

## **Attachment**

### **Attachment 1: Transmission System**

#### **1.1 Woreta PCO System**

#### **1.2 Merawi PCO System**

### **Attachment 2: Implementation Schedule**

### **Attachment 3: Technical Specifications**

**Attachment 1**

**Bahir Dar**

**1. Transmission System**

**1.1 Woreta PCO System**

Table 5.2.1.1	Woreta PCO Base Station
Table 5.2.1.1- 1	Woreta PCO Station No. 1
Table 5.2.1.1- 2	Woreta PCO Station No. 2
Table 5.2.1.1- 3	Woreta PCO Station No. 3
Table 5.2.1.1- 4	Woreta PCO Station No. 4
Table 5.2.1.1- 5	Woreta PCO Station No. 5
Table 5.2.1.1- 6	Woreta PCO Station No. 6
Table 5.2.1.1- 7	Woreta PCO Station No. 7
Table 5.2.1.1- 8	Woreta PCO Station No. 8
Table 5.2.1.1- 9	Woreta PCO Station No. 9
Table 5.2.1.1-10	Woreta PCO Station No.10
Table 5.2.1.1-11	Woreta PCO Station No.11
Table 5.2.1.1-12	Woreta PCO Station No.12
Table 5.2.1.1-13	Woreta PCO Station No.13
Table 5.2.1.1-14	Woreta PCO Station No.14

**1.2 Merawi PCO System**

Table 5.2.1.1- 1	Merawi PCO Station No. 1
Table 5.2.1.1- 2	Merawi PCO Station No. 2
Table 5.2.1.1- 3	Merawi PCO Station No. 3
Table 5.2.1.1- 4	Merawi PCO Station No. 4
Table 5.2.1.1- 5	Merawi PCO Station No. 5
Table 5.2.1.1- 6	Merawi PCO Station No. 6
Table 5.2.1.1- 7	Merawi PCO Station No. 7
Table 5.2.1.1- 8	Merawi PCO Station No. 8
Table 5.2.1.1- 9	Merawi PCO Station No. 9
Table 5.2.1.1-10	Merawi PCO Station No.10
Table 5.2.1.1-11	Merawi PCO Station No.11
Table 5.2.1.1-12	Merawi PCO Station No.12
Table 5.2.1.1-13	Merawi PCO Station No.13

## Ethiopia Rural PCO System F/S Result

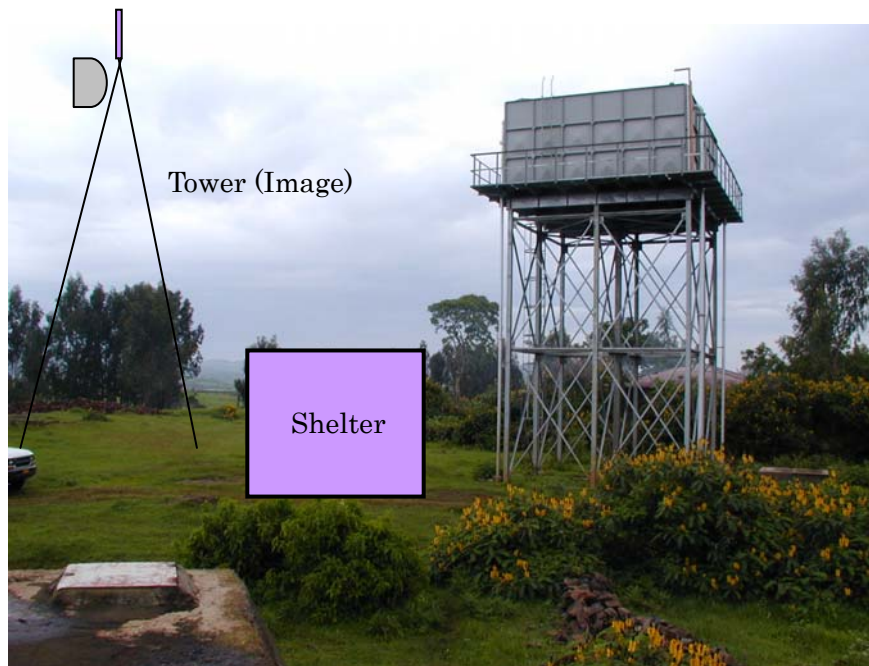
### Table 5.2.1.1 Woreta PCO Base Station

