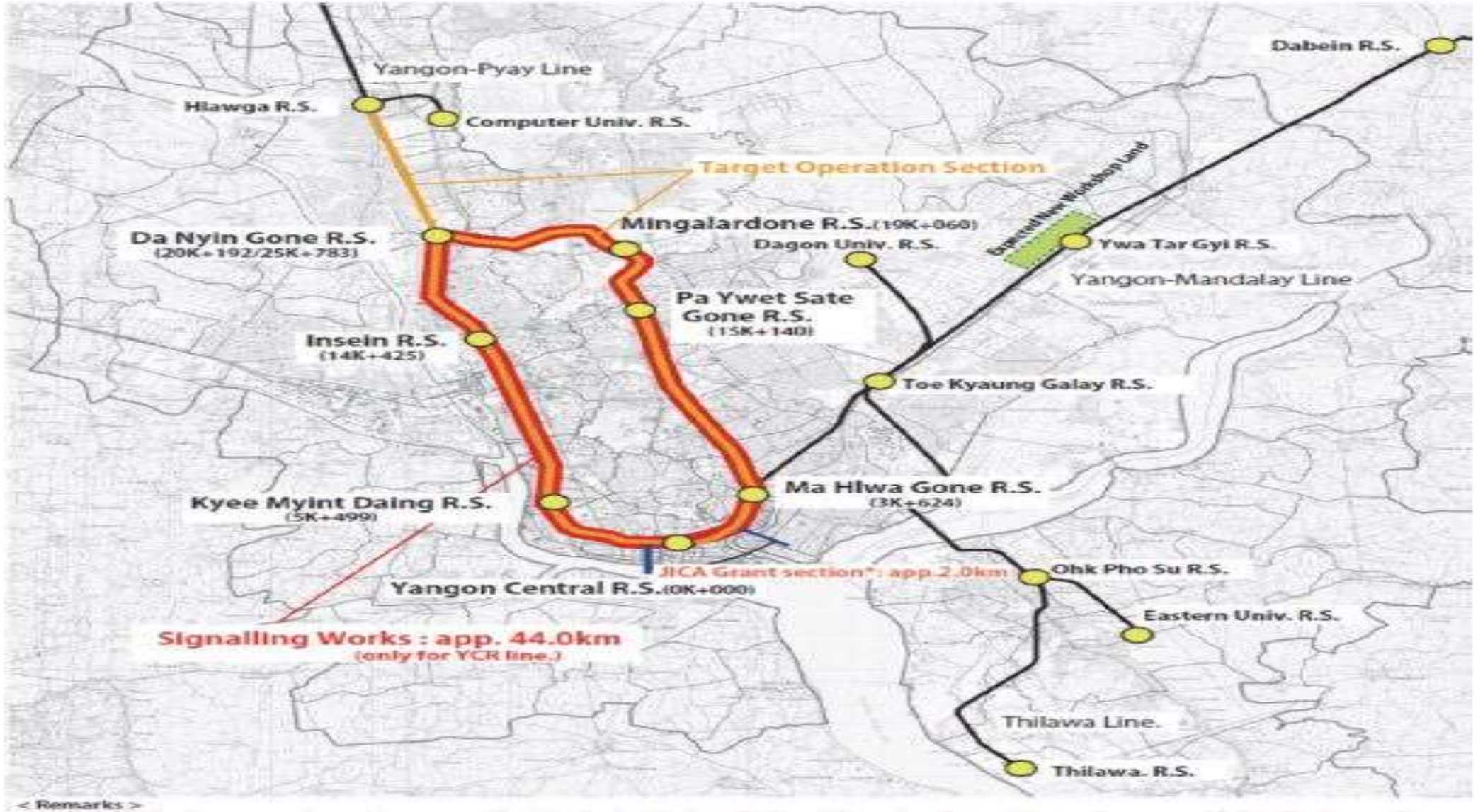


Yangon Circular Line Station List

West Side		East Side	
No.	Station Name	No.	Station Name
1	Yangon Central	22	Golf Mein
2	Payar Lan	23	Kyite Ke Late
3	Lanmadaw	24	Mingaladone Jay
4	Pyay Lan	25	Mingaladone
5	Shan Lan	26	Wai Bar Gi
6	Ahlone Lan	27	Okkalapa
7	Panhlaing	28	Pa Ywat Sate Gone
8	Kyee Myin Daing	29	Kyauk Yay Taw
9	Hanthawaddy	30	Ta Tar Lay
10	Hledan	31	Yaagu
11	Ka Ma Yut	32	Parami
12	Thaimyaing	33	Kanbe
13	Oak Kyin	34	Baulkkaw
14	Thamine	35	Tamwe
15	Thamine Myothit	36	Myitkar Nyunt
16	Kyaoe Gone	37	Ma Hlwa Gone
17	Insein	38	Pa Zun Taung
18	Yway Kha		
19	Phaw Sein		
20	Aung San		
21	Da Nyin Gone		

Basic Data Resource) Ministry of Foreign Affairs of Japan, [The situation of Countries & Regions], Ministry of Labour, Immigration and Population, and JETRO [statistics] *Numbers without note are the data of 2015

