資　料

資　料

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資料－1　調査団員・氏名

資料-1　調査団員氏名、所属

(1) 第一次現地調査

	氏　名	業　務	所　属
1	江尻　幸彦	総括	独立行政法人　国際協力機構 地球環境部　専任参事
2	黛　正伸	技術アドバイザー	独立行政法人　国際協力機構 ケニア事務所
3	肥後　武司	調査企画	独立行政法人　国際協力機構 地球環境部　水資源グループ 水資源第二チーム
4	山本　誠	業務主任／水道計画	日本テクノ株式会社
5	坂本　正吾	施設計画・設計／施工	（日本テクノ株式会社補強） 株式会社日本水工設計
6	丸尾　祐治	副業務主任／水道計画 ／水理地質／水質調査	株式会社地球システム科学
7	植松　政郎	物理探査／試掘調査	株式会社地球システム科学
8	加藤　益雄	運営維持管理	株式会社日水コン
9	有田　一博	調達計画／積算	日本テクノ株式会社
10	森　正蔵	社会調査／環境社会配慮	（株式会社日水コン補強） 森国際ｺﾝｻﾙﾃｨﾝｸﾞ株式会社
11	堀内　和子	業務調整	日本テクノ株式会社

(2) 第二次現地調査

	氏　名	業　務	所　属
1	村上　敏雄	団長	株式会社ソーワコンサルタント インハウスコンサルタント
2	黛　正伸	技術アドバイザー	独立行政法人　国際協力機構 ケニア事務所
3	加治　貴	調査企画	独立行政法人　国際協力機構 地球環境部　水資源グループ 水資源第二チーム
4	山本　誠	業務主任／水道計画	日本テクノ株式会社
5	坂本　正吾	施設計画・設計／施工	（日本テクノ株式会社補強） 株式会社日本水工設計
6	丸尾　祐治	副業務主任／水道計画 ／水理地質／水質調査	株式会社地球システム科学
7	植松　政郎	物理探査／試掘調査	株式会社地球システム科学

	氏　名	業　務	所　属
8	有田　一博	調達計画／積算	日本テクノ株式会社
9	森　正蔵	社会調査／環境社会配慮/運営維持管理	（株式会社日水コン補強） 森国際ｺﾝｻﾙﾃｨﾝｸﾞ株式会社
10	米谷　直晃	業務調整	日本テクノ株式会社

(3) 再調査

	氏　名	業　務	所　属
1	高松　章二	業務主任代行	日本テクノ株式会社
2	藤田　知己	環境社会配慮	セントラルコンサルタント株式会社
3	米谷　直晃	業務調整	日本テクノ株式会社

(4) 概略設計概要説明

	氏　名	業　務	所　属
1	松山　剛士		独立行政法人　国際協力機構 エチオピア事務所　次長
2	黛　正伸	技術アドバイザー	独立行政法人　国際協力機構 ケニア事務所
3	加治　貴	案件管理	独立行政法人　国際協力機構 地球環境部　水資源グループ 水資源第二チーム
4	高松　章二	業務主任／水道計画	日本テクノ株式会社
5	有田　一博	調達計画／積算	日本テクノ株式会社

資料－2　調査行程

資料-2　調査行程

1) 第1次現地調査日程

日付			官団員	コンサルタント団員							
				業務主任／水道計画	施設計画・設計／施工	副業務主任／水道計画／水理地質／水質調査	物理探査／試掘調査	運営維持管理	調達計画／積算	社会調査／環境社会配慮	業務調整
				山本　誠	坂本　正吾	丸尾　祐治	植松 政郎	加藤　益雄	有田　一博	森　正蔵	堀内　和子
1	7/27	月	東京発、ｱﾃﾞｨｽｱﾍﾞﾊﾞ着、JICA表敬	東京発	東京発			東京発			東京発
2	7/28	火	JICA事務所、他ﾄﾞﾅｰ聞き取り	ｱﾃﾞｨｽｱﾍﾞﾊﾞ着	ｱﾃﾞｨｽｱﾍﾞﾊﾞ着			ｱﾃﾞｨｽｱﾍﾞﾊﾞ着			ｱﾃﾞｨｽｱﾍﾞﾊﾞ着
3	7/29	水	JICA表敬、WRDF協議、ｱﾃﾞｨｽｱﾍﾞﾊﾞ発、ﾊﾞﾊﾙﾀﾞｰﾙ着	JICA表敬、WRDF協議、ｱﾃﾞｨｽｱﾍﾞﾊﾞ発、ﾊﾞﾊﾙﾀﾞｰﾙ着	JICA表敬、WRDF協議、ｱﾃﾞｨｽｱﾍﾞﾊﾞ発、ﾊﾞﾊﾙﾀﾞｰﾙ着			JICA表敬、WRDF協議、ｱﾃﾞｨｽｱﾍﾞﾊﾞ発、ﾊﾞﾊﾙﾀﾞｰﾙ着			JICA表敬、WRDF協議、ｱﾃﾞｨｽｱﾍﾞﾊﾞ発、ﾊﾞﾊﾙﾀﾞｰﾙ着
4	7/30	木	AWRDB・BDWSSS・BoFED・EPLAUA表敬、協議	AWRDB・BDWSSS・BoFED・EPLAUA表敬、協議	AWRDB・BDWSSS・BoFED・EPLAUA表敬、協議			AWRDB・BDWSSS・BoFED・EPLAUA表敬、協議			AWRDB・BDWSSS・BoFED・EPLAUA表敬、協議
5	7/31	金	ｻｲﾄ視察（Zone 1、2）	ｻｲﾄ視察（Zone 1、2）	ｻｲﾄ視察（Zone 1、2）			ｻｲﾄ視察（Zone 1、2）			ｻｲﾄ視察（Zone 1、2）
6	8/1	土	ﾐﾆｯﾂ準備	BDWSSS協議、書類整理	BDWSSS協議、書類整理			BDWSSS協議、書類整理			BDWSSS協議、書類整理
7	8/2	日	団内協議、ﾐﾆｯﾂ準備	団内協議、ﾐﾆｯﾂ準備	団内協議			団内協議			団内協議、ﾐﾆｯﾂ準備
8	8/3	月	ﾐﾆｯﾂ協議	ﾐﾆｯﾂ協議	ﾐﾆｯﾂ協議			ﾐﾆｯﾂ協議			ﾐﾆｯﾂ協議
9	8/4	火	ﾐﾆｯﾂ協議・署名	ﾐﾆｯﾂ協議	ﾐﾆｯﾂ協議			ﾐﾆｯﾂ協議			ﾐﾆｯﾂ協議
10	8/5	水	ﾊﾞﾊﾙﾀﾞｰﾙ発、ｱﾃﾞｨｽｱﾍﾞﾊﾞ着、MOWIE協議	ﾊﾞﾊﾙﾀﾞｰﾙ発、ｱﾃﾞｨｽｱﾍﾞﾊﾞ着、MOWIE協議	ﾊﾞﾊﾙﾀﾞｰﾙ発、ｱﾃﾞｨｽｱﾍﾞﾊﾞ着、MOWIE協議	東京発		ｻｲﾄ調査			ﾊﾞﾊﾙﾀﾞｰﾙ発、ｱﾃﾞｨｽｱﾍﾞﾊﾞ着、MOWIE協議
11	8/6	木	大使館・JICA報告、ｱﾃﾞｨｽｱﾍﾞﾊﾞ発	大使館・JICA報告	大使館・JICA報告	ｱﾃﾞｨｽｱﾍﾞﾊﾞ着、調査準備		ｻｲﾄ調査			大使館・JICA報告
12	8/7	金	東京着	機材調達、書類整理	機材調達、書類整理	現地再委託入札（揚水試験）		ｻｲﾄ調査		ﾊﾞﾝｸｰﾊﾞｰ発	機材調達、書類整理
13	8/8	土		書類整理	書類整理	現地再委託開札（揚水試験）		ｻｲﾄ調査		ﾌﾗﾝｸﾌﾙﾄ着・発	現地再委託補助
14	8/9	日		ｱﾃﾞｨｽｱﾍﾞﾊﾞ発、ﾊﾞﾊﾙﾀﾞｰﾙ着	ｱﾃﾞｨｽｱﾍﾞﾊﾞ発、ﾊﾞﾊﾙﾀﾞｰﾙ着	資料整理		資料整理		ｱﾃﾞｨｽｱﾍﾞﾊﾞ着・発、ﾊﾞﾊﾙﾀﾞｰﾙ着、再委託入札評価	現地再委託補助
15	8/10	月		ｻｲﾄ調査	ｻｲﾄ調査	現地再委託先確認（水質調査）		ｻｲﾄ調査	東京発	AWRDB・BDWSSE表敬、ｻｲﾄ調査	現地再委託補助
16	8/11	火		ｻｲﾄ調査	ｻｲﾄ調査	現地再委託先確認（水質調査）		ｻｲﾄ調査	ｱﾃﾞｨｽｱﾍﾞﾊﾞ着	現地再委託（社会調査び環境社会配慮）の契約交渉	現地再委託補助
17	8/12	水		ｻｲﾄ調査	ｻｲﾄ調査	ｱﾃﾞｨｽｱﾍﾞﾊﾞ発、ﾊﾞﾊﾙﾀﾞｰﾙ着		ﾊﾞﾊﾙﾀﾞｰﾙ発、ｱﾃﾞｨｽｱﾍﾞﾊﾞ着、ｱﾃﾞｨｽｱﾍﾞﾊﾞ発	ｱﾃﾞｨｽｱﾍﾞﾊﾞ発、ﾊﾞﾊﾙﾀﾞｰﾙ着	現地再委託（社会調査び環境社会配慮）の契約交渉	ｱﾃﾞｨｽｱﾍﾞﾊﾞ発、ﾊﾞﾊﾙﾀﾞｰﾙ着
18	8/13	木		ｻｲﾄ調査	ｻｲﾄ調査	ｻｲﾄ調査、現地再委託準備（水質調査、揚水試験）		東京着	ｻｲﾄ調査	現地再委託（社会調査び環境社会配慮）の契約締結	ｻｲﾄ調査
19	8/14	金		ｻｲﾄ調査	ｻｲﾄ調査	ｻｲﾄ調査、現地再委託準備（水質調査、揚水試験）			ｻｲﾄ調査	ｻｲﾄ調査及び現地再委託の監理	ｻｲﾄ調査
20	8/15	土		ｻｲﾄ調査	ｻｲﾄ調査	ｻｲﾄ調査			市場調査	ｻｲﾄ調査及び現地再委託の監理	ｻｲﾄ調査
21	8/16	日		資料整理	資料整理	資料整理			資料整理	資料整理	資料整理
22	8/17	月		ｻｲﾄ調査	ｻｲﾄ調査	ｻｲﾄ調査			市場調査	ｻｲﾄ調査及び現地再委託の監理	ｻｲﾄ調査
23	8/18	火		ｻｲﾄ調査	ｻｲﾄ調査	ｻｲﾄ調査			市場調査	ｻｲﾄ調査及び現地再委託の監理	ｻｲﾄ調査
24	8/19	水		ｻｲﾄ調査	ｻｲﾄ調査	ｻｲﾄ調査			市場調査	ｻｲﾄ調査及び現地再委託の監理	ｻｲﾄ調査
25	8/20	木		ｻｲﾄ調査	ｻｲﾄ調査	ｻｲﾄ調査			市場調査	ｻｲﾄ調査及び現地再委託の監理	ｻｲﾄ調査
26	8/21	金		ｻｲﾄ調査	ｻｲﾄ調査	現地再委託入札（揚水試験）			市場調査	ｻｲﾄ調査及び現地再委託の監理	ｻｲﾄ調査
27	8/22	土		ｻｲﾄ調査	ｻｲﾄ調査	現地再委託契約交渉（揚水試験）			ﾊﾞﾊﾙﾀﾞｰﾙ発、ｱﾃﾞｨｽｱﾍﾞﾊﾞ着 市場調査	ｻｲﾄ調査及び現地再委託の監理	ｻｲﾄ調査
28	8/23	日		資料整理	ﾊﾞﾊﾙﾀﾞｰﾙ発、ｱﾃﾞｨｽｱﾍﾞﾊﾞ着	資料整理			ｱﾃﾞｨｽｱﾍﾞﾊﾞ発	資料整理	ﾊﾞﾊﾙﾀﾞｰﾙ発、ｱﾃﾞｨｽｱﾍﾞﾊﾞ着
29	8/24	月		ｻｲﾄ調査	資料整理、ｱﾃﾞｨｽｱﾍﾞﾊﾞ発	現地再委託監理			東京着	ｻｲﾄ調査及び現地再委託の監理	精算業務、ｱﾃﾞｨｽｱﾍﾞﾊﾞ発
30	8/25	火		ｻｲﾄ調査	東京着	現地再委託監理				ｻｲﾄ調査及び現地再委託の監理	東京着
31	8/26	水		ﾊﾞﾊﾙﾀﾞｰﾙ発、ｱﾃﾞｨｽｱﾍﾞﾊﾞ着		現地再委託監理				ｻｲﾄ調査及び現地再委託の監理	
32	8/27	木		JICA事務所報告、ｱﾃﾞｨｽｱﾍﾞﾊﾞ発		現地再委託監理				ｻｲﾄ調査及び現地再委託の監理	
33	8/28	金		東京発		現地再委託監理				ｻｲﾄ調査及び現地再委託の監理	
34	8/29	土				現地再委託監理				ｻｲﾄ調査及び現地再委託の監理	
35	8/30	日				資料整理				資料整理	
36	8/31	月				現地再委託監理				ｻｲﾄ調査及び現地再委託の監理	
37	9/1	火				現地再委託監理				ｻｲﾄ調査及び現地再委託の監理	
38	9/2	水				現地再委託監理				ｻｲﾄ調査及び現地再委託の監理	
39	9/3	木				現地再委託監理				ｻｲﾄ調査及び現地再委託の監理	
40	9/4	金				現地再委託監理				ﾊﾞﾊﾙﾀﾞｰﾙ発、ｱﾃﾞｨｽｱﾍﾞﾊﾞ着・発	
41	9/5	土				現地再委託監理				ﾌﾗﾝｸﾌﾙﾄ着・発、ﾊﾞﾝｸｰﾊﾞｰ着	
42	9/6	日				ﾊﾞﾊﾙﾀﾞｰﾙ発、ｱﾃﾞｨｽｱﾍﾞﾊﾞ着				ﾌﾗﾝｸﾌﾙﾄ着、ﾌﾗﾝｸﾌﾙﾄ発、ﾊﾞﾝｸｰﾊﾞｰ着	
43	9/7	月				ｱﾃﾞｨｽｱﾍﾞﾊﾞ発					
44	9/8	火				東京着					
45	9/9	水									
46	9/10	木									
47	9/11	金									
48	9/12	土									
49	9/13	日									
50	9/14	月									
51	9/15	火									
52	9/16	水									
53	9/17	木									
54	9/18	金									
55	9/19	土									
56	9/20	日									
57	9/21	月									
58	9/22	火									
59	9/23	水									
60	9/24	木									
61	9/25	金									
62	9/26	土									
63	9/27	日									
64	9/28	月									
65	9/29	火									
66	9/30	水									
67	10/1	木									
68	10/2	金									
69	10/3	土									
70	10/4	日					東京発				
71	10/5	月					ｱﾃﾞｨｽｱﾍﾞﾊﾞ着、物理探査準備				
72	10/6	火					ｱﾃﾞｨｽｱﾍﾞﾊﾞ発、ﾊﾞﾊﾙﾀﾞｰﾙ着				
73	10/7	水					AWRDB、BDWSSE表敬、物理探査準備				
74	10/8	木					物理探査準備				
75	10/9	金					物理探査準備				
76	10/10	土					物理探査実施				
77	10/11	日					資料整理				
78	10/12	月					物理探査実施				
79	10/13	火					物理探査実施				
80	10/14	水					物理探査実施				
81	10/15	木					物理探査実施				
82	10/16	金					物理探査実施				
83	10/17	土					物理探査実施				

資料-2　調査行程

1) 第1次現地調査日程

日付			官団員	コンサルタント団員							
				業務主任 ／水道計画	施設計画・設計 ／施工	副業務主任／水道計画／ 水理地質／水質調査	物理探査 ／試掘調査	運営維持管理	調達計画／積算	社会調査／ 環境社会配慮	業務調整
				山本　誠	坂本　正吾	丸尾　祐治	植松 政郎	加藤　益雄	有田　一博	森　正蔵	堀内　和子
84	10/18	日					資料整理				
85	10/19	月					物理探査実施				
86	10/20	火					物理探査実施				
87	10/21	水					物理探査実施				
88	10/22	木					物理探査実施				
89	10/23	金					物理探査実施				
90	10/24	土					物理探査実施				
91	10/25	日					資料整理				
92	10/26	月					物理探査実施				
93	10/27	火					物理探査実施				
94	10/28	水					物理探査実施				
95	10/29	木					調査取りまとめ				
96	10/30	金					調査取りまとめ				
97	10/31	土					ﾊﾉﾊﾙﾀﾞｰﾙ発、ｱﾃﾞｨｽｱﾍﾞﾊﾞ着				
98	11/1	日					ｱﾃﾞｨｽｱﾍﾞﾊﾞ発				
99	11/2	月					東京着				
100	11/3	火									

資料-2　調査行程

2) 第2次現地調査日程

日付			官団員	コンサルタント団員						
				業務主任 ／水道計画	施設計画・設計 ／施工	副業務主任/水道計画/ 水理地質/水質調査	物理探査/試掘調査	調達計画／積算	社会条件調査	業務調整2
				山本 誠	坂本 正吾	丸尾 祐治	植松 政郎	有田 一博	森 正蔵	米谷 直晃
1	11/22	日				日本発				
2	11/23	月				再委託準備(試掘) 再委託先と協議(揚水試験)				
3	11/24	火				再委託準備(試掘) 再委託先と協議(揚水試験)				
4	11/25	水				再委託準備(試掘) 再委託先と協議(揚水試験)				
5	11/26	木				再委託準備(試掘)契約				
6	11/27	金				移動(アディスアベバ-バハルダール)				
7	11/28	土				BDWSSS協議				
8	11/29	日				資料整理				
9	11/30	月				BDWSS,AWRDB協議				
10	12/1	火				BDWSSS協議				
11	12/2	水				BDWSSSサイト視察				
12	12/3	木				BDWSSSサイト視察				
13	12/4	金				再委託監理(揚水試験)				
14	12/5	土				再委託監理(揚水試験)				
15	12/6	日				資料整理				
16	12/7	月				再委託監理(揚水試験・試掘)				
17	12/8	火				再委託監理(揚水試験・試掘)				
18	12/9	水				再委託監理(揚水試験・試掘)				
19	12/10	木				再委託監理(揚水試験・試掘) BDWSSSと協議				
20	12/11	金				再委託監理(揚水試験・試掘) BDWSSSと協議				
21	12/12	土				再委託監理(揚水試験・試掘) BDWSSSと協議				
22	12/13	日				再委託監理(揚水試験・試掘)				
23	12/14	月				再委託監理(揚水試験・試掘)				
24	12/15	火				再委託監理(揚水試験・試掘)				
25	12/16	水				再委託監理(揚水試験・試掘)				
26	12/17	木				再委託監理(揚水試験・試掘)				
27	12/18	金				再委託監理(揚水試験・試掘)				
28	12/19	土				再委託監理(揚水試験・試掘)				
29	12/20	日				再委託監理(揚水試験・試掘)				
30	12/21	月				再委託監理(揚水試験・試掘)				
31	12/22	火				再委託監理(揚水試験・試掘)				
32	12/23	水				再委託監理(揚水試験・試掘) 物理探査追加候補調査				
33	12/24	木				BoWIE Ato Zemene面会。再委託監理(試掘)				
34	12/25	金				再委託監理(試掘) 物理探査追加候補調査				
35	12/26	土				再委託監理(試掘) 物理探査追加候補調査				
36	12/27	日				再委託監理(試掘)				
37	12/28	月				再委託監理(試掘)				
38	12/29	火				再委託監理(試掘)				
39	12/30	水				再委託監理(試掘)				
40	12/31	木				再委託監理(試掘)				
41	1/1	金				再委託監理(試掘)				
42	1/2	土				再委託監理(試掘)				
43	1/3	日				簡易水質試験(18か所)				
44	1/4	月				再委託監理(試掘)				
45	1/5	火				再委託監理(試掘)				
46	1/6	水				再委託監理(試掘)				
47	1/7	木				再委託監理(試掘)				
48	1/8	金				再委託監理(試掘)				
49	1/9	土				再委託監理(試掘)				
50	1/10	日				再委託管理(試掘)、資料整理				
51	1/11	月				再委託監理(試掘)、資料整理				
52	1/12	火				バハルダール→アディス移動、JICA神公明所長面会				
53	1/13	水				再委託先打ち合わせ 資料整理				
54	1/14	木				アディスアベバ発				
55	1/15	金				東京着				
56	1/16	土								
57	1/17	日								
58	1/18	月								
59	1/19	火								
60	1/20	水					東京発			
61	1/21	木					アディスアベバ着 資機材受取			
62	1/22	金					バハルダール移動			
63	1/23	土					試掘、物理探査サイト調査 BDWSSS、ANRS, BoWIE協議			
64	1/24	日					資料整理			
65	1/25	月					再委託監理(試掘)			
66	1/26	火					再委託監理(試掘)			
67	1/27	水					再委託監理(試掘) 物理探査			
68	1/28	木					再委託監理(試掘) 物理探査			
69	1/29	金					再委託監理(試掘) 物理探査			
70	1/30	土					再委託監理(試掘) 物理探査			
71	1/31	日					資料整理			
72	2/1	月					再委託監理(試掘) BDWSSS、ANRS, BoWIE協議 物理探査			
73	2/2	火					再委託監理(試掘) 物理探査			
74	2/3	水					再委託監理(試掘) 物理探査			
75	2/4	木					再委託監理(試掘) 物理探査			
76	2/5	金					再委託監理(試掘) 物理探査			

資料-2　調査行程

2) 第2次現地調査日程

日付			官団員	コンサルタント団員						
				業務主任／水道計画	施設計画・設計／施工	副業務主任/水道計画/水理地質/水質調査	物理探査/試掘調査	調達計画／積算	社会条件調査	業務調整2
				山本　誠	坂本　正吾	丸尾　祐治	植松　政郎	有田　一博	森　正蔵	米谷　直晃
77	2/6	土					再委託監理(試掘) BDWSSS、ANRS, BoWIE協議 物理探査			
78	2/7	日					資料整理			
79	2/8	月					再委託監理(試掘) 物理探査			
80	2/9	火					再委託監理(試掘) 物理探査			
81	2/10	水					再委託監理(試掘) 物理探査			
82	2/11	木					再委託監理(試掘) 物理探査			
83	2/12	金					再委託監理(試掘) 物理探査			
84	2/13	土					再委託監理(試掘) 物理探査			
85	2/14	日					資料整理			
86	2/15	月					再委託監理(試掘) 物理探査			
87	2/16	火					再委託監理(試掘) 物理探査			
88	2/17	水					再委託監理(試掘) 物理探査			
89	2/18	木					再委託監理(試掘) 物理探査			
90	2/19	金					再委託監理(試掘) 物理探査			
91	2/20	土					再委託監理(試掘) 物理探査			
92	2/21	日					資料整理			
93	2/22	月					再委託監理(試掘・揚水試験) 物理探査			
94	2/23	火					再委託監理(試掘・揚水試験) 物理探査			
95	2/24	水					再委託監理(試掘・揚水試験) 物理探査			
96	2/25	木					再委託監理(試掘・揚水試験) 物理探査			
97	2/26	金					再委託監理(試掘・揚水試験) 物理探査			
98	2/27	土					再委託監理(試掘・揚水試験) 物理探査			
99	2/28	日		東京発			資料整理	東京発	東京発	東京発
100	2/29	月		アディスアベバ着			再委託監理(試掘・揚水試験) 物理探査	アディスアベバ着	アディスアベバ着 バハルダール移動	アディスアベバ着
101	3/1	火		JICA表敬 大使館表敬			再委託監理(試掘・揚水試験) 物理探査	JICA表敬 大使館表敬	BDWSSS、ANRS, BoWIE表敬 訪問	JICA表敬 大使館表敬
102	3/2	水		MoFEC表敬			再委託監理(試掘・揚水試験) 物理探査	MoWIE、MoFEC表敬	BDWSSS、ANRS, BoWIE協議、情報収集	MoWIE、MoFEC表敬
103	3/3	木		WWCEと協議			再委託監理(試掘・揚水試験) 物理探査	WWCEと協議	BDWSSS、ANRS, BoWIE協議、情報収集	WWCEと協議
104	3/4	金		AAWSAと協議			再委託監理(試掘・揚水試験) 物理探査	AAWSAと協議	BDWSSS、ANRS, BoWIE協議、情報収集	AAWSAと協議
105	3/5	土		再委託先からの質問対応			再委託監理(試掘・揚水試験) 物理探査	市場調査	BDWSSS、ANRS, BoWIE協議、情報収集	再委託先からの質問対応
106	3/6	日		資料整理	東京発		資料整理	資料整理	資料整理	資料整理
107	3/7	月		MoWIE表敬	アディスアベバ着		再委託監理(試掘) 物理探査	市場調査	BDWSSS協議、情報収集 ANRS, BoWIE協議、情報収集	再委託準備(測量、地盤・土質)
108	3/8	火		バハルダール移動	再委託準備(測量、地盤・土質)		再委託監理(試掘) 物理探査	市場調査	BoCT及びNABUと協議	再委託準備(測量、地盤・土質)
109	3/9	水		ANRS　BoWIE表敬・協議 BDWSSS表敬・協議	再委託準備(測量、地盤・土質)		再委託監理(試掘) 物理探査	市場調査	EFWA協議・情報収集	再委託準備(測量、地盤・土質)
110	3/10	木		ANRS, BoFED表敬・協議	再委託準備(測量、地盤・土質)		再委託監理(試掘) 物理探査	市場調査	ORDAとサイト視察	再委託準備(測量、地盤・土質)
111	3/11	金		EFWA・BDCA表敬・協議	再委託準備(測量、地盤・土質)		再委託監理(試掘) 物理探査	市場調査	サイト視察(公共水栓)	再委託準備(測量、地盤・土質)
112	3/12	土		ORDA協議・サイト調査	再委託準備(測量、地盤・土質)		再委託監理(試掘) 物理探査	市場調査	サイト視察(井戸群)	再委託準備(測量、地盤・土質)
113	3/13	日	日本発 バハルダール着	資料整理	移動(アディスアベバ-バハルダール)		資料整理	資料整理	資料整理	移動(アディスアベバ-バハルダール)
114	3/14	月	JICA調査団協議	JICA調査団協議	JICA調査団協議		JICA調査団協議	再委託契約(測量、地盤・土質)	JICA調査団協議	JICA調査団協議
115	3/15	火	サイト視察(井戸群)	サイト視察(井戸群)	サイト視察(井戸群)		サイト視察(井戸群)	市場調査 再委託準備(群生揚水試験)	サイト視察(井戸群)	サイト視察(井戸群)
116	3/16	水	ANRS, BoWIE、BDWSSS表敬訪問	ANRS, BoWIE、BDWSSS表敬訪問 テクニカルノート作成	再委託準備(測量、地盤・土質)		再委託監理(試掘) 物理探査	市場調査	EIA資料作成	再委託準備(測量、地盤・土質)
117	3/17	木	BDCA、EFWA表敬訪問 JICAコンサルタント協議	BDCA、EFWA表敬訪問 JICAコンサルタント協議	JICAコンサルタント協議 再委託準備(測量、地盤・土質)		移動(バハルダール-アディスアベバ)	市場調査	BDCA、EFWA表敬訪問 JICAコンサルタント協議	JICAコンサルタント協議 再委託準備(測量、地盤・土質)
118	3/18	金	JICA現地事務所訪問 BoWIE表敬訪問 エチオピア発	BDWSSS、ANRS,BoWIE協議	再委託準備(測量、地盤・土質)		アディスアベバ発	市場調査	EIA資料作成 BDCA、BDWSSS協議	再委託準備(測量、地盤・土質)
119	3/19	土	日本着	EFWA、BDCA協議	再委託準備(測量、地盤・土質)		東京着	市場調査	EIA資料提出 BDCA、BDWSSS協議	再委託準備(測量、地盤・土質)
120	3/20	日		資料整理	資料整理			資料整理	資料整理	資料整理
121	3/21	月		BDCA、BDWSSS協議	再委託監理(測量、地盤・土質)			再委託準備(群生揚水試験)	関係機関協議(Abay basin authority)	再委託監理(測量、地盤・土質)