#### (1) Site Information

<i>Category</i>	<i>Survey Item</i>	<i>Survey Result</i>	<i>Remarks</i>
1. Location	Site Name Latitude Longitude Above Sea Level Site condition	Woreta PCO Base Station 11° 55' 20" N 37° 42' 10" E 1,880m See Attachment -7.	To be newly installed    (Possible site)
2. Building	Building Structure Air conditioning Installation place	None None None	Required Required Required
3. Tower	Tower condition	None	Required
4. Power	Commercial Power DC power supply Power for outdoor	Not available None None	Required power line installation work Required Required
5. Grounding	Indoor Grounding Outdoor Grounding	None None	Required Required
6. Equipment Installation	Vehicle Access Road Material Temporary Storage Vehicle Carrying in/Parking	OK Approx. 100m <sup>2</sup> available OK	Exposed to the weather
7. Others	Population of Site	220,496 (19,852: Central city)	

#### (2) Transmission Facilities

<i>Category</i>	<i>Survey Item</i>	<i>Survey Result</i>	<i>Remarks</i>
1. System	BCO Base Station System	1) No. of PCO Stations: 14 2) No. of PCO Repeater Stations :2	
Circuit (Subject for F/S)	Required digital circuit (2xE1) between Woreta city and Woreta PCO BASE.	(Cable Link : Woreta city – PCO BASE)	To be newly procured
2. Antenna (Subject for F/S)	Antenna For direction to PCO st.	42m (Omni-directional antenna)	To be newly procured
3. Tower (Subject for F/S)	Tower/Height required For direction to PCO stations	Self-supporting type: 40m  Mounting position: H = 40m	To be newly procured



**Woreta PCO Base Station (Planned Construction site)  
(Required Tower (H=40m) and Equipment shelter)**

**Table 5.2.1.1-1** Survey Result of Woreta PCO Station (No.1/Gala Minder)

**(1) Site Information**

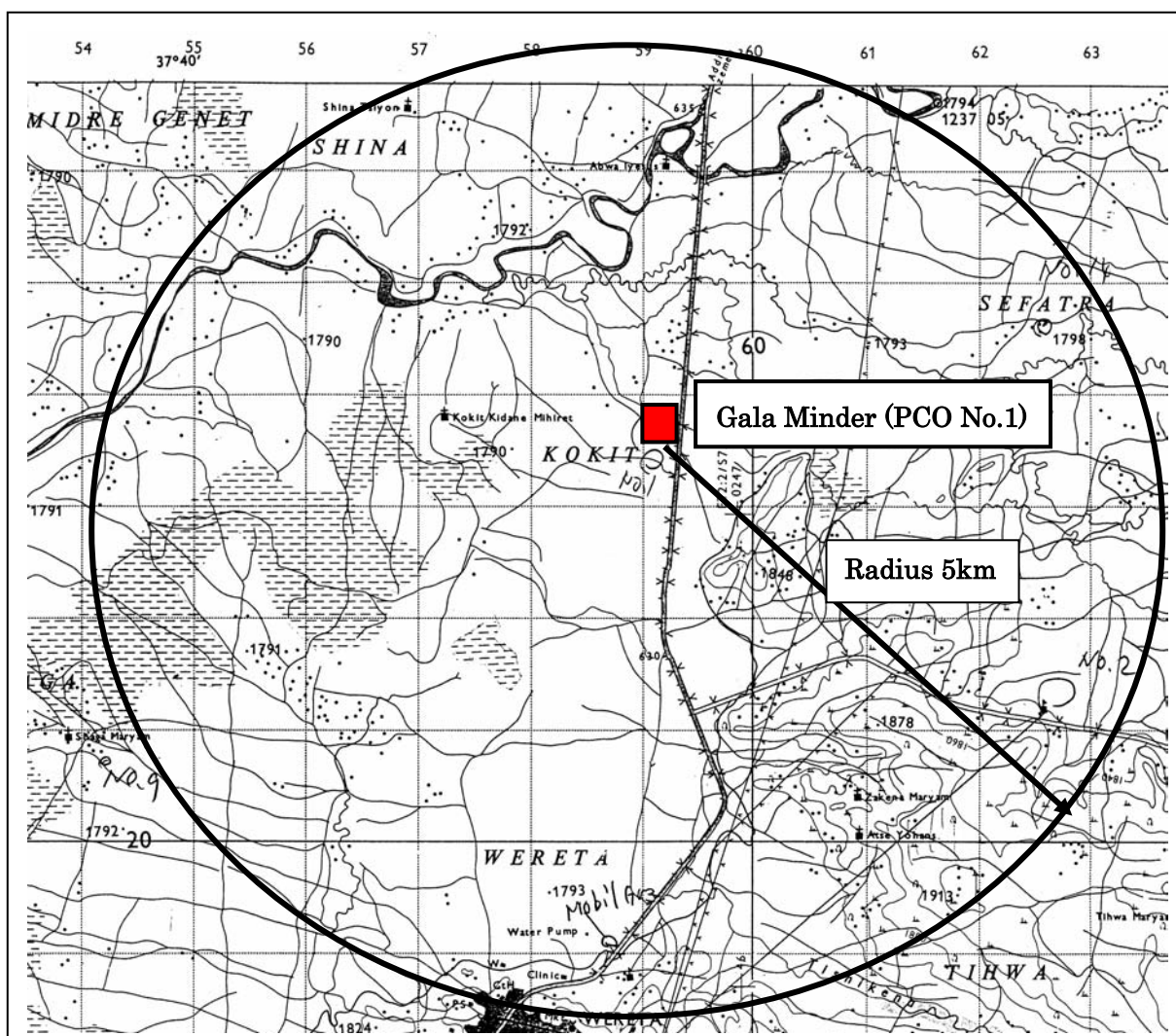
<i>Category</i>	<i>Survey Item</i>	<i>Survey Result</i>	<i>Remarks</i>
1. Location	Site Name	Gala Minder (near an elementary school)	Map Survey Data
	Address		
	Latitude	11° 58' 00" N	
	Longitude	37° 42' 10" E	
	Above Sea Level	1793m	
	Site condition	Attachment 5.2.1.1-No.1	
2. building	Building Structure	None	Required
3. Power	Commercial Power	None	Solar power system required
4. Grounding	Indoor Grounding	None	Required
	Outdoor Grounding	None	Required
5. Equipment Installation	Vehicle Access Road	OK (near the road)	Use empty space  Request for placing
	Material Temporary Storage	Approx. 13m × 14m available	
	Vehicle Carrying in/Parking	OK (Parking: dry season only)	
	Minimum Entrance space	Carry-in road: Approx. 5m	
	Security Guard	Required	
6. Others	Population of Site (Within 2km radius)	About 250 households	
	Temperature/Humidity/Precipitation Data		