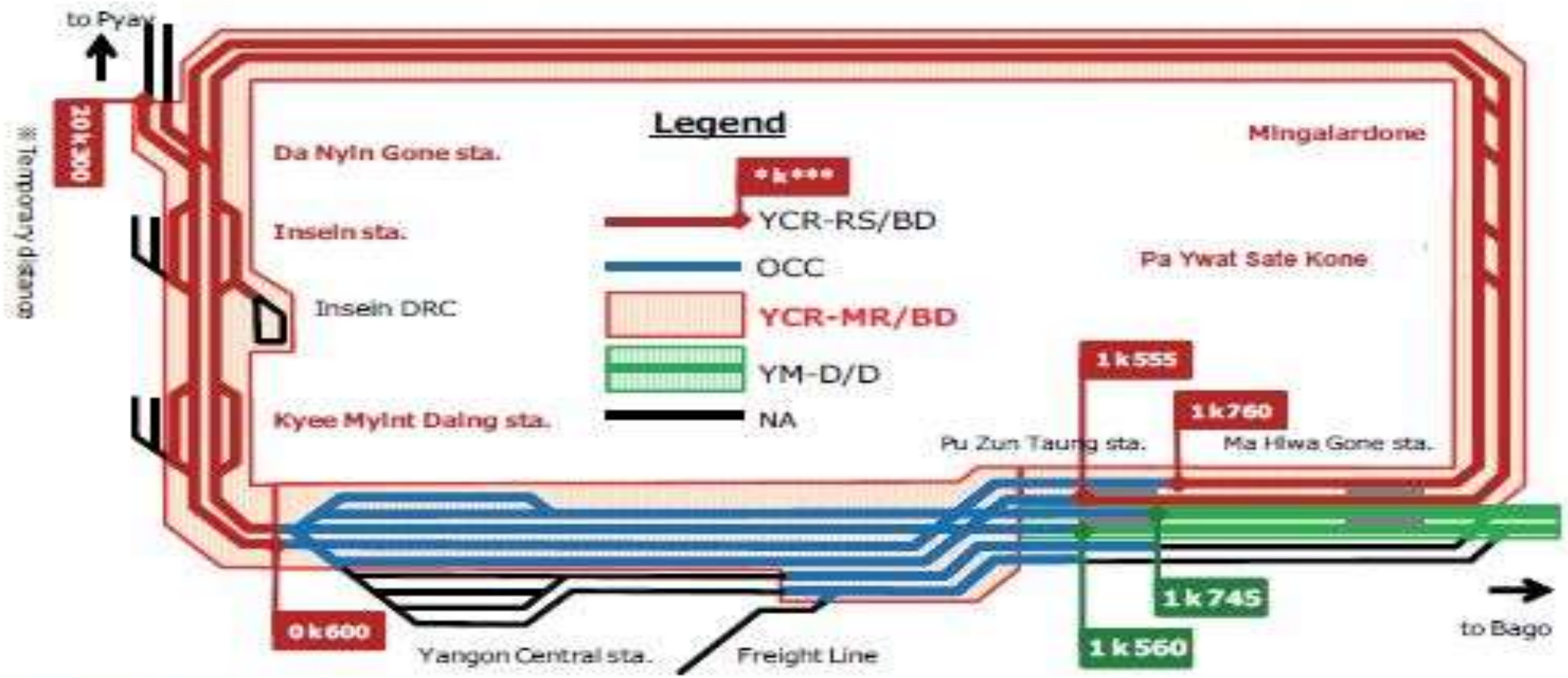
- Area 680,000 km^2 (About 1.8times larger than Japan)
- Population 51.49 Million (May in 2015 (Resource from Ministry of Labour, Immigration and Population)
- Capital Nay Pyi Taw
- Ethnic Groups Burmese (about 70%), and Other Minorities
- Language Myanmar Language
- Religion Buddhism(90%), Christianity, Islamism and Others
- Major Industry Agriculture
- Nominal GDP About 56.8 Billion Dollars (2013/14,Estimated by IMF)
- GDP per Capita 1,113 Dollars (2013/14,Estimated by IMF)
- Rate of Increase in Consumer Price Index 11.48%(2015),5.94%(2014),5.71%(2013),2.83%(2012),2.77% (2011),8.22% (2010) (Estimated by JETRO)
- Total Amount of Trade (Central Statistical Organization (2013/14))
  (1) Export: About 11.2 Billion Dollars
  (2) Import: About 13. 7 Billion Dollars
- Major Trade Items
  (1) Export: Natural Gas, beans, Clothing, Teak(Wood), Rice
  (2) Import: Machine Parts, Refined Oil, Products, Chemicals
- Currency: Kyat 1 Dollar = 1,285 Kyat (Resource from Central Bank of Myanmar) (February 2016)
- Records of Japanese Aid (2014)
  (1) Loan Aid: 98.34 Billion Yen (E/N Base)
  (2) Grant Aid: 18.19 Billion Yen (E/N Base)
  (3) Technical Cooperation: 7.05 Billion Yen (JICA Record Base)



< Remarks >
*:JICA Grant Section means the section covered by "the Project for Installation of Operation Control Center System and Safety Equipment"
R.S.: Railway Station