資料-2　調査行程

2) 第2次現地調査日程

日付			官団員	コンサルタント団員						
				業務主任／水道計画	施設計画・設計／施工	副業務主任/水道計画/水理地質/水質調査	物理探査/試掘調査	調達計画／積算	社会条件調査	業務調整2
				山本　誠	坂本　正吾	丸尾　祐治	植松　政郎	有田　一博	森　正蔵	米谷　直晃
122	3/22	火		BDWSSS、ANRS,BoWIE協議	再委託監理(測量、地盤・土質)			市場調査	関係機関協議(BDWSSS,BDCA,EFWA等)	再委託監理(測量、地盤・土質)
123	3/23	水		移動(バハルダール-アディスアベバ)	再委託監理(測量、地盤・土質)			市場調査	関係機関協議(BDWSSS,BDCA,EFWA等)	再委託監理(測量、地盤・土質)
124	3/24	木		MoWIE協議	再委託監理(測量、地盤・土質)			市場調査	関係機関協議(BDWSSS,BDCA,EFWA等)	再委託監理(測量、地盤・土質)
125	3/25	金		MoWIE協議	再委託監理(測量、地盤・土質)			市場調査	関係機関協議(BDWSSS,BDCA,EFWA等)	再委託監理(測量、地盤・土質)
126	3/26	土		Water Aid協議	再委託監理(測量、地盤・土質)			市場調査	関係機関協議(BDWSSS,BDCA,EFWA等)	再委託監理(測量、地盤・土質)
127	3/27	日		アディスアベバ発	資料整理			資料整理	資料整理	資料整理
128	3/28	月		東京着	自主測量 再委託先監理(測量、地盤・土質)			市場調査	関係機関協議(BDWSSS,BDCA,EFWA等)	自主測量 再委託先監理(測量、地盤・土質)
129	3/29	火			自主測量 再委託先監理(測量、地盤・土質)			リコンファーム	関係機関協議(BDWSSS,BDCA,EFWA等)	自主測量 再委託先監理(測量、地盤・土質)
130	3/30	水			自主測量 再委託先監理(測量、地盤・土質)	東京発		市場調査	関係機関協議(BDWSSS,BDCA,EFWA等)	自主測量 再委託先監理(測量、地盤・土質)
131	3/31	木			自主測量 再委託先監理(測量、地盤・土質)	アディスアベバ着		市場調査	関係機関協議(BDWSSS,BDCA,EFWA等)	自主測量 再委託先監理(測量、地盤・土質)
132	4/1	金			自主測量 再委託先監理(測量、地盤・土質)	再委託準備(群井揚水試験)		市場調査	関係機関協議(BDWSSS,BDCA,EFWA等)	自主測量 再委託先監理(測量、地盤・土質)
133	4/2	土			自主測量 再委託先監理(測量、地盤・土質)	移動(アディスアベバ-バハルダール)		市場調査	関係機関協議(BDWSSS,BDCA,EFWA等)	自主測量 再委託先監理(測量、地盤・土質)
134	4/3	日			資料整理	再委託先監理(試掘・揚水試験)		資料整理	資料整理	資料整理
135	4/4	月			自主測量 再委託先監理(測量、地盤・土質)	再委託先監理(試掘、揚水試験)		移動(アディスアベバ-バハルダール)	関係機関協議(BDWSSS、ANRS、BoWIE,EFCA)	自主測量 再委託先監理(測量、地盤・土質)
136	4/5	火			自主測量 再委託先監理(測量、地盤・土質)	再委託先監理(試掘、揚水試験)		移動(アディスアベバ-バハルダール)	関係機関協議(BDWSSS、ANRS、BoWIE,EFCA)	自主測量 再委託先監理(測量、地盤・土質)
137	4/6	水			自主測量 再委託先監理(測量、地盤・土質)	再委託先監理(試掘、揚水試験)		市場調査 聞き取り調査(電力公社、BDWSSS、ANRS,BoWIE)	関係機関協議(BDWSSS、ANRS、BoWIE,EFCA)	自主測量 再委託先監理(測量、地盤・土質)
138	4/7	木			自主測量 再委託先監理(測量、地盤・土質)	再委託先監理(試掘、井戸干渉試験、揚水試験)		市場調査 聞き取り調査(電力公社、BDWSSS、ANRS,BoWIE)	関係機関協議(BDWSSS、ANRS、BoWIE,EFCA)	自主測量 再委託先監理(測量、地盤・土質)
139	4/8	金			自主測量 再委託先監理(測量、地盤・土質)	再委託先監理(試掘、井戸干渉試験、揚水試験)		市場調査 聞き取り調査(電力公社、BDWSSS、ANRS,BoWIE)	関係機関協議(BDWSSS、ANRS、BoWIE,EFCA)	自主測量 再委託先監理(測量、地盤・土質)
140	4/9	土			自主測量 再委託先監理(測量、地盤・土質)	再委託先監理(試掘、井戸干渉試験、揚水試験)		市場調査 聞き取り調査(電力公社、BDWSSS、ANRS,BoWIE)	関係機関協議(BDWSSS、ANRS、BoWIE,EFCA)	自主測量 再委託先監理(測量、地盤・土質)
141	4/10	日			資料整理	資料整理		資料整理	資料整理	資料整理
142	4/11	月			聞き取り調査 (BDCA,BDWSSS) 再委託先監理(測量、地盤・土質)	再委託先監理(試掘、揚水試験)		市場調査 聞き取り調査(電力公社、BDWSSS、ANRS,BoWIE)	関係機関協議(BDWSSS、ANRS、BoWIE,EFCA)	聞き取り調査 (BDCA,BDWSSS) 再委託先監理(測量、地盤・土質)
143	4/12	火			聞き取り調査 (BDCA,BDWSSS) 再委託先監理(測量、地盤・土質)	再委託先監理(試掘、井戸干渉試験、揚水試験)		市場調査 聞き取り調査(電力公社、BDWSSS、ANRS,BoWIE)	関係機関協議(BDWSSS、ANRS、BoWIE,EFCA)	聞き取り調査 (BDCA,BDWSSS) 再委託先監理(測量、地盤・土質)
144	4/13	水			聞き取り調査 (BDCA,BDWSSS) 再委託先監理(測量、地盤・土質)	再委託先監理(試掘、井戸干渉試験、揚水試験)		市場調査 聞き取り調査(電力公社、BDWSSS、ANRS,BoWIE)	関係機関協議(BDWSSS、ANRS、BoWIE,EFCA)	聞き取り調査 (BDCA,BDWSSS) 再委託先監理(測量、地盤・土質)
145	4/14	木			聞き取り調査 (BDCA,BDWSSS) 再委託先監理(測量、地盤・土質)	再委託先監理(試掘、揚水試験)、Stakeholder Meeting		市場調査 聞き取り調査(電力公社、BDWSSS、ANRS,BoWIE)	関係機関協議(BDWSSS、ANRS、BoWIE,EFCA)	聞き取り調査 (BDCA,BDWSSS) 再委託先監理(測量、地盤・土質)
146	4/15	金			ﾊﾊﾙﾀﾞｰﾙ発、ｱﾃﾞｨｽｱﾍﾞﾊﾞ着 ET145　13:00-14:00	再委託先監理(試掘、揚水試験)		市場調査 聞き取り調査(電力公社、BDWSSS、ANRS,BoWIE)	関係機関協議(BDWSSS、ANRS、BoWIE,EFCA)	再委託先監理(測量、地盤・土質)
147	4/16	土			再委託先打ち合わせ	再委託先監理(試掘、揚水試験)		市場調査 聞き取り調査(電力公社、BDWSSS、ANRS,BoWIE)	関係機関協議(BDWSSS、ANRS、BoWIE,EFCA)	再委託先監理(測量、地盤・土質)
148	4/17	日			資料整理	再委託先監理(試掘)資料整理		資料整理	資料整理	資料整理
149	4/18	月			アディスアベバ発	再委託先監理(試掘、揚水試験)		市場調査 関係機関協議(BDWSSS、ANRS、BoWIE)	関係機関協議(BDWSSS、ANRS、BoWIE,EFCA)	再委託先監理(測量、地盤・土質)
150	4/19	火			日本着	再委託先監理(試掘、揚水試験)		市場調査 関係機関協議(BDWSSS、ANRS、BoWIE)	関係機関協議(BDWSSS、ANRS、BoWIE,EFCA)	再委託先監理(測量、地盤・土質)
151	4/20	水				再委託先監理(試掘、揚水試験)		市場調査 関係機関協議(BDWSSS、ANRS、BoWIE)	関係機関協議(BDWSSS、ANRS、BoWIE,EFCA)	再委託先監理(測量、地盤・土質)
152	4/21	木				再委託先監理(試掘、井戸干渉試験)		市場調査 関係機関協議(BDWSSS、ANRS、BoWIE)	関係機関協議(BDWSSS、ANRS、BoWIE,EFCA)	再委託先監理(測量、地盤・土質)
153	4/22	金				再委託先監理(試掘、井戸干渉試験)		市場調査 関係機関協議(BDWSSS、ANRS、BoWIE)	関係機関協議(BDWSSS、ANRS、BoWIE,EFCA)	移動（バハルダール-アディスアベバ）
154	4/23	土				再委託先監理(試掘、井戸干渉試験)		移動(バハルダール-アディスアベバ)	関係機関協議(BDWSSS、ANRS、BoWIE,EFCA)	資料収集
155	4/24	日				資料整理		アディスアベバ着	資料整理	資料整理
156	4/25	月				再委託先監理(試掘、揚水試験)		市場調査	関係機関協議(BDWSSS、ANRS、BoWIE,EFCA)	再委託先打ち合わせ
157	4/26	火				再委託先監理(試掘、揚水試験)		アディスアベバ発	関係機関協議(BDWSSS、ANRS、BoWIE,EFCA)	アディスアベバ発
158	4/27	水				再委託先監理(試掘)		日本着	関係機関協議(BDWSSS、ANRS、BoWIE,EFCA)	日本着
159	4/28	木				再委託先監理(試掘)			関係機関協議(BDWSSS、ANRS、BoWIE,EFCA)	
160	4/29	金				再委託先監理(試掘)			関係機関協議(BDWSSS、ANRS、BoWIE,EFCA)	
161	4/30	土				再委託先監理(試掘)			資料整理	
162	5/1	日				資料整理			関係機関協議(BDWSSS、ANRS、BoWIE,EFCA)	
163	5/2	月				再委託先監理(試掘)			関係機関協議(BDWSSS、ANRS、BoWIE,EFCA)	
164	5/3	火				再委託先監理(試掘)			関係機関協議(BDWSSS、ANRS、BoWIE,EFCA)	
165	5/4	水				再委託先監理(試掘)			関係機関協議(BDWSSS、ANRS、BoWIE,EFCA)	
166	5/5	木				再委託先監理(試掘)			関係機関協議(BDWSSS、ANRS、BoWIE,EFCA)	
167	5/6	金				再委託先監理(試掘)			関係機関協議(BDWSSS、ANRS、BoWIE,EFCA)	
168	5/7	土				再委託先監理(試掘)			資料整理	
169	5/8	日				再委託先監理(試掘)			関係機関協議(BDWSSS、ANRS、BoWIE,EFCA)	
170	5/9	月				再委託先監理(試掘)			関係機関協議(BDWSSS、ANRS、BoWIE,EFCA)	
171	5/10	火				再委託先監理(試掘)			関係機関協議(BDWSSS、ANRS、BoWIE,EFCA)	
172	5/11	水				再委託先監理(試掘)			関係機関協議(BDWSSS、ANRS、BoWIE,EFCA)	
173	5/12	木				再委託先監理(試掘)			移動(バハルダール-アディスアベバ) アディスアベバ発	
174	5/13	金				再委託先監理(試掘)			日本着	
175	5/14	土				再委託先監理(試掘)				
176	5/15	日				再委託先監理(試掘)				
177	5/16	月				再委託先監理(試掘、揚水試験)				

資料-2　調査行程

2) 第2次現地調査日程

日付			官団員	コンサルタント団員						
				業務主任 ／水道計画	施設計画・設計 ／施工	副業務主任/水道計画/ 水理地質/水質調査	物理探査/試掘調査	調達計画／積算	社会条件調査	業務調整2
				山本 誠	坂本 正吾	丸尾 祐治	植松 政郎	有田 一博	森 正蔵	米谷 直晃
178	5/17	火				再委託先監理(試掘、揚水試験)				
179	5/18	水				再委託先監理(試掘、揚水試験)				
180	5/19	木				再委託先監理(試掘)				
181	5/20	金				再委託先監理(試掘)				
182	5/21	土				再委託先監理(試掘)				
183	5/22	日				再委託先監理(試掘)				
184	5/23	月				再委託先監理(試掘)				
185	5/24	火				再委託先監理(試掘)				
186	5/25	水				再委託先監理(試掘、揚水試験)				
187	5/26	木				再委託先監理(試掘、揚水試験)				
188	5/27	金				再委託先監理(試掘、揚水試験)				
189	5/28	土				再委託先監理(試掘、揚水試験)				
190	5/29	日				資料整理				
191	5/30	月				再委託先監理(試掘、揚水試験)				
192	5/31	火				再委託先監理(試掘、揚水試験)				
193	6/1	水				再委託先監理(試掘、揚水試験)				
194	6/2	木				再委託先監理(試掘、揚水試験)				
195	6/3	金				再委託先監理(試掘、揚水試験)				
196	6/4	土				再委託先監理(試掘、揚水試験)				
197	6/5	日				資料整理				
198	6/6	月				再委託先監理(試掘、揚水試験)				
199	6/7	火				再委託先監理(試掘、揚水試験)				
200	6/8	水				再委託先監理(試掘、揚水試験)				
201	6/9	木				再委託先監理(試掘、揚水試験)				
202	6/10	金				再委託先監理(試掘、揚水試験)				

資料-2　調査行程

3) 現地再調査

日付			コンサルタント団員			
			業務主任代行 ／水道計画	施設計画・設計 ／施工	社会条件調査	業務調整2
			高松　章二	坂本　正吾	藤田　知己	米谷　直晃
1	8/4	木				東京発
2	8/5	金				BDWSSS協議 BDCA協議
3	8/6	土		東京発		資料整理
4	8/7	日		資料整理		資料整理
5	8/8	月		測量作業打ち合わせ		測量作業打ち合わせ
6	8/9	火	東京発	測量作業打ち合わせ	東京発	測量作業打ち合わせ
7	8/10	水	BDWSSS協議 BDCA協議	測量作業打ち合わせ	BDWSSS協議 BDCA協議	測量作業打ち合わせ
8	8/11	木	BDWSSS協議 BDCA協議	測量作業打ち合わせ	サイト調査	測量作業打ち合わせ
9	8/12	金	BDWSSS協議 BDCA協議	サイト調査	サイト調査	サイト調査
10	8/13	土	サイト調査	サイト調査	サイト調査	サイト調査
11	8/14	日	資料整理	東京着	資料整理	資料整理
12	8/15	月	BDWSSS協議 BDCA協議 サイト調査		サイト調査	サイト調査
13	8/16	火	BDWSSS協議 BDCA協議		BDCA協議	サイト調査
14	8/17	水	BDWSSS協議 BDCA協議		サイト調査	サイト調査
15	8/18	木	BDWSSS協議 BDCA協議 サイト調査		BDCA協議 サイト調査	サイト調査
16	8/19	金	BDWSSS協議 BDCA協議		BDCA協議 サイト調査	サイト調査
17	8/20	土	BDWSSS協議 BDCA協議		BDCA協議 サイト調査	サイト調査
18	8/21	日	資料整理		資料整理	資料整理
19	8/22	月	BDWSSS協議 BDCA協議 サイト調査		BDCA協議	BDWSSS協議 BDCA協議
20	8/23	火	BDWSSS協議 BDCA協議		BDCA協議	BDWSSS協議 BDCA協議
21	8/24	水	BDWSSS協議 BDCA協議		BDCA協議	BDWSSS協議 BDCA協議
22	8/25	木	東京着		東京着	サイト調査
23	8/26	金				サイト調査
24	8/27	土				サイト調査
25	8/28	日				資料整理
26	8/29	月				アディスアベバ着
27	8/30	火				JICAエチオピア事務所表敬
28	8/31	水				東京着

資料-2 調査行程

4) 概略設計概要説明日程

日付			官団員			コンサルタント団員	
			団長	技術アドバイザー	案件管理	業務主任 ／水道計画	調達計画 /積算
			松山　剛士	黛　正伸	加治　貴	高松　章二	有田　一博
1	11/27	日			東京発 アディスアベバ着	東京発 アディスアベバ着	東京発 アディスアベバ着
2	11/28	月	準備調査報告書(案)説明 ミニッツ協議	準備調査報告書(案)説明 ミニッツ協議	準備調査報告書(案)説明 ミニッツ協議	準備調査報告書(案)説明 ミニッツ協議	準備調査報告書(案)説明 ミニッツ協議
3	11/29	火	準備調査報告書(案)説明 ミニッツ協議 財務経済開発省と協議	準備調査報告書(案)説明 ミニッツ協議 財務経済開発省と協議	準備調査報告書(案)説明 ミニッツ協議 財務経済開発省と協議	準備調査報告書(案)説明 ミニッツ協議 財務経済開発省と協議	準備調査報告書(案)説明 ミニッツ協議 財務経済開発省と協議
4	11/30	水	準備調査報告書(案)説明 ミニッツ協議	準備調査報告書(案)説明 ミニッツ協議	準備調査報告書(案)説明 ミニッツ協議	準備調査報告書(案)説明 ミニッツ協議	準備調査報告書(案)説明 ミニッツ協議
5	12/1	木	ミニッツ署名	ミニッツ署名	ミニッツ署名	ミニッツ署名	ミニッツ署名
6	12/2	金	JICAエチオピア事務所報告 在エチオピア日本大使館報告	JICAエチオピア事務所報告 在エチオピア日本大使館報告 アディスアベバ発	JICAエチオピア事務所報告 在エチオピア日本大使館報告	JICAエチオピア事務所報告 在エチオピア日本大使館報告	JICAエチオピア事務所報告 在エチオピア日本大使館報告
7	12/3	土					
8	12/4	日			アディスアベバ発	アディスアベバ発	アディスアベバ発

資料－3　関係者（面会者）リスト

資料 3　関係者（面会者）リスト

在エチオピア日本国大使館(Embassy of Japan in Ethiopia)

市川　敬一郎	二等書記官

JICA エチオピア事務所 JICA Ethiopia Office

神　公明	所長
松山　剛士	次長
高橋　逸郎	企画調査員
Mr. Ephrem Fufa	ナショナルスタッフ

水・灌漑・エネルギー省 Ministry of Water, Irrigation and Electricity : MoWIE

Mr. Nuredine Mohamed	Director, Water Supply and Sanitation Directorate
Mr. Tamiru Gedefa Wami	WSS-PUM Coordinator

財務経済開発省 Ministry of Finance and Economic Cooperation : MoFEC

Mr. Dereje Girma	Senior Desk Officer Asia & Oceania

アムハラ州水・灌漑・エネルギー開発局 Amhara National Regional State, Bureau of Water, Irrigation and Energy Development: ANRS,BoWIED

Mr. Zemene Tsehay	Head
Mr. Yimer Habtie	Process Owner
Mr. Asrat Kassie	Water Supply Core Process Owner
Mr. Asnake Akaineh	Head of Public Relation
Mr. Netsanet Chalachew	Environmentalist, Water Resource Management Core Process Owner
Mr. Asmamaw Kebede	Head of Finance
Mr. Ayana Desaline	Program Coordinator of One WASH

バハルダール市上下水道サービス Bahir Dar City Water Supply and Sewerage Service: BDWSSS

Mr. Abiy Sisay Garedew	General Manager
Mr. Belstie Yayu	Deputy Manager
Mr. Wondim Gashu	Hidar 11 Branch Manager
Mr. Alemu Yigirem	Case Team Cordinator of Water Production, Distributioion and Quality Control
Mr. Ashebir Yahaanes	Head of Revenue, Finance, Procurement and Material Management Support Process
Mr. Abebe Tesfa	Case Team Coodinator of Procurement and Material Management Sub-process
Mr. Ahmed Aclem	Billing and ICT (Information Collection Technology) Officer
Mr. Tilahun	Case Team Coodinator of Study, Design & Supervision Sub-process
Mr. Yeshambel Ejigu	Customer Service Coordinator of Hidar 11 Branch
Mr. Addisu Fetene	Case Team Coodinator of Rural Water Supply Sub-process
Mr. Addisu Fetene	Case Team Coodinator of Rural Water Supply Sub-process

Mr. Alemayeh	Officer of Rural Water Supply Sub-process
Mr. Mulugeta Derso	Electrical Engineer

アムハラ州観光・文化開発局 ANRS, Bureau of Culture, Tourism and Parks Development:BoCTPD

Mr. Negash Atnafu	Expert in Lake Tana Biosphere Reserve

アムハラ州財務・経済開発局 Amhara National Regional State Bureau of Finance and Economic Development : ANRS, BoFED

Mr. Girma Tesfaye Abayneh	Deputy Bureau Head
Mr. Desalegne Alem	Vice Process Owner, Population Affair
Mr. Bedilu Dingetu	Commisioner of Plan Commission

アムハラ州貿易局 Amhara National Regional State Bureau of Trade : ANRS BoT

Mr. Debritu Bezalem	Civil Engineer

アムハラ州環境保護局 Environment, Forest and Wildlife Protection Authority : EFWPA

Mr. Assefa Belay	Director General
Mr. Tesfaye Asnakew	Process Owner of EIA Department
Mr. Woldegebriel Geberekidan	EIA Expert

バハルダール市役所 Bahir Dar City Administration: BDCA

Mr. Kidanie Misker	General Manager
Mr. Mengisti Amsalu	Head of Trade, Industry and Market Development Department
Mr. Shefrew	Road Authority
Mr. Evelta	Head of Infrastracture
Mr. Zeieuem Getoruy	Sanitation Officer head
Mr. Amare Tseganew	Head of Plan Iimplementation Department
Mr. Bekele Abiew	Socio-economist
Mr. Kassahun Debas	External Resource Mobilization Officer of the Finance and Economic Department
Mr. Tewabe Aniley	Manager of Hidar 11 Kebele Office
Mr. Atu Bikese	Manager of Zenzelma Kebel Office
Mr. Adera Endalamaw	Chair Person of Wereb Kola Tsiyon Kebele Office
Mr. Melsachew Mengistu	Head of Bahir Dar Abay River Millennium Park Office
Mr. Mastwal Tefera	Expert in Land Department

タナ湖流域組織 Tana Sub-basin Organization

Mr. Tashager Adwmasu	Head of Water Resource Information Management System Unit
Mr. Birlew Abebe	Head

Organization for Rehabilitation and Development in Amhara: ORDA

Mr. Dejene Minliku	Deputy and Programs Director
Mr. Getu Hailu	Program Advisor
Mr. Afewerk Teklemariam	Program Manager
Mr. Semaegizher Eshetn	Program Manager of Bahir Dar Whole Sanitation Chain

ドイツ自然保護連盟 Nature and Biodiversity Conservation Union: NABU

Mr. Tadesse Adgo	Project Coordinator, NABU　Bahir Dar　Project Office

アディスアベバ市上下水道庁 Addis Ababa Water and Sewerage Authority: AAWSA

Mr. Etsegenet Tesfaye	Leader, Communication Affairs Support Process
Mr. Nobiyu Tesfamariam	Public Relations Senior Expert
Mr. Suleman Teyib	Public Relations Officer

設計施工監理公社 Water Works Design and Supervision Enterprise: WWDSE

Mr. Dereje Ayalew	Project Engineer

アバイ流域管理事務所 Abay Basin Authority

Mr. Mikiyas Gonfa	Hydrologic technician
Mr. Habitamu Tamir	Water Resource Administration Director
Mr. Melaku Tarekegn	Monitering & Supervision Unit, Water Qaulity Expert

バハルダール大学ゼンゼルマキャンパス Zenzelma Campus of Bahir Dar University

Ms. Mariamcher Tamir	Administration Head

気象局バハルダール支店 National Meteorogical Barhir Dar Branch

Mr. Tesfaya Hibru	Director

North West Region Ethiopian Electric

Mr. Asnake Tamilu	Regional head

アディスアベバ大学 Addis Ababa University

Dr. Tilahun Mammo	Department of Earth Sciences Professor
Dr. Feleke Zewge	Department of Chemistry Professor

Jerusalem Children And Community Development Organization Barhir Dar Development Program Office: JECCD

Mr. Edeqliqn Fente	Director

アムハラ州設計施工監理公社 Amhara Design and Supervision Works Enterprise: ADSWE

Mr. Molla Fetene	Head, Dept. of Hydrology
Mr. Wubetu　Lemenh	Water Supply Engineer
Mr. Mekonnen Getahun	Head of Laboratory

アムハラ州井戸掘削公社 Amhara Water Well Drilling Enterprise: AWWDE

Mr. Tadesse Shewekene	Hydrogeologist In Charge of Pumping Test

アムハラ州給水施設建設公社 Amhara Water Works Construction Enterprise: AWWCE

Mr. Ato Ermiyas Emerie	Project Superviser

バハルダール大学 Bahir Dar University: BDU

Mr. Mengistu Gebru	Vice President for Business and Development
Mr. Misrak Tefera	Head of Physical Projects Office

Water Aid

Mr. Abera Endeshaw Abebe	Senior policy and Influencing Officer

資料－4　討議議事録（M/D）/テクニカルノート

資料-4（1）討議議事録(M/D)（2015年8月4日署名）

Minutes of Discussions
on the Preparatory Survey for
the Project for Improvement of Water Supply in Bahir Dar City
in the Amhara Regional State
in the Federal Democratic Republic of Ethiopia

In response to the request from the Government of the Federal Democratic Republic of Ethiopia (hereinafter referred to as "Ethiopia"), the Government of Japan decided to conduct a Preparatory Survey for the Project for Improvement of Water Supply in Bahir Dar City (hereinafter referred to as "the Project"), and entrusted the Preparatory Survey to Japan International Cooperation Agency (hereinafter referred to as "JICA").

JICA sent the Preparatory Survey Team for the Outline Design (hereinafter referred to as "the Team") to Ethiopia, headed by by Mr. Yukihiko Ejiri, Senior Assistant Director, Department of Global Environment, JICA, and is scheduled to stay in the country from 27th July to 8th October, 2015.

The Team held a series of discussions with the officials concerned of the Government of Ethiopia and conducted a field survey in the Project area. In the course of the discussions, both sides have confirmed the main items described in the attached sheets. The Team will proceed to further works and prepare the Preparatory Survey Report.

Bahir Dar, 4th August, 2015

Yukihiko Ejiri
Leader
Preparatory Survey Team
Japan International Cooperation Agency
Japan

Zemene Tsehay
Head
Bureau of Water Resource Development
Amhara Regional State
Federal Democratic Republic of Ethiopia

Abiy Sisay
General Manager
Bahir Dar city Water Supply and
Sewerage Service
Federal Democratic Republic of Ethiopia

Mesfin G/Medhin
Deputy Bureau Head
Bureau of Finance Economic Development
Amhara Regional State
Federal Democratic Republic of Ethiopia

ATTACHEMENT

1. Objective of the Project

The objective of the Project is to improve water supply service in Bahir Dar City by/through wells development, distribution network expansion and distribution reservoir construction, thereby contributing to improvement of public health and sustainable economic development for Bahir Dar City.

2. Title of the Preparatory Survey

Both side confirmed the title of the Survey as "the Preparatory Survey for the Project for Improvement of Water Supply in Bahir Dar City"

3. Project Site

Both sides confirmed that the sites of the Project are parts of Bahir Dar City, which will be conformed based on the result of the Preparatory Survey.

4. Line Agency, Executing Agency and Operating Agency

Both sides confirmed the line agency, executing agency and operating agency as follows:

4-1. The line agency is Ministry of Water, Irrigation and Energy (hereinafter referred to as "MoWIE"), which would be the agency to supervise the executing agency.

4-2. The executing agency is Amhara Water Resource Development Bureau (hereinafter referred to as "AWRDB"). The executing agency shall coordinate with all the relevant agencies to ensure smooth implementation of the Project and ensure that the undertakings are taken by relevant agencies properly and on time.

4-3. The operating agency is Bahir Dar city Water Supply and Sewerage Service (hereinafter referred to as "BDWSSS"), which would be the agency to operate the Project

5. Items requested by the Government of Ethiopia

5-1. As a result of discussions, both sides agreed that the requested items of the Project are expansion and rehabilitation of existing water supply schemes, including construction of new boreholes, transmission facilities, distribution reservoir, distribution network expansion and rehabilitation in Bahir Dar City. Both sides understand that the components of the Project would be proposed by the Team after the review of current condition of existing facilities in the Preparatory Survey as the current conditions are likely to be slightly different from the conditions which Japanese side expected.

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

6. Japanese Grant Scheme

6-1. The Ethiopian side understands the Japanese Grant Scheme and its procedures as described in Annex 2 and Annex 3, and necessary measures to be taken by the Government of Ethiopia.

6-2. The Ethiopian side understands to take the necessary measures, as described in Annex 5, for smooth implementation of the Project, as a condition for the Japanese Grant to be implemented. The detailed contents of the Annex 5 will be worked out during the survey and shall be agreed no later than by the Explanation of the Draft Preparatory Survey Report.
The contents of Annex 5 will be used to determine the following:
(1) The scope of the Project.
(2) The timing of the Project implementation.
(3) Timing and possibility of budget allocation.
Contents of Annex 5 will be updated as the Preparatory Survey progresses, and will finally be the attachment to the Grant Agreement.

6-3. Japanese side explained that in accordance with the policy of Japanese Grant, the project cost borne by the Japanese government, in whole or part, will not be the target of repayment of any kind from BDWSSS to any Ethiopian authorities. Ethiopian side understands and follows the policy of Japanese Grant.

7. Operation and Maintenance of the Facilities

7-1. The team explained about the importance of operation and maintenance of the facilities considering the fact that proper asset management impacts greatly on maintenance cost and lifespan of the facilities. In order to review the current operation and maintenance situation, the Ethiopian side confirmed to share the policy, plan and data related to operation and maintenance of the BDWSSS.

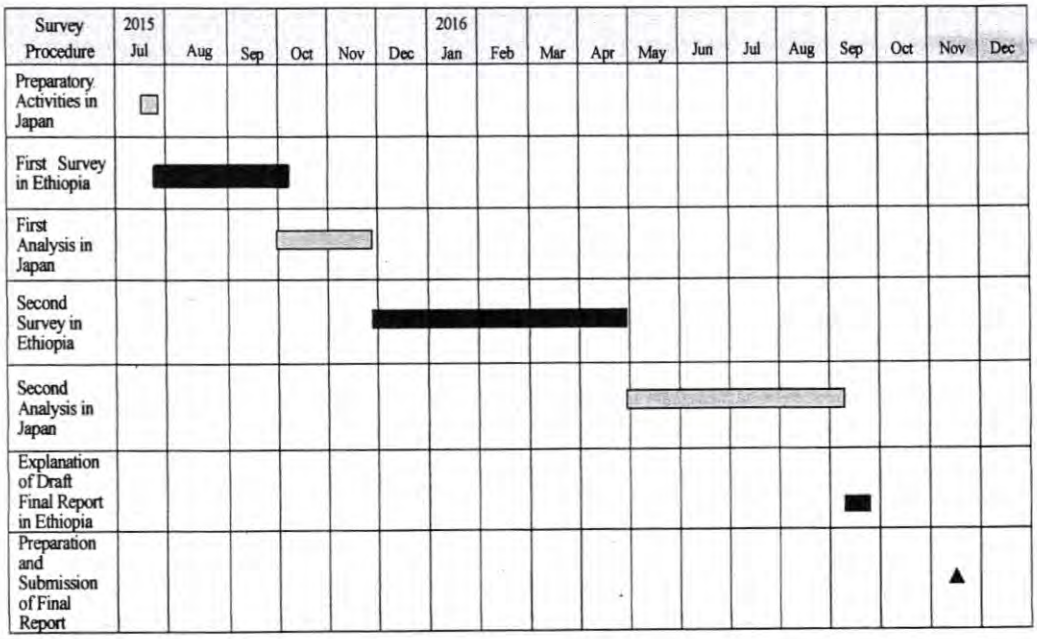
8. Schedule of the Survey

8-1. The Team will proceed with further survey in Ethiopia until 8th October, 2015 as the first field survey, and from November, 2015 to April, 2016 as the second field survey.

8-2. JICA will prepare a draft Preparatory Survey Report in English and dispatch a mission to Ethiopia in order to explain its contents around September, 2016.

8-3. If the contents of the draft Preparatory Survey Report is accepted in principle and the Undertakings are fully agreed by the Ethiopian side, JICA will complete the final report in English and send it to Ethiopia around December, 2016.

8-4. The above schedule is tentative and subject to change.



9. Environmental and Social Considerations

9-1. The Ethiopian side confirmed to give due environmental and social considerations during implementation of the Project, and after completion of the Project, in accordance with the JICA Guidelines for Environmental and Social Considerations (April, 2010).

9-2. The Project is categorized as B because the Project has no sensitive characteristics, nor falls it into sensitive sectors under the Guidelines, and its potential adverse impacts on the environment are not likely to be significant. The Ethiopian side confirmed to conduct the necessary procedures concerning the environmental assessment (including stakeholder meetings, Environmental Impact Assessment (EIA) /Initial Environmental Examination (IEE) and information disclosure,etc.) and make EIA/IEE report of the Project. The IEE/EIA approval shall be received from the responsible authorities and submitted to JICA by Dece と mber 2016

9-3. In case the Project results in involuntary resettlement, the Ethiopian side confirmed to prepare a Resettlement Action Plan (RAP)/Abbreviated Resettlement Action Plan (ARAP) and make it available to the public. In addition, the Ethiopian side confirmed to provide the affected people with sufficient compensation and/or support in accordance with RAP/ARAP, in a timely manner.

10. Other Relevant Issues

10-1. Planning factor

Both sides agreed that the target year of the Project shall be 2025 and the following planning factor shall be confirmed by the Preparatory Survey.

- Target area

- Unit supply amount
- Water supply capacity of groundwater wells
- Other design criteria

10-2. Review of contents requested by the government of Ethiopia

Both sides agreed that the following contents requested by the government of Ethiopia shall be reviewed by the Preparatory Survey.

- Location of groundwater wells to be developed
- Layout plan of existing and planned distribution reservoirs
- Development plan for water distribution network

10-3. Geophysical prospecting

Both sides agreed that geophysical prospecting for groundwater development shall be carried out in Charchara area and the other 1 or 2 selected potential area(s)

10-4. Water quality survey

Both sides agreed that the all drinking water quality standard in Ethiopia shall be measured by the Preparatory Survey including pesticides and chlorinated organic compounds.

10-5. Undertakings of the Ethiopian side for the Project

Both sides agreed that the following undertakings shall be done by the Ethiopian side.

(1) Although details will be investigated in the survey, generally the followings need to be ensured by the Ethiopian side.

- Ensuring lands for facility construction in the Project
- Obtaining permission for facility construction, pipeline construction under roads, and groundwater development
- Constructing access roads to the construction sites
- Connecting commercial electricity lines to the facilities, established in the Project, from nearby existing grid

(2) If involuntary resettlement is necessary, AWRDB is requested to take responsibility to follow an appropriate process for consensus building, coordination with competent authorities and compensation.

(3) AWRDB needs to ensure land use permission for the Project by obtaining written consensus from land owners or administrators, and other stakeholders if necessary.

10-6. Undertakings of the Ethiopian side for the Preparatory Survey

Both sides agreed that the following undertakings shall be done by the Ethiopian side.

- To provide the Team with available relevant data, information and materials necessary for the execution of the Survey
- To assist smooth implementation of borehole pumping test such as coordination with stakeholders concerned
- To prepare the answers of the Questionnaire presented by the Team
- To assign full-time counterpart to the Team during their stay in Ethiopia, to play the

following roles as the coordinator to the Team:

a) To make the appointments and to set up the meetings with authorities, departments and all other facilities and firms whatever the Team intends to visit.
b) To attend the site survey and any other visiting place with the Team and to make any convenience on accommodation, working office, adequate transportation, getting the permissions if required, etc., and
c) To assist and advise the Team for the collection of data and information as much as possible

- To secure the permission to photograph and to enter into private properties and restricted areas for the Team for proper execution of the Survey, if necessary
- To take any measures deemed necessary to secure the safety of the members of the Team

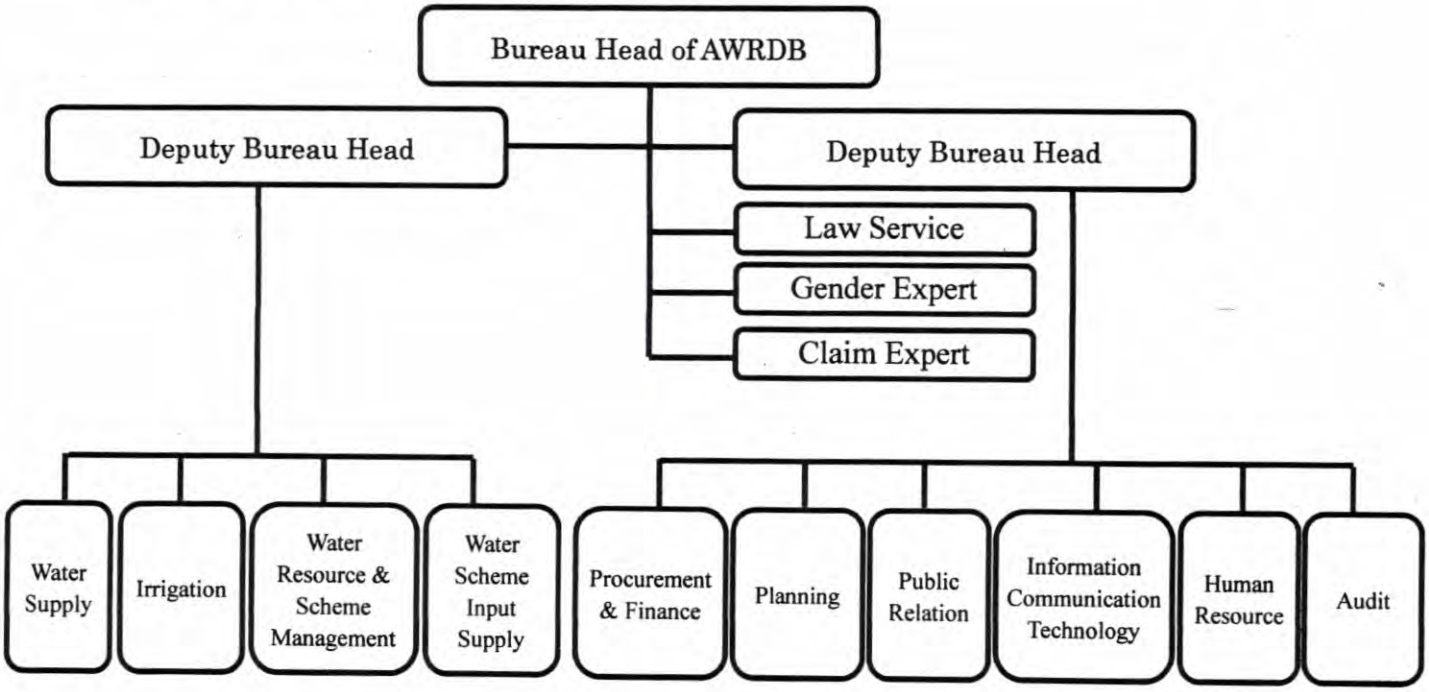
10-7. Progress Monitoring Report

The Team explained that the Ethiopian side must take initiative to carefully monitor the progress of the Project in order to ensure its smooth implementation as part of their responsibility, and must regularly report to JICA about its status by using the Project Monitoring Report (PMR), shown in Annex 6.