**(2) PCO Subscriber Station**

<i>Category</i>	<i>Survey Item</i>	<i>Survey Result</i>	<i>Remarks</i>
1. System	No. of Subscriber Lines	8 lines (VoIP compatible telephones)	
2. Antenna	Antenna Facility		
	PCO Antenna Height	10m	
	PCO Antenna Direction	Azimuth: 180° (in the direction of base station)	
3. Tower	Tower	None	To be newly installed
	Tower Height	Pole: 10m (new installation)	To be newly installed
	Installation place	There are installation spaces on the ground.	
4. Equipment	Equipment installation	No space	Required shelter (To be newly procured)

(3) Subscribers (Demand Area)

Category	Survey Item	Survey Result	Remarks
1. Demand Area	Summary of Topography - Above Sea Level - Land Feature  - House - Tree  Expected Demand Area	1800m Flat land (basin)  One-story houses About 10 m high trees here and there Attachment - 1	Verified by 1/50,000 map and visual check



Attachment-1 Expected Demand Area (Reference)



Attachment 5.2.1.1-No.1

**Table 5.2.1.1-2** Survey Result of Woreta PCO Subscriber Station  
(No.2/Wore Meda)

**(1) Site Information**

<i>Category</i>	<i>Survey Item</i>	<i>Survey Result</i>	<i>Remarks</i>
1. System	Site Name	Wore Meda (near an elementary school)	
2. Antenna	Address		Map Survey Data
	Latitude	11° 56' 50" N	
	Longitude	37° 43' 50" E	
3. Tower	Above Sea Level	1,820 m	
	Site photo	Attachment 5.2.1.1-No.2	
4. Equipment	Building Structure	None	Required
3. Power Supply	Commercial Power Supply	None	Solar power system required
4. Grounding	Indoor Equipment Grounding	None	Required
	Outdoor Equipment Grounding	None	Required
5. Equipment Installation	Vehicle Access Road	OK (near the road, 30m) Approx. 20m × 20m available	Use empty space
	Material Temporary storage		
	Vehicle Carrying in/Parking	OK	
	Minimum Entrance	Carry-in road: Approx. 5m	Request for placing
	Security Guard	Not required (The janitor of the elementary school can take charge.)	
6. Others	Population of Site (Within 2km radius)	About 250 households	
	Temperature/Humidity/Precipitation Data		