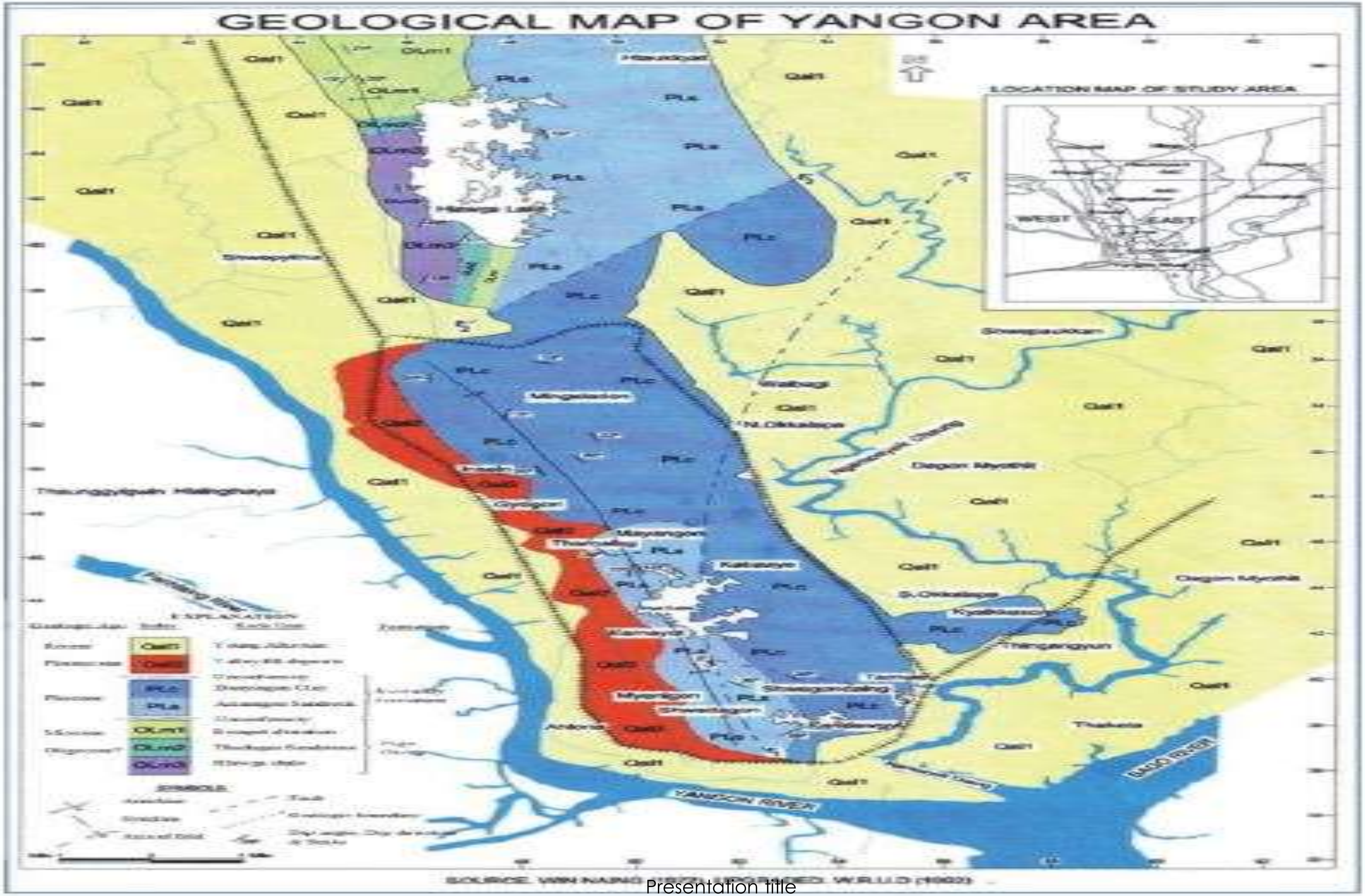
Source: JICA Study Team

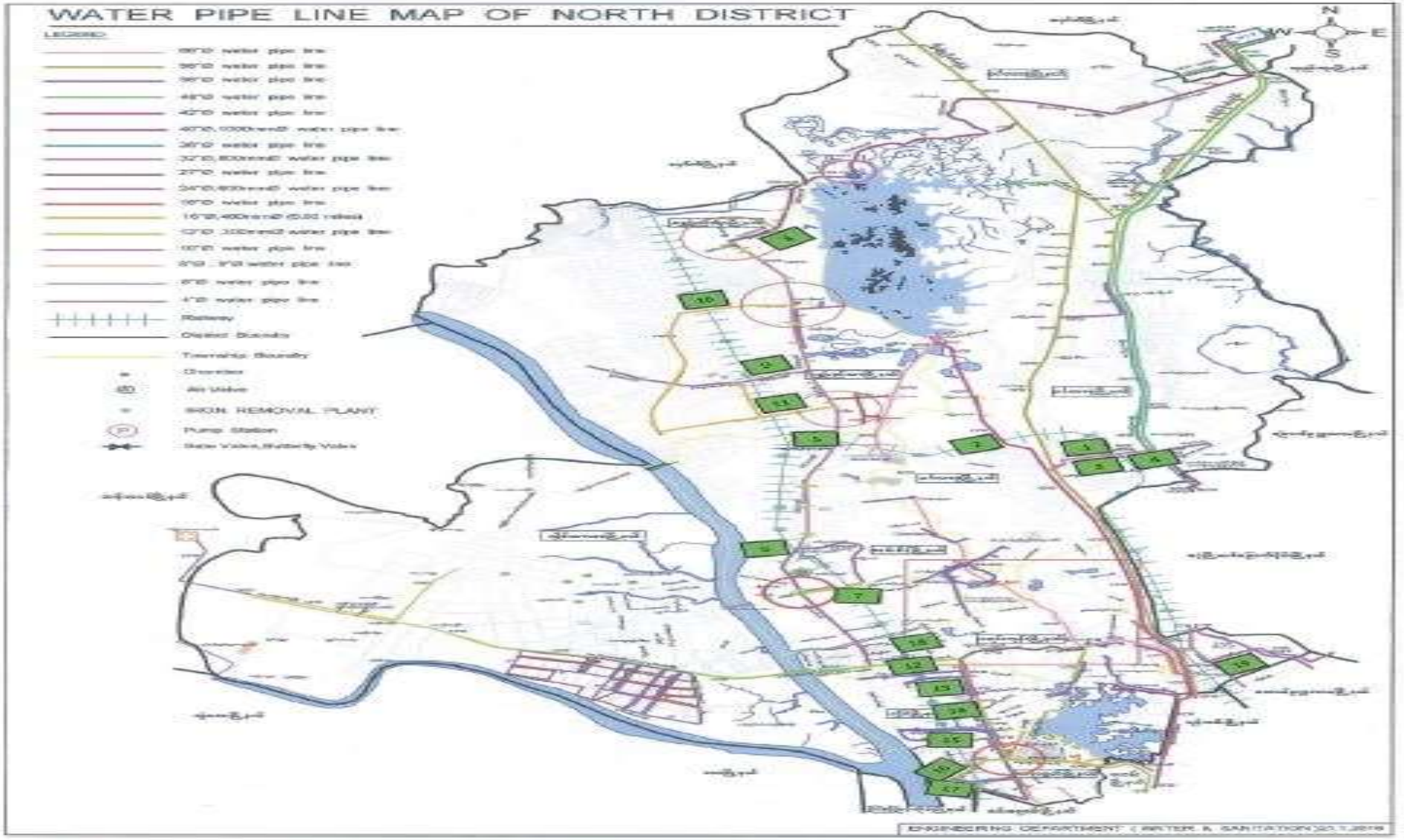
Project Location Map



Source: JICA Study Team

Figure 1.1.3 Detail Chainage of Project Borders


GEOLOGICAL MAP OF YANGON AREA
LOCATION MAP OF STUDY AREA
WEST
EAST
YANGON RIVER



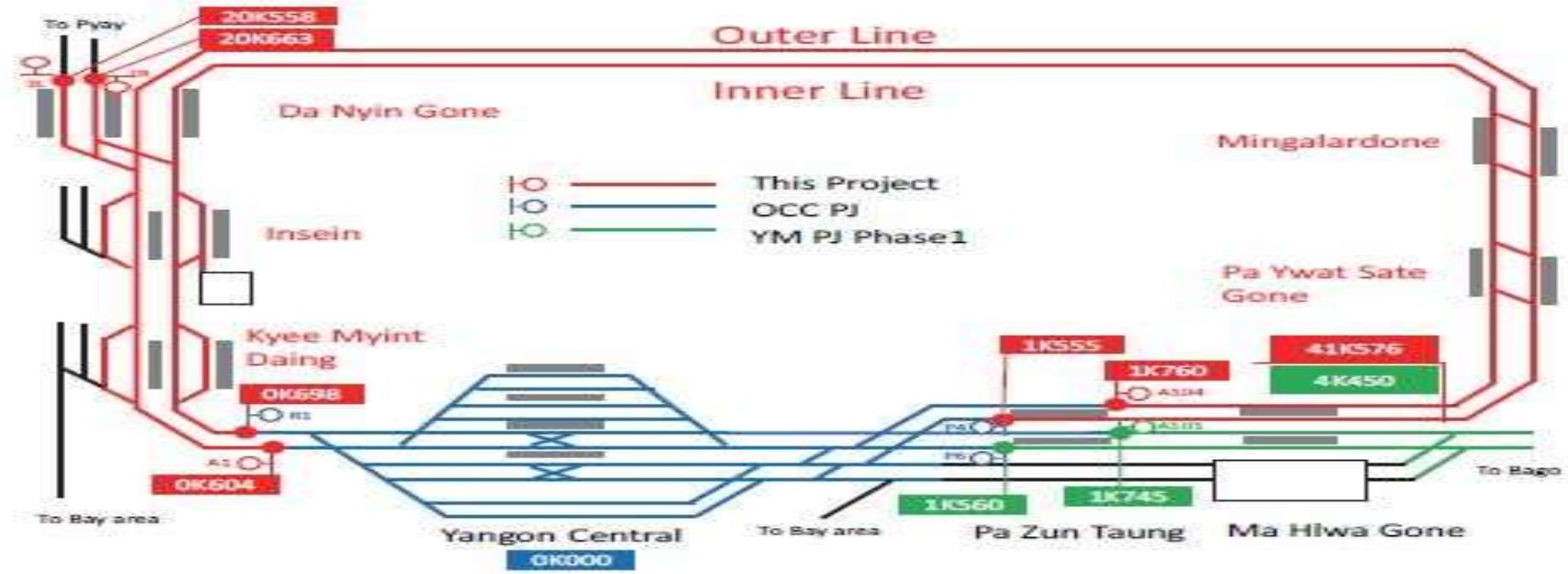
Source: YCDC

Figure 2.5.2 Locations of Water Pipelines (North Yangon District)

5.3 Scope of Work

5.3.1 Scope of Signalling Work

Figure 5.3.1 shows the scope of this project.