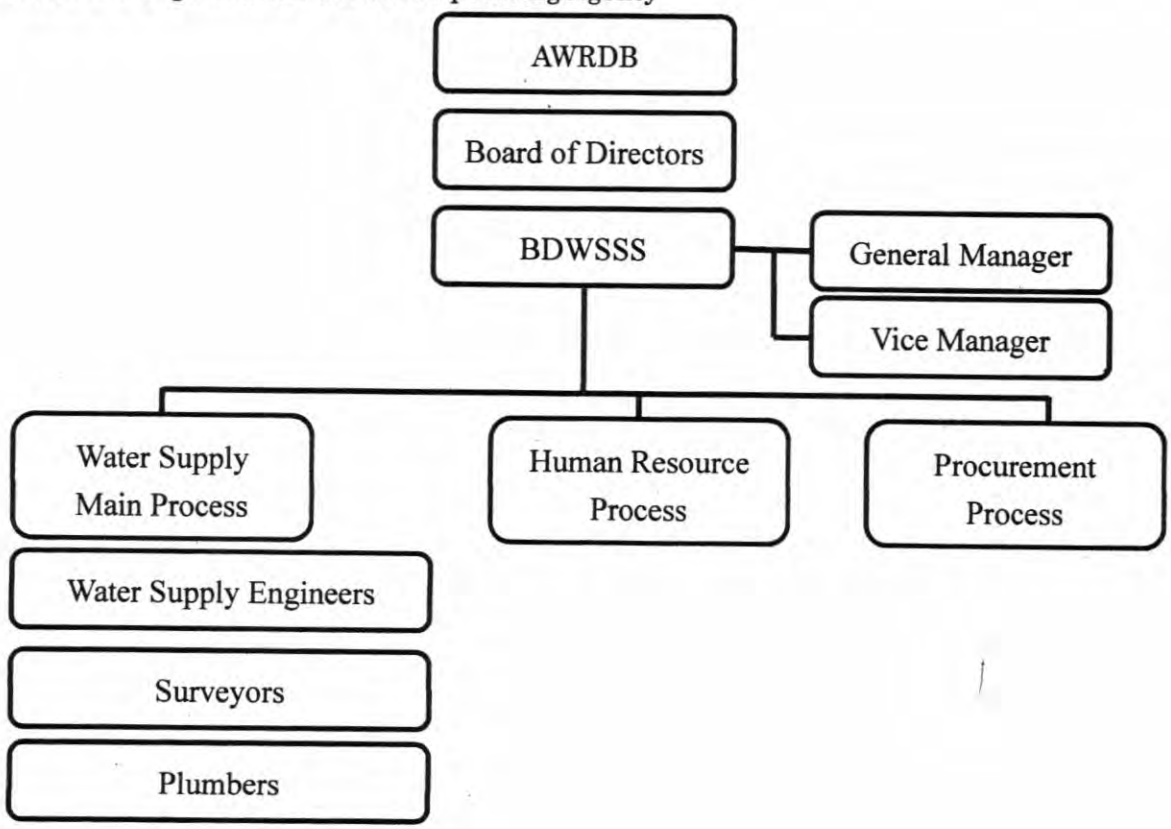
Annex 1 Organization Chart of Executing and Operating Agency
Annex 2 Japanese Grant
Annex 3 Flow Chart of Japanese Grant Procedures
Annex 4 Financial Flow of Japanese Grant
Annex 5 Major Undertakings to be taken by Each Government
Annex 6 Project Monitoring Report (template)

Annex 1

Annex-1-1 Organization Chart of Executing Agency



Annex-1-2 Organization Chart of Operating Agency



JAPANESE GRANT

The Japanese Grant (hereinafter referred to as the "Grant") is non-reimbursable fund provided to a recipient country to procure the facilities, equipment and services (engineering services and transportation of the products, etc.) for its economic and social development in accordance with the relevant laws and regulations of Japan. The Grant is not supplied through the donation of materials as such.

Based on a JICA law which was entered into effect on October 1, 2008 and the decision of the GOJ, JICA has become the executing agency of the Japanese Grant for Projects for construction of facilities, purchase of equipment, etc.

1. Grant Procedures

The Grant is supplied through following procedures :

- Preparatory Survey
  - The Survey conducted by JICA
- Appraisal &Approval
  - -Appraisal by the GOJ and JICA, and Approval by the Japanese Cabinet
- Authority for Determining Implementation
  - -The Notes exchanged between the GOJ and a recipient country
- Grant Agreement (hereinafter referred to as "the G/A")
  - -Agreement concluded between JICA and a recipient country
- Implementation
  - -Implementation of the Project on the basis of the G/A

2. Preparatory Survey

(1) Contents of the Survey

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

- Confirmation of the background, objectives, and benefits of the Project and also institutional capacity of relevant agencies of the recipient country necessary for the implementation of the Project.
- Evaluation of the appropriateness of the Project to be implemented under the Grant Scheme from a technical, financial, social and economic point of view.
- Confirmation of items agreed between both parties concerning the basic concept of the Project.

- Preparation of an outline design of the Project.
- Estimation of costs of the Project.

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

JICA requests the Government of the recipient country to take whatever measures necessary to achieve its self-reliance in the implementation of the Project. Such measures must be guaranteed even though they may fall outside of the jurisdiction of the organization of the recipient country which actually implements the Project. Therefore, the implementation of the Project is confirmed by all relevant organizations of the recipient country based on the Minutes of Discussions.

(2) Selection of Consultants

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

(3) Result of the Survey

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

3. Japanese Grant Scheme

(1) The E/N and the G/A

After the Project is approved by the Cabinet of Japan, the Exchange of Notes(hereinafter referred to as "the E/N") will be singed between the GOJ and the Government of the recipient country to make a pledge for assistance, which is followed by the conclusion of the G/A between JICA and the Government of the recipient country to define the necessary articles, in accordance with the E/N, to implement the Project, such as payment conditions, responsibilities of the Government of the recipient country, and procurement conditions.

(2) Selection of Consultants

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

(3) Eligible source country

Under the Grant, in principle, Japanese products and services including transport or those of the recipient country are to be purchased. The Grant may be used for the purchase of the products or services of a third country, if necessary, taking into account the quality, competitiveness and economic rationality of products and services necessary for achieving the objective of the Project. However, the prime contractors, namely, constructing and procurement firms, and the prime consulting firm are limited to "Japanese nationals", in principle.

(4) Necessity of "Verification"

The Government of the recipient country or its designated authority will conclude contracts denominated in Japanese yen with Japanese nationals, in principle. Those contracts shall be verified by JICA. This "Verification" is deemed necessary to fulfill accountability to Japanese taxpayers.

(5) Major undertakings to be taken by the Government of the Recipient Country

In the implementation of the Grant Project, the recipient country is required to undertake such necessary measures as Annex. The Japanese Government requests the Government of the recipient country to exempt all customs duties, internal taxes and other fiscal levies such as VAT, commercial tax, income tax, corporate tax, resident tax, fuel tax, but not limited, which may be imposed in the recipient country with respect to the supply of the products and services under the verified contract, since the Grant fund comes from the Japanese taxpayers.

(6) "Proper Use"

The Government of the recipient country is required to maintain and use properly and effectively the facilities constructed and the equipment purchased under the Grant, to assign staff necessary for this operation and maintenance and to bear all the expenses other than those covered by the Grant.

(7) "Export and Re-export"

The products purchased under the Grant should not be exported or re-exported from the recipient country.

(8) Banking Arrangements (B/A)

a) The Government of the recipient country or its designated authority should open an account under the name of the Government of the recipient country in a bank in Japan (hereinafter referred to as "the Bank"), in principle. JICA will execute the Grant by making payments in Japanese yen, in principle, to cover the obligations incurred by the Government of the recipient country or its designated authority under the Verified Contracts.

b) The payments will be made when payment requests are presented by the Bank to JICA under an Authorization to Pay (A/P) issued by the Government of the recipient country or its designated authority.

(9) Authorization to Pay (A/P)

The Government of the recipient country should bear an advising commission of an Authorization to Pay and payment commissions paid to the Bank.

(10) Environmental and Social Considerations

The Government of the recipient country must carefully consider environmental and social impacts by the Project and must comply with the environmental regulations of the recipient country and JICA Guidelines for Environmental and Social Consideration (April, 2010) .

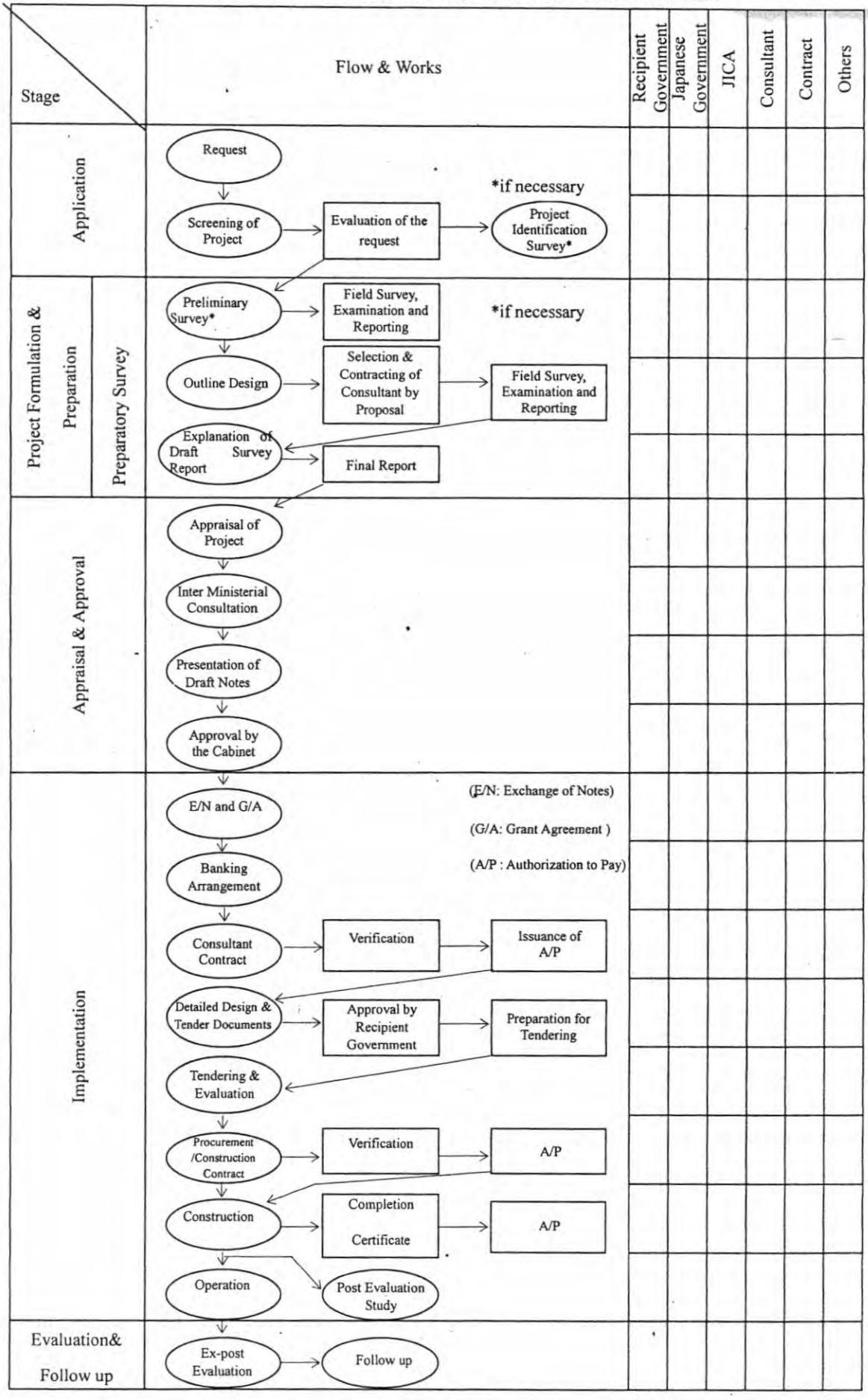
(11) Monitoring

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

(12) Safety Measures

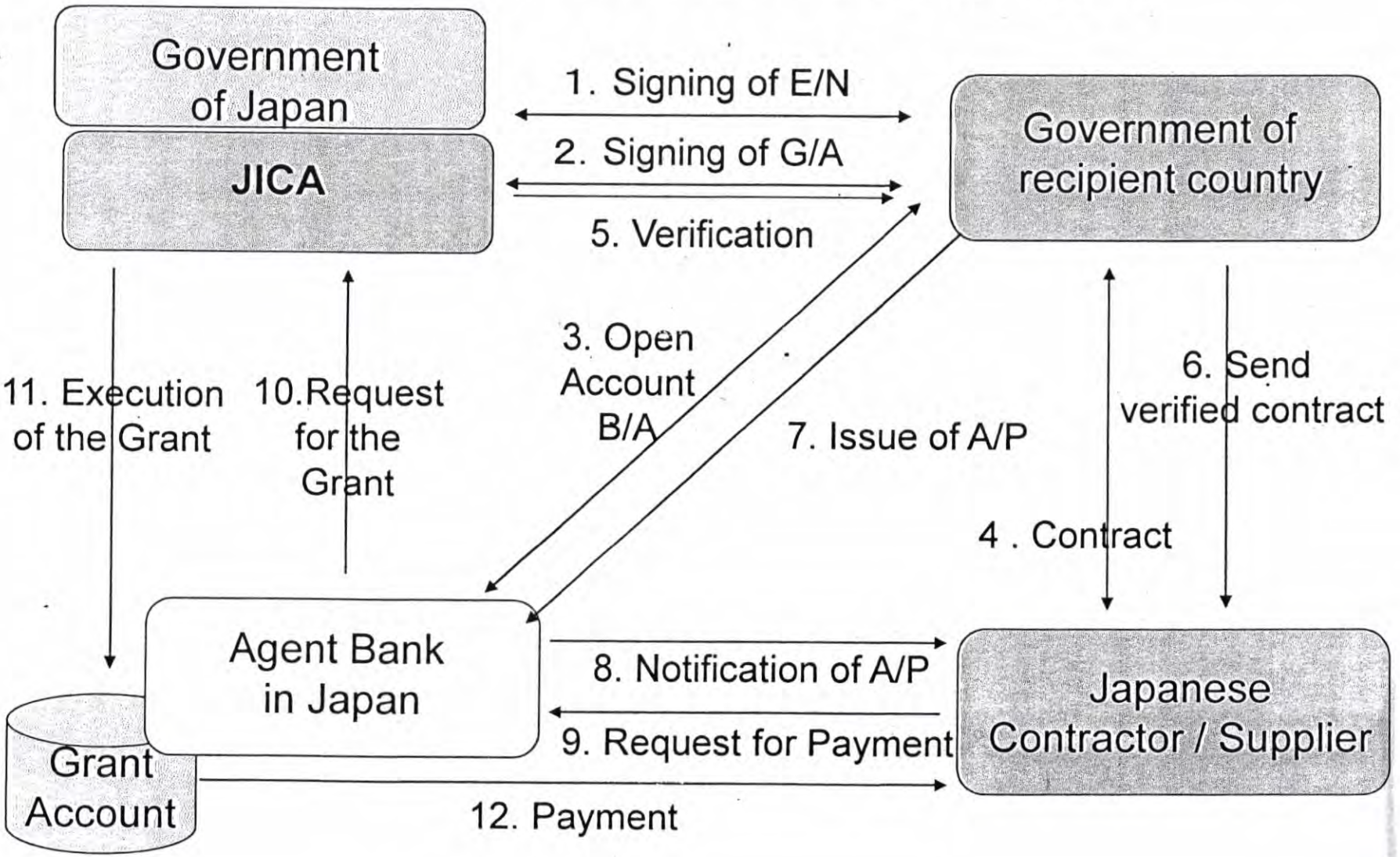
The Government of the recipient country must ensure that the safety is highly observed during the implementation of the Project.

FLOW CHART OF JAPANESE GRANT PROCEDURES



Annex 4

Financial Flow of Grant Aid (A/P Type)



Annex 5

Major Undertakings to be taken by Each Government

Major Undertakings to be taken by Recipient Government

1. Before the Tender

NO	Items	Deadline	In charge	Cost	Ref.
1	To open Bank Account (Banking Arrangement (B/A))	within 1 month after G/A			
2	To approve IEE/EIA	To be decided by the Survey			
3	To implement EIA	before start of the construction			
4	To secure the following lands 1) Proposed wells development site of To be decided by the Survey 2) Proposed distribution reservoir site of To be decided by the Survey 3) Access road to proposed distribution reservoir site of To be decided by the Survey 4) Proposed pipeline site of To be decided by the Survey	before notice of the tender document			
5	To obtain the planning, zoning, building permit	before notice of the tender document			
6	Other necessary measures: To be determined through the Preparatory Survey				

2. During the Project Implementation

NO	Items	Deadline	In charge	Cost	Ref.
1	To bear the following commissions to a bank of Japan for the banking services based upon the B/A				
	1) Advising commission of A/P	within 1 month after the signing of the contract			
	2) Payment commission for A/P	every payment			
2	To ensure prompt unloading and customs clearance in recipient country				
	1) Tax exemption and customs clearance of the products	during the Project			
	2) Internal transportation to the project site	during the Project			
3	To accord Japanese nationals and/or physical persons of third countries whose services may be required in connection with the supply of the products and the services under the verified contract such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work	during the Project			
4	To ensure that customs duties, internal taxes and other fiscal levies which may be imposed in the country of the Recipient with respect to the purchase of the Products and/or the Services be exempted and/or be borne by its designated authority without using the Grant Such customs duties, internal taxes and other fiscal levies mentioned above include VAT, commercial tax, income tax and corporate tax of Japanese nationals, resident tax, fuel tax, but not limited, which may be imposed in the	during the Project			

	recipient country with respect to the supply of the products and services under the verified contract				
5	To bear all the expenses, other than those to be borne by the Grant Aid, necessary for construction of the facilities as well as for the transportation and installation of the equipment	during the Project			
6	To construct access roads				
	1) Outside the site	3 months before completion of the construction			
7	To provide facilities for the distribution of electricity, water supply, drainage and other incidental facilities				
	Electricity The distributing line to the site	before start of the construction			
8	To submit environmental monitoring report to JICA Ethiopia Office	during the Project			

(B/A: Banking Arrangement, A/P: Authorization to pay, N/A: Not Applicable)

Major Undertakings to be Covered by the Japanese Grant

No	Items	Deadline	Cost Estimated (Million Japanese Yen)*	
1	To construct water supply facilities			
	1) To ensure prompt unloading and customs clearance at the port of disembarkation in recipient country			
	a) Marine(Air) transportation of the products from Japan to the recipient country			
	b) Internal transportation from the port of disembarkation to the project site			
	2) To construct access roads			
	a) Within the site			
	3) To construct the temporary building			
	4) To provide facilities for the distribution of electricity, water supply, drainage and other incidental facilities			
	a) Electricity			
	- The drop wiring and internal wiring within the site			
	- The main circuit breaker and transformer			
	b) Water Supply			
	- The supply system within the site (receiving and/or elevated tanks)			
	c) Drainage			
	- The drainage system (for toilet sewer, ordinary waste, storm drainage and others) within the site			
	d) Furniture and Equipment			
	- Project equipment			
2	To implement detailed design, tender support and construction supervision (Consultant)			
3	Contingencies			
	Total			

*; The cost estimates are provisional. This is subject to the approval of the Government of Japan.

Project Monitoring Report
on
Project Name
Grant Agreement No. XXXXXXX

20XX, Month

Organization Information

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

Outline of Grant Agreement:

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

1: Project Description

1-1 Project Objective

1-2 Necessity and Priority of the Project

- Consistency with development policy, sector plan, national/regional development plans and demand of target group and the recipient country.

1-3 Effectiveness and the indicators

- Effectiveness by the Project

Quantitative Effect (Operation and Effect indicators)		
Indicators	Original (Yr)	Target (Yr)
Qualitative Effect		

2: Project Implementation

2-1 Project Scope

Table 2-1-1a: Comparison of Original and Actual Location

Location	**Original:** *(M/D)* **Attachment(s):Map**	**Actual:** *(PMRand PCR)* **Attachment(s):Map**

Table 2-1-1b: Comparison of Original and Actual Scope

Items	Original	Actual
(M/D)	*(M/D)*	*(PMR and PCR)* Please state not only th e most updated schedul e but also other past re visions chronologically.

'Soft component' shall be included in 'Items'.		All change of design shal l be recorded regardless of its degree.

2-1-2 Reason(s) for the modification if there have been any.

(PMR and PCR)

2-2 Implementation Schedule
2-2-1 Implementation Schedule

Table 2-2-1: Comparison of Original and Actual Schedule

Items	Original		Actual
	DOD	G/A	
[M/D] 'Soft component' shall be stated in the column of 'Items'. Project Completion Date*	*(M/D)*		*(PMR,PCR)* As of (Date of Revision) Please state not only the most updated schedule but also other past revisions chronologically.

*Project Completion was defined as _____ at the time of G/A.

2-2-2 Reasons for any changes of the schedule, and their effects on the project.

(PMR and PCR)

2-3 Undertakings by each Government
2-3-1 Major Undertakings
See Attachment 2.

2-3-2 Activities
See Attachment 3.

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

2-4 Project Cost
2-4-1 Project Cost
Table 2-3-1 Comparison of Original and Actual Cost by the Government of Japan
(Confidential until the Tender)

Items			Cost (Million Yen)	
	Original	Actual	Original	Actual
Construction Facilities (or Equipment)	'Soft component' shall be included in 'Items'.			Please state not only the most updated schedule but also other past revisions chronologically.
Consulting Services	- Detailed design -Procurement Management -Construction Supervision			
Total				

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

Table 2-3-2 Comparison of Original and Actual Cost by the Government of XX

Items			Cost (Million USD)	
	Original	Actual	Original	Actual
	'Soft component' shall be included in 'Items'.			Please state not only the most updated schedule but also other past revisions chronologically.
Total				

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

2-4-2 Reason(s) for the wide gap between the original and actual, if there have been any, the remedies you have taken, and their results.

(PMR, PCR)

2-5 Organizations for Implementation

2-5-1 Executing Agency:

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

Original: *(M/D)*
Actual, if changed: *(PMR and PCR)*

2-6 Environmental and Social Impacts

- The results of environmental monitoring as attached in Attachment XX in accordance with Schedule 4 of the Grant Agreement.
- The results of social monitoring as attached in Attachment XX in accordance with Schedule 4 of the Grant Agreement.
- Information on the disclosed results of environmental and social monitoring to local stakeholders, whenever applicable.

3: Operation and Maintenance (O&M)

3-1 O&M and Management

- Organization chart of O&M
- Operational and maintenance system (structure and the number ,qualification and skill of staff or other conditions necessary to maintain the outputs and benefits of the project soundly, such as manuals, facilities and equipment for maintenance, and spare part stocks etc)

Original: *(M/D)*
Actual: *(PCR)*

3-2 O&M Cost and Budget

- The actual annual O&M cost for the duration of the project up to today, as well as the annual O&M budget.

Original: *(M/D)*

4: Precautions (Risk Management)

- Risks and issues, if any, which may affect the project implementation, outcome, sustainability and planned countermeasures to be adapted are below.

Original Issues and Countermeasure(s): *(M/D)*	
Potential Project Risks	Assessment
1.	Probability: H/M/L
(Description of Risk)	Impact: H/M/L
	Analysis of Probability and Impact:
	Mitigation Measures:
	Action during the Implementation:
	Contingency Plan (if applicable):
2.	Probability: H/M/L
(Description of Risk)	Impact: H/M/L
	Analysis of Probability and Impact:
	Mitigation Measures:
	Action during the Implementation:
	Contingency Plan (if applicable):
3.	Probability: H/M/L
(Description of Risk)	Impact: H/M/L
	Analysis of Probability and Impact:
	Mitigation Measures:
	Action during the Implementation:
	Contingency Plan (if applicable):
Actual issues and Countermeasure(s)	
(PMR and PCR)	

5: Evaluation at Project Completion and Monitoring Plan

5-1 Overall evaluation

Please describe your overall evaluation on Project.

(PCR)

5-2 Lessons Learnt and Recommendations

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

(PCR)

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

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

(PCR)

Attachment

1. Project Location Map
2. Undertakings to be taken by each Government
3. Monthly Report
4. Report on RD
5. Environmental Monitoring Form/Social Monitoring FormMonitoring sheet on price of specified materials (Quarterly)
6. Report on Proportion of Procurement (Recipient Country, Japan and Third Countries) (Completion Report Only)

資料-4（2）討議議事録（M/D）（2015年8月6日署名）

Minutes of Meeting
on the Preparatory Survey for
the Project for Improvement of Water Supply in Bahir Dar City
in the Amhara Regional State,
the Federal Democratic Republic of Ethiopia

The Preparatory Survey Team for the Outline Design (hereinafter referred to as "the Team") on the Project for Improvement of Water Supply in Bahir Dar City (hereinafter referred to as "the Project") reported to Ministry of Water, Irrigation and Energy (hereinafter referred to as "MoWIE") the result of the explanation of Inception Report to concerned parties in Amhara Regional State based on the Minute of Discussions (hereinafter referred to as "the M/D") attached. In particular, Article 6-3 of the M/D was explained in details as follows.

During the first survey in Ethiopia, the Team found out a fact that town water authorities have to reimburse the fund to Water Resources Development Fund or the fund has to be offset from the block grant, in case of water facilities constructions, even though the fund was provided by foreign governments or international donor agencies. However, the team explained the difficulty to apply this funding system, as Annex 2 in M/D on the Project in Attachment because of the Japanese Grant Policy.

As a result of several discussions, MoWIE understood the above Japanese condition, and agreed the contents in Article 6-3 in M/D in Attachment

Addis Ababa, 6th August, 2015

江尻幸彦

Yukihiko Ejiri
Leader
Preparatory Survey Team
Japan International Cooperation Agency
Japan

Kebede Gerba
State Minister
Ministry of Water, Irrigation and Energy
Federal Democratic Republic of Ethiopia

Attachment Minute of Discussion on the Preparatory Survey for the Project for Improvement of Water Supply in Bahir Dar City in the Amhara Regional State in the Federal Democratic Republic of Ethiopia

TECHNICAL NOTE

ON THE PREPARATORY SURVEY
FOR THE PROJECT FOR
IMPROVEMENT OF WATER SUPPLY IN BAHIR DAR CITY,
IN THE AMHARA REGIONAL STATE
IN THE FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA

The Technical Note attached in the following pages confirms various matters discussed among the JICA Preparatory Survey Team, Water Resources Development Bureau of Amhara Regional State (AWRDB) and Bahir Dar city Water Supply and Sewerage Service (BDWSSS) during the First Survey period.

Bahir Dar, September 3rd, 2015

for Makoto Yamamoto (Mr.)
Chief Consultant /
Water Supply Planning
JICA Preparatory Survey Team

Zemene Tsehay
Bureau Head

Zemene Tsehay (Mr.)
Head,
Water Resource Development Bureau
Amhara Regional State

አብይ ሲሳይ ጋረደው
Abiy Sisay Garedew
ዋና ስራ አስኪያጅ
Head Manager

Abiy Sisay (Mr.)
General Manager
Bahir Dar city Water Supply and
Sewerage Service

Project for Improvement of Water Supply in Bahir Dar City

Date: September 3rd, 2015

Technical Note

The following items are confirmed by the Ethiopian side and the JICA Preparatory Survey Team (hereinafter referred to as "Survey Team") based on the results of the First Survey.

1. Project Target Year

As already agreed between the Ethiopian and the Japanese sides in the Minutes of Discussions dated on August 4th, 2015, the design year targeted for the Project shall be 2025.

2. Target Area and Major Contents of the Project

The target area and the contents of the Project shall be decided based on the results of the Preparatory Survey implemented by Survey Team in Bahir Dar City. The priority of the contents of the Project decided by the Ethiopian side is shown as below. These priorities will be fully considered when the data collected during the First Survey are analyzed by the Survey Team, and the target area and contents of the Project will be proposed to the Ethiopian side in the beginning of the Second Survey..

Priority	Area	Major Contents
1	Zone 2	Improvement of water sources and construction / rehabilitation of water supply facilities in the existing water supply area and the extension area expected by the project target year in Zone2
2	Zone 1	Installation of water level meter, flow meter and chlorination facilities in Kotita and Kotitina Reservoirs

The Ethiopian side strongly requested the Japanese side to include in the Project the water supply to Diaspora area and the connection of new water facility to the existing water supply of Zenzelma area located outside of Zone 2. In addition, the Ethiopian side requested the Japanese side to procure laboratory equipment for water quality analysis and leakage detection equipment. The Survey Team will scrutinize the pros and cons of these requests made by the Ethiopian side in Japan.

3. Design Factors

Considering the experiences of pipe installation in Ethiopia, the piping materials of the Project shall be selected as follows,

1) Transmission / Distribution pipes

Internal Diameter 300mm or above: Ductile cast iron pipe (DIP)
Internal Diameter below 300mm: High density polyethylene (HDPE) pipe

2) The effective volume of distribution reservoir shall be in the range of 30% to 50% of the average daily supply amount.
3) The location of new distribution reservoir shall be selected from the three (3) candidate places, which satisfy the required land elevation: i.e. one along the road from Abay booster station to Zenzelma, the place near the old Palace and the place in Amaesasena area. In the Second Survey, the Survey Team will propose the specific location of the new distribution reservoir to the Ethiopian side and it shall be decided by mutual consent. In the Project, three (3) water reservoirs, namely the existing Gabriel Reservoir with necessary rehabilitation, Diaspora Reservoir, which is under construction and the one which will be planned in the Project, are to be utilized.
4) The design water consumption per capita per day shall be decided after discussion with the Ethiopian side in the beginning of the Second Survey, based on the result of investigation and analysis by Survey Team in Japan.
5) The design factors not mentioned above will be selected appropriately by the Survey Team by referring to the description of "Urban Water Design Criteria" (Ministry of Water Resources, Ethiopia, 2006) and "The Design Criteria for Water Supply Facilities" (Ministry of Health, Labour and Welfare, Japan, 2012). The Survey Team will propose the selected design factors to the Ethiopian side in the beginning of the Second Survey.

4. The location for the geophysical prospecting

1) The geophysical prospecting will be carried out at Charchara and Ashraf areas, and one additional site in the Zone 2 areas will be selected for conducting the geophysical prospecting.

5. Environmental and Social Considerations

1) According to the Bureau of the Environmental Protection Land Administration and Use in the Amhara Regional State (hereinafter referred to as BoEPLAUA), the Project, which is assumed to develop underground water more than 2,000 m^3/day, is required to implement full Environmental Impact Assessment (hereinafter referred to as EIA) in accordance with the General EIA Guideline (BoEPLAUA, 2011). Based on this requirement, Amhara Water Resources Development Bureau (hereinafter referred to as AWRDB) shall implement full EIA and prepare the EIA report based on its result. AWRDB shall submit this report to BoEPLAUA and get approval from them.

6. Request to the Ethiopian side

1) Bahir Dar city Water Supply and Sewerage Service (hereinafter referred to as BDWSSS) shall prepare the financial statements including the balance sheets and the statements of profit and loss for the past two (2) years and they shall be subject to audit under the international

standard soon. BDWSSS shall provide them for the Survey Team in the Second Survey. In addition, BDWSSS shall revise the statements of profit and loss for the past three (3) years appropriately, by, for instance, removing the billing amount for cumulative unpaid water charges and provide them for the Survey Team in the Second Survey.

2) BDWSSS shall make the roads to the existing boreholes accessible for conducting pumping test by the beginning of the Second Survey which will be started in the first week of November 2015. Those wells which are selected for the pumping test are Charchara No.2, No.3, and No.4, and Ashraf No.1 and No.2 wells.

3) Based on the analysis on the results of the geophysical prospecting, the Survey Team will propose the locations of test well drilling at the beginning of the Second Survey. The Ethiopian side is requested to acquire or lease necessary lands for the test well drilling.

7. Other issues

1) Initially, the pumping test of five (5) existing boreholes was planned to be conducted in the First Survey. However, the equipment for pumping test could not be transported to the borehole sites because the roads to the sites were not accessible due to the continual heavy rains. As a result the pumping test could not be carried out during the First Survey period. Therefore, the pumping test of existing boreholes will be implemented in the Second Survey.

2) The Survey Team will conduct the pumping test in the Second Survey in case that the access roads to the borehole sites are improved enough to be able to transport the equipment by heavy duty trucks to the sites.

3) The test well drilling works will start, if weather permits, from the last week of November, 2015 and it will take about two (2) months to drill eight (8) boreholes if everything goes smoothly.

4) The Second Survey will start from the first week of November, 2015 and it goes to the end of April, 2016.