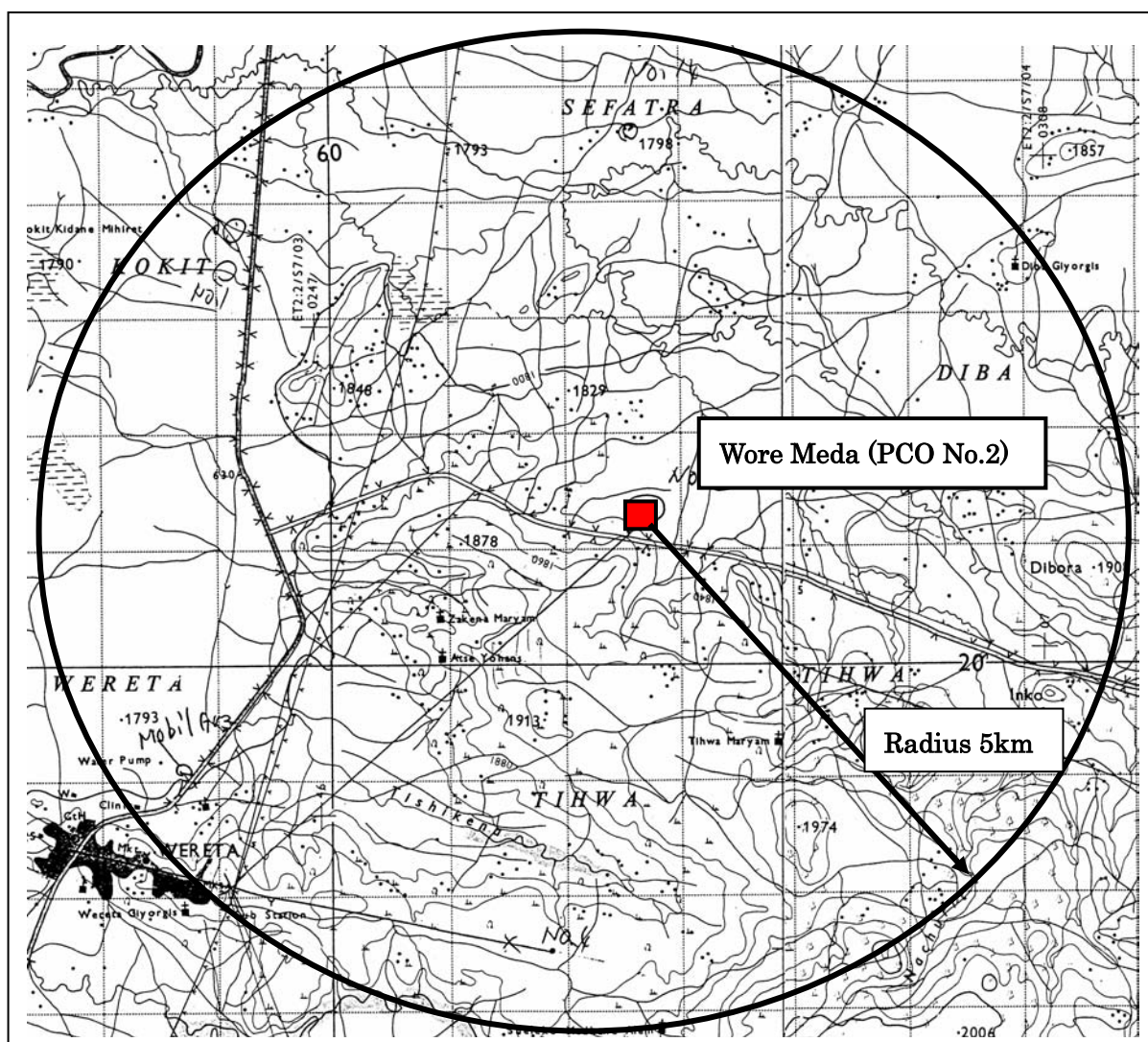
**(2) PCO Subscriber Station**

<i>Category</i>	<i>Survey Item</i>	<i>Survey Result</i>	<i>Remarks</i>
1. System	No. of Subscriber Lines	8 lines (VoIP compatible telephones)	
2. Antenna	Antenna Facility		
	PCO Antenna Height	10m	
	PCO Antenna Direction	Azimuth: 227.6° (in the direction of base station)	
3. Tower	Tower	None	To be newly installed
	Tower Height	Pole: 10m (new installation)	To be newly installed
	Installation place	There are installation spaces on the ground.	
4. Equipment	Equipment installation	No space	Required shelter



(3) Subscribers (Demand Area)

Category	Survey Item	Survey Result	Remarks
1. Demand Area	Summary of Topography - Above Sea Level - Land Feature  - House - Tree  Expected Demand Area	1,820 m Flat land (Mountains in the direction of base station)  One-story houses About 10 m high trees here and there Attachment - 2	Verified by 1/50,000 map and visual check



Attachment-2 Expected Demand Area (Reference)



**Attachment 5.2.1.1 - No.2**