Source: JICA Study Team

Figure 5.3.1 Scope of this project and other relational project

The Yangon Circular Railway line (YCR) is 46km in extended length. The scope of this project is shown by the red lined part at Figure 5.3.1, and is shown in Table 5.3.1.

With regard to the scope of this Project, in case of the outer line, it is from up-line automatic block signal A1 (0K604) at Yangon Central Station, to a clockwise direction, to down-line outer signal P4 (1K555) at Pa Zun Taung Station, providing that the starting point of 0K000 is at Yangon Central Station. In case of the inner line, it is from the new auto block signal A104 (1K760) at Pa Zun Taung Station, to a counter-clockwise direction, to outer signal R1 (0K698) at Yangon Central Station. As for the part of line between Yangon Central Station and Da Nyin Gone Station, train of the YCR, and train of Regional line operation to the direction of Pyay/Bagan, are sharing the same line. The boundary of Regional line at Da Nyin Gone Station is the location of advanced starter signal 3L (20K558) and down-line outer signal [illegible] (20K663).

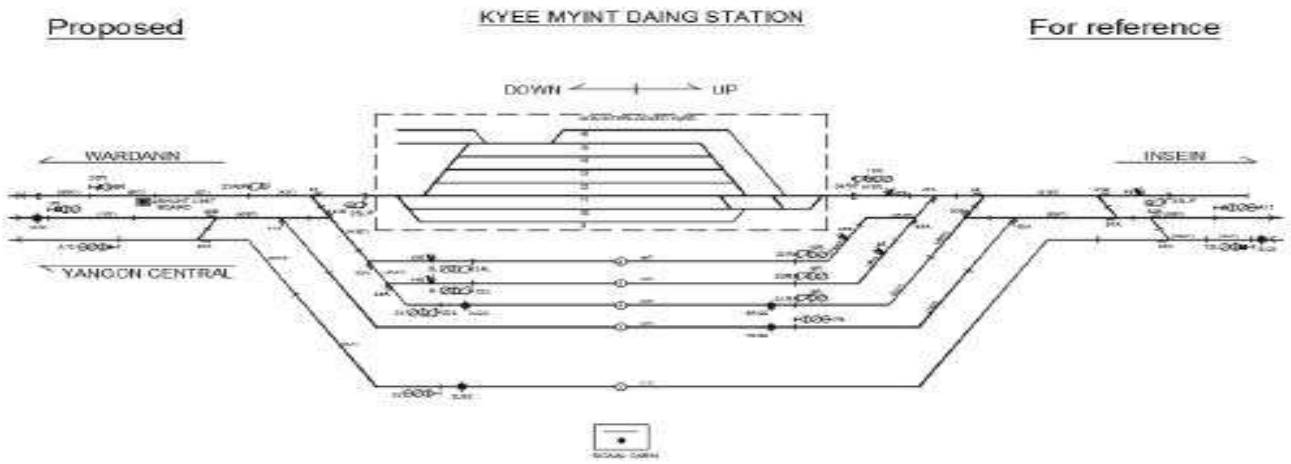
Station Name	Items	Commencing Use [Year]	Number of routes
Da Nyin Gone Station	German RI (Siemens) 	1970	10
Mingalardone Station	MR made RI 	2000	11
Pa Ywat Sate Gone Station	MR made RI 	2000	11

Source: JICA Study Team

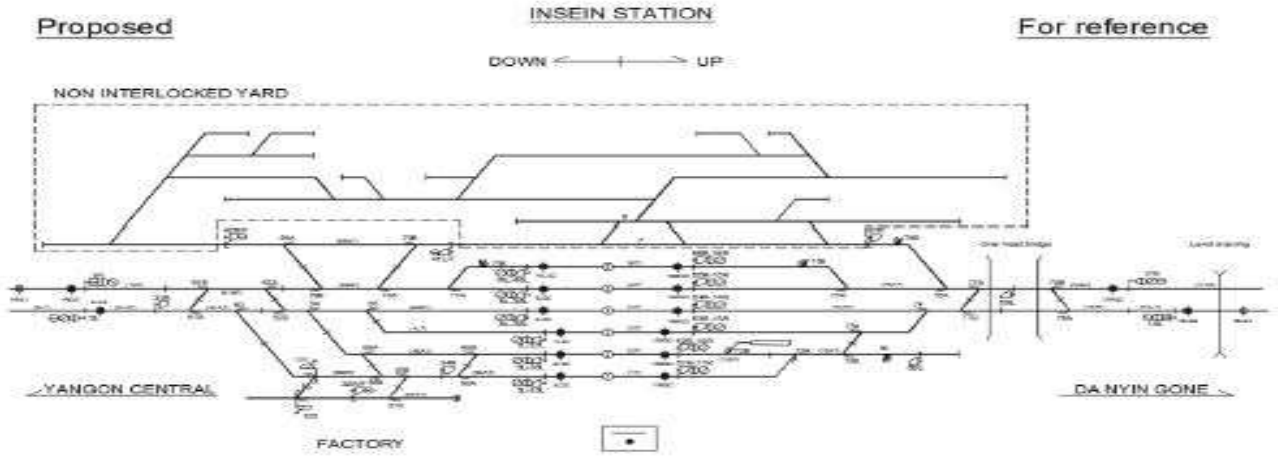
(2) Signals

With the exception of Kyee Myint Daing Station, all main signals are colour light signal type and all shunting signals are position light signal type. Although indicator unit is already replaced with LED type by MR, there are old signals which were installed more than 40 years ago, and concrete foundations are damaged.

With regard to Kyee Myint Daing Station, as its interlocking system is mechanical interlocking, semaphore signal is installed. However, home and starter signal of main track which is connected to automatic block section are colour light signals. The existing signal facilities are shown as Tab-XX