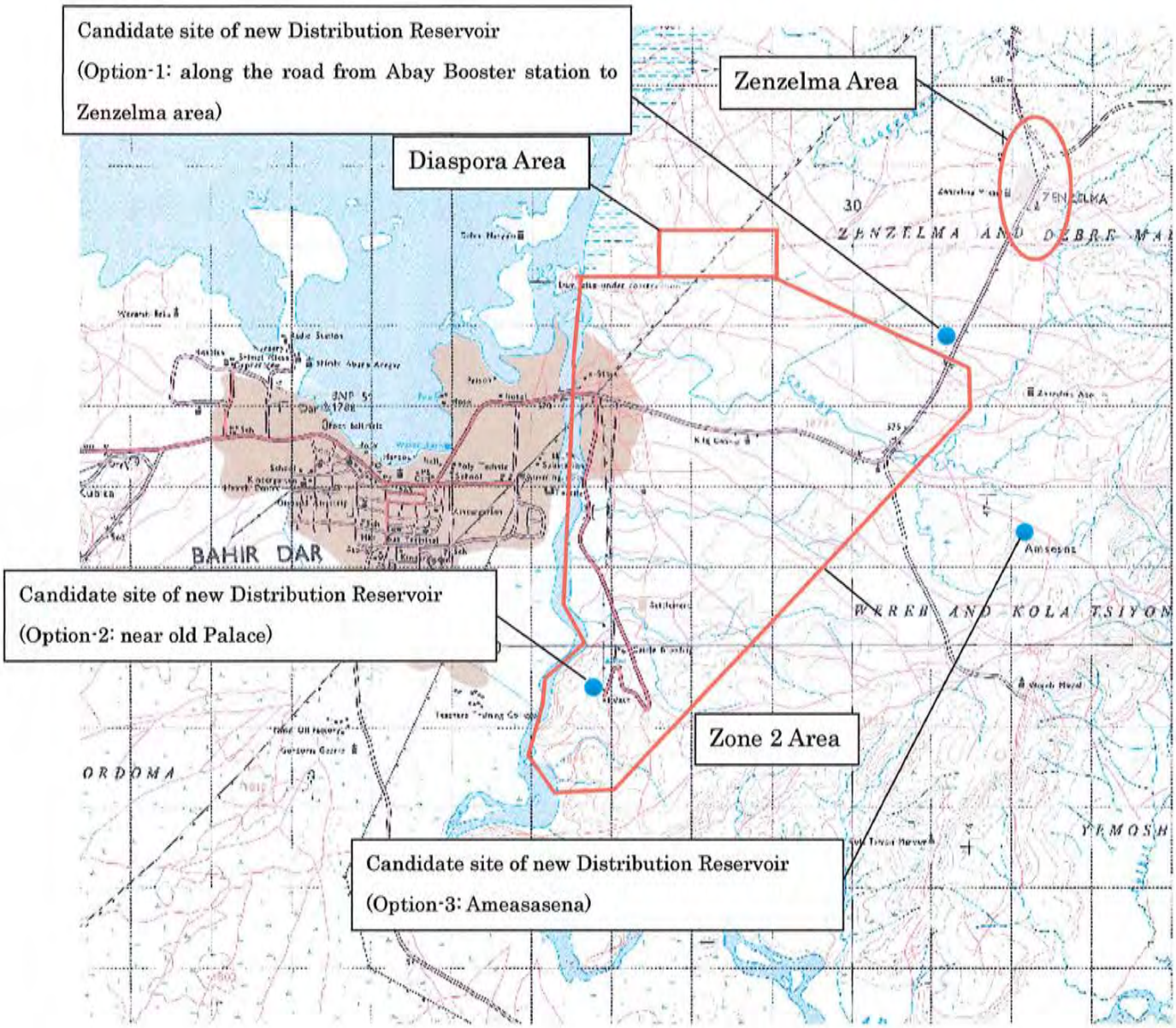


Fig-1. Location Map of Bahir Dar City

TECHNICAL NOTE

ON THE PREPARATORY SURVEY FOR THE PROJECT FOR IMPROVEMENT OF WATER SUPPLY IN BAHIR DAR CITY IN THE AMHARA REGIONAL STATE IN THE FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA

The Technical Note attached in the following pages confirms various matters discussed among the Japan International Cooperation Agency (hereinafter referred to as "JICA") Preparatory Survey Team, Bureau of Water, Irrigation and Energy Development, Amhara National Regional State (hereinafter referred to as "BoWIED"), and Bahir Dar City Water Supply and Sewerage Service (hereinafter referred to as "BDWSSS") during the Second Preparatory Survey period for the Project for Improvement of Water Supply in Bahir Dar City (hereinafter referred to as "the Project"). The Technical Note does not state final results of the Survey because it contains issues which are under considerations.

Bahir Dar city, April 27th, 2016

for Shogo Mori

for Makoto Yamamoto (Mr.)
Chief Consultant /
Water Supply Planning
JICA Preparatory Survey Team

for

Zemene Tsehay (Mr.)
Bureau Head
Bureau of Water, Irrigation and Energy Development
Amhara National Regional State

Abiy Sisay (Mr.)
General Manager
Bahir Dar city Water Supply
and Sewerage Service

ATTACHMENT

The following items are confirmed by the Ethiopian side and the JICA Preparatory Survey Team (hereinafter referred to as "Survey Team") based on the results of the First and Second Preparatory Survey.

1. Geophysical Prospecting

The geophysical survey was conducted by Survey Team from November 2015 to March 2016 in Charchara, Ashraf areas and the area near Chimbl River so as to select the candidate locations of test borehole drilling for the Project. The actual locations where geophysical survey was conducted are shown in the Fig.-1.

Fig.-1. Location of geophysical survey

2. Borehole Drilling Tests

Based on the results of geophysical survey, eight (8) test boreholes were drilled in and around Bahir Dar city from December 2015 to April 2016. The actual locations of test boreholes are shown in the Fig.-2. The results of test borehole drilling are shown in the Table-1.

Fig.-2. Location of test boreholes

Table-1. Results of test borehole drilling

No. of boreholes	Diameter of Casing (inch)	Drilling depth (m)	Remarks
Charchara TW No.1	12	72	-
Charchara TW No.2	12	72	-
Charchara TW No.3	12	70	-
Ashraf TW No.1	8	150	Failed because of insufficient water amount
Ashraf TW No.2	8	150	-
Ashraf TW No.3	12	90	-
Chimbl TW No.1	8	180	Failed because of insufficient water amount
Chimbl TW No.2	8	-	Drilling works ongoing

3. Water Quality Tests

Survey Team got the water samples from the sixteen (16) points shown below and the water quality analysis for them is being implemented in the laboratory. The results of water quality analysis will be shown in the Final Report. The locations of sampling points are shown in the Fig.-3.

Charchara Existing Boreholes (No.1, No.3, No.4)
Charchara TW No.1, No.2, No.3
Ashraf Existing Borehole No.2
Ashraf TW No.2, No.3
Chimbl TW No.2
Areke Spring, Lomie Spring, Tikurewoha Spring

Gudobahir Existing Borehole No.1
Two (2) Public Tap Stands in Zone 2 of Bahir Dar city

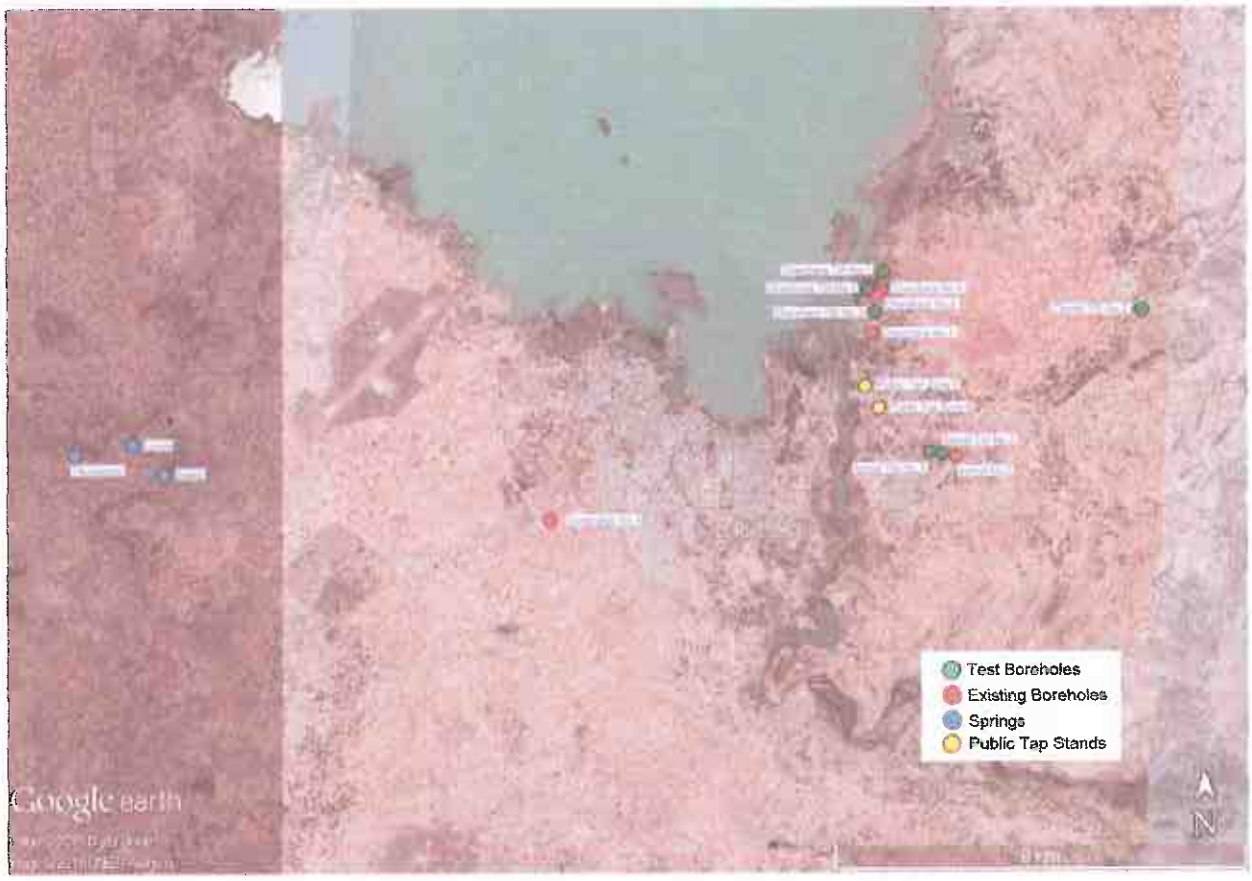


Fig.-3. Location of sampling points

4. Pumping Tests of Existing Boreholes and Test boreholes

Pumping tests of existing boreholes and test boreholes were conducted from November 2015 to April 2016 in Zone 2 of Bahir Dar city. The results of pumping tests are shown in the Table-2.

Table-2. Results of pumping tests

No. of boreholes	Altitude *2 (m)	Optimum Pumping Discharge(L/s)	SWL (GL-m)	Draw down (m)	Remarks
Charchara No.1	1,793	8.4	1.04	8.23	-
Charchara No.2	1,794	8.4	2.43	7.67	-
Charchara No.3	1,794	32.0	2.47	-	*1
Charchara No.4	1,794	40.0	3.57	0.10	*1
Charchara No.5	1,794	41.0	1.46	23.34	*1
Charchara No.6	1,797	52.5	1.04		*1
Charchara TW No.1	1,794	65.1	1.22	1.28	-
Charchara TW No.2	1,791	59.5	1.33	4.29	-
Charchara TW No.3	1,795	63.7	5.02	4.59	-
Ashraf No.1	1,824	6.2	39.50	30.02	-
Ashraf No.2	1,826	20.3	41.79	12.09	-
Ashraf TW No.2	1,822	-	-	-	To be implemented
Ashraf TW No.3	1,818	-	-	-	To be implemented

Chimbl TW No.2		-	-	-	To be implemented

Note)
*1: The pumping tests for Charchara No.3, No.4, No.5 and No.6 were conducted by the Ethiopian side.
*2: Altitude: obtained from Google Earth

5. Conditions of Existing Facilities and Distribution Networks

Based on the results of First Preparatory Survey and Second preparatory Survey, the existing water supply system in Bahir Dar city was found to be as follows;

(1) Water Supply System in Zone 2

The existing water supply system in the eastern side of Abay River in Bahir Dar city (hereinafter referred to as "Zone 2"), which has some boreholes as its water sources, is complicated. For example,

- Charchara No.1 existing borehole is being used normally for the specific area in Zone 1 and its water flows into Abay Balancing Tank only in case that the water consumption in that specific area becomes low. In the Project, Charchara No.1 existing borehole shall not be considered as the water source of Zone 2.
- The raw water from existing Charchara No.2 and No.3 boreholes are conveyed to the balancing tank at Abay Booster Pump Station. Then, it is mostly distributed by pumping through the trunk distribution main laid up to the Gabriel Reservoir and its branch distribution mains. During low water consumption periods (e.g. night time), part of the water from the pump station reaches to the Gabriel Reservoir. This means that the trunk distribution main is used as both a distribution and a transmission line. At the reservoir, the water transmitted from the pump station is mixed with the water conveyed from other sources including existing Ashraf No.1 and No.2 boreholes. The mixed water is then distributed, by gravity, through the same trunk distribution main in reverse (from the pipe end at the reservoir towards the pump station) when the water from the pump station does not reach to the reservoir.
- Chlorination is implemented in the Balancing Tank in the Abay Booster Pump Station and in the Gabriel Reservoir.

(2) Distribution pipe network in Zone 2

According to the result of pressure test, conducted by Survey Team in August 2015, the water pressure in most of the part in Zone 2 was found to be sufficient. However, the water pressure only in Diaspora area was insufficient, which residual water head was zero (0) meter. According to BDWSSS, this issue of water pressure in Diaspora area was improved to supply water sufficiently by changing the diameter of distribution pipeline before the Second Preparatory Survey.

6. Design Factor

6-1. Target Year

As already agreed in the Minutes of Discussions dated on August 4th, 2015, the design year targeted by the Project shall be 2025.

6-2. Target Area

Considering the current situation of expansion of residential area in Bahir Dar city, the target area of the Project shall be Zone 2, which residential area is rapidly expanding. In addition, Gudguad area and the southern part of Zenzelma Campus of Bahir Dar University (hereinafter referred to as Zenzelma Campus) shall be included in the target area. Moreover, the water supply to Zenzelma Campus shall be included in the target of the Project. The target area of the Project is shown in Fig.-4.

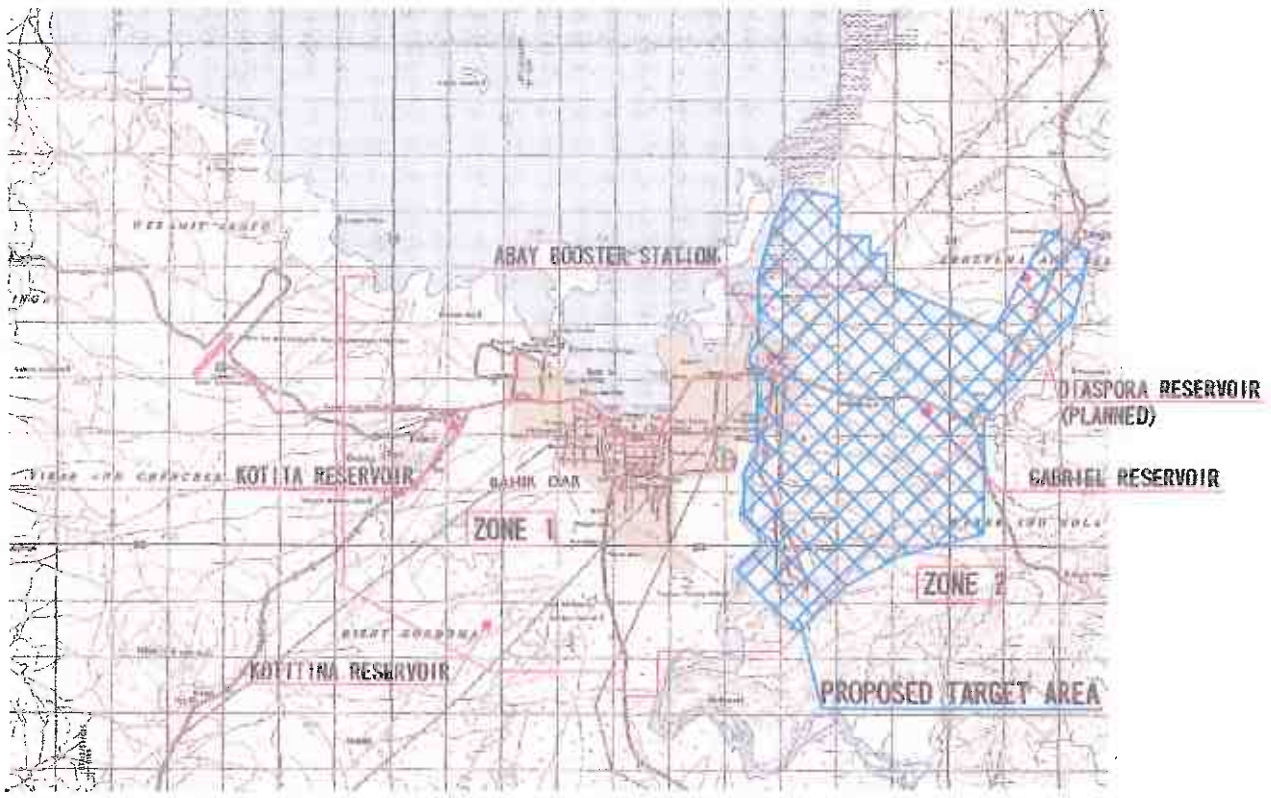


Fig.-4. Target Area of the Project

In the Project, the water to the communities located in Gudguad area and the area in the southern part of Zenzelma Campus shall be supplied by public tap stands.

6-3. Target Population

Target population shall be calculated based on the current population in consideration of the population growth rate. Target population is described in the Table-3. Four point nine five (4.95) percent, which was used in the population projection from 2014 to 2017 in Bahir Dar city by Central Statistical Agency in Ethiopia (CSA), is adopted.

Table-3. Target Population

Kebele	Area	2016	2025
Hidar 11	Zone A-E	8,014	12,380
	Diaspora	75,099	116,010
Zenzelma	Gudguad	1,748	2,710
	Sesa Beret, Zenzelma Michael area	2,978	4,610
Wereb Kola Tsiyon	Ashraf, Bezawit Marian church	3,293	5,090
Zenzelma Campus of Bahir Dar University		1,816	6,900
Total		92,948	147,700
【Breakdown】			
Private tap users (Direct customers*3) 50%*5	Hidar 11, Wereb Kola Tsiyon		66,740
Private tap users (Indirect customers*4) 50%*5			66,740
Public tap users	Zenzelma		7,320
Private tap users in			

Zenzelma Campus of Bahir Dar University			6,900

Note)
*3: The term "Direct customers" means the customers who signed water service contract with BDWSSS and have their own taps.
*4: The term "Indirect customers" means the users who use the private tap of neighbors.
*5: The percentage of direct customers and indirect customers are forty five point five (45.5) percent and fifty four point five (54.5) percent, respectively. In 2025, the percentage of direct customers is expected to increase to be fifty (50) percent. The percentage of indirect customers in 2025 shall also be fifty (50) percent.

6-4. Water Consumption per Capita

(1) Domestic use (Private connection)

Considering the actual water consumption in 2015, the design water consumption shall be set as follows;
Direct customers: eighty (80) L/capita/ day
Indirect customers: fifty (50) L/ capita/ day*6

Note)
*6: According to the design criteria for water supply facilities in Ethiopia, the design water consumption of indirect customers is set to sixty (60) percent of the one of direct customers. In accordance with this percentage, the design water consumption of indirect customers in the Project shall be set to fifty (50) L/capita/day, corresponding to about sixty (60) percent of the one of direct customers, which is eighty (80) L/capita/day.

(2) Domestic use (Public tap users)

The design water consumption for public tap users shall be set to thirty (30) L/ capita/ day.

(3) Other water consumption

Considering the ratio of water consumption for the other purposes to the one for domestic purpose, the design water consumption for other purposes shall be set to twenty (20) percent of the one for domestic purpose.
The new market, 'Terminal Market Centre' is under construction in a large scale apart from the existing commercial area. The design water consumption amount for this new market is two hundred fifty (250) m^3/day*7 and it shall be added to the water amount calculated using the above percentage.
In addition, the design water consumption for industrial purpose shall be added to the above amount. It shall be set to four hundred (400) m^3/day*8 considering the size of area for industrial purpose.
Besides, water consumption of Zenzelma Campus of Bahir Dar University shall be added to the design water amount. It shall be set to four hundred (400) m^3/day*9 considering the future increase of water demand.

Note)
*7: The current water consumption for commercial facilities per area is calculated to seven hundred sixty seven (767) m^3/day/km^2. Design water consumption for Terminal Market Center: 767×0.28(Planned area)=214.76≒250m^3/day
*8: The current water consumption for industrial facilities per area is calculated to four hundred eighty (480) m^3/day/km^2. Design water consumption for industrial facilities: 480×0.96(Planned area)×0.80(land utilization rate in 2025)=368.64≒400m^3/day
*9: The design water consumption per capita for the students in the dormitory shall be fifty (50) L/capita/day and the one for the lecturer and the University staff living in the Zenzelma campus site shall be eighty (80) L/capita/day. Considering the future increase of the number of students, the design water consumption for Zenzelma Campus shall be calculated as follows;
6,200(estimated number of students)×0.05+700(estimated number of lecturer and staff)×0.08=366.00
366.00×1.10(including other consumptions in Zenzelma Campus)=402.60≒400m3/day

6-5. Design Leakage Rate

Considering the results of survey for Non-Revenue Water (NRW) in the other city in Amhara in 2014 and the residual water head in Zone 2 of Bahir Dar city, the design rate of NRW shall be thirty (30) percent and the design leakage rate shall be eighteen (18) percent, corresponding to the sixty (60) percent of design rate of NRW.

6-6. Design Loading Rate

Considering the tendency of fluctuation of water consumption, the design loading rate shall be zero point seven six (0.76).

6-7. Design Water Amount

The design water amount is calculated as shown in Table-4 according to the above conditions;

Table-4. Design Water Amount

		Target Population	Water amount(m^3/day)	
			Calculation result	Adopted value
Direct customers	80 L/capita/day	(50%) 66,740	5,339.20	
Indirect customers	50 L/capita/day	(50%) 66,740	3,337.00	
Public tap users	30 L/capita/day	7,320	219.60	
Sub-total			8,895.80	
Industrial purpose			400.00	
For Terminal Market Center			250.00	
For Zenzelma Campus of Bahir Dar University			400.00	
Other purposes	Excl. industrial Purpose	20%	1,779.16	
Additional amount	For transmission to central area of Zenzelma		182.93	
Sub-total			11,907.89	
Design average daily distribution amount			14,521.82	14,500
Design maximum Daily distribution amount			19,107.66	19,100

7. Facility Planning

7-1. Planned facilities in the Project

The flow diagram of planned facilities in the Project is shown in the Fig.-5.

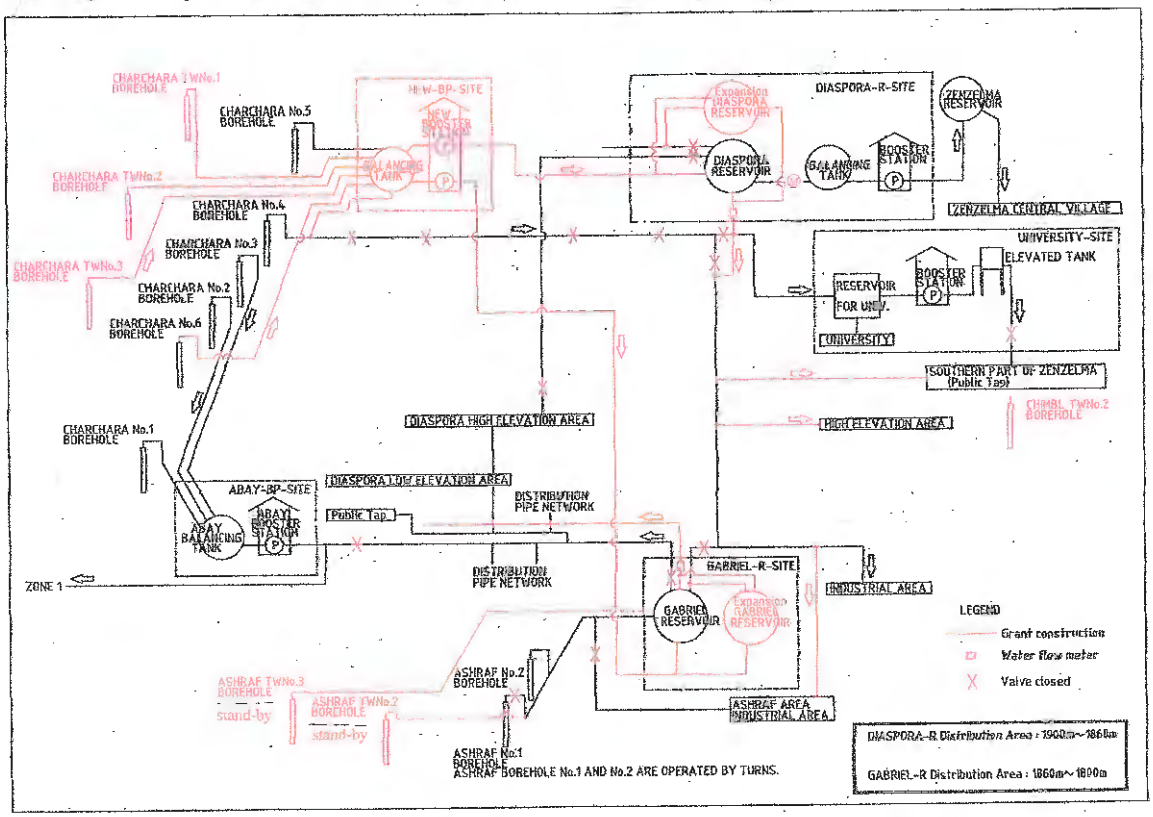


Fig.-5. Flow Diagram of Planned Facilities in the Project

7-2. Pump Operation

The maximum operation hours of boreholes is planned as follows:

Table-5. Maximum Operation Hours of Borehole Pumps

Boreholes	Optimum Pump Discharge (L/s)	Design Pump Discharge (L/s)	Maximum Operation hours of borehole pumps (hrs)	Maximum amount of raw water transmission (m^3/day)	Remarks
Charchara No.1	8.4				*10
Charchara No.2	8.4				*10
Charchara No.3	32.0				*10
Charchara No.4	40.0	40.0	18.0	2,592.00	
Charchara No.5	41.0	41.0	18.0	2,656.80	
Charchara No.6	52.5	52.5	18.0	3,402.00	
Charchara TW No.1	65.1	65.1	18.0	4,218.48	
Charchara TW No.2	59.5	59.5	18.0	3,855.60	
Charchara TW No.3	63.7	63.7	18.0	4,127.76	
Ashraf No.1	6.2				*11
Ashraf No.2	20.3	20.3	18.0	1,315.44	
Ashraf TW No.2	*9				*12
Ashraf TW No.3	*9				*12
Chimbl TW No.2	*9				*13
Total				22,168.08	

Note)

*9: Pumping test for Ashraf TW No.2, Ashraf TW No.3 and Chimbl TW No.2 will be implemented later.

*10: Charchara No.1, Charchara No.2 and Charchara No.3 will not be used for the Project. They will be used for Zone 1.BDWSSS will monitor the amount of water flow and water level of them appropriately and these boreholes are considered to be utilized as for stand-by and/or for monitoring.

*11: Ashraf No.1 shall not be used for the Project because of bad conditions.

*12: Ashraf TW No.2 and Ashraf TW No.3 will be used as stand-by boreholes.

*13: Chimbl TW No.2 will not be used for the Project because it cannot be expected to have sufficient water amount.

7-3. Other technical issues

- The northern area of Zenzelma campus of Bahir Dar University is the center of Zenzelma area. Currently, the local NGO, named ORDA, is implementing the project on their own initiative to supply water to this area. The water source of these water supply facilities is planned to be the reservoir, which effective volume is one thousand (1,000) m^3 and is under construction by BDWSSS (hereinafter referred to as "Diaspora Reservoir"). These water supply facilities will be handed over to BDWSSS after completion of the project and will be the asset of BDWSSS. However, the operation and maintenance will be implemented by the committee of the local community and the local community has no obligation to pay any money to BDWSSS. Though this area will not be included in the target area of the Project, the necessary water amount for the water supply facilities, constructed by ORDA, shall be secured as the water amount of water sources so as to be able to use these facilities after completion of the Project.
- The Study Team will propose the appropriate water tariff in the Final Report, considering the operation and maintenance cost of the water supply facilities in Bahir Dar city, including Zone 1.The Ethiopian side will proceed with the process for the revision of water tariff based on the proposal by the Survey Team by the completion of the Project.
- The Study Team will scrutinize and decide the size of distribution pipes including existing pipe lines by conducting hydraulic analysis of distribution network in Zone 2 based on the water demand in the year of 2025.
- The Ethiopian side shall consider the reduction of initial cost for contracting with public water services for expecting the increase of customers. It will be required for that to take action such as the inclusion of material cost for water service facilities to the water tariff.

8. Environmental and Social Considerations

- The environmental and social considerations for the Project are based on the Ethiopian regulations as well as the JICA's Guidelines for Environmental and Social Considerations.
- In accordance with one of the conditions for implementing EIA (i.e. ground water development of more than two thousand (2,000) m^3/day) specified in the Amhara Regional State's General EIA Guideline (2011/2012), EIA is required for the Project.
- BoWIED submitted the scoping report required for EIA to Environment, Forest and Wildlife Protection Authority (EWFA) on 15th March 2016 and held a stakeholder meeting on 14th April 2016. It is planned that BoWIED will submit the draft EIA report to EWFA by the middle of May 2016 with the support of the local consultant contracted with the Survey Team.
- BoWIED is required to revise the EIA report in accordance with the comments from EFWA on the draft EIA report with help of the local consultant. It is planned that BoWIED will submit the improved EIA report to EFWA for approval by the end of May 2016. (This submission may be delayed until around the middle of June 2016 if EFWA's review process or the correction of the draft report takes time more than expected.)
- The EIA report may need to be updated and resubmitted to EFWA for re-approval by September 2016 if the planned major project activities are significantly alerted after the submission of the improved EIA.
- Thirty (30) meters buffer from the center of new reservoir, new pump station and new boreholes should basically be secured with fence to reduce the risk of water contamination.

9. Undertakings of the Ethiopian Sides

The items shown in the Table- 5 and Table-6 are expected as the major undertakings to be taken by the Ethiopian side.

Table-5. Major Undertakings to be taken by the Ethiopian side before the Tender

NO	Items	Deadline	In charge
1	To open Bank Account (Banking Arrangement (B/A))	within 1 month after G/A	
2	To approve EIA	***	
3	To implement EIA	before start of the construction	
4	To secure the following lands 1) Proposed boreholes development site of Charchara, Ashraf and around Chimbl river 2) Proposed reservoir expansion sites of Gabriel and Diaspora Reservoirs 3) Access road to the boreholes development sites, proposed distribution reservoir sites and new pumping station 4) Proposed pipeline sites	before notice of the tender document	
5	To obtain the necessary permit for the implementation of the Project from the concerned organization (planning, zoning, building, road, river etc.)	before notice of the tender document	
6	To assign counterparts for the Survey Team during detail design survey	Soon after starting detail design survey	

Table-6. Major Undertakings to be taken by the Ethiopian side during the Project Implementation

NO	Items	Deadline	In charge
1	To bear the following commissions to a bank of Japan for the banking services based upon the B/A		
	1) Advising commission of A/P	within 1 month after the singing of the contract	
	2) Payment commission for A/P	every payment	
2	To ensure prompt unloading and customs clearance in recipient country		
	1) Tax exemption and customs clearance of the products	during the Project	
	2) Internal transportation to the project site	during the Project	
3	To accord Japanese nationals and/or physical persons of third countries whose services may be required in connection with the supply of the products and the services under the verified contract such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work	during the Project	
4	To ensure that customs duties, internal taxes and other fiscal levies which may be imposed in the country of the Recipient with respect to the purchase of the Products	during the Project	

	and/or the Services be exempted and/or be borne by its designated authority without using the Grant Such customs duties, internal taxes and other fiscal levies mentioned above include VAT, commercial tax, income tax and corporate tax of Japanese nationals, resident tax, fuel tax, but not limited, which may be imposed in the recipient country with respect to the supply of the products and services under the verified contract		
5	To bear all the expenses, other than those to be borne by the Grant Aid, necessary for construction of the facilities as well as for the transportation and installation of the equipment	during the Project	
6	To submit Project Monitoring Report	every month	
7	To construct access roads		
	1) Outside the site	3 months before completion of the construction	
8	To provide facilities for the distribution of electricity, water supply, drainage and other incidental facilities		
	1) Electricity The distributing line to the site	3 months before completion of the construction	
9	To implement environmental management plan and environmental monitoring plan	during the Project	
10	To submit environmental monitoring report to JICA Ethiopia Office	every month attached to Project Monitoring Report	
11	To assign client-supervisor during the construction period	during the Project	
12	To assign counterparts for the soft-component activities	during the Project	
13	To install the fence and gate around the facilities	before completion of the Project	
14	To install water supply pipe, which internal diameter is below 80mm, and water service pipe and to connect to the each household	before completion of the Project	

(B/A: Banking Arrangement, A/P: Authorization to pay, N/A: Not Applicable)

Table-7. Major Undertakings to be taken by the Ethiopian side after the Project

NO	Items	Deadline	In charge
1	To maintain and use properly and effectively the facilities constructed and equipment, including allocation of maintenance cost, operation and maintenance of facilities, regular checking/periodical inspection, etc., provided under the Grant Aid	after the Project	
2	To install water supply pipe, which internal diameter is below 80mm, and water service pipe and to connect to the each household	after the Project	

10. Others Issues

- During the absent of Survey Team, the Ethiopian side shall manage the test boreholes, which were drilled in the Second Preparatory Survey, appropriately.

End

資料-4（5）テクニカルノート（2016年8月23日署名）

TECHNICAL NOTE
ON THE PREPARATORY SURVEY
FOR
THE PROJECT FOR IMPROVEMENT OF WATER SUPPLY IN BAHIR DAR CITY
IN THE AMHARA REGEONAL STATE
IN THE FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA

Date: August 23, 2016

Based on results of the latest field surveys, the Ethiopian side and JICA Survey Team agreed on the following items. This Technical Note shall be agreed in addition to the previous Technical Note signed on April 27, 2016 unless any special instructions are not added.

1. Water service pipe laying plan

The basic plan of water service pipe laying locations for the Project for Improvement of Water Supply in Bahir Dar City (hereinafter called the Project) is as shown in the attached drawings. The water service pipe shall be installed in the utility space of the road.

2. The scope of water service pipe installation

The scope of water service pipe installation agreed by the previous Technical Note signed on April 27, 2016 shall be revised as follows.

2.1 Basically, the installation of pipe with OD not less than 90 mm at the existing permanent road and distribution pipe to Diaspora reservoir shall be carried out by the Grant Aid.

2.2 Concerning the installation of pipe at non-existing projected road to be constructed in the area where the Bahir Dar City Administration (BDCA) is setting its city planning (Urban Planning Area), pipe with OD not less than 90 mm shall be installed by the Grant Aid at the road where the completion of land acquisition and road base construction prior to notice of the tender document in December, 2017 (expected) is duly secured by Bahir Dar City Administration.