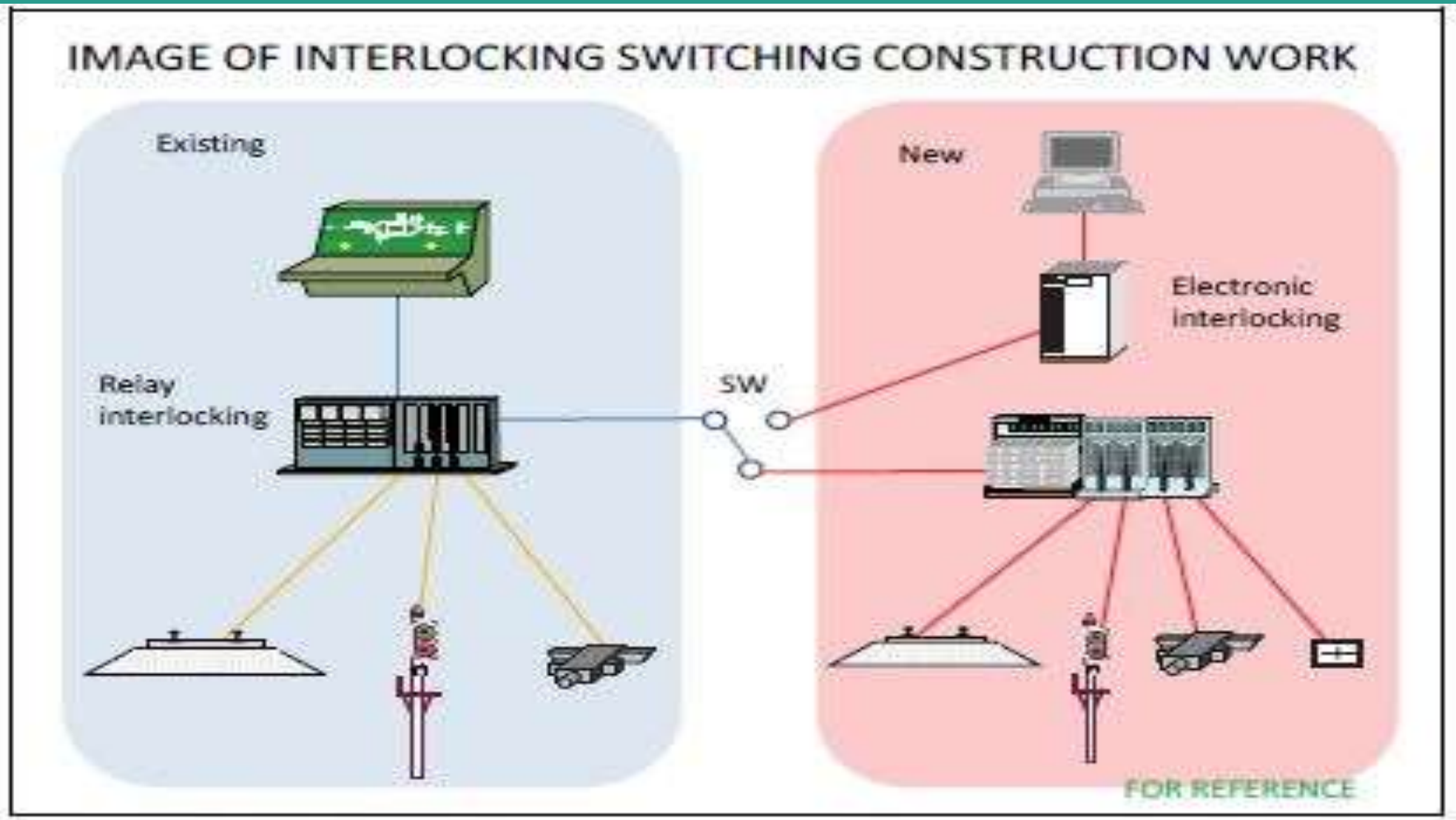
(a) Kyee Myint Daing Station



(b) Insein Station

Source: JICA Study Team

Figure 5.8.1 Improvement plan of the big station



Source: JICA Study Team

Figure 5.8.4 Changeover image of EI system

(4) Basic policy of changeover from existing RI to new RI

The stations, where existing RI is to be replaced with new RI, are three stations, namely, Da Nyin Gone Station, Mingalardone Station and Pa Ywat State Gone Station.

(i) Installation of new signal equipment room at new place (If signal cabin is to be relocated, new signal cabin shall be prepared.)

(ii) Installation of trough and crossing duct as route for new signal cable

(iii) Installation of new interlocking device

(iv) Installation of signal cable for new signalling device

(v) Installation of new wayside signalling device

(vi) Changeover of wayside signalling device

(vii) Changeover of interlocking device

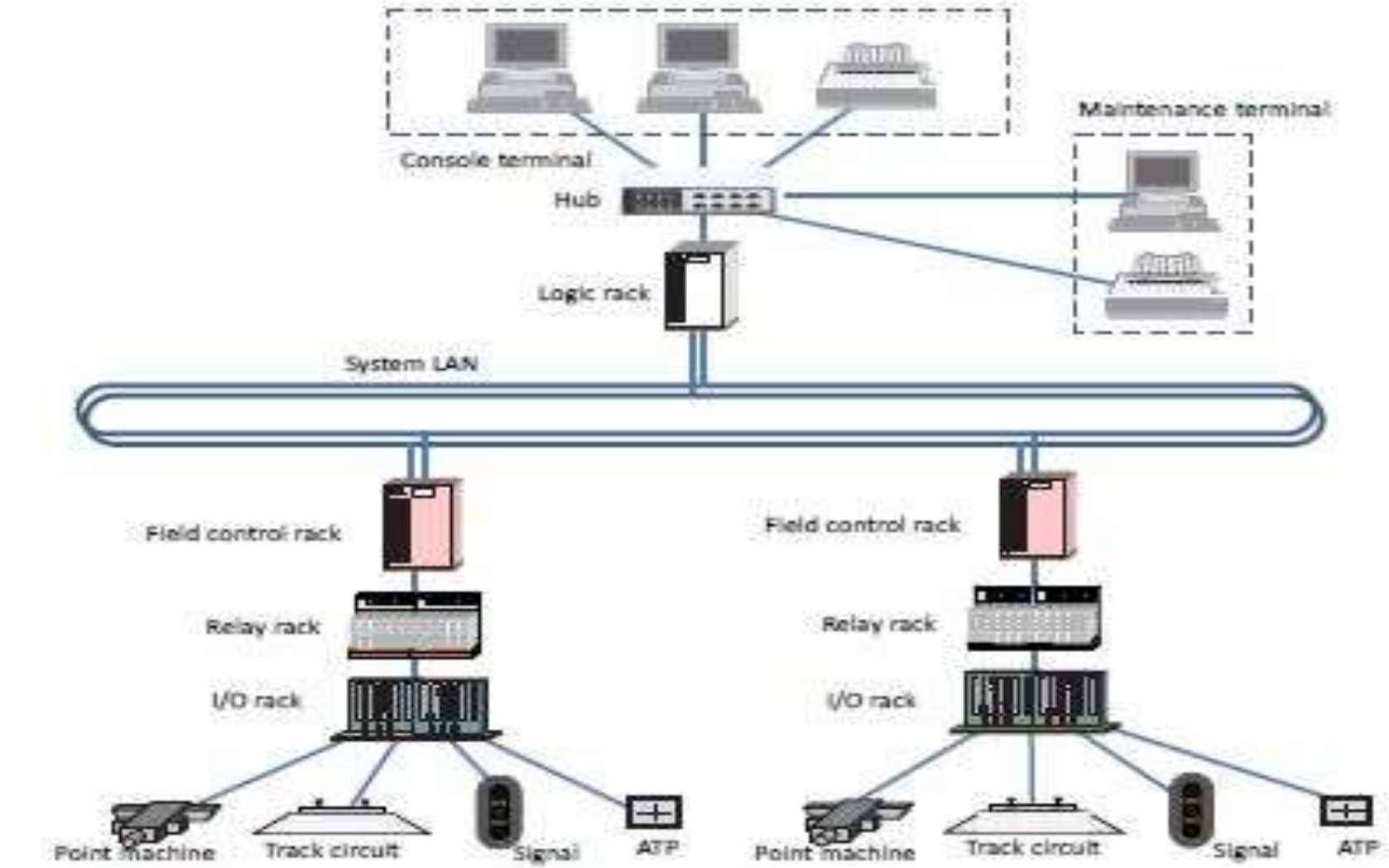
Changeover to new signal device shall be carried out by using changeover switch. As for changeover of signal on-site device such as point machine and track circuit, it shall be carried out stepwise.

As for replacing point machines with replacing turnouts, by collaborating with MR, the Contractor shall carry out installing two electric point machines per night work (8 hours) with replacing

Table 5.8.3 Changeover section of ABS

Section Name	Section	Distance
SECTION 1	Da Nyin Gone Station - Mingalardone Station	7.6km
SECTION 2	Mingalardone Station - Pa Ywat Sate Gone Station	4.0km
SECTION 3	Yangon Central Station - Kyee Myint Daing Station	5.6km
SECTION 4	Kyee Myint Daing Station - Insein Station	8.8km
SECTION 5	Insein Station - Da Nyin Gone Station	6.0km
SECTION 6	Pa Ywat Sate Gone Station - Ma Hlwa Gone Station	11.2km
SECTION 7	Ma Hlwa Gone Station - Pa Zun Taung Station	2.4km

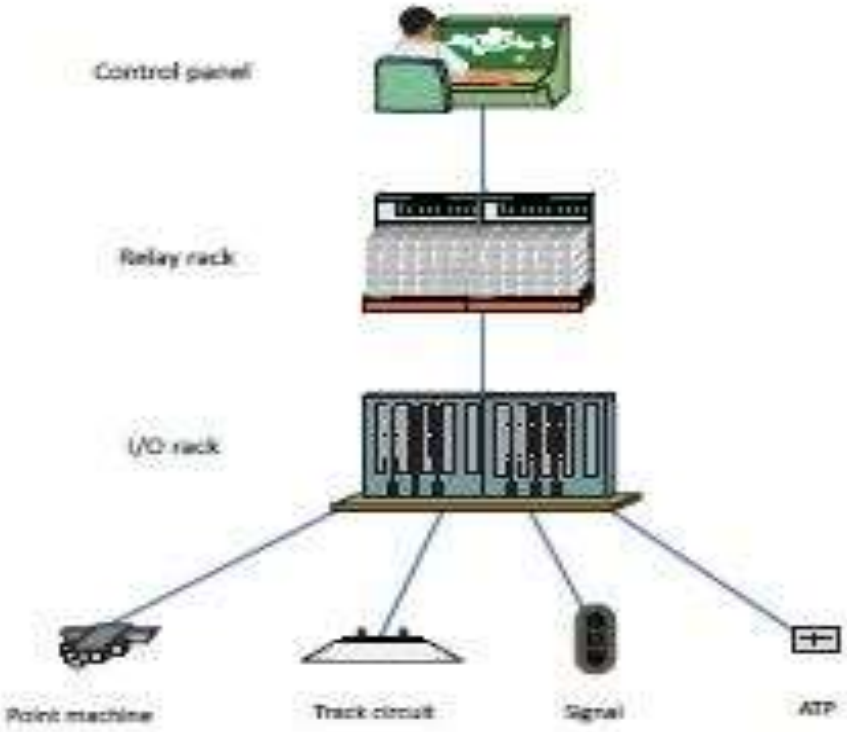
Source: JICA Study Team



Source: JICA Study Team

Figure 5.9.3 System configuration of the typical EI

As for RI system, interlocking logic is composed by relay connection. The relay is stored in relay rack, and data input and output is carried out with the control panel/monitor which is man-machine interface equipment. The system configuration of typical RI system is shown in the following figure.