2.3 Basically, the installation of pipe with OD less than 90 mm and household connections shall be carried out by the Ethiopian side. Since the installation of household connections to existing houses carried out simultaneously with the installation of distribution pipe makes efficient work, the Ethiopian side promotes the contract for houehold connection in accordance with the Project implementation schedule.

2.4 Out of the Urban Planning Area, water supply pipe with OD less than 90 mm to be connected public water stand shall be exceptionally installed by the Grant Aid in order to realize early and

direct effect of the Project. The Ethiopian side shall install public water stands in accordance with the work schedule of pipe installation.

3. For the water service pipe installation not under existing road outside of the Urban Planning Area

1) Installation of line markers along the installed water service pipe under the farmland is required to identify underground water service pipe for future possible development.
2) Information sharing activity carried out by BDWSSS to the farmers relevant to the water service pipe installation is required to announce the construction activity during dry season.

4. Land Acquisition For the road base construction in the Urban Planning Area

1) BDCA agrees the location of non-exisitng projected road and water service pipe laying as shown on the drawing attached to this Technical Note.
2) Land acquisition and compensation for non-existing projected road areas and their road base construction are carried out by BDCA under the urban development project.
3) The road base construction includes identification of center, boundary and elevation of future roads on the site, completion of the land acquisition and compensation for the road area, as well as completion of subgrade of road structure.
4) The road base construction shall follow the schedule below. Followed by the schedule, BDCA agrees that the land acquisition and compensation for the non-existing projected road are completed by BDCA before April, 2017.

Step	Procedure	Date and Time
1	BDCA identifies the proposed roads regarding road center, boundary and elevation through the on-site survey.	By October, 2016
2	BDCA identifies land, structures and persons affected by the proposed road base construction and evaluates affected lands and structures to set out compensation amount.	By November, 2016
3	BDCA conducts meetings with affected persons regarding the land acquisition for the road base construction and obtain agreement from them with proper compensation amount and relocation schedule.	By February, 2017
4	BDCA completes payment activities for compensation to the affected persons and land acquisition.	By April, 2017
5	BDCA completes the road base construction of all roads correlated with water service pipe installation.	By December, 2017

5. Others

5.1 Concerning pipeline foundations for pipes, BDWSSS agrees to apply Japanese design criteria for water works facilities.

5.2 Excesive soil from the construction site shall be desposed to designated area in Bahir Dar City if it is needed.

5.3 Concerning earth covering of pipelines, based on the Ethiopian technical guidelines,

agreement was made that it should be more than 1.0 m thickness.

6. Undertakings of the Ethiopian Side

The undertakings of the Ethiopian Side agreed by the previous Technical Note signed on April 27, 2016 shall be revised as follows.

Major Undertakings to be taken by the Ethiopian side before the Tender

NO	Items	Deadline	In charge
1	To open Bank Account (Banking Arrangement (B/A))	within 1 month after G/A	
2	To approve EIA	***	
3	To implement EIA	before start of the construction	
4	To complete land acqusition and road base construction for the projected road specified in the attached drawing	before notice of the tender document	
5	To secure the following lands 1) Proposed boreholes development site of Charchara, Ashraf and around Chimbl river 2) Proposed reservoir expansion sites of Gabriel and Diaspora Reservoirs 3) Access road to the boreholes development sites, proposed distribution reservoir sites and new pumping station 4) Proposed pipeline sites	before notice of the tender document	
6	To obtain the necessary permit for the implementation of the Project from the concerned organization (planning, zoning, building, road, river etc.)	before notice of the tender document	
7	To assign counterparts for the Survey Team during detail design survey	Soon after starting detail design survey	
8	To promote the increase of customers for private connections	Before the tender	

Major Undertakings to be taken by the Ethiopian side during the Project Implementation

NO	Items	Deadline	In charge
1	To bear the following commissions to a bank of Japan for the banking services based upon the B/A		
	1) Advising commission of A/P	within 1 month after the singing of the contract	
	2) Payment commission for A/P	every payment	
2	To ensure prompt unloading and customs clearance in recipient country		

	1) Tax exemption and customs clearance of the products	during the Project	
	2) Internal transportation to the project site	during the Project	
3	To accord Japanese nationals and/or physical persons of third countries whose services may be required in connection with the supply of the products and the services under the verified contract such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work	during the Project	
4	To ensure that customs duties, internal taxes and other fiscal levies which may be imposed in the country of the Recipient with respect to the purchase of the Products and/or the Services be exempted and/or be borne by its designated authority without using the Grant Such customs duties, internal taxes and other fiscal levies mentioned above include VAT, commercial tax, income tax and corporate tax of Japanese nationals, resident tax, fuel tax, but not limited, which may be imposed in the recipient country with respect to the supply of the products and services under the verified contract	during the Project	
5	To bear all the expenses, other than those to be borne by the Grant Aid, necessary for construction of the facilities as well as for the transportation and installation of the equipment	during the Project	
6	To submit Project Monitoring Report	every month	
7	To construct access roads		
	1) Outside the site	3 months before completion of the construction	
8	To provide facilities for the distribution of electricity, water supply, drainage and other incidental facilities		
	1) Electricity The distributing line to the site	3 months before completion of the construction	
9	To implement environmental management plan and environmental monitoring plan	during the Project	
10	To submit environmental monitoring report to JICA Ethiopia Office	every month attached to Project Monitoring Report	
11	To assign client-supervisor during the construction period	during the Project	
12	To assign counterparts for the soft-component activities	during the Project	
13	To install water service pipe with OD less than 90 mm, household connection and public water stand	before completion of the Project	
14	To promote the increase of the customers for private	during the Project	

	connections		

(B/A: Banking Arrangement, A/P: Authorization to pay, N/A: Not Applicable)

Major Undertakings to be taken by the Ethiopian side after the Project

NO	Items	Deadline	In charge
1	To maintain and use properly and effectively the facilities constructed and equipment, including allocation of maintenance cost, operation and maintenance of facilities, regular checking/periodical inspection, etc., provided under the Grant Aid	after the Project	
2	To install water service pipe with OD less than 90 mm, and household connection	after the Project	
3	To promote the increase of the customers for private connections	after the Project	

Date: August 23, 2016

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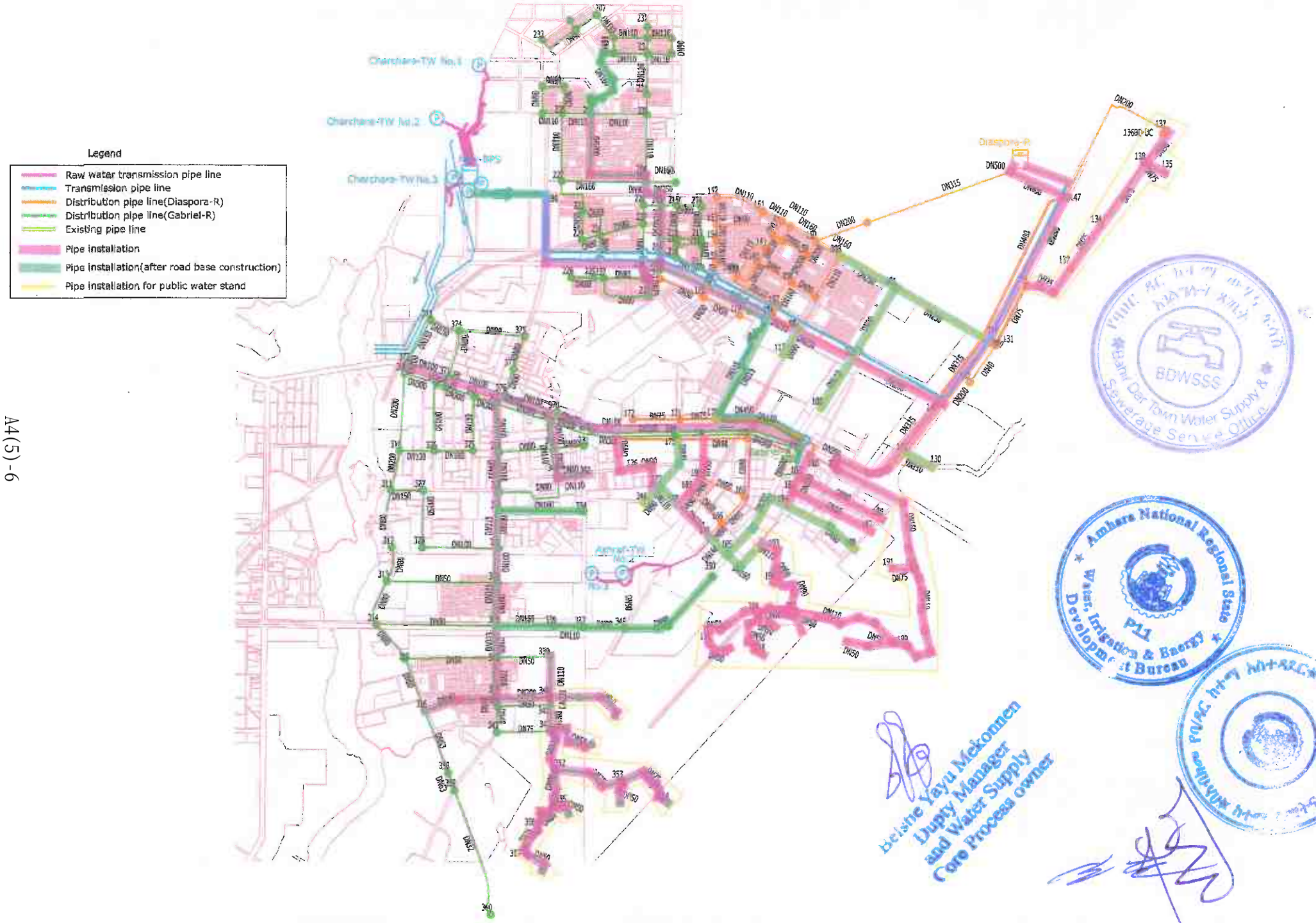
Legend
Raw water transmission pipe line
Transmission pipe line
Distribution pipe line(Diaspora-R)
Distribution pipe line(Gabriel-R)
Existing pipe line
Pipe installation
Pipe installation(after road base construction)
Pipe installation for public water stand
Chanchara-TW No.1
Chanchara-TW No.2
Chanchara-TW No.3
Diaspora-R
DN500
DN315
DN200
DN160
DN110
DN90
DN75
DN50
BDWSSE
Bahir Dar Town Water Supply & Sewerage Service Office
Amhara National Regional State
Water, Irrigation & Energy Development Bureau
PU
Beisne Yayu Mekonnen
Duppy Manager
and Water Supply
Core Process owner

A4(5)-6

Minutes of Discussions
on the Preparatory Survey
for the Project for Improvement of Water Supply in Bahir Dar City
in the Amhara Regional State
in the Federal Democratic Republic of Ethiopia

(Explanation on Draft Preparatory Survey Report)

With reference to the minutes of discussions signed between Bureau of Water, Irrigation and Energy Development, Amhara Regional State (hereinafter referred to as "BoWIED") and the Japan International Cooperation Agency (hereinafter referred to as "JICA") on 4th August, 2015 and in response to the request from the Government of Federal Democratic Republic of Ethiopia (hereinafter referred to as "Ethiopia") in 2013, JICA dispatched the Preparatory Survey Team (hereinafter referred to as "the Team") for the explanation of Draft Preparatory Survey Report (hereinafter referred to as "the Draft Report") for the Project for Improvement of Water Supply in Bahir Dar City in the Amhara Regional State (hereinafter referred to as "the Project"), headed by Takeshi MATSUYAMA, Senior Representative, JICA Ethiopia Office from 28th November to 1st December, 2016.

As a result of the discussions, both sides agreed on the main items described in the attached sheets.

Addis Ababa, 1st December, 2016

Takashi MATSUYAMA

Senior Representative

Ethiopia Office

Japan International Cooperation Agency

Japan

Asrat KASSIE

Water Supply Coreprocess Owner

Bureau of Water, Irrigation and Energy Development, Amhara Regional State
Federal Democratic Republic of Ethiopia

Kokeb MISRAK

Director

Bilateral Cooperation Directorate

Ministry of Finance and Economic Cooperation
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Abiy SISAY

General Manager

Bahir Dar City Water Supply and Sewerage Service in Amhara Region
Federal Democratic Republic of Ethiopia

Kidanie MISKER

General Manager

Bahir Dar City Administration

Federal Democratic Republic of Ethiopia

ATTACHMENT

1. Objective of the Project
The objective of the Project is to improve the volume of water supply by/through the development of deep wells, expansion of distribution networks, construction of distribution reservoirs, etc. in the target area (defined in Clause 3.) in Zone 2 of Bahir Dar City, thereby contributing to decrease the number of patients suffering waterborne diseases and reduce labor for drawing water in the target area.

2. Title of the Preparatory Survey
Both sides confirmed the title of the Preparatory Survey as "the Preparatory Survey for the Project for Improvement of Water Supply in Bahir Dar City in the Amhara Regional State".

3. Project Site
Both sides confirmed that the site of the Project is the urban planning area (the area added to current residential area and expected to expand by 2025 in Zone 2), the Wereb Kola Tsiyon area (outside of the urban planning area) and Zenzelma Campus of Bahir Dar University (hereinafter referred to as "the target area"), which is shown in Annex 1.

4. Responsible Authorities for the Project
Both sides confirmed the authorities responsible for the Project are as follows:

4-1. The Bureau of Water, Irrigation and Energy Development, Amhara Regional State (BoWIED) will be the executing agency for the Project (hereinafter referred to as "the Executing Agency"). The Executing Agency shall coordinate with all the relevant authorities to ensure smooth implementation of the Project and ensure that the undertakings for the Project shall be taken care by relevant authorities properly and on time. The organization chart is shown in Annex 2.

4-2. The Bahir Dar City Water Supply and Sewerage Service (BDWSSS) will be the operating agency for the Project (hereinafter referred to as "the Operating Agency"). The Operating Agency shall be responsible for the operation and maintenance of the facilities developed by the Project. The organization chart is shown in Annex 2.

4-3. The supervising ministry of the Executing Agency is the Ministry of Water, Irrigation and Electricity (hereinafter referred to as "MoWIE"). MoWIE shall be responsible for supervising the Executing Agency on behalf of the Government of Ethiopia.

5. Contents of the Draft Report
After the explanation of the contents of the Draft Report by the Team, the Ethiopian side agreed to its contents.

6. Cost Estimate
Both sides confirmed that the cost estimate including the contingency described in

the Annex 3, Major Undertakings to be Taken by the Government of Ethiopia, and the total grant cost are provisional, and the total grant cost will be examined further by the Government of Japan for its approval. The contingency would cover the additional cost against natural disaster, unexpected natural conditions, etc.

7. Confidentiality of the Cost Estimate and Technical Specifications
Both sides confirmed that the cost estimate and technical specifications in the Draft Report should never be duplicated or disclosed to any third parties until all the contracts under the Project are concluded.

8. Procedures and Basic Principles of Japanese Grant
The Ethiopian side agreed that the procedures and basic principles of Japanese Grant as described in Annex 4 shall be applied to the Project. In addition, the Ethiopian side agreed to take necessary measures according to the procedures.

9. Timeline for the Project Implementation
The Team explained to the Ethiopian side that the expected timeline for the project implementation is as attached in Annex 5.

10. Expected Outcomes and Indicator
Both sides agreed that key indicator for expected outcome is as follows. The Ethiopian side will be responsible for the achievement of agreed key indicator targeted in year 2025 and shall monitor the progress based on that indicator.
[Quantitative Indicator]

Indicator	**Baseline Value (Data in 2015)**	**Target Value (in 2025; 5 years after the Project completion)**
Average Daily Distribution Water Amount (Target Area) (m^3/day)	3,000 *1	14,500 *2

*1: The baseline value is calculated based on the BDWSSS's Water Production data.
*2: The target value is calculated based on the parameters, e.g. target population, 147,700, in 2025 (water consumption unit for private tap users (direct users): 80 L/capita/day, for private tap users (indirect users): 50 L/capita/day, for public tap users: 30 L/capita/day), estimated commercial and industrial use (water demand by industrial facilities: 400 m^3/day, by Terminal Market Center: 250 m^3/day, by Bahir Dar University: 400 m^3/day, etc.), design leakage rate: 18%. The optimum yield from the seven wells used in the Project is 22,168 m^3/day. The average daily distribution water amount is measured with flow meters installed at the booster station and the outlet from Ashraf wells.

[Qualitative Indicators]
- Decrease of the number of patients suffering waterborne diseases in the target area; and
- Reduction of labor for drawing water in the target area.

11. Technical Assistance ("Soft Component" of the Project)
Considering the sustainable operation and maintenance of the products and services granted by the Project, the technical assistance is planned under the Project. The technical assistance aims at improving technical skills and knowledge for BDWSSS

to conduct sustainable and appropriate operation and maintenance of water supply facilities which will be constructed in the target area under the Project. Staff of BoWIED will also join in the trainings/lectures.

The technical assistance is composed of five (5) outputs as follows:

- Output 1: Chlorination for disinfection is performed properly and sustainably at the distribution reservoirs;
- Output 2: Water level of the distribution reservoirs is recorded and utilized for operation of the transmission pumps;
- Output 3: Appropriate control of the groundwater discharge from the production wells is understood based on monitoring of groundwater level;
- Output 4: Basics of non-revenue water (hereinafter referred to as "NRW") and their countermeasures are understood; and
- Output 5: Measurement of NRW ratios in Zone 2 is started.

The Ethiopian side confirmed to deploy necessary number of counterparts who are appropriate and competent for achieving the purpose of the technical assistance as described in the Draft Report.

12. Undertakings to be taken by the Government of Ethiopia

Both sides confirmed the undertakings to be taken by the Government of Ethiopia as described in Annex 3.

12-1. Both sides particularly confirmed that indirect taxes, such as value added tax (VAT), withholding tax and stamp duties, which may be imposed in Ethiopia with respect to the purchase of the products and/or the services, shall be borne by BoWIED without using the Grant.

12-2. With respect to custom duties related to the Project, both sides confirmed the tax shall be exempted.

12-3. Besides, with respect to direct taxes such as corporate tax and personal income tax, both sides understood that further discussion will be necessary between the Government of Japan and the Government of Ethiopia.

Annex 6 shows responsible organizations to bear customs duties, internal taxes and other fiscal levies.

12-4. The Ethiopian side assured to take the necessary measures and coordination including allocation of the necessary budget which are preconditions of implementation of the Project. The Ethiopian side must secure necessary budget during and after the Project as it is described in Annex 3.

12-5. BoWIED plans to apply the budget for the Project through BoFEC to the Amhara Regional Council around March to April 2017. Budget allocation will be done before the end of Ethiopian fiscal year, 30th June 2017.

12-6. BDWSSS will secure the budget for the Project from its own capital. It is necessary for BDWSSS to apply the budget as a part of its Annual Budget Plan to the Board of Director around May 2017. Afterwards, the budget will be allocated before the end of June 2017.

12-7. In terms of the bearing of indirect taxes, BoWIED needs budget allocation from the Amhara Regional State Bureau of Finance and Economic Cooperation (hereinafter referred to as "BoFEC"). Both sides confirmed that BoWIED will finish necessary procedure to secure the budget allocation from BoFEC before April 2017.

12-8. Both sides confirmed that the Ethiopian side will ensure necessary amount of budget for the whole project period.

12-9. It is further agreed that the costs are indicative, i.e. at the Outline Design level. More accurate costs will be calculated at the Detailed Design stage.
Both sides also confirmed that the Annex 3 will be used as an attachment of G/A.

13. Monitoring During the Implementation
The Project will be monitored by the Executing Agency and reported to JICA by using the form of Project Monitoring Report (hereinafter referred to as "PMR") attached as Annex 7. The timing of submission of the PMR is described in Annex 3.

14. Project Completion
Both sides confirmed that the Project completes when all the facilities constructed and equipment procured by the grant are in operation. The completion of the Project will be reported to JICA promptly, but in any event not later than six months after completion of the Project.

15. Ex-Post Evaluation
JICA will conduct ex-post evaluation after three (3) years from the project completion, in principle, with respect to five evaluation criteria (Relevance, Effectiveness, Efficiency, Impact, and Sustainability). The result of the evaluation will be publicized. The Ethiopian side is required to provide necessary support for the data collection.

16. Items and Measures to be Considered for the Smooth Implementation of the Project
Both sides confirmed as follows:

16-1. Road Base Construction for Planned Permanent Roads by Bahir Dar City Administration
In principle, the Project will install the water pipes along the existing and planned permanent roads. Thus, land acquisition is not required for the pipe installation along the roads in the Project.
In terms of the planned permanent roads, the total length of 9.5 km has yet to be constructed. The location of the 9.5 km planned roads is shown in Annex 8. Bahir Dar City Administration (hereinafter referred to as "BDCA") has a responsibility for the construction of planned permanent roads, including land acquisition for the roads and utility spaces, as the urban development project which is separated from the Project.
As of November 2016, BDCA has already acquired the land for 5.4 km out of the 9.5 km. Following the schedule shown in Annex 9, BDCA will complete the land acquisition and road base construction for the 9.5 km. The road base construction means to flatten and put gravels on the areas for planned permanent roads including utility spaces where the water pipes in the Project will be installed. BDCA will finish the road base construction till June 2017.

16-2. Promotion of Household Connection
To realize the objective of the Project, it is estimated that the number of household connection will increase as follows:

- During the Project (March 2017 to September 2020): increase of around 3,000 household connection; and
- After the Project: (October 2020 to 2025): increase of around 7,500 household connection.

To obtain household connection, a household needs to make a contract with BDWSSS and to install service pipes and a water meter at their expense. BDWSSS has a responsibility to promote and conduct household connection during and after the Project. The schedule to promote and conduct household connection by the Ethiopian Side is shown in Annex 5.

16-3. The Ethiopian Side's Responsibility and Project Scope in Installation of Distribution Pipes

The Ethiopian side will install the distribution pipes with outside diameter (OD) less than 90 mm for the household connection. The Project will install those with OD not less than 90 mm. Annex 10 shows the project scope and the Ethiopian side's responsibility for the installation of distribution pipes.

16-4. Efficient Installation of Distribution Pipes (OD Less Than 90 mm) by Ethiopian Side

BDWSSS cannot provide households with water in the target area until the facilities constructed by the Project becomes in full or partial operation. During the project period, BDWSSS can neither make water supply contract with households nor install service pipes/water meter at households in the target area where water is not supplied.

However, in light of efficiency, the installation of distribution pipes (OD less than 90 mm) by the Ethiopian side will be carried out simultaneously with the installation of distribution pipes (OD not less than 90 mm) by the Project. Its schedule is shown in Annex 5.

The Project will install branch pipes (Tee) and valves together with the distribution pipes (OD not less than 90 mm). The Ethiopian side will connect the distribution pipes (OD less than 90 mm) to the valves. The Ethiopian side will not use snap taps with saddle for any connections from the distribution pipes (OD not less than 90 mm).

16-5. Minimizing Water Leakage from Household Connection

To avoid water leakage from service pipes and a water meter at households, their quality control is crucial. If households purchase service pipes and water meters from shops individually, there is a concern that the leakage might occur due to their low quality. Thus, both sides confirmed that first, BDWSSS will purchase service pipes and a water meters which meet BDWSSS's quality standards, and then BDWSSS will install and sell them for household connection.

16-6. Partial Handover

To minimize interruption of water supply, partial handover of the facilities developed by the Project to BDWSSS will be done after necessary inspections. In this case, those facilities as the partial handover will be operated by BDWSSS under their responsibility. A liability period of the facilities will start from the

partial handover.

16-7. Water Quality Testing

Water quality will be examined at some selected points such as washouts and/or hydrants installed by the Project before the handover. Water quality at both existing customer taps and new customer taps will be examined by BDWSSS before commencement of water supply.

16-8. Securing Sufficient Number of Staff

BDWSSS needs more staff in the operation and maintenance for the facilities developed by the Project. Increase of staff number is planned as follows:

- Operator: Current number 20, Necessary number 32;
- Guard: Current number 18, Necessary number 44; and
- Staff in head office and branch office: Current number 18, Necessary number 34.

Both sides confirmed that BDWSSS will hire more staff following above plan and train them at appropriate timing.

16-9. Power Supply

Sufficient power supply is necessary to operate the facilities developed by the Project. To ensure the sufficient power supply, BoWIED and BDWSSS will consult with a power company immediately after receiving the Preparatory Survey Report to avoid the delay of water supply due to a lack of power supply.

17. Schedule of the Study

JICA will finalize the Preparatory Survey Report based on the confirmed items. The report will be sent to the Ethiopian side in February 2017.

18. Environmental and Social Considerations

18-1. General Issues

18-1-1. Environmental Guidelines and Environmental Category

The Team explained that 'JICA Guidelines for Environmental and Social Considerations (April 2010)' (hereinafter referred to as "the Guidelines") is applicable for the Project. The Project is categorized as B because the Project is not located in a sensitive area, nor has sensitive characteristics, nor falls into sensitive sectors under the Guidelines, and its potential adverse impacts on the environment are not likely to be significant.

18-1-2. Environmental Checklist

The environmental and social considerations including major impacts and mitigation measures for the Project are summarized in the Environmental Checklist attached as Annex 11. Both sides confirmed that in case of major modification of the content of the Environmental Checklist, the Ethiopian side shall submit the modified version to JICA in a timely manner.

18-2. Environmental Issues

18-2-1. Environmental Impact Assessment

Both sides confirmed the environmental impact assessment (hereinafter referred to as "EIA") report was approved by the Environmental, Forest and Wildlife Protection Authority (hereinafter referred to as "EFWPA") of Amhara Regional State in November 2016. BoWIED will send JICA an EIA approval letter from EFWPA and final EIA by the middle of December 2016.
The Ethiopian side agreed JICA's disclosure of the EIA report on its website.

18-2-2. Environmental Management Plan and Environmental Monitoring Plan

Both sides confirmed Environmental Management Plan (hereinafter referred to as "EMP") and Environmental Monitoring Plan (hereinafter referred to as "EMoP") of the Project is as Annex 12. Both sides agreed that environmental mitigation measures and monitoring shall be conducted based on the EMP and EMoP, which may be updated during the detailed design stage.
In the EMoP, it is proposed that water quality (turbidity and TSS) of Lake Tana will be monitored during the construction, and their data will be obtained from the water quality monitoring of Lake Tana by the Tana Sub-Basin Organization. However, detail information about the monitoring activity by the Tana Sub-Basin Organization has yet to be confirmed. Thus, BDWSSS will check its monitoring activity during the detailed design stage, and if needed, revise the EMoP.

18-3. Social Issues

18-3-1. Land Acquisition

Both sides confirmed the around 1.9 ha of land would be acquired and 26 households would be affected due to the implementation of the Project. The land acquisition shall be implemented based on the Abbreviated Resettlement Action Plan (RAP) as Annex 13 which was prepared in line with the Guidelines and authorized by the Ethiopian side.

18-3-2. Compensation to the Affected Households

The Ethiopian Constitution (1995) does not allow private ownership of land asset. Federal Democratic Republic of Ethiopia Rural Land Administration and Land Use Proclamation (No. 456/2005) states that right to use farm land are given to farmers without charge nor time limits. Therefore, there are no markets for land.
Amhara Regional State follows Expropriation of Landholding for Public Purposes and Payment of Compensation Proclamation (No. 455/2005) for compensation to loss of agricultural land. The Proclamation states that the compensation is equivalent to 10 times of annual average income in last five years (namely, the compensation is annual average income of 10 years).
The average income for last five years from farming activities is calculated based on unit average income for 10 years, i.e. 25 ETB/m^2/10-year, calculated by a formula defined in the Minutes of Meeting prepared by the Bahir Dar City Compensation Study Team in BDCA in 2015 for the Project. In the formula, market values (average of 2010 to 2014) of three major crops in the region (teff, maize and finger millet) are used. As Annex 14 shows, both sides confirmed the details of formula and calculation of the unit average income, and there is no huge discrepancy between the current market values in 2016 and the average market values of 2010 to 2014.

In the Project, the amount of compensation is calculated by multiplying the unit average income for 10 years (25 ETB/m^2) by the affected land area.
The compensation to the 26 households in the Project has been already paid based on the Abbreviated RAP and the above calculation. Annex 15 shows the record of payment.

18-3-3. Current Living Conditions of the Affected Households

The Abbreviated RAP does not contain any information about income level nor livelihood conditions of each 26 affected households. Their current living conditions after the land acquisition are not known either.
Thus, both sides confirmed that BDWSSS will conduct a survey about the income level and livelihood conditions of the 26 affected households until the end of December 2016.

18-3-4. Additional Supports to the Affected Households

Both sides confirmed that BDWSSS and BDCA will consider more appropriate income restoration programs referring to the survey result of the income level and livelihood conditions of the 26 affected households. If severely affected households will be found through the survey and social monitoring (refer to 18-4-2), BDWSSS will provide the income restoration programs to them. Hiring as operators (literate persons), guards and/or workers for the construction by BDWSSS could be one of the income restoration programs.

18-3-5. Compensation for Manufacturer in Gabriel Reservoir

The land required for the expansion of Gabriel Reservoir belongs to BDCA. BDCA currently rents it out to the manufacturer of concrete blocks, and it has constructed a temporary structure (small storage with zinc roof).
BDCA and the manufacturer agreed in their agreement document that when BDCA needs the rented land for a public development project, the manufacturer will evacuate without any compensation for the land and temporary structure. Thus, no compensation is necessary for the manufacturer.

18-3-6. Revision of Abbreviated RAP

Both sides confirmed that BDWSSS and BDCA will revise the current Abbreviated RAP. Major additional items included in the revised Abbreviated RAP are as follows;

- Income level and livelihood conditions of the 26 affected households; and
- Additional supports to the affected households.

BDWSSS and BDCA will submit the revised Abbreviated RAP to JICA before the middle of January 2017.

18-3-7. Sections where Water Pipes will be installed under Agricultural Land

In principle, the Project will install the water pipes along the existing and planned permanent roads. However, as exception, there are sections where the water pipes will be installed under agricultural land. They are as follows:

- Section between Diaspora Reservoir to National Road No. 3: total length of 450 m

- Section between Bahir Dar University to National Road No. 3: total length of 1,170 m

In order to avoid land acquisition, the water pipes under the sections will be installed during dry seasons because the farmers do not engage in their cultivating works in a dry season, and they will be buried and recovered for the farmers to be able to continue their agricultural activities. In case that any negative impacts occur after the water pipe installation, the farmers can file complaints to BDCA and BDWSSS to solve an issue.

BDWSSS and BDCA have identified that there are around 30 farmers engaging in the agricultural activities in the sections. BDWSSS and BDCA will have a meeting early January, 2017 to explain the water pipe installation plan and the measure to avoid the land acquisition to the farmers. BDWSSS will submit a document which shows the farmers' agreement with them to JICA before the middle of January 2017.

18-4. Environmental and Social Monitoring

18-4-1. Environmental Monitoring

Both sides agreed that the Ethiopian side will implement the environmental monitoring, and will submit results of environmental monitoring to JICA by using the monitoring form attached as Annex 16. The timing of submission of the monitoring form is described in Annex 3.

18-4-2. Social Monitoring

Both sides confirmed that the Ethiopian side will implement social monitoring about the land acquisition proposed in the Abbreviated RAP, and will submit results of the social monitoring to JICA by using the monitoring form attached as Annex 17. The timing of submission of the monitoring form is described in Annex 3.

18-4-3. Information Disclosure of Monitoring Results

Both sides confirmed that the Ethiopian side will disclose the results of the environmental and social monitoring to local stakeholders through their website.

The Ethiopian side agreed JICA will disclose the results of the environmental and social monitoring submitted by the Ethiopian side as the monitoring forms attached as Annex 16 and 17 on its website.

19. Other Relevant Issues

19-1. Effort to Start Water Supply as Early as Possible

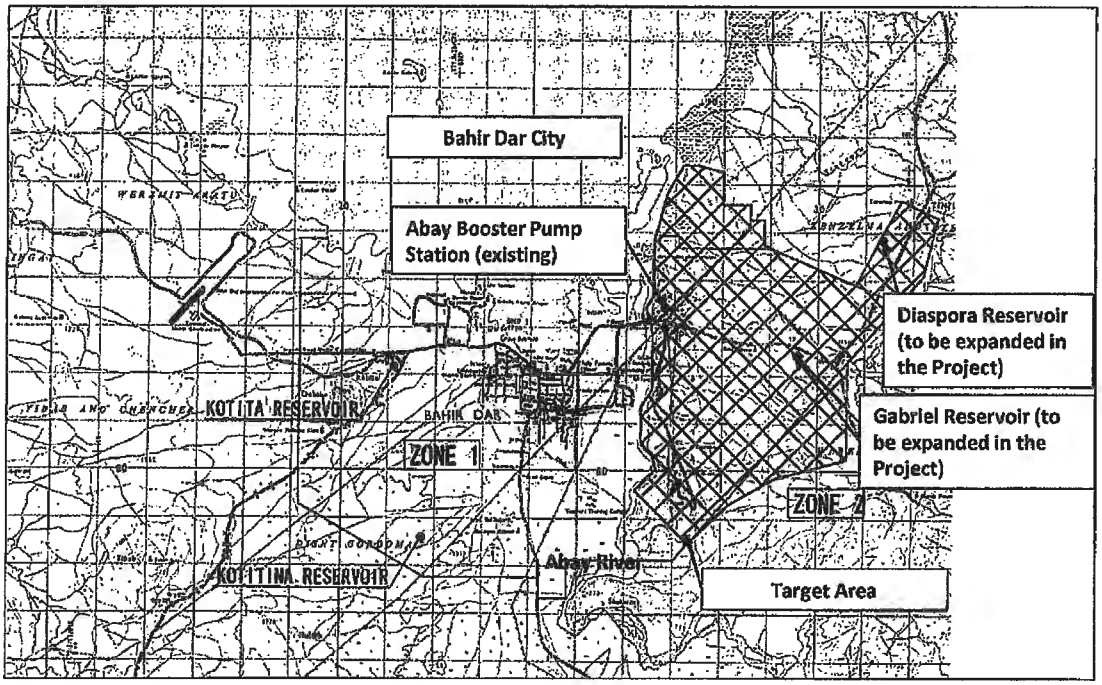
Because of the rapid population increase and city development, the water demand in the target area is very high. Both sides confirmed that the Project will make effort to supply water in the target area as early as possible.