Source: JICA Study Team

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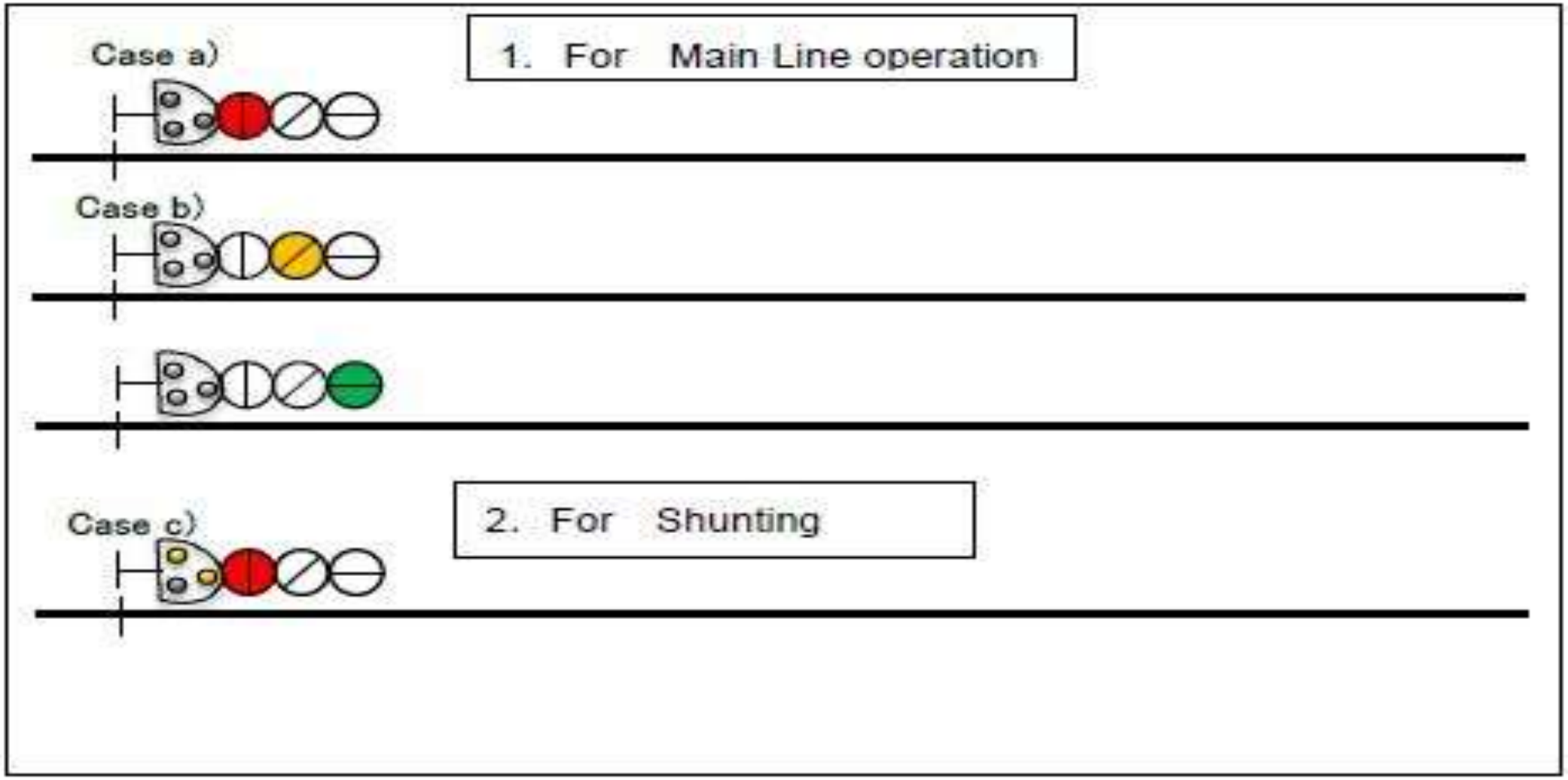
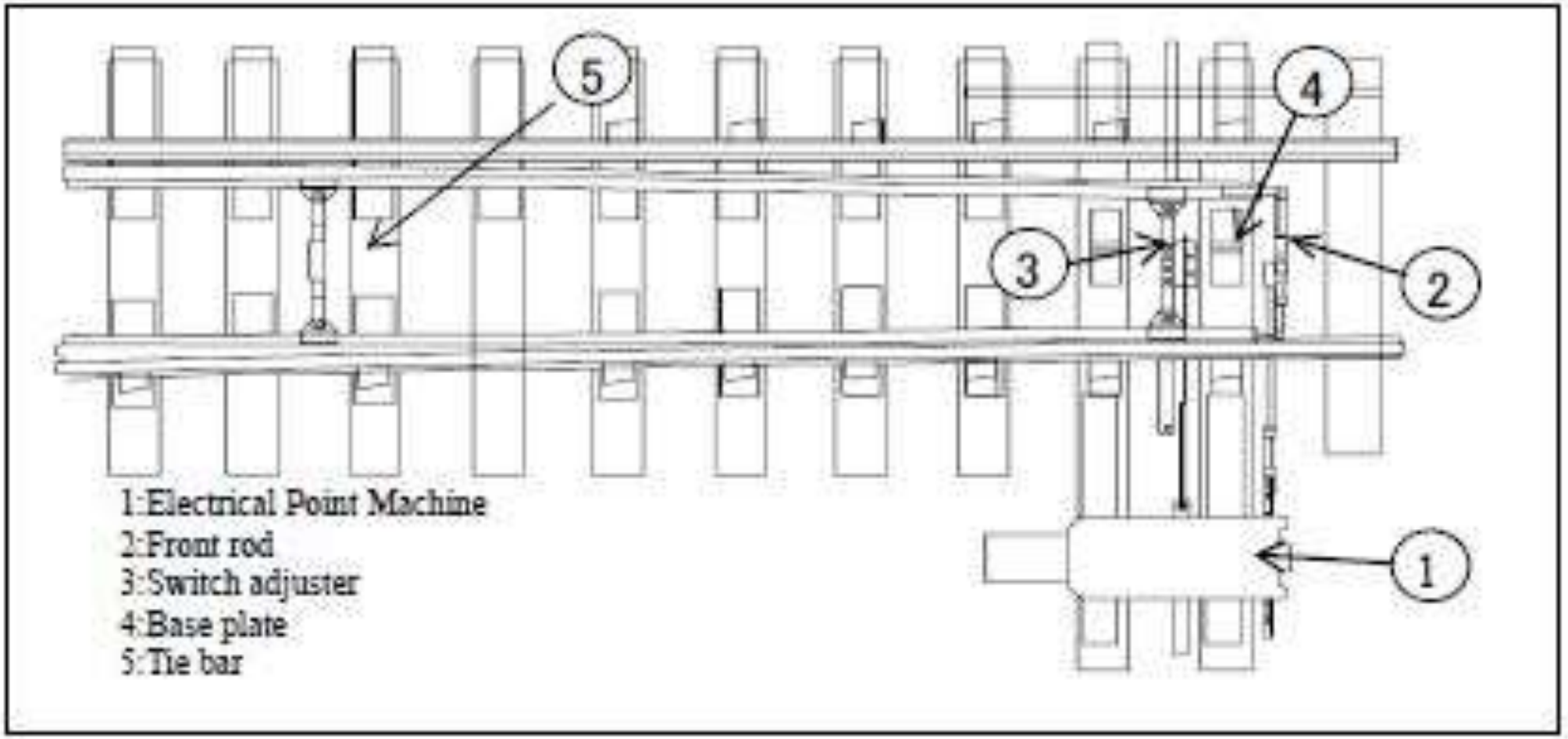


Source: JICA Study Team

Figure 5.9.5 Aspect Control Method of Shunting Signal
(The same location as Main Signal)