19-2. Disclosure of Information

Both sides confirmed that the Preparatory Survey Report from which project cost is excluded will be disclosed to the public after completion of the Preparatory Survey. The comprehensive report including the project cost will be disclosed to the public after all the contracts under the Project are concluded.

Annex 1 Project Site
Annex 2 Organization Charts
Annex 3 Major Undertakings to be Taken by the Government of Ethiopia
Annex 4 Japanese Grant
Annex 5 Timeline for the Project Implementation
Annex 6 Responsible Organizations to Bear Customs Duties, Internal Taxes and Other Fiscal Levies
Annex 7 Project Monitoring Report (template)
Annex 8 Unconstructed Planned Permanent Roads
Annex 9 Schedule of BDCA's Land Acquisition and Road Base Construction of Planned Permanent Roads
Annex 10 Project Scope and Ethiopian Side's Responsibility for Installation of Distribution Pipes
Annex 11 Environmental Check List
Annex 12 Environmental Management Plan/Environmental Monitoring Plan
Annex 13 Abbreviated Resettlement Action Plan
Annex 14 Formula and Calculation of the Unit Average Income for the Compensation in the Project
Annex 15 Record of Payment of Compensation
Annex 16 Environmental Monitoring Form
Annex 17 Social Monitoring Form
Annex 18 Major Undertakings for Moving Forwards to the Project Implementation by Both Sides

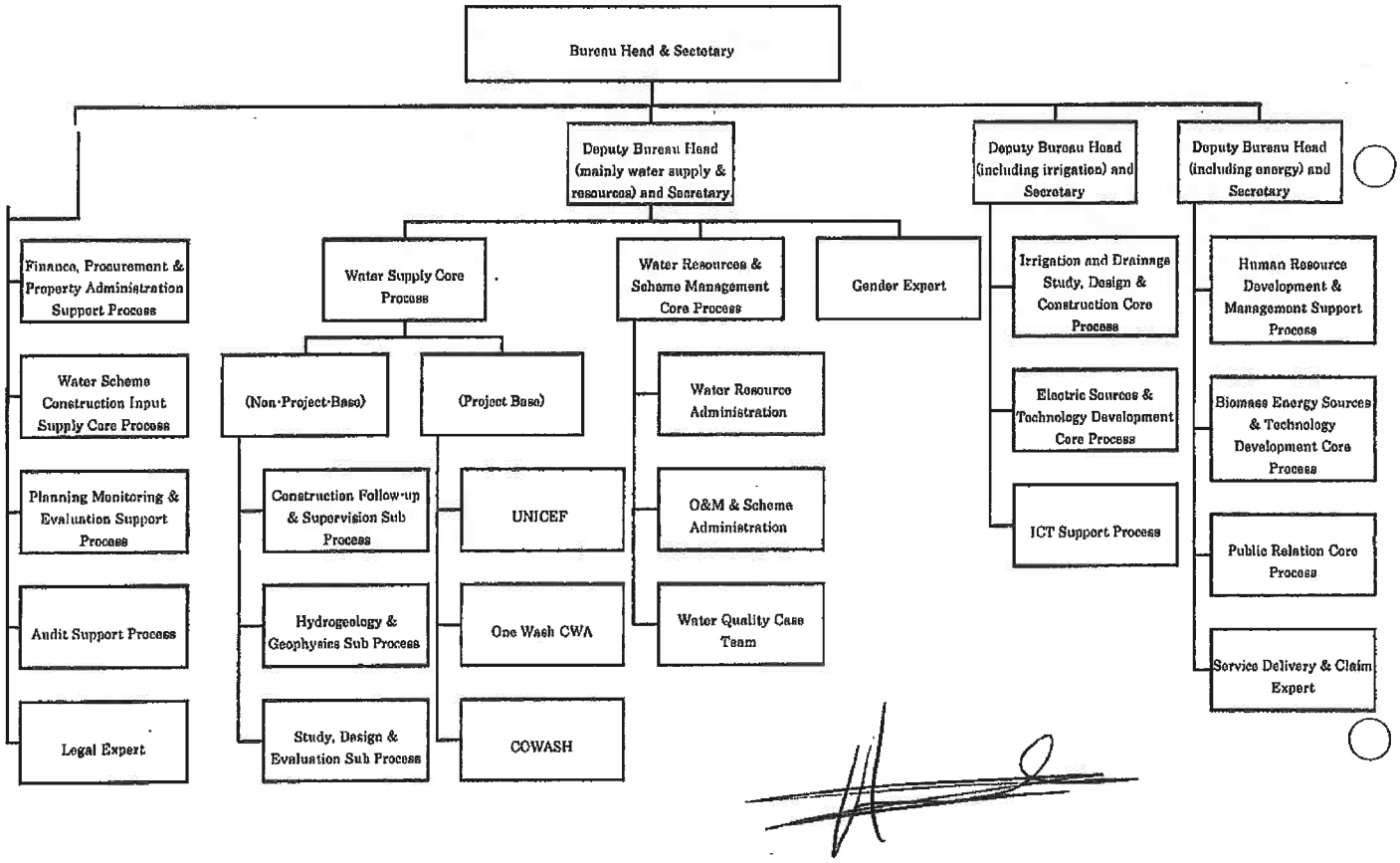
Annex 1 Project Site



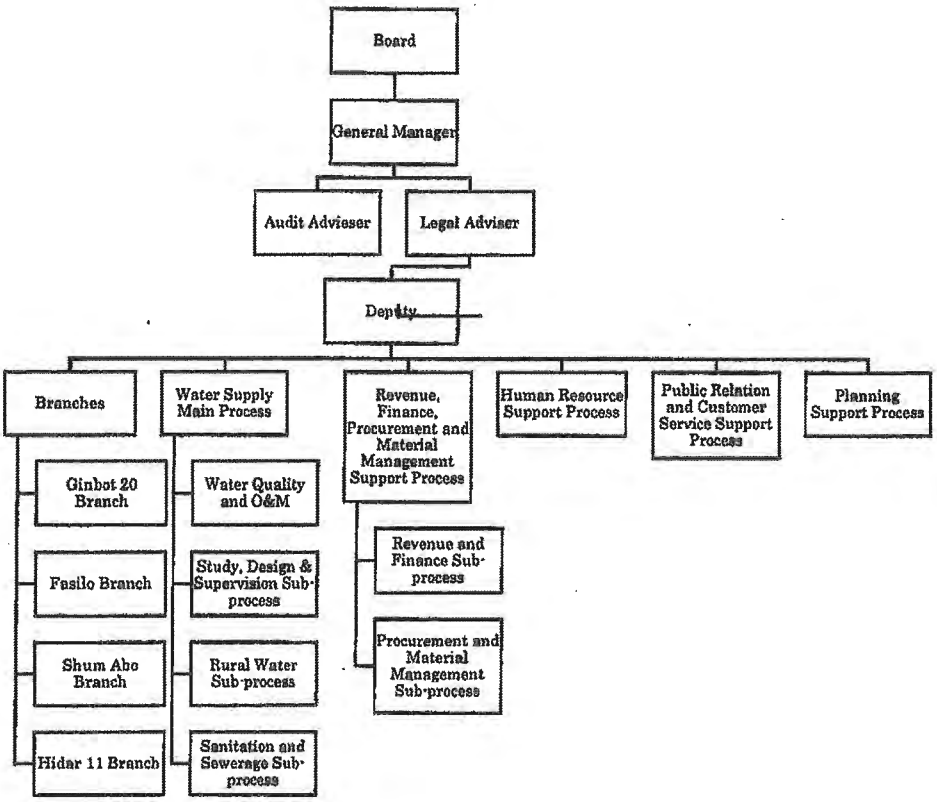
Annex 2

Organization Charts

(1) Bureau of Water, Irrigation and Energy Development, Amhara Regional State (BoWIED)



(2) Bahir Dar City Water Supply and Sewerage Service (BDWSSS)



Annex 4

JAPANESE GRANT

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

1. Procedures of Project Grants

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

(1) Preparation

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

(2) Appraisal

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

(3) Implementation

Exchange of Notes

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

Grant Agreement (hereinafter referred to as "the G/A")

-Agreement concluded between JICA and the Recipient

Banking Arrangement (hereinafter referred to as "the B/A")

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

Construction works/procurement

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

(4) Ex-post Monitoring and Evaluation

-Monitoring and evaluation at post-implementation stage

2. Preparatory Survey

(1) Contents of the Survey

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

- Confirmation of the background, objectives, and benefits of the Project and also institutional capacity of

relevant agencies of the Recipient necessary for the implementation of the Project.

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

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

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

(2) Selection of Consultants

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

(3) Result of the Survey

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

3. Basic Principles of Project Grants

(1) Implementation Stage

1) The E/N and the G/A

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

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

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

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

3) Procurement Procedure

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

4) Selection of Consultants

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

5) Eligible source country

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

6) Contracts and Concurrence by JICA

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

7) Monitoring

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

8) Safety Measures

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

9) Construction Quality Control Meeting

Construction Quality Control Meeting (hereinafter referred to as the "Meeting") will be held for quality assurance and smooth implementation of the Works at each stage of the Works. The member of the Meeting will be composed by the

Recipient (or executing agency), the Consultant, the Contractor and JICA. The functions of the Meeting are as followings:

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

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

(2) Ex-post Monitoring and Evaluation Stage

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

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

(3) Others

1) Environmental and Social Considerations

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

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

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

3) Proper Use

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

4) Export and Re-export

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

PROCEDURES OF JAPANESE GRANT

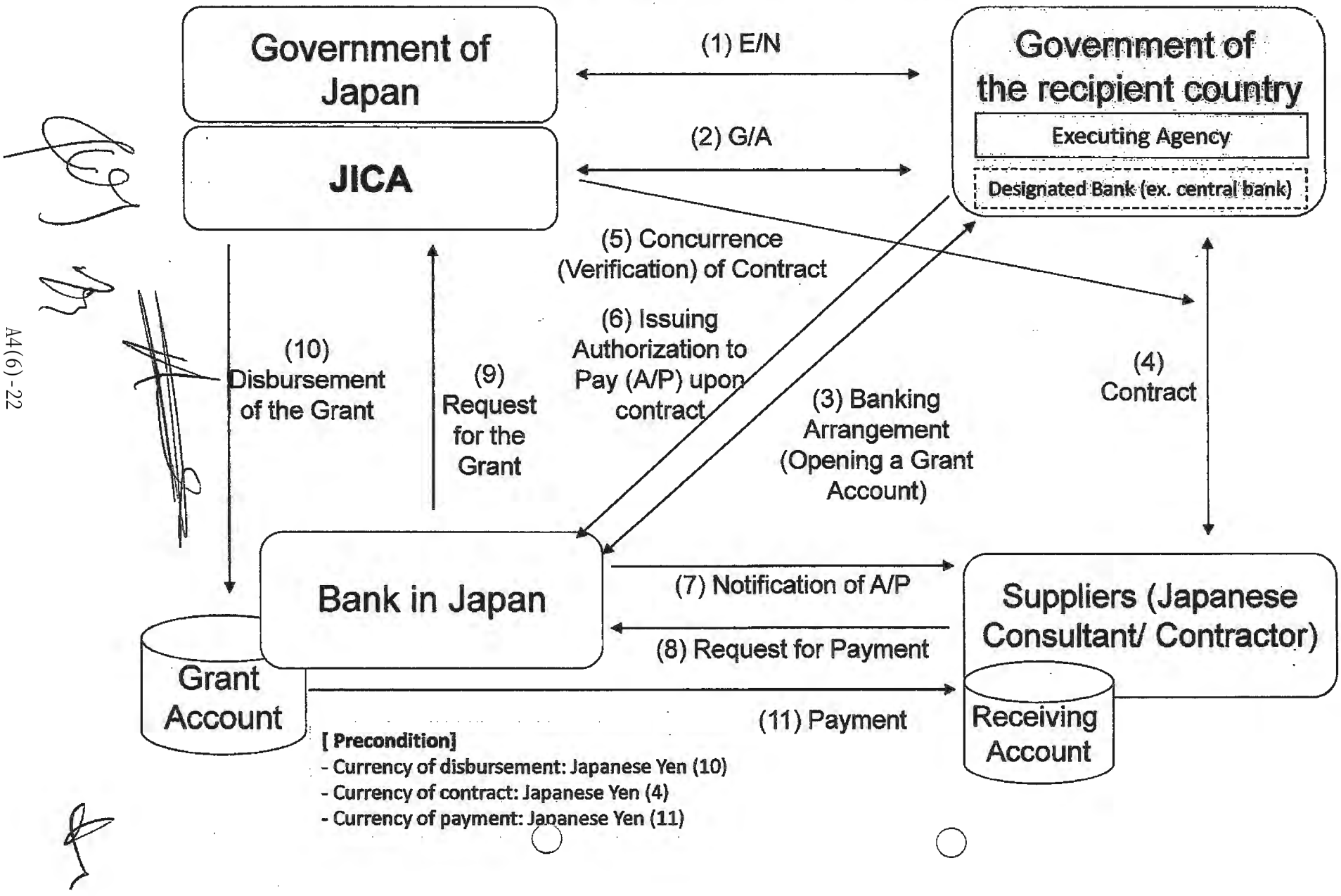
Stage	Procedures	Remarks	Recipient Government	Japanese Government	JICA	Consultants	Contractors	Agent Bank
Official Request	Request for grants through diplomatic channel	Request shall be submitted before appraisal stage.	x	x				
1. Preparation	(1) Preparatory Survey Preparation of outline design and cost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

notes:

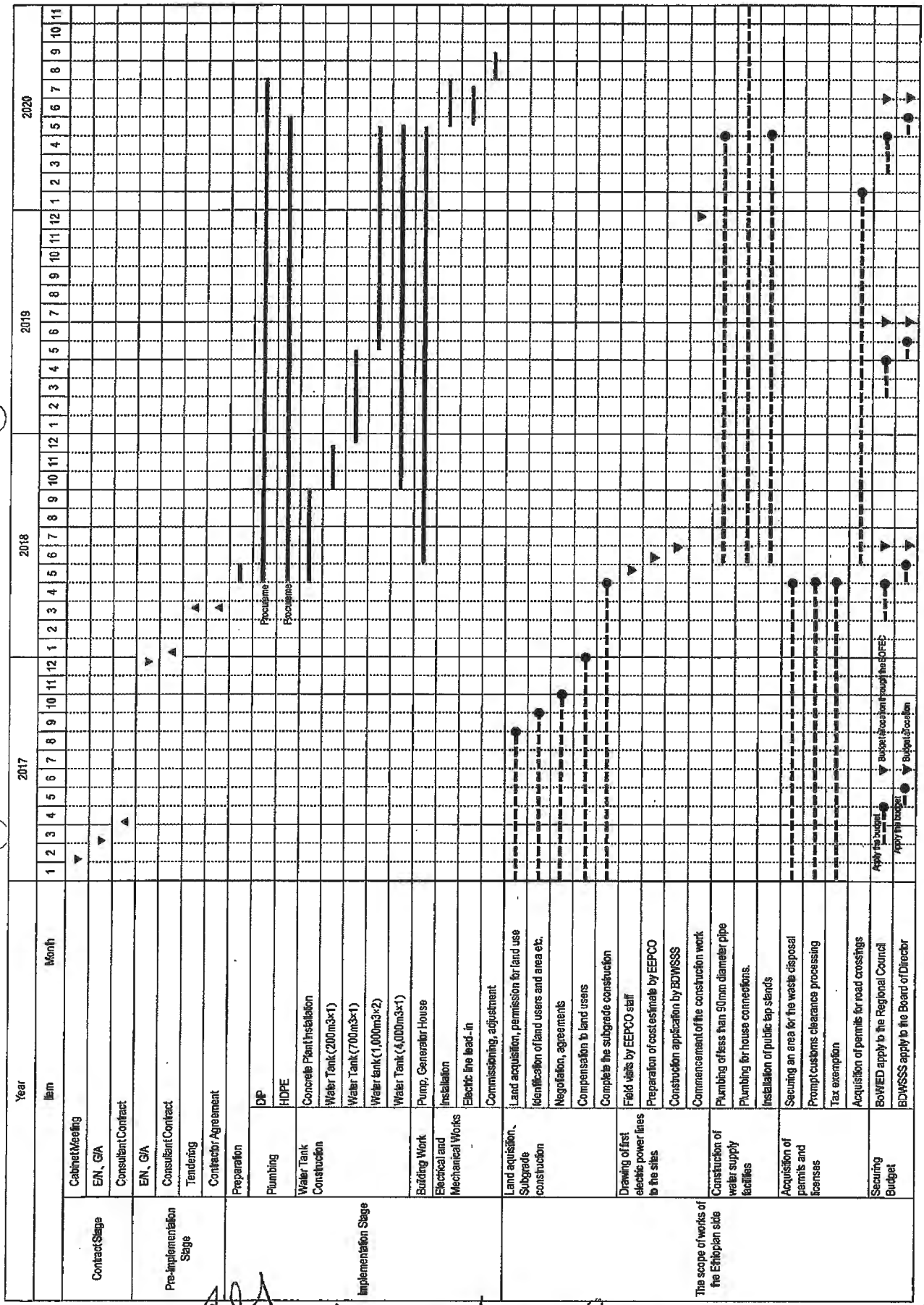
1. Project Monitoring Report and Report for Project Completion shall be submitted to JICA as agreed in the G/A.

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

Financial Flow of Japanese Grant (A/P Type)



Annex 5 Timeline for the Project Implementation



Annex 6

Responsible Organizations to Bear Customs Duties, Internal Taxes and Other Fiscal Levies

No.	Category	Items	Description	Tax rate (%)	Who bears	Organization in Charge
1	Indirect tax	Custom Duties (permanent items) consists of Custom Duty, VAT, Withholding tax, Surtax, Excise tax	Items imported into Ethiopia are subject to 5 kinds of taxes, customs duties, excise tax, VAT, surtax and withholding tax. Their tax rates are decided based on products' priority categories set by the government and are calculated in a sequential order.	0-100	- (exemption)	MoFEC, ERCA
2	Direct tax	Corporate Income Tax	Business income tax for corporation	30	Ethiopian and Japanese Governments continues discussion	MoFEC, ERCA
3		Personal Income Tax for Foreign Staff	Person (individual) income tax for foreign staff including Japanese	10-35	Ethiopian and Japanese Governments continues discussion	MoFEC, ERCA
4	Indirect tax	Input VAT (paid)	Paid value added tax on purchasing goods and serices	15	BoWIED	MoFEC, ERCA
5		Output VAT (Received)	Received value added tax on selling goods and serices	15	BoWIED	MoFEC, ERCA
6		Withholding Tax	The current payments of income tax at time of payments made on account of goods and current services	2-30	BoWIED	MoFEC, ERCA
7		Stamp Duty	Stamp duty	0.5-2 5-350 Birr	BoWIED	MoFEC, ERCA
8	Others	Registration fee, License fee, and Permits and approvals fee, etc.	Registration fee, license fee, and permits and approvals fee, etc.	-	BoWIED	BoWIED
9		Other internal taxes and fiscal levies	Aside from the above listed, other internal and levies which Ethiopia government imposes, and payments and costs occurred realted on the Project	-	BoWIED	BoWIED
10		Penalty and interests imposed	Penalty and interests imposed from Ethiopian Revenues and Customs Authority (ERCA), other related parties or companies	-	BoWIED	BoWIED

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

Organizational Information

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

General Information:

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

1: Project Description

1-1 Project Objective

1-2 Project Rationale

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

1-3 Indicators for measurement of "Effectiveness"

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

2: Details of the Project

2-1 Location

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

2-2 Scope of the work

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

Reasons for modification of scope (if any).

(PMR)

2-3 Implementation Schedule

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

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

2-4 Obligations by the Recipient

2-4-1 Progress of Specific Obligations

See Attachment 2.

2-4-2 Activities

See Attachment 3.

2-4-3 Report on RD

See Attachment 11.

2-5 Project Cost

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

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

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

2-5-2 Cost borne by the Recipient

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

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

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

(PMR)

2-6 Executing Agency

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

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

2-7 Environmental and Social Impacts

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

3: Operation and Maintenance (O&M)

3-1 Physical Arrangement

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

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

3-2 Budgetary Arrangement

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

Original *(at the time of outline design)*

Actual *(PMR)*

4: Potential Risks and Mitigation Measures

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

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

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

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

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

5-1 Overall evaluation

Please describe your overall evaluation on the project.

5-2 Lessons Learnt and Recommendations

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

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

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

Attachment

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

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

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

Attachment 6

Monitoring sheet on price of specified materials

1. Initial Conditions (Confirmed)

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

2. Monitoring of the Unit Price of Specified Materials

(1) Method of Monitoring : ●●

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

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

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

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-
-

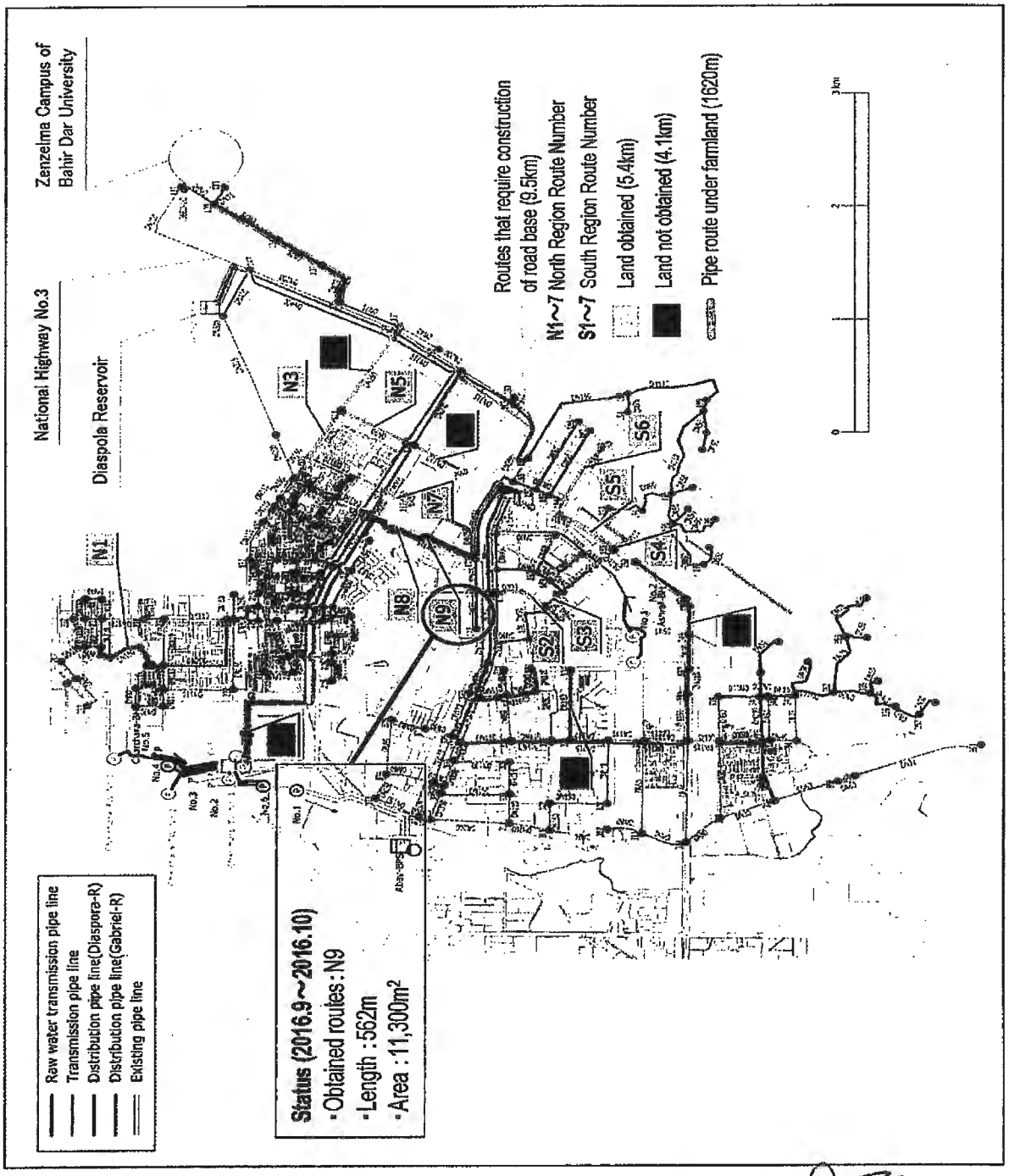
Attachment 7

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

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

Annex 8

Unconstructed Planned Permanent Roads (as of Nov. 2016)



Annex 9

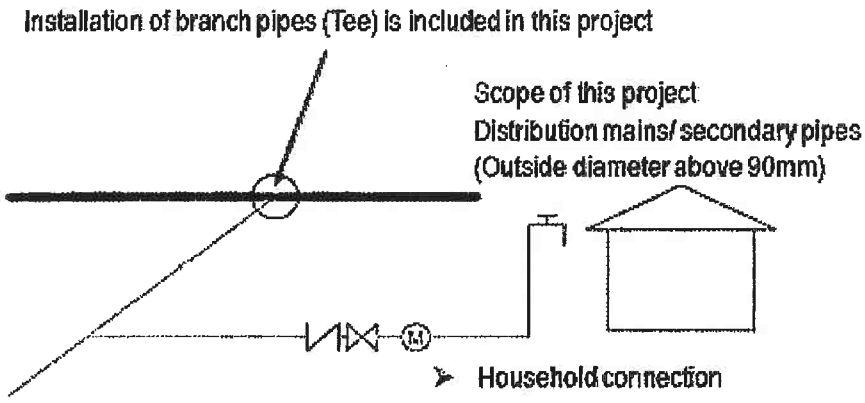
Schedule of BDCA's Land Acquisition and Road Base Construction of Planned Permanent Roads

Step	Action	Schedule
1	BDCA conducts the on-site survey to identify the proposed roads regarding road center, boundary and elevation through.	from 1st week of December 2016 (for around 15 days)
2	BDCA identifies land, structures and persons affected by the proposed road base construction and evaluates affected lands and structures to set out compensation amount.	from 1st week of January 2017 (for around 2 months)
3	BDCA conducts meetings with affected persons regarding the land acquisition for the road base construction and obtain agreement from them with proper compensation amount and relocation schedule.	from 1st week of January 2017 (for around 2 months)
4	BDCA completes payment activities for compensation to the affected persons and land acquisition.	until March 2017
5	BDCA completes the road base construction of all roads correlated with water service pipe installation.	until June 2017

1

Annex 10

Project Scope and Ethiopian Side's Responsibility for Installation of Distribution Pipes



Distribution secondary pipes

(less than 90mm outside diameter, but the pipes connected to the public tap stands outside of the urban planning area will be installed in this project.)

Annex 11

Environmental Check List

Category	Environmental Item	Main Check Items	Yes: Y No: N Not applicable/a	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
1 Permits and Explanation	(1) EIA and Environmental Permits	(a) Have EIA reports been already prepared in official process? (b) Have EIA reports been approved by authorities of the host country's government? (c) Have EIA reports been unconditionally approved? If conditions are imposed on the approval of EIA reports, are the conditions satisfied? (d) In addition to the above approvals, have other required environmental permits been obtained from the appropriate regulatory authorities of the host country's government?	(a) Y (b) Y (c) Y (d) Y	(a) already prepared (b) Approved in November 2016 (d)In March 2016, BDWSSS acquired the permission for drilling the 8 test wells in this survey from Abay Basin Authority. Moreover, BDWSSS acquired the permission for extracting additional groundwater for this project from Abay Basin Authority in May 2016. This permission needs to be updated every year.
	(2) Explanation to the Local Stakeholders	(a) Have contents of the project and the potential impacts been adequately explained to the Local stakeholders based on appropriate procedures, including information disclosure? Is understanding obtained from the Local stakeholders? (b) Have the comment from the stakeholders (such as local residents) been reflected to the project design?	(a) Y (b) Y	(a) Public opinions on this project were collected from 100 households sampled from the project target area during the household survey conducted in August 2015. Moreover, The report from this survey's first period in Ethiopia (including the outlines of the project) was distributed and directly explained to main stakeholders of this project such as BDCA and EFWPA in March 2016. Moreover, the stakeholder meeting was held for the EIA on this project in April 2016 and opinions were actively exchanged with various stakeholders including existing land users of the candidate construction sites. (b) Many of the collected opinions were reflected in the contents of this project.
	(3) Examination of Alternatives	(a) Have alternative plans of the project been examined with social and environmental considerations?	(a) Y	(a) Many alternative sites were compared, from environmental and social viewpoints, for the construction of distribution reservoirs and pump station in this survey. Moreover, through the negotiations with existing land users of the lands to be acquired, the boundaries of the lands were decided in a way to satisfy their requirements as much as possible.
2 Pollution Control	(1) Air Quality	(a) Is there a possibility that chlorine from chlorine storage facilities and chlorine injection facilities will cause air pollution? Are any mitigating measures taken? (b) Do chlorine concentrations within the working environments comply with the country's occupational health and safety standards?	(a) N (b) Y	(a) There is no possibility to cause air pollution because calcium hypochlorite will be continuously used for water disinfection. (b) In this project, chlorine dosing will be automated with dosing equipment so that operation such as dissolution of calcium hypochlorite, which is currently conducted by hand, can be done safely. Therefore, this improvement meets relevant Ethiopian regulations (e.g. the health and safety of worker should not be compromised at work area and building.
	(2) Water Quality	(a) Do pollutants, such as SS, BOD, COD contained in effluents discharged by the facility operations comply with the country's effluent	(a) n/a	(a) Water purification processes such as sedimentation and filtering are not required in this project because groundwater from deep wells will be used as its water source while chlorine disinfection is required. Therefore, discharge of backwash

Category	Environmental Item	Main Check Items	Yes: Y No: N Not applicable/a	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
		standards?		water having high pollution road will not occur.
	(3) Wastes	(a) Are wastes, such as sludge generated by the facility operations properly treated and disposed in accordance with the country's regulations?	(a) Y	(a) Sludge will not be generated from raw water because water purification process such as sedimentation and filtering are not required. Vault toilets will be installed at facilities such as production wells and reservoirs. Human waste accumulated in these vault toilets and solid waste generated at the facilities will be collected by BDWSSS and then disposed to the disposal sites designated by BDCA (however, appropriate treatment of human wastes and sanitary landfill of solid wastes are not conducted at theses disposal site).
	(4) Noise and Vibration	(a) Do noise and vibrations generated from the facilities, such as pumping stations comply with the country's standards?	(a) n/a	(a) Noise and vibrations from the submersible pumps of production wells are not matter of concern because these pumps will be placed under water. At the booster pump station to be constructed outside of the built up areas (the lands around the sits are categorized into agricultural lands in the existing land use plan), impact of the noise from the ground pumps for transmission on the surrounding environment will be limited because these pumps will be installed within a reinforced concrete building. Acceptable maximum value of noise is not set for agricultural lands, where the pump station will be built, in the Ethiopian guideline environmental standards (2003) although those for industrial, commercial and residential areas are set in the standards. Even the most strict value set for the night time at residential areas (45 dB (A)) in the standards can be met by closing the doors and windows of the reinforced concrete building in which the pumps will be installed.
	(5) Subsidence	(a) In the case of extraction of a large volume of groundwater, is there a possibility that the extraction of groundwater will cause subsidence?	(a) N	(a) The ground foundation at the well fields of Ashraf and Charchara, where new boreholes were drilled for this project, is strong. There have been no information suggesting the possibility of subsidence in these areas although groundwater is being extracted in these areas. Therefore, subsidence is not expected.
3 Natural Environment	(1) Protected Areas	(a) Is the project site or discharge area located in protected areas designated by the country's laws or international treaties and conventions? (b) Is there a possibility that the project will affect the protected areas?	(a) N (b) N	(a) Several project sites are located within the Abay River Millennium Park established by Amhara State. However, there have been many development within the park area because this park area is not fenced out and there is no clear restriction on the development within the park area. According to the management office of this park area established within BDCA, water supply facilities can be constructed within the park area since this project has high priority as long as its EIA is approved. Moreover the project target area is within Lake Tana Biosphere Reserve, which was registered under UNESCO in 2015. However, core zones requiring protection do not exist within the target area. The construction of several water supply facilities located in its buffer zones are allowed if its EIA is approved. (b) Although wells in Charchara are within a buffer zone of the biosphere reserve, impacts on the ecosystem of the core zone, which is located more than 500m away beyond a water body of

Category	Environmental Item	Main Check Items	Yes: Y No: N Not applicable/a	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
				Lake Tana, are almost not expected at all since this project will not extract the surface water nor cut down native forest. However, there is a slight possibility that muddy water generated by soil erosion during rain cause minor impacts on the core zone (wetland) on the opposite shore through the water of Lake Tana. Therefore, serious soil erosion should be avoided at the construction sites.
	(2) Ecosystem	(a) Does the project site encompass primeval forests, tropical rain forests, ecologically valuable habitats (e.g., coral reefs, mangroves, or tidal flats)? (b) Does the project site or discharge area encompass the protected habitats of endangered species designated by the country's laws or international treaties and conventions? (c) If significant ecological impacts are anticipated, are adequate protection measures taken to reduce the impacts on the ecosystem? (d) Is there a possibility that the amount of water used (e.g., surface water, groundwater) by project will adversely affect aquatic environments, such as rivers? Are adequate measures taken to reduce the impacts on aquatic environments, such as aquatic organisms?	(a) N (b) N (c) n/a (d) N	(a) The project sites are within agricultural lands, grazing grounds and plantation lands for lumber. Any of the project sites are not located within ecologically valuable habitats. (b)Endangered species and rare species do not exist with the project target area. However, black crowned cranes, crocodiles, and hippopotamus and fish species endemic fish species of Lake Tana, whose populations are decreasing due to development, etc. exist around the target area. (d) The deep wells drilled for this water supply project exists in the areas where confined groundwater is abundant. Therefore, impact of extracting groundwater from these wells on other neighbouring deep wells is limited. Moreover, extraction of groundwater from these deep wells has almost no impact on surface water bodies such as lake and rivers and unconfined groundwater. Thus, no impact on aquatic lives is expected to occur.
	(3) Hydrology	(a) Is there a possibility that the amount of water used (e.g., surface water, groundwater) by the project will adversely affect surface water and groundwater flows?	(a) N	(a) The extraction of groundwater from the deep wells drilled during this survey will not affect flow of any surface water because there are no springs, etc. downstream of the deep wells. Moreover, optimum discharge rates are set for these wells not to adversely affect the existing deep wells at surrounding areas. Therefore no genitive impact is expected on the flow of groundwater.
4 Social Environment	(1) Resettlement	(a) Is involuntary resettlement caused by project implementation? If involuntary resettlement is caused, are efforts made to minimize the impacts caused by the resettlement?	(a) N	(a)This project does not require physical relocation of residences but requires land acquisition.
	(2) Living and Livelihood	(a) Is there a possibility that the project will adversely affect the living conditions of inhabitants? Are adequate measures considered to reduce the impacts, if necessary? (b) Is there a possibility that the amount of water used (e.g., surface water, groundwater) by the project will adversely affect the existing water uses and water area uses?	(a)Y (b)N	(a) This project has negative impacts on the livelihoods of the people currently cropping, pasturing and/or growing eucalypt tress for lumber on the lands to be acquired. In order to mitigate the impacts on them, the boundaries of the lands to be acquired were adjusted in a way satisfying their requirements as much as possible while adequate payment of compensation by BDWSSS was supported. (b) Through the interference tests of neighbouring wells, etc. it is confirmed that there is little interference of groundwater level between the deep wells to be used for this project. Therefore, no

Category	Environmental Item	Main Check Items	Yes: Y No: N Not applicable/a	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
				impact on the uses of existing deep wells at surrounding areas is expected.
	(3) Heritage	(a) Is there a possibility that the project will damage the local archaeological, historical, cultural, and religious heritage? Are adequate measures considered to protect these sites in accordance with the country's laws?	(a) N	(a)The project sites are away from the monasteries around Lake Tana that are registered as world heritages of UNESCO. Therefore, there is no possibility that this project will damage their values. Moreover, sufficient consideration was given to avoid selecting the site near the old palace having historical value in the analysis of alternative sites for distribution reservoirs.
	(4) Landscape	(a) Is there a possibility that the project will adversely affect the local landscape? Are necessary measures taken?	(a) N	(a) The construction of a distribution reservoir near a good landscape observation place was avoided through comparing alternative sites. Moreover, the rooms for pump operation and security guard for the borehole of CharcharaTW-No.2, which is located in the wetland having a relatively good surrounding landscape used for pasturing during dry season, will be constructed away from the land to reduce their impacts on the landscape.
	(5) Ethnic Minorities and Indigenous Peoples	(a) Are considerations given to reduce impacts on the culture and lifestyle of ethnic minorities and indigenous peoples? (b) Are all of the rights of ethnic minorities and indigenous peoples in relation to land and resources respected?	(a) Y (b) n/a	(a) The communities of ethnic minority (Negede), which were relocated to avoid from the flooding of Chimbl River with support of the government, exist in Diaspora Area where water supply is currently not sufficient due to low distribution pressure. The livelihoods of Negede people living in Diaspora Area will be improved by this project through the improvement of water supply conditions in this area. (b) At the beginning of this survey, the existence of Negede people living around Charchara, where deep wells were drilled for this project, was misinformed. However, non-existence of Negede people living around this area was confirmed later. Therefore, the rights of Negede people on lands and resources are not relevant to this project.
	(6) Working Conditions	(a) Is the project proponent not violating any laws and ordinances associated with the working conditions of the country which the project proponent should observe in the project? (b) Are tangible safety considerations in place for individuals involved in the project, such as the installation of safety equipment which prevents industrial accidents, and management of hazardous materials? (c) Are intangible measures being planned and implemented for individuals involved in the project, such as the establishment of a safety and health program, and safety training (including traffic safety and public health) for workers etc.? (d) Are appropriate measures taken to	(a) Y (b) Y (c) Y (d) Y	(a) In order to follow Ethiopian regulations regarding working environment during the construction for this project, appropriate working hours, etc. were considered in the planning of implementation schedule. (b) The safety of the BDWSSS's staff involved in O&M of facilities are considered. For example, equipment for automating chlorine dosing will be installed in this project. (c) The soft component of this project includes the training for BDWSSS's staff to operate the chlorine dosing equipment safely. (d) BDWSSS will mainly employ the existing farmers, etc. using the lands to be acquired as security guards for the facilities to be constructed by the project. Therefore, the possibility that security guards will violate safety of local residents is low.