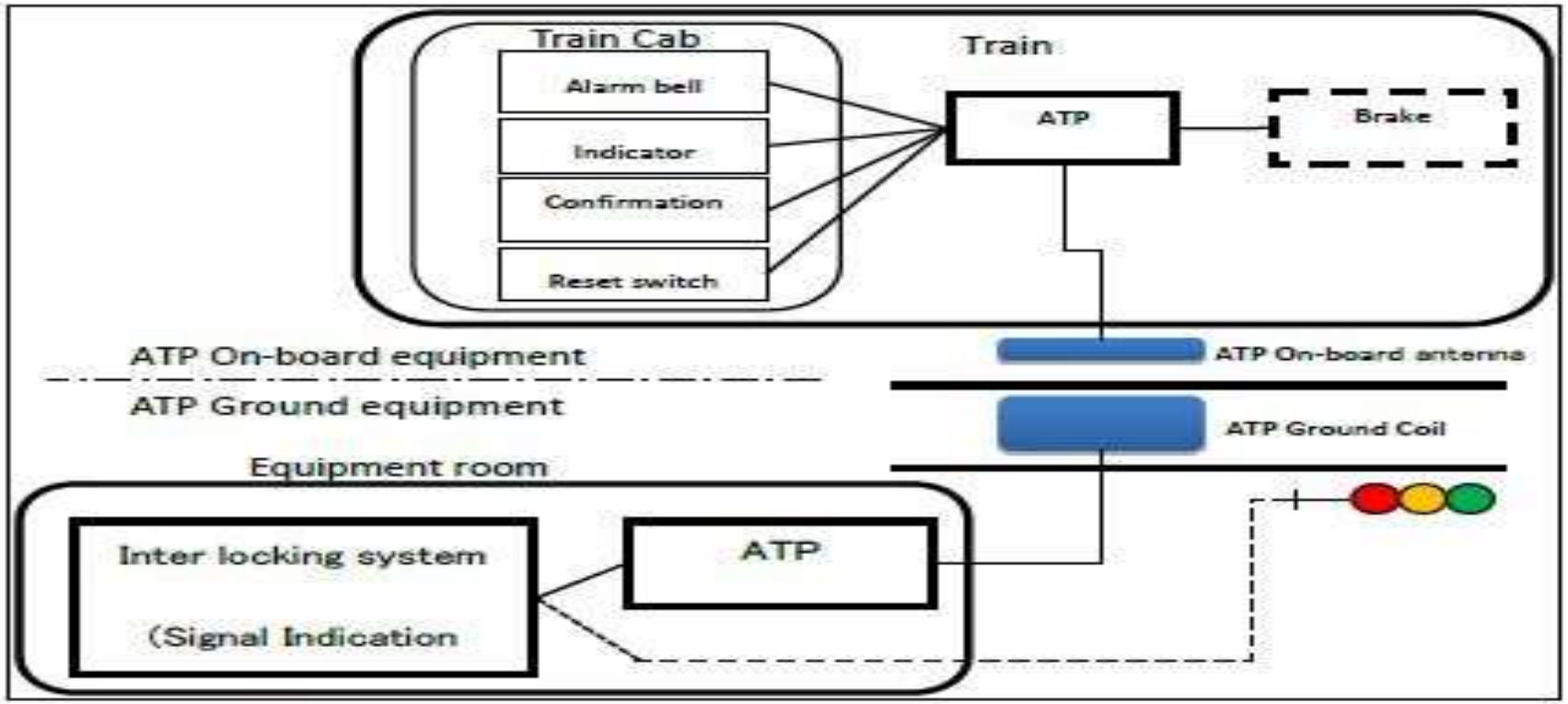


Source: JICA Study Team

Figure 5.9.9 Device configuration of Point Machine

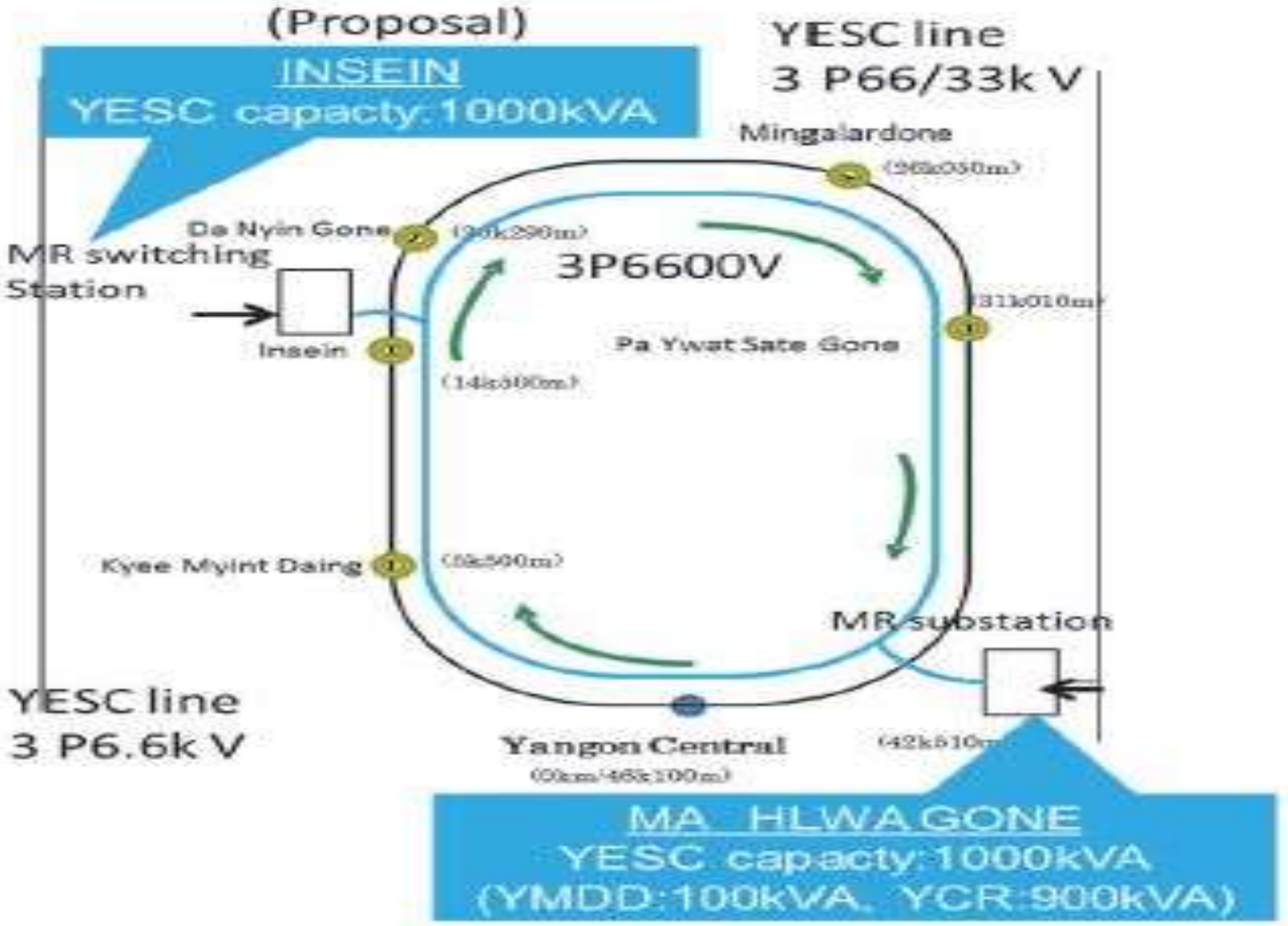
2) Type of ATP

As for ATP system to be used for this project, it shall be ATS-S type, point control type and used in Japan, in order to adjust its specification to YM-D/D(1) project. Concerning ATP ground device, signal aspect from interlocking device shall be inputted to its conditions, and it shall vary frequency of ground coil. As for ATP on-board equipment, it consists of on-board antenna for receiving the frequency from ground coil, ATP receiver, brake mechanism, and in driver cab, indicator, confirmation button, alarm speaker and reset switch. System configuration of ATP system of this project is shown in Figure 5.9.11.



Source: JICA Study Team

Figure 5.9.11 System configuration of ATP system


(Proposal)
INSEIN
YESC capacty:1000kVA
YESC line
3 P66/33k V
Mingalardone
Da Nyin Gone
MR switching
Station
3P6600V
Insein
Pa Ywat Sate Gone
Kyee Myint Daing
MR substation
YESC line
3 P6.6k V
Yangon Central
MA HLWA GONE
YESC capacty:1000kVA
(YMDD:100kVA, YCR:900kVA)

Our team

MD U Ba Myint

GM U Kyaw Kyaw Myo

GM U Maung Maung Thwin

GM U Min Aung

Our Team

U Han Nyunt

DGM(S&T)

SUMMARY

AS we had strong willingness and commitment, we finally made successful implementation of the Yangon Circular Railway Project as team works.


MR
HEAD OFFICE
OF
MYANMA RAILWAYS


S&T
Utmost Safety
of Trains

Mingalardone Signal House

Drainage Improvement Work Progress Photo

d LC23

Betweer

Thank you

to all Audience

Especially to all Participants in this Project from start to end.