Category	Environmental Item	Main Check Items	Yes: Y No: N Not applicable/a	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
		ensure that security guards involved in the project not to violate safety of other individuals involved, or local residents?		
5 Others	(1) Impacts during Construction	(a) Are adequate measures considered to reduce impacts during construction (e.g., noise, vibrations, turbid water, dust, exhaust gases, and wastes)? (b) If construction activities adversely affect the natural environment (ecosystem), are adequate measures considered to reduce impacts? (c) If construction activities adversely affect the social environment, are adequate measures considered to reduce impacts? (d) If the construction activities might cause traffic congestion, are adequate measures considered to reduce such impacts?	(a) Y (b) Y&Y (c) Y&Y (d) Y&Y	(a)There is no concern regarding noise and vibration from hammering of foundation piles because the foundation of the project sites is strong. However, disposal of the spoil soil, which is not used for refiling, may be required because water supply pipes will be installed with open cut method. Construction wastes as such spoil soil will be disposed at the disposal sites designated by BDCA to avoid negative impacts on the surrounding environment. (b) The construction requiring land clearance, etc. may cause soil erosion with storm water runoff. The muddy water from the soil erosion may cause impacts on natural environment such as rivers and Lake Tana. Therefore, land clearance, etc. should be avoided during rainy season and erosion control measures such as construction of storm water drains should be placed at construction sites to avoid serious soil erosion. (c)Since the installation of transmission and distribution pipes will take place even in built-up areas, special attention should be given to the construction especially near religious facilities, etc. not to disturb social activities of residents. Moreover, access restriction near open-cut construction sites and speedy refill of open-cuts should be implemented thoroughly to prevent children, elderlies, etc. from falling into the diches excavated for pipe installation. (d)The installation of transmission and distribution pipes may cause traffic jam. However, its impacts would be limited because traffic in the target area is not heavy. In order to avoid causing traffic jam as much as possible, mitigation measures should be implemented (e.g. sufficient traffic control and avoidance of construction during the hours having relatively high traffic when installing road-crossing pipes, etc.)
	(2) Monitoring	(a) Does the proponent develop and implement monitoring program for the environmental items that are considered to have potential impacts? (b) What are the items, methods and frequencies of the monitoring program? (c) Does the proponent establish an adequate monitoring framework (organization, personnel, equipment, and adequate budget to sustain the monitoring framework)? (d) Are any regulatory requirements pertaining to the monitoring report system identified, such as the format and frequency of reports from the	(a)Y (b) see right (c)Y (d)Y	(a)Water quality monitoring is required because rivers would be polluted by the increase of wastewater resulting from the increase of water supply. This monitoring is included in the environmental monitoring plan for this project. (b)Water quality monitoring is considered along with the contents of soft component in a way that the staff of BDWSSS's water quality laboratory can play a central role in implementing its plan. The water quality parameters and frequencies for monitoring are kept at a minimal level to implement without much difficulties. (c)In order to improve the sustainability of the monitoring, BDWSSS which is responsible to operate the facilities to be constructed under this project, is designated for implementing the monitoring instead of BoWIED which is the implementation organization of this project. (d)The results of the monitoring will be reported to BDWSSS's

Category	Environmental Item	Main Check Items	Yes: Y No: N Not applicable/a	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
		proponent to the regulatory authorities?		board of directors, which includes the deputy head of BoWIED and the deputy mayor of BDCA, along with BDWSSS's quarterly reporting of its performance.
6 Note	Reference to Checklist of Other Sectors	(a) Where necessary, pertinent items described in the Dam and River Projects checklist should also be checked.	(a)n/a	(a) Additional evaluation on the checklist items related to dam and river developments are not required because the water sources of this project are deep wells.
	Note on Using Environmental Checklist	(a) If necessary, the impacts to transboundary or global issues should be confirmed (e.g., the project includes factors that may cause problems, such as transboundary waste treatment, acid rain, destruction of the ozone layer, or global warming).	(a)n/a	(a)There is no concern regarding impacts to transboundary or global issues in this project.

Annex 12

Environmental Management Plan

No.	Environmental Items	Mitigation Measures	Implementing Organization	Supervisory Organization	Cost
During Construction					
1	Water Pollution, Soil Erosion and Bottom Sediment	Fence out the facility sites including buffer space around them against water pollution at and around the sits	Construction Contractor	BoWIED (and Consultant for Construction Supervision)	Most of the proposed mitigation measures for the period of construction are part of usual construction procedures, which do not require additional costs just for the environmental management. However, an additional environmental-list is required for the environmental management in each of the construction contractor implementing it and BoWIED responsible for it. The total personnel costs (including allowances) of the two well-experienced Ethiopian environmentalists who can also work as sociologists is estimated
		Implement integrated erosion prevention measures at project construction sites (e.g. limiting excavation work, constructing proper drains, flood control structures and embankment, raising ground level, constructing access roads with gravel pavement, keeping sufficient vegetation and restoring errored lands)			
		Earthmoving activates should be avoid during rainy season as much as possible to minimize soil erosion.			
2	Solid Waste	Spoil soil and construction debris generated during construction should be collected and disposed of properly in designated disposal sites.			
		Spoil soil should not be piled up at locations which can be washed away by storm water runoff.			
		Sufficient reuse of construction materials including excavated soil and left over pipe pieces.			
3	Fauna and Flora	Minimize possible cutting of mature trees and replace the cut trees by planting new trees around the sites.			
4	Noise and Vibration	Limiting construction activities for pipe installation within residential areas, etc. only to daylight hours and week days as much as possible.			
		If urgency requires construction activities to be carried out during nights and weekends, use noise barriers to reduce noise.			
5	Air Pollution	Watering those locations which generate dust during pipe installation in residential areas, etc.			
		Properly maintain construction machineries and vehicles discharging exhaust gas and causing dust and minimize their operation in residential areas, etc.			
6	Soil Pollution	Properly operate and maintain construction machineries and vehicles which may leak oil and fuel.			
7	Traffic, Children and Residents	Traffic control personals should be in place during the construction.			
		Installation of pipes crossing road should be conducted during time periods having especially low traffic.			
		Construction signboards with lights is required in order to avoid traffic collision around construction sites during nights.			
		Good coordination with transport and traffic related governmental offices are required for installing pipes smoothly.			
		Ring-fence the trenches for pipe installation and refilled without unnecessary delay to prevent accidents of falling, especially for children.			
		Use of high density polyethylene (HDPE) pipes for quick installation and leakage reduction.			
8	Land Uses	Piling up excavated soil on a relatively small area rather than spreading over wider surface at construction sites.			
		When installing pipes under agricultural lands without acquiring the lands, pipe installation during rainy season when growing grain crops and vegetables should be avoided not to disturb their			

No.	Environmental Items	Mitigation Measures	Implementing Organization	Supervisory Organization	Cost
		production.			at around USB 120,000 (=USD 2,000 / month * 30 months for construction * 2 persons).
		When installing pipes under agricultural lands, top soil should be removed and kept separately, then should be placed at the top of trench lines to keep the productivity of the lands.			
9	Public Health and Worker	Educate construction workers, distribute condoms, and prevent prostitution to avoid the spread of infectious diseases such as HIV/AIDS.			
		Keep the construction sites and camps clean and remove puddles of stagnant water (e.g. improving drainage, removing wastes, filling dents and holes on the ground) to prevent water-borne diseases and mosquito-borne diseases.			
		Implement sufficient accident prevention measures at construction sites.			
10	Landscape and Cultural Property	Avoid construction work during the periods when important services are provided and people gathers.			
		If temporally required, keep the construction materials and machineries at locations away or hidden from churches, etc.			
11	Property and Public Facility	Good coordination with other underground utilities (telephone, electricity, etc.) including the confirmation of existing and assigned locations for each relevant utility line are required for installing pipes smoothly without damaging other utility lines.			
		If the relocation of other utility's line is unavoidable, the sufficient coordination and support should be given to the utility to minimize the period of interrupting other utility's service.			
12	Land Use Right	Compensation and support should be given to the persons affected by the land acquisition for the project in accordance to JICA's guidelines for environmental and social consideration and relevant laws and regulations in Ethiopia.			
During Operation					
1	Water Pollution	Promote non-advancement of industries having high risk of polluting groundwater and no discharge of untreated industrial effluents in cooperation through development management committee of BDCA (BDWSSS is one of the memebers of development management committee of BDCA).	BDWSSS	Board of Directors of BDWSSS	The environmental management during the operation can be carried out mainly by BDWSSS as part of their usual work (no need of personnel specialized for environmental management)
2	Water Pollution (Surface Water) and Protected Area	Promotion of proper onsite-sanitation for preventing surface water pollution resulting from the increase in discharged wastewater due to water supply increase.			
3	Solid Waste	Confirmation on the management of and pollution from the disposal sites under the control of BDCA and propose their improvement based on the findings.			
4	Soil Erosion / Fauna and Flora	Construct storm water drainage to reduce soil erosion during rainy season.			
		Keep drains and vegetation coverage in good condition at and around water supply facilities to mitigate the impacts of soil erosion and soil washed away on fauna and flora.			
5	Groundwater Flow and Water Uses	Do not exceed the optimum pump rate set at 70% of maximum discharge from each well in order to avoid the decline of groundwater level at surrounding wells due to excessive groundwater extraction.			
		Prioritize the operation of the wells having less interference with other wells and less drawdown of groundwater.			
		Enhance awareness raising activities for leakage reduction and water save in order to mitigate the decline of groundwater level over years.			

No.	Environmental Items	Mitigation Measures	Implementing Organization	Supervisory Organization	Cost
		Reduce the annual amount of groundwater extraction from a well filed if the groundwater level decreases over years.			
6	Noise and Vibration	Close the doors of pump facilities during the operation.			
7	Soil Pollution	Reduce accidental spills and leaks of oil and fuel products and leakage from electric generators (to be installed at the production wells and the pump station) by proper handling and maintaining them.			
8	Worker	Use rubber gloves, mask for dust removal and protective eye shield when handling calcium hypochlorite powder.			
				Total Cost	Around USD 120,000

Environmental Monitoring Plan

No.	Impact Item	Target and Measure of Monitoring and Parameters to be measured	Location	Frequency	Responsible Organ
【During Construction】					
1	Water Pollution, Soil Erosion, Bottom Sediment and Protected Area	Visually confirm the existence of the fences completely enclosing the major water supply facilities	All construction sites	Before the end of each construction, Once a month	Construction Contractor
		Visually confirm the implementation of soil erosion control measures (e.g. limiting excavation work, constructing proper drains, flood control structures and embankment, raising ground level, constructing access roads with gravel pavement, keeping sufficient vegetation and restoring errored lands)			
		Confirming the construction plan avoiding earthmoving works during rainy season and its actual implementation			
		Measure lake water quality near the core zone of the biosphere reserve, which may be affected by the soil erosion from the project sites in Charchara: Turbidity and TSS (use water quality monitoring data of Tana Sub-basin Organization [*1])	Lake Tana (near Charchara) (3 points)	Once a year (rainy season)	
2	Solid Waste	Visually confirm the disposal of construction wastes at disposal sites designated by BDCA	Disposal site of construction waste	Once a month	
		Visually confirm the storage of spoil soil, construction materials at places where rainwater won't wash away	All construction sites and stock yards		
		Visually confirm the reuse of spoil soil and efficient uses of construction materials such as remaining cut pipes	All construction sites		
3	Fauna and Flora	Visually confirm the minimization of logging of mature trees while planting native young trees instead	Wells, pump station and reservoirs	Once a month	
4	Noise / Vibration	Visually confirm the effort of installing water pipes in residential areas, etc. only during daytime on weekdays as far as possible at site while checking the construction schedule.	Pipe installation sites near residencies	Once a week	
		Visually confirm the use of sound-proof sheet in case that pipe installation during night time and weekends in residential areas, etc. cannot be avoided			
5	Air Pollution	Visually confirm that watering to prevent excessive dust is carried out when necessary during pipe installation in residential areas, etc.			
		Visually confirm that the construction machineries and vehicles discharging exhaust gas are well maintained	Storage area of construction machineries and vehicles	Once a month	
6	Soil Pollution	Visually confirm that the construction machineries and vehicles, which may leak fuel and machine oil, are well maintained			
7	Traffic, Children and Residents	Visually confirm the allocation of sufficient traffic control persons at pipe installation sites	Pipe installation sites	Once a week	
		Visually confirm at site that the installation of pipes across roads is conducted during the time having especially low traffic while checking the records of pipe installation as well.	Road crossings of pipe installation		
		Visually confirm that electrically-lighted signboards are placed to avoid traffic collision around the construction sites during night	Installation sites of transmission and distribution pipes		
		Confirm the records of sufficient advance coordination with the organization managing roads and traffic for smooth pipe installation along roads		Once a month	
		Visually confirm that pipe installation sites are enclosed so that children and others won't fall into the ditches and refilling of the ditches after laying pipes are not delayed		Every day	

		Confirm the application plan of HDPE pipes and its implementation			
8	Land Use	Visually confirm that surplus soil are not spread over around the construction sites	All construction sites	Once a month	
		Visually confirm at site that pipe installation under farmlands during rainy season is avoided as far as possible while checking the construction schedule	Pipes installation sites under farmlands (service pipe lines for public water stands)	Twice a month	
		Visually confirm that pipe installation ditches are refilled with original fertile surface soil after laying pipes under farmlands			
9	Public Health and Workers	Confirm the recorders of health and hygiene instructional supports to the construction workers such as education on HIV-AIDS, distribution of condoms, prevention of prostitution, etc.	Office of construction contractor	Once a month	
		Visually confirm the cleanness at camp for construction workers and implementation of on-site prevention measures against water-borne and mosquito-borne diseases	Office and camp of the contractor and construction sites		
		Visually confirm the sufficient accident prevention measures are carried out at construction sites while checking the records of safety education to the construction workers	Office of the contractor and construction sites	Once a month	
10	Landscape and Cultural Property	Visually confirm the avoidance of construction work during the periods when important services are provided and people gathers.	Pipe installation sites	Once a week	
		Visually confirm that construction machineries, materials, etc. are placed in the way not disturbing the surrounding sceneries significantly.	All construction sites	Once a month	
11	Property and Public Facility	Confirm the records of the coordination with the organizations managing utility lines such as underground telephone and electricity cables to avoid damages on their utility lines	Pipe installation sites	Once a month	
		Confirm the records of ex-ante coordination to minimize the interruption of other utility services when relocation of other utility lines is unavoidable to install water pipes			
12	Land Use Right	Refer to monitoring plan in the Abbreviated Resettlement Action Plan	Refer to monitoring plan in the Abbreviated Resettlement Action Plan	Once a month (until the end of livelihood restoration program (In case that livelihood restoration program is provided))	BDWSSS
【During Operation】					
1	Water Pollution	Confirm non-advancement of industries having high risk of polluting groundwater and no discharge of untreated industrial effluents in cooperation through development management committee of BDCA (BDWSSS is one of the members of development management committee of BDCA).	Industrial area upstream of Ashraf Well Field	Once a month	BDWSSS
2	Water Pollution (surface water) and Protected Area	Confirm the promotion plan of disseminating on-site sanitation facilities and its implementation	Kebelle health committees in the target area (Hidar 11,Zenzenlma,Wereb Kola Tsiyon)	Once a year	BDWSSS (conducted by the staff of its water quality and O&M sub-process)
		Measure water quality of the river which may be further polluted by the increased wastewater discharged resulting from the water supply increase: pH, TDS, SO_4, NO_3, PO_4, Turbidity, Faecal Coliform, BOD_5 and DO	Chimbl River (3 pints)	Semi-annual ly up to 2025 (rainy and dry seasons)	

3	Solid Waste	Confirmation on the management of and pollution from the disposal sites under the control of BDCA and the contents of proposal for their improvement.	Assigned Disposal Sites	Twice a year	
4	Soil Erosion, and Fauna and Flora	Visually confirm the conditions of storm water drains and surrounding vegetation.	Production wells, pump station and distribution reservoirs	Once a year (during rainy season)	
5	Ground-water Flow and Water Use	Confirm that discharge of well pumps	Production wells to be built under this project	Every day	
		Confirm static and active water levels of wells	Level monitoring wells at Ashraf and Charchara	Every week	
		Confirm the plan for awareness-raising activities and their implementation	Charchara No. 4、5、6、TW-1、TW-2、TW-3、Ashraf No. 2	Twice a year	
		Confirm periodic record of the static water level and dynamic water level of the well in order to check if the static water level has declined over time	Level monitoring wells at Ashraf and Charchara	Every month	
6	Noise and Vibration	Visually confirm that the surface pumps are not operated with the doors and windows of pump house kept open while further confirming it through interviews to operations, etc.	Pump station	Quarterly up to 2025	
7	Soil Pollution	Visually confirm the proper operation and maintenance of stand-by power generators which may leak fuels and machine oil and the pollution of surrounding soil while further confirming them through interviews to operators, etc.	Production wells and pump station		
8	Worker	Visually confirm that the calcium hypochlorite for disinfecting water are handled with rubber gloves, mask for dust removal and protective eye shield, etc.	Pump station and reservoirs		

*1) The practice of the water quality monitoring of Lake Tana by Tana Sub-basin Organization will be confirmed during detail design stage.

Annex 13

Provisional

Abbreviated Resettlement Action Plan (November 2016)

(1) Necessity of Land Acquisition and Involuntary Resettlement

In this water supply project, water supply pipes are mainly installed within the utility space of existing and planned roads. The construction of planned roads (including land acquisition) is being implemented by the urban development project of BDCA separately from this project. Therefore, land acquisition for the utility space, where water supply pipes will be installed, is not required to implement under this project. Although informal resettlement is not required, land acquisition for developing new production wells, pump station and expansion distribution reservoirs is required (these lands requiring compensation have already been acquired).

(2) Framework of Land Acquisition and Resettlement

1) Outlines of Ethiopian Regulations regarding Land Acquisition and Resettlement

1) -1 National Legal Framework of Land Use Right

The Ethiopian constitution established in 1995 ensures the right of private property but does not allow the private possession of lands. It prescribes lands as common property of the nation and public. Regarding the right to use agricultural lands, Federal Democratic Republic of Ethiopia Rural Land Administration and Land Use Proclamation (No.456/2005) states that right to use farm lands are given to famers without charge nor time limits. This proclamation obligates state governments to institute state regulations regarding the use and management of farm lands and the establishment of an organization for implementing the state regulations. In this way, the Ethiopian government handles the establishment of basic policies and regulations regarding farm lands while state governments grant the right to use farm lands and manage the uses. Although buying and selling of the right to use lands are not allowed, the right can be devised or inherited. The possession of the buildings on the lands are also allowed.

1) -2 National Legal Framework for Land Acquisition

Land acquisition for public purposes is prescribed in the constitution. Concrete process and compensation criterion are explained in Expropriation of Landholding for Public Purposes and Payment of Compensation Proclamation (No.455/2005). Moreover, more detailed compensation criterion for each type of property are specified in Payment of Compensation for Property

Situated on Landholdings Expropriated for Public Purposes, Council Ministers Regulation (No.135/2007). According to this regulation, only local municipalities, which are woredas and urban administrations, can conduct land acquisition for public purposes on the condition that it is properly compensated prior to the implementation of project. The basic principles of the compensation are that it should be calculated based on the costs of relocating the properties on the land such as buildings and that 10-years-worth compensation based on the average income for the last five (5) years, in case of farm land, should be paid. The regulation also states that the compensation should be calculated by the organizations or individuals authorized for the calculation. The process for land users to raise objection against land acquisition is also specified in the regulation. The regulation also states the necessity of providing substitute farm lands similar to the farm lands to be acquired whenever possible.

1) -3 Legal Framework and Process of Land Acquisition in Amhara National Regional State

ANRS has the following own policies and regulations regarding land uses and land acquisitions. Moreover, BDCA has officials in charge of calculating the compensation.

- Amhara Regional Rural Land Administration and Use Policy (2000)
- The Revised Amhara National Regional State Rural Land Administration and Use Proclamation (No.133/2006)
- The Amhara National Regional State Rural Land Administration and Use System Implementation, Council of Regional Government Regulation (No.51/2007)

The process of land acquisition for public purposes in ANRS is explained in detail in the guideline below.

- Amhara National Regional State, Guideline for the Procedure of Clearing Landholding for Public Interest and Compensation Payment (2009)

1) -4 Process of Land Acquisition (including grievance adjustment, implementation structure, etc.)

The following table shows the steps of land acquisition in this project, which are summarized based on the guideline of Amhara listed above and the results of discussions with BoWIED and BDWSSS and interview to the BDCA's section for land administration.

Table 1 Steps of Land Acquisition in this Project

Step 1	BDWSSS, on behalf of the implementation agency of this project (i.e. BoWIED), submits the application of land acquisition (including the location and boundaries of the lands) at least six (6) months before the planned work starts on the land.
Step 2	BDWSSS, with help of corresponding Kebele Offices of BDCA, identify the existing users of the lands to be acquired and ask them for cooperation in the land acquisition.
Step 3	BDCA, on behalf of BDWSSS, negotiate with the existing users of the lands to be acquired at site and decide the boundaries of the lands to be acquired (BDWSSS put piles along the confirmed boundaries of the lands to be acquired). Moreover, BDCA measures the area size of the lands and informs the

	measured area size and calculated compensation to the existing users at the site (BDCA's area measurement is conducted with measuring tape and ordinal handheld GPS having area measurement functions) .
Step 4	The existing users who are asked to provide their lands submit their proof documents of having land use right BDCA. This way, BDCA confirms that the existing users are eligible to receive compensation for their lands.
Step 5	BDCA will inform such decisions and confirm the agreement of existing users with written notice (clearance order) to the existing users or to the concerned kebele office. In case of the kebele office receiving them, the kebele office will then notify the decision to the land users by means of legal notice. The concerned land user may present his or her complaint or petition to BDCA within fifteen (15) days starting from the day that the written clearance order was received.
Step 6	After a decision has been made for the clearance of land needed for public service, the compensation will be paid to the existing land users. BDWSSS have to deposit the fixed amount of compensation to the bank accounts of the existing land users within eight (8) days after receiving the formal request of paying compensation from BDCA. The land users are also obligated to handover the land within fifteen (15) days after the payment of compensation.

2) JICA's Policies on Involuntary Settlement

JICA's policies on involuntary settlement are as follows.

Table 2 JICA Policies on Involuntary Settlement

The key principle of JICA policies on involuntary resettlement is summarized below.

I. Involuntary resettlement and loss of means of livelihood are to be avoided when feasible by exploring all viable alternatives.

II. When, population displacement is unavoidable, effective measures to minimize the impact and to compensate for losses should be taken.

III. People who must be resettled involuntarily and people whose means of livelihood will be hindered or lost must be sufficiently compensated and supported, so that they can improve or at least restore their standard of living, income opportunities and production levels to pre-project levels.

IV. Compensation must be based on the full replacement cost as much as possible.

V. Compensation and other kinds of assistance must be provided prior to displacement.

VI. For projects that entail large-scale involuntary resettlement, resettlement action plans must be prepared and made available to the public. It is desirable that the resettlement action plan include elements laid out in the World Bank Safeguard Policy, OP 4.12, Annex A.

VII. In preparing a resettlement action plan, consultations must be held with the affected people and their communities based on sufficient information made available to them in advance. When consultations are held, explanations must be given in a form, manner, and language that are understandable to the affected people.

VIII. Appropriate participation of affected people must be promoted in planning, implementation, and monitoring of resettlement action plans.

IX. Appropriate and accessible grievance mechanisms must be established for the affected people and their communities.

Above principles are complemented by World Bank OP 4.12, since it is stated in JICA Guideline that "JICA confirms that projects do not deviate significantly from the World Bank's Safeguard Policies". Additional key principle based on World Bank OP 4.12 is as follows.

X. Affected people are to be identified and recorded as early as possible in order to establish their eligibility through an initial baseline survey (including population census that serves as an eligibility cut-off date, asset inventory, and socioeconomic survey), preferably at the project identification stage, to prevent a subsequent influx of encroachers or

others who wish to take advance of such benefits.

XI. Eligibility of Benefits include, the PAPs who have formal legal rights to land (including customary and traditional land rights recognized under law), the PAPs who don't have formal legal rights to land at the time of census but have a claim to such land or assets and the PAPs who have no recognizable legal right to the land they are occupying.

XII. Preference should be given to land-based resettlement strategies for displaced persons whose livelihoods are land-based.

XIII. Provide support for the transition period (between displacement and livelihood restoration.

XIV. Particular attention must be paid to the needs of the vulnerable groups among those displaced, especially those below the poverty line, landless, elderly, women and children, ethnic minorities etc.

XV. For projects that entail land acquisition or involuntary resettlement of fewer than 200 people, abbreviated resettlement plan is to be prepared.

In addition to the above core principles on the JICA policy, it also laid emphasis on a detailed resettlement policy inclusive of all the above points; project specific resettlement plan; institutional framework for implementation; monitoring and evaluation mechanism; time schedule for implementation; and, detailed Financial Plan etc.

3) Comparison between JICA Guidelines and Ethiopian Laws and Regulations

Table 1-21 shows the comparison between the contents of Ethiopian and Amhara State's Laws and Regulations and JICA Guidelines for Environmental and Social Considerations (2010 regarding land acquisition.

Table 3 Comparison between JICA Guidelines, etc. and Ethiopian Laws and Regulations

No.	JICA Guidelines (partly referring to World Bank OP4.12)	Laws and Regulations of Ethiopia and Amhara National Regional State	Gap	Polity of this Project in Case of Having Gap
1	In the case of Category B projects, JICA encourages project proponents etc. to consult with local stakeholders when necessary. In principle, project proponents etc. disclose information about the environmental and social considerations of their projects. JICA assists project proponents etc. by implementing cooperation projects as needed.(JICA GL)	Projects requiring EIA need public participation and information disclosure. Method of information disclosure is not specified. Need to collect public information for scoping through workshop and questionnaire survey, etc. The contact with concerned people is suggested for understating the level of their concerns and implement adequate compensation and mitigation measures during impact assessment. However, the method of contacting them is not specified. (General EIA Guideline of Amhara State (2011/12))	Their details of descriptions differ but there is no conflicting description. Therefore, there is no gap.	-
2	Involuntary resettlement and loss of means of livelihood are to be avoided when feasible by exploring all viable alternatives. (JICA GL)	General EIA Guideline of Amhara requires consideration of all implementable options (e.g. site, design, process, etc.). Acceding to Amhara's guidelines for land acquisition (2009), application of land acquisition for public purposes would not be accepted unless if it is unavoidable.	There is no gap between their basic directions.	-

No.	JICA Guidelines (partly referring to World Bank OP4.12)	Laws and Regulations of Ethiopia and Amhara National Regional State	Gap	Polity of this Project in Case of Having Gap
3	When population displacement is unavoidable, effective measures to minimize impact and to compensate for losses should be taken. (JICA GL)	General EIA GL of Amhara refers the following content of Article 44, Ethiopian Constitution as its legal framework. All persons who have been displaced or whose livelihoods have been adversely affected because of state programs have the right to commensurate monetary or alternative means of compensation, including relocation with Adequate state assistance. Amhara's guideline for land acquisition also requires consideration of providing job opportunities and lands for replacement other than monetary compensation to the people losing their livelihood such as agricultural lands.	There is no gap with Amhara's General EIA Guideline which describes the right to commensurate monetary or alternative means of compensation. However, in case of this project, BDCA has the right to decide whether land for replacement will be provided. Since the lands, where BDCA has right to use, is limited, BDCA provides replacing lands only for relocation of residencies but not for replacing farmlands, etc.	Regarding unavoidable land acquisition without relocation of residences, variable measures (e.g. employing the affected persons as BDWSSS's security guards) should be taken at a maximum in order to minimize adverse impacts and compensate their losses.
4	People who must be resettled involuntarily and people whose means of livelihood will be hindered or lost must be sufficiently compensated and supported, so that they can improve or at least restore their standard of living, income opportunities and production levels to pre-project levels. (JICA GL)			
5	Compensation must be based on the full replacement cost as much as possible. (JICA GL)	The constitution does not allow possession of land (land use right can be hold). Since the selling and buying of land use right is also forbidden, there is not replacement cost of land itself. In case of acquisition of agricultural lands, improvement costs spent for the land (equivalent to the total of actual costs and value of labour), structures on the ground (replacement price of storage, barn, etc.) and agricultural products (estimated income for 10 years) are compensated. BDCA provide replacing land when residence needs to be relocated. Compensation for the loss of residential building is based on its replacement cost.	Replacement cost of land itself does not exist in Ethiopia. Instead, compensation is paid to cover the improvement costs of land and lost income for 10 years estimated based on market prices of agriculture products. However, the loss of buildings on land is compensated based on replacement price. Therefore, compensation is considered to be based on replacement cost as much as possible, and there is no gap.	-
6	Compensation and other kinds of assistance must be provided prior to displacement. (JICA GL)	Compensation should be paid prior to land acquisition (Amhara's guideline for land acquisition (2009))	There is no gap.	-
7	For projects that entail large-scale involuntary resettlement, resettlement action plans (RAP) must be prepared and made available to the public.	Amhara's General EIA Guidelines and the guidelines for land acquisition do not require the projects having involuntary	Since RAP is not required in Amhara State, there is a gap with JICA GL which requires RAP in	This project does not require involuntary relocation of residence. However,

No.	JICA Guidelines (partly referring to World Bank OP4.12)	Laws and Regulations of Ethiopia and Amhara National Regional State	Gap	Polity of this Project in Case of Having Gap
	(JICA GL)	resettlement to prepare RAP nor land acquisition plan. However, EIA is required when implementing a resettlement program within natural forest and mature reserve.	case of causing large-scale involuntary resettlement.	abbreviated RAP is prepared to address other types of losses. For proceeding the acquisition of agricultural lands, etc. in a planned manner, confirmation of appropriate unit price for compensation, confirmation of boundaries and area size of the lands to be acquired, preparation of abbreviated RAP and explanation and support to the affected farmers, etc. are conducted.
8	In preparing a resettlement action plan, consultations must be held with the affected people and their communities based on sufficient information made available to them in advance. (JICA GL)			
9	When consultations are held, explanations must be given in a form, manner, and language that are understandable to the affected people. (JICA GL)			
10	Appropriate participation of affected people must be promoted in planning, implementation, and monitoring of resettlement action plans. (JICA GL)			
11	Appropriate and accessible grievance mechanisms must be established for the affected people and their communities. (JICA GL)	According to Amhara's guideline for land acquisition, in case of this project, BDCA decides the boundaries of the lands to be acquired, timing of removing structures, provision of replacing lands and process of filing a complaint. The concerned land user may present his or her complaint or petition to BDCA within 15 days after the written clearance order was received. If the famer cannot be satisfied with the dealings of BDCA, the famer can proceed to the mediation process of the local court.	Amhara State and BDCA have a mechanism of grievance adjustment adaptive to this project. Therefore, there is no gap.	-

No.	JICA Guidelines (partly referring to World Bank OP4.12)	Laws and Regulations of Ethiopia and Amhara National Regional State	Gap	Polity of this Project in Case of Having Gap
12	Resettlement plan should have a process for recognizing claims to legal rights to land (including claims that derive from customary law and traditional usage) as a legal framework. (World Bank OP4.12 Annex A Item 7)	Land users operating on land for four or more years without having tenure certificate will not be entitled for compensation unless adequate and legal reasons are presented. The lands along roads, where compensation was paid in the past, won't be compensated again.	Although RAP is not required in Amhara State, confirmation process of legal rights on lands exist.	Compensation eligibility of the lands to be acquired for this project are confirmed in accordance to Amhara's guideline for land acquisition and JICA GL.
13	Preference should be given to land-based resettlement strategies for displaced persons whose livelihoods are land-based. (World Bank OP4.12 Item 5)	According to Amhara's guideline for land acquisition, in case of this project, BDCA decides where replacing lands are provided.	BDCA provides replacing lands when relocation of residencies is required. However, Since the lands, where BDCA has right to use, is limited, BDCA does not provide replacing lands only when acquiring only agricultural lands. Therefore, there is a gap.	In accordance with JICA GL and Amhara's guideline for land acquisition, the appropriateness of compensation for acquiring agricultural lands and the validity of mitigation measures (e.g. employing affected farmers as security guards of water supply facilities) are confirmed.
14	The project proponent, etc. should make efforts for the resettling persons including supporting means for an alternative sustainable livelihood and re-establishment of communities at resettlement sites. (JICA GL)	Amhara's guidelines for land acquisition describes the necessity of supporting the farmers completely or partly losing their lands that are their livelihoods. However, there is no description regarding supports required for re-establishing the communities of relocated people.	Although both sides have descriptions regarding support such as restoring livelihoods, there is no description regarding community re-establishment for relocated people.	Handing of the gap described on the left is not required because involuntary relocation of residence does occur in this project.
15	Displaced people should be able to communicate their concerns at formal occasions. Especially indigenous people, ethnic minorities, the landless, and women should be adequately represented at those occasions. (World Bank OP4.12 Annex A Item 15)	Amhara's General EIA Guidelines does not have relevant description specifically for the residents to be relocated. However, there are descriptions about the necessity of avoiding exclusion of the socially vulnerable and ethnic minorities in the public participation for EIA.	Although Amhara's General EIS guideline does not have relevant descriptions specifically for involuntary resettlement, there is no gap between their directions.	-
16	Where impacts on the entire displaced population are minor, or fewer than 200 people are displaced, an abbreviated resettlement plan may be agreed with the borrower. (World Bank OP4.12 Item 25)	Amhara's General EIA Guidelines and the guidelines for land acquisition do not require RAP nor its abbreviated version.	Note 26 of World Bank OP4.12 Item 25 requires abbreviated RAP if loss occurs even when relocation of residence is not required. Therefore, there is a gap.	Abbreviated RAP is prepared. Moreover, explanation and support to the affected people are conducted.

4) Policies on Land Acquisition and Involuntary Resettlement in this Project

The following describes policies on land acquisition and involuntary resettlement in this project.

Table 4 Policies on Land Acquisition and Involuntary Resettlement in this Project

I. The Government of Ethiopia will use the Project Resettlement Policy (the Project Policy) for the Project for Improvement of Water Supply in Bahir Dar City in the Amhara Regional State specifically because existing national laws and regulations have not been designed to address involuntary resettlement according to international practice, including JICA's Guidelines . The Project Policy is aimed at filling-in any gaps in what local laws and regulations cannot provide in order to help ensure that PAPs are able to rehabilitate themselves to at least their pre-project condition. This section discusses the principles of the Project Policy and the entitlements of the PAPs based on the type and degree of their losses. Where there are gaps between the Ethiopian legal framework for resettlement and JICA's Guidelines, practicable mutually agreeable approaches will be designed consistent with Government practices and JICA's Guidelines.

II. Land acquisition and involuntary resettlement will be avoided where feasible, or minimized, by identifying possible alternative project designs that have the least adverse impact on the communities in the project area.

III. Where displacement of households is unavoidable, all PAPs (including communities) losing assets, livelihoods or resources will be fully compensated and assisted so that they can improve, or at least restore, their former economic and social conditions.

IV. Compensation and rehabilitation support will be provided to any PAPs, that is, any person or household or business which on account of project implementation would have his, her or their:

- Standard of living adversely affected;
- Right, title or interest in any house, interest in, or right to use, any land (including premises, agricultural and grazing land, commercial properties, tenancy, or right in annual or perennial crops and trees or any other fixed or moveable assets, acquired or possessed, temporarily or permanently;
- Income earning opportunities, business, occupation, work or place of residence or habitat adversely affected temporarily or permanently; or
- Social and cultural activities and relationships affected or any other losses that may be identified during the process of resettlement planning.

V. All affected people will be eligible for compensation and rehabilitation assistance, irrespective of tenure status, social or economic standing and any such factors that may discriminate against achievement of the objectives outlined above. Lack of legal rights to the assets lost or adversely affected tenure status and social or economic status will not bar the PAPs from entitlements to such compensation and rehabilitation measures or resettlement objectives. All PAPs residing, working, doing business and/or cultivating land within the project impacted areas as of the date of the latest census and inventory of lost assets(IOL), are entitled to compensation for their lost assets (land and/or non-land assets), at replacement cost, if available and restoration of incomes and businesses, and will be provided with rehabilitation measures sufficient to assist them to improve or at least maintain their pre-project living standards, income-earning capacity and production levels.

VI. PAPs that lose only part of their physical assets will not be left with a portion that will be inadequate to sustain their current standard of living. The minimum size of remaining land and structures will be agreed during the resettlement planning process.

VII. People temporarily affected are to be considered PAPs and resettlement plans address the issue of temporary acquisition.

VIII. Where a host community is affected by the development of a resettlement site in that community, the host community shall be involved in any resettlement planning and decision-making. All attempts shall be made to minimize the adverse impacts of resettlement upon host communities.

IX. The resettlement plans will be designed in accordance with Ethiopian regulations and JICA's Policy on Involuntary Resettlement.

X. The Resettlement Plan will be translated into local languages and disclosed for the reference of PAPs as well as other interested groups.

XI. Payment for land and/or non-land assets will be based on the principle of replacement cost.

XII. Compensation for PAPs dependent on agricultural activities will be land-based wherever possible. Land-based strategies may include provision of replacement land, ensuring greater security of tenure, and upgrading livelihoods of people without legal land titles. If replacement land is not available, other strategies may be built around opportunities for re-training, skill development, wage employment, or self-employment, including access to credit. Solely cash compensation will be avoided as an option if possible, as this may not address losses that are not easily quantified, such as access to services and traditional rights, and may eventually lead to those populations being worse off than without the project.

XIII. Replacement lands, if the preferred option of PAPs, should be within the immediate vicinity of the affected lands wherever possible and be of comparable productive capacity and potential. As a second option, sites should be identified that minimize the social disruption of those affected; such lands should also have access to services and facilities similar to those available in the lands affected.

XIV. Resettlement assistance will be provided not only for immediate loss, but also for a transition period needed to restore livelihood and standards of living of PAPs. Such support could take the form of short-term jobs, subsistence support, salary maintenance, or similar arrangements.

XV. The resettlement plan must consider the needs of those most vulnerable to the adverse impacts of resettlement (including the poor, those without legal title to land, ethnic minorities, and women, children, elderly and disabled) and ensure they are considered in resettlement planning and mitigation measures identified. Assistance should be provided to help them improve their socio-economic status.

XVI. PAPs will be involved in the process of developing and implementing resettlement plans.

XVII. PAPs and their communities will be consulted about the project, the rights and options available to them, and proposed mitigation measures for adverse effects, and to the extent possible be involved in the decisions that are made concerning their resettlement.

XVIII. Adequate budgetary support will be fully committed and made available to cover the costs of land acquisition (including compensation and income restoration measures) within the agreed implementation period. The funds for all resettlement activities will come from the Government.

XIX. Displacement does not occur before provision of compensation and of other assistance required for relocation. Sufficient civic infrastructure must be provided in resettlement site prior to relocation. Acquisition of assets, payment of compensation, and the resettlement and start of the livelihood rehabilitation activities of PAPs, will be completed prior to any construction activities, except when a court of law orders so in expropriation cases. (Livelihood restoration measures must also be in place but not necessarily completed prior to construction activities, as these may be ongoing activities.

XX. Organization and administrative arrangements for the effective preparation and implementation of the resettlement plan will be identified and in place prior to the commencement of the process; this will include the provision of adequate human resources for supervision, consultation, and monitoring of land acquisition and rehabilitation activities.

XXI. Appropriate reporting (including auditing and redress functions), monitoring and evaluation mechanisms, will be identified and set in place as part of the resettlement management system. An external monitoring group will be hired by the project and will evaluate the resettlement process and final outcome. Such groups may include qualified NGOs, research institutions or universities

Cut-off-date of Eligibility

The cut-off-date of compensation in this project is April 23, 2016 on which day area size measurement of the required lands was conducted by the section of BDCA in charge of land administration.

Principle of Replacement Cost in this Project

See (4) Specific Measures for Compensation and Support, regarding the confirmation of replacement cost in this project.

(3) Scale and Location of Land Acquisition

As shown in Table 5, the total area of the lands required for this project (including public lands) is around 24,866 m^2.

Table 5 Land Uses within the Project Sits requiring Land Acquisition

Land Use	Area (m^2)								Total	Proportion (%)
	Expansion of water distribution station		New Pump Station and Production Well (Charchara TW-No.3)	Development of Production Wells						
				Previously Drilled Test Well	Recently Drilled Test Well					
	Gabriel	Diaspora		Charchara No.6	Charchara TW-No.1	Charchara TW-No.2	Ashraf TW-No.2	Ashraf TW-No.3		
1. Grain Crop		2,740					3,611	3,149	9,500	49 %
2. Vegetable					Approx. 1,075	5,166			Approx. 6,241	32 %
3. Eucalypt Trees for Lumber		Approx. 100	3,225		Approx. 200				Approx. 3,525	18 %
4. Pastureland						*		*	-	-
Sub Total	0	2,840	3,225		1,275	5,166	3,611	3,149	19,266	100 %
5. Other	Approx. 3,800 (BDCA's land rented for stock yard)			Approx. 1,800 (Public Land utilized for Pasturing)					Approx. 5,600	
Total	Approx. 3,800	2,840	3,225	Approx. 1,800	1,275	5,166	3,611	3,149	Approx. 24,866	

Note: 1) Area size values with 'approx.' are rough values estimated based on the recent satellite image of Google Earth. Other area values are based on the area measurements carried out by BDCA's land administration department in the presence of current land users.

2) Lands marked with ** are used for pasturing seasonally when not being used for vegetable or grain cropping.

The land of 3,800m^2 required for the expansion of Gabriel water distribution station belongs to BDCA. However, BDCA currently rents it out to a manufacture of concrete blocks, which has constructed a temporary structure (a small storage with zinc roof) and uses the land as a stock yard. Their rental agreement requires smooth displacement from the land without compensation when BDCA requests to return the land. However, necessity of BDWSSS's payment of compensation for the structure needs to be confirmed with the rental agreement although the manufacture explained that compensation is not required for the temporary structure.

Part of the access road to the well of Charchara No. 6 requires the public land (around 1,800 m^2) currently used for grazing ground. The grant of permission from BDCA to use this land is currently under confirmation.

The construction of the access roads to Charchara TW-No.1, Charchara TW-No.2、Charchara No.6, Ashraf TW-No.2 and Ashraf TW-No.3 does not required additional land acquisition.

As a result, the total area of the land acquisition requiring compensation under this project is 19,266m^2 as shown in Table 8. The number of the affected households is 26. As summarize in Table 8, the lands requiring compensation are currently used for grain cropping, growing vegetables and plantation of eucalypt trees as lumber.

Table 6 Project Affected Households Entitled for Compensation and Area of Land Acquisition

No.	Project Affected Households Entitled for Compensation at Project Sites	Area Size of Land Acquisition (m^2)
I	Charchara TW-No.1	
	3 Households	1,275
II	Charchara TW-No.2	
	13 Households	5,166
III	Charchara TW-No.3 and New Pump Station	
	2 Households	3,225
IV	Ashraf TW-No.2	
	1 Household	3,611
V	Ashraf TW-No.3	
	1 Household	3,149
VI	Expansion Site of Diaspora Reservoir	
	6 Households	2,840
合計	26 Households	19,266

Note: The area size values in the table are based on the measurements conducted by BDCA's land administration department in the presence of land users.

1) Population Census

The persons affected by the acquisition of agricultural lands for facility construction are 26 households as of April 23, 2016 as shown in Table 9, which are around 96 persons (the average household size is 3.7/household in Hidar 11 Kebele which is the urban kebele of Zone 2). These households are the targets of compensation and support regarding the acquisition of agricultural lands.

The cut-off-date of compensation in this project is April 23, 2016 on which day area size measurement of the required lands was conducted by the section of BDCA in charge of land administration.

2) Property and Land Survey

All of the 26 affected households have official right to use the lands. The lands requiring compensation are 19,266 m^2 and currently used for grain cropping (49%), growing vegetables (32%) and plantation of eucalypt trees as lumber (18%). There are no assets such as irrigation facilities and building on these lands.

3) Household Economy and Livelihood Survey

Each of the 26 households eligible for compensation have family and is engaged in agriculture (grain and vegetable) and/or forestry (eucalypt). There are two persons having the title of Ethiopian Orthodox Church's minister (Kesis) among them.

(4) Specific Measures for Compensation and Support

1) Entitlement Matrix

Table 7 shows an entitlement matrix which summarises the targets and contents of compensation, main process and organization in charge for each type of land acquisition and loss.

Table 7 Entitlement Matrix for Land Acquisition and Land Use under this Project

Item No.	Type of Loss	Target of Compensation, etc.	Contents of Compensation, etc.	Main Process, etc.	Organization in Charge
1	Loss of agricultural land (including forestry)	Farmer having right to use the land	Income for 10 years is compensated for agricultural and forestry lands. In case of forestry, the trees can be sold before land acquisition. In this case, the compensation for the land is compensated as typical agricultural land. Affected persons are possibly employed as BDWSSS's security guards.	Decision on the boundaries of the lands to be acquired and their area size in the presence of the famers having land use rights and staff from the administration office of corresponding kebeles. Calculation of compensation based on the land size and type of agricultural product. Advise to the famers on the use of compensation in a planned manner, etc.	BDCA (decision on the land boundaries, calculation and notification of compensation, and advice for restoring livelihood, etc.) and BDWSSS (payment of compensation, provision of employment opportunities, etc.)
2	Loss of building on the ground in the project area	Person having right to use the land on which the building exists or the one use the land based on rental agreement.	In principle, compensation base on replacement cost. However, the temporary structure on BDCA's rented land is compensated based on its rental agreement in accordance to Amhara's guideline for land acquisition.	Confirm the contents of lease agreement of the land, and confirm the contents of compensation accordingly. Currently, the content of the rental agreement is being confirmed, and after confirmation, there are cases where investigation of the reacquisition price is carried out in some cases depending on the compensation content.	BDCA and BDWSSS

2) Calculation of Compensation for Agricultural Lands

The compensation for agricultural lands is calculated based on market prices of typical crops (Maize, Finger Millet and Teff). The latest unit price of 25ETB/ m^2/10 year, which has been used by BDCA since 2016, is used in this project. This unit price is about two times as high as the previous unit price used until 2015. However, the increased unit price has not been approved officially by Amhara State (as of May 2016) which still use the lower unit prices.

In case that trees such as eucalyptus for lumber are grown in agricultural lands, compensation

is calculated based on the income from the forestry. However, existing land users can sell their trees on the lands before land acquisition. In this case, after selling lumber, the compensation is calculated based on the compensation price set for typical agricultural lands (25ETB/m^2/10 years).

3) Restoration of Livelihood

Inside BDCA, which is in charge of land acquisition process for Bahir Dar City and its surrounding areas, there are no section providing services for restoring livelihood of affected people after land acquisition, supporting their job hunting and occupational capacity development, etc. However, Amhara Lending and Saving Organization, which support the people whose livelihood was worsen by land acquisition, exists in Amhara State. BDWSS supports the persons affected by the land question for this project to have access to this organization. Moreover, BDWSSS will employ part of the affected persons as security guards for the water supply facilities to be built on the acquired lands.

In the stakeholder meeting, the importance of instructing the affected persons receiving compensation not to use the compensation without a plan was pointed out by participants of the meeting.

In response to this suggestion, consultation regarding planned use of compensation was held for the exiting land users of the candidate sites who joined in the stakeholder meeting and might become affected by the land acquisition. Moreover, when BDCA handed over the compensation paid by BDWSSS to the affected persons, BDCA took a measure of depositing the compensation into their bank account as much as possible without giving cash by hand. In this measure, BDCA asked Commercial Bank of Ethiopia to open bank accounts for the affected persons.

(5) Mechanism for Grievance Adjustment

The concerned land user may present his or her complaint or petition to BDCA within fifteen (15) days starting from the day that the written clearance order was received from BDCA or the administration office of corresponding kebele. Complaints from affected persons are usually handled by the staff of BDCA who are in charge of measuring lands for calculating compensation. If the complaint is not resolved by the staff, the complaint will be passed to the section of BDCA specialized in grievance adjustment for various complains (special committee for coping with complains in the process of land acquisition is not set in BDCA). If the famer cannot agree with the dealings of this section, the famer can proceed to the mediation process of the local court.

(6) Monitoring Plan for Land Acquisition

Using the monitoring sheet shown in Table 8, the progress of compensation payment, implementation of livelihood support and grievance adjustment will be monitored monthly until the end of livelihood restoration program (in case that livelihood restoration program is provided).

Table 8 Monitoring Sheet for BDWSSS's Land Acquisition Process

No.	Project Affected Persons at Selected Project Sites	Size of Acquired Land (m^2)	Paid Land Compensation (Birr)	Date of Payment	Living Conditions	Records of Livelihood Support	Records of complains and their handlings
I	**Charchara TW-No.1**						
1	*Eniy Addis**	539					
2	*Muche Mande*	320					
3	*Meles Mande*	416					
	Sub Total	1,275					
II	**Charchara TW-No.2**						
1	*Dires Milikit*	378					
2	*Bahiru Miliki*	378					
3	*Melkam Yewale*	378					
4	*Sendeq Tesfaneh*	504					
5	*Zimam Asnakew*	504					
6	*Anguach Azagaw*	378					
7	*Abebe Tesfahun*	378					
8	*Tesfa Biadiglign*	378					
9	*Gashaw Amashe*	378					
10	*Yamorot Tilahun*	378					
11	*Beletech Nure*	378					
12	*Tebabel abebe*	378					
13	*Fetene Yihune*	378					
	Sub Total	5,166					
III	**Charchara TW-No.3 & New Pump Station**						
1	*Ato Masresha Sendek**	1,075					
2	*Ato Simegn Bahiri**	2,150					
	Sub Total	3,225					
IV	**Asharaf TW-No.2**						
1	*Ato Asmare Tiruneh*	3,611					
	Sub Total	3,611					
V	**Asharaf TW-No.3**						
1	*Ato Dejen Wole's Family*	3,149					
	Sub Total	3,149					
VI	**Diaspora Reservoir Expansion Site**						
1	*Kesis Tefera Desse**	473					
2	*Kesis Ademe Eniyew*	244					
3	*W/o Qeye Yimer*	594					
4	*Ato Adella Molla*	239					
5	*Ato Tebikewy Molla*	225					
6	*Ato Chekol's Family*	1,065					
	Sub Total	2,840					
Total	**26 Persons**	19,266					

Note : * Prefer the standard land compensation (standard compensation based on price of typical crops) to the compensation for eucalyptus trees because they will sell the eucalyptus trees before the implementation of land acquisition.

(7) Implementation Structure (Institutions involved and their Responsibilities)

BDWSSS is responsible for applying the land acquisition required for the project to BDCA. BoWIED, BDWSSS and BDCA has accountability to the persons to be affected by the land acquisition. BDCA is responsible for agreement building with the affected persons regarding the boundaries of the lands to be acquired, measurement of area size, calculation of compensation and coping with complains from the affected persons. Moreover, BDWSSS is responsible for

paying compensation in accordance with the notification from BDCA and supporting the affected persons in restoring their livelihood.

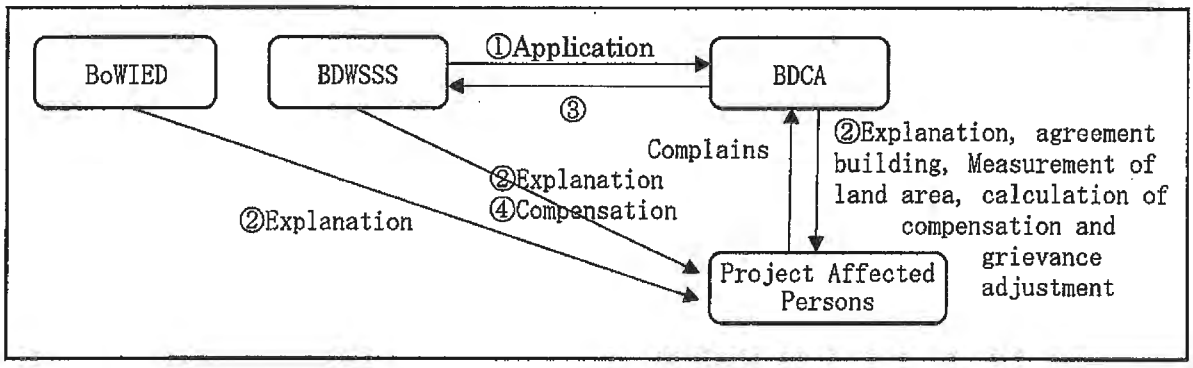


Figure 1 Institutions involved in the Land Acquisition and their Roles

(8) Implementation Schedule

As shown in (11), BDWSSS has already completed the payment of compensation for all the agricultural lands which, as already confirmed, requires compensation for land acquisition. Depending living conditions of the affected people which will be monitored, the livelihood supports will be considered

(9) Costs and Financial Sources

As shown in (11), BDWSSS has already paid the total compensation of 481,883.29 ETB to 26 households affected by the land acquisition of this project. BDWSSS has paid the compensation from its revenues including water charges.

(10) Stakeholder Meeting

According to the General EIA Guideline of Amhara, conducing an interview survey is one option of collecting opinions from stakeholders at the stage of scoping. In this survey, public opinions on environmental and social concerns regarding this project were collected (after the explanation on the project) in the questionnaire-based interview survey of 100 households sampled in the project target area (conducted in August to September, 2015) during the first survey period in Ethiopia. Part of the public concerns and opinions collected in this interview survey are as follows:

- Children may fall in the diches excavated for water pipe installation.
- Pipe installation may damage existing infrastructure including roads.
- The construction may cause noise problems.
- Land acquisition may be required for the project.

In order to identify the lands to be acquired for this project based on alternative analysis, at first, site visits and initial negotiation with existing land users were conducted (e.g. confirmation of their willingness to cooperate for the land acquisition and the boundaries of land acquisition relatively acceptable for them). After that, consensus was formed between JICA Survey Team, BDWSSS and BoWIED in April 2016 regarding the conditions set for candidate construction sites (e.g. radius and shape of buffer space for preventing pollution). Then, the stakeholder meeting was held on April 14, 2016 as a preparatory step before the six steps of land acquisition explained in 1)-4 Process of Land Acquisition (including grievance adjustment, implementation structure, etc.). In this stakeholder meeting, requirements of the land acquisition were explained to the representatives of existing land users from candidate construction sites.

Table 10 shows the questions and answers regarding land acquisition extracted from the records of the stakeholder meeting described in (10) Stakeholder Meeting of Environmental Impact Assessment.

Table 10 Questions and Answers regarding Land Acquisition in the Stakeholder Meeting

Questions from Participants	Responses from BDWSSS
Compensation for land acquisition is too small.	BDCA revised the unit prices of compensation for different agricultural and timber production three months ago to make the compensation closer to the value of lands (market price of the production for 10 years). These revised unit prices will be applied in this water supply project. Moreover, BDWSSS considers the employment of the people losing their lands for the project as the security guards of the water supply facilities to be built.
Calculation of the compensation for land acquisition is not clear. Sometimes paid compensation is less than estimated compensation. So please make sure that this kind of problem won't happen.	BDCA will measure the area size of the lands to be acquired and calculate the amount of compensation. BDWSS are responsible for paying the compensation in this project.

After the stakeholder meeting, previously described Steps 1 to 3 for land acquisition were carried out in the presence of JICA Survey Team or the contractor of Environmental and Social Consideration Study. In May 2016, as Step 3, BDCA finalized the boundaries of the lands to be acquired through negotiations with existing land users at site in consideration of their preferences, etc. (e.g. avowing the segmentation of lands which makes the use of remaining lands difficult). Moreover, the area size of the lands to be acquired from each existing user was measured in their presence. Again in these occasions, the adoption of new unit compensation prices of different agricultural products, which BDCA started to use from 2016, for the calculation of compensation was explained to the existing land users. BDWSS is responsible for paying compensation of land acquisition required for this project. In case that these existing land users plant fruit trees with potential of high income (e.g. mango and avocado) in these lands, the compensation would increase significantly and BDWSS would have difficulty to

acquire the lands. Therefore, with support from BDCA, BDWSSS conducted the assessment of current land uses, decision on the boundaries of the lands and measurement of the lands at the earliest time.

(11) Progress in Land Acquisition

The land acquisition process for this project has already started. As shown in Table 10, BDWSSS has already paid the total compensation of 481,883.29 ETB to the 26 households affected by the project.

Table 10 Progress of the Compansation Payment to the Project Affected People

No.	Project Affected Persons at Project Sites	Area Size of Acquired Land (m^2)	Compensation paid by BDWSSS (ETB)	Date of Compensation Payment
I	**Charchara TW-No.1**			
1	*Eniy Addis**	539	13,481.58	June 16, 2016
2	*Muche Mande*	320	8,003.91	June 16, 2016
3	*Meles Mande*	416	10,405.08	June 16, 2016
	Sub Total	**1,275**	**31,890.57**	
II	**Charchara TW-No.2**			
1	*Dires Milikit*	378	9,454.62	June 16, 2016
2	*Bahiru Miliki*	378	9,454.62	June 16, 2016
3	*Melkam Yewale*	378	9,452.62	June 16, 2016
4	*Sendeq Tesfaneh*	504	12,606.15	June 16, 2016
5	*Zimam Asnakew*	504	12,606.15	June 16, 2016
6	*Anguach Azagaw*	378	9,454.62	June 16, 2016
7	*Abebe Tesfahun*	378	9,454.62	June 16, 2016
8	*Tesfa Biadiglign*	378	9,454.62	June 16, 2016
9	*Gashaw Amashe*	378	9,454.62	June 16, 2016
10	*Yamorot Tilahun*	378	9,454.62	June 16, 2016
11	*Beletech Nure*	378	9,454.62	June 16, 2016
12	*Tebabel abebe*	378	9,454.62	June 16, 2016
13	*Fetene Yihune*	378	9,454.62	June 16, 2016
	Sub Total	**5,166**	**129,211.12**	
III	**Charchara TW-No.3 & New Pump Station**			
1	*Ato Masresha Sendek**	1,075	26,888.13	June 16, 2016
2	*Ato Simegn Bahiri**	2,150	53,776.25	June 16, 2016
	Sub Total	**3,225**	**80,664.38**	
IV	**Asharaf TW-No.2**			
1	*Ato Asmare Tiruneh*	3,611	90,319.09	June 16, 2016
	Sub Total	**3,611**	**90,319.09**	
V	**Asharaf TW-No.3**			
1	*Ato Dejen Wole's Family*	3,149	78,763.45	June 16, 2016
	Sub Total	**3,149**	**78,763.45**	
VI	**Diaspora Reservoir Expansion Site**			
1	*Kesis Tefera Desse**	473	11,830.78	June 16, 2016
2	*Kesis Ademe Eniyew*	244	6,102.98	June 16, 2016
3	*W/o Qeye Yimer*	594	14,857.25	June 16, 2016
4	*Ato Adella Molla*	239	5,977.92	June 16, 2016
5	*Ato Tebikewy Molla*	225	5,627.75	June 16, 2016
6	*Ato Chekol's Family*	1,065	26,638.00	June 16, 2016
	Sub Total	**2,840**	**71,034.68**	
Total	**26 Persons**	**19,265.92**	**481,883.29**	

Note: The lands used by the persons with * mark have eucalypt plantation. They all cut down and sold the eucalypt

trees before the handover of the lands. After that, the standard compensation rate (25 ETB/m^2) used in BDCA for farmlands without especially valuable plants was adopted for all of these lands.

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Annex 14

Formula and Calculation of the Unit Average Income for the Compensation in the Project

The unit average income for 10 years is calculated based on the average income for last five years from farming activities as follows.

- Formula to calculate the unit average income
  Land utilization (%) * 1 (ha) * Crop productivity (100 kg/ha) * Market price (ETB/100 kg) * 10 (years)

- Calculation of the unit average income (25 ETB/m^2 for 10 years)

Crop Item	Land Utilization (%)*1	Crop Productivity (100 kg/ha) *2	Market Price (ETB/100 kg) *3	Years	Unit Average Income (ETB/ha for 10 years)
Teff	0.34	23	1,288.67	10	100,773.99
Maize	0.33	56	497	10	91,845.60
Finger Millet	0.33	25	697	10	57,502.50
				Total	**250,122.09**

*1: Based on nation-wide average
*2: Average of 2013 to 2015
*3: Average of 2010 to 2014

The current market values in 2016 are as follows.

- Market price in November 2016

Crop Item	Market Price (ETB/100 kg) *1
Teff	High quality: 2,100 Low quality: 1,500
Maize	550
Finger Millet	750

*1: Based on hearing at a market in Bahir Dar City. The prices are selling price at

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a market. Selling prices from a farmer to a merchant are around 10-20% lower than the selling prices at a market

- Estimated selling price from a farmer to a merchant in November 2016

Crop Item	Selling Price (ETB/100 kg) *1
Teff	High quality: 1,890 Low quality: 1,350
Maize	495
Finger Millet	675

*1: Market Price in 2016 * 0.9

The comparison between the current market values in 2016 and the average market values of 2010 to 2014 is as follows.

- Comparison table

Crop Item	Current Market Values (Selling Price) (ETB/100 kg)	Average Market Values of 2010 to 2014 (ETB/100 kg)
Teff	High quality: 1,890 Low quality: 1,350	1,288.67
Maize	495	497
Finger Millet	675	697

The average market value of Teff (2010 to 2014) might be slightly lower, but there is no huge discrepancy between the current market values in 2016 and the average market values of 2010 to 2014.

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Annex 15

Record of Payment of Compensation

No.	Project Affected Persons at Project Sites	Area Size of Acquired Land (m^2)	Compensation paid by BDWSSS (ETB)	Date of Compensation Payment
I	**Charchara TW-No.1**			
1	*Eniy Addis**	539	13,481.58	June 16, 2016
2	*Muche Mande*	320	8,003.91	June 16, 2016
3	*Meles Mande*	416	10,405.08	June 16, 2016
	Sub Total	**1,275**	**31,890.57**	
II	**Charchara TW-No.2**			
1	*Dires Milikit*	378	9,454.62	June 16, 2016
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10	*Yamorot Tilahun*	378	9,454.62	June 16, 2016
11	*Beletech Nure*	378	9,454.62	June 16, 2016
12	*Tebabel abebe*	378	9,454.62	June 16, 2016
13	*Fetene Yihune*	378	9,454.62	June 16, 2016
	Sub Total	**5,166**	**129,211.12**	
III	**Charchara TW-No.3 & New Pump Station**			
1	*Ato Masresha Sendek**	1,075	26,888.13	June 16, 2016
2	*Ato Simegn Bahiri**	2,150	53,776.25	June 16, 2016
	Sub Total	**3,225**	**80,664.38**	
IV	**Asharaf TW-No.2**			
1	*Ato Asmare Tiruneh*	3,611	90,319.09	June 16, 2016
	Sub Total	**3,611**	**90,319.09**	
V	**Asharaf TW-No.3**			
1	*Ato Dejen Wole's Family*	3,149	78,763.45	June 16, 2016
	Sub Total	**3,149**	**78,763.45**	
VI	**Diaspora Reservoir Expansion Site**			
1	*Kesis Tefera Desse**	473	11,830.78	June 16, 2016
2	*Kesis Ademe Enlyew*	244	6,102.98	June 16, 2016
3	*W/o Qeye Yimer*	594	14,857.25	June 16, 2016
4	*Ato Adella Molla*	239	5,977.92	June 16, 2016
5	*Ato Tebikewy Molla*	225	5,627.75	June 16, 2016
6	*Ato Chekol's Family*	1,065	26,638.00	June 16, 2016
	Sub Total	**2,840**	**71,034.68**	
Total	**26 Persons**	**19,265.92**	**481,883.29**	

Note: The lands used by the persons with * mark have eucalypt plantation. They all cut down and sold the eucalypt trees before the handover of the lands. After that, the standard compensation rate (25 ETB/m^2) used in BDCA for farmlands without especially valuable plants was adopted for all of these lands.

Annex 16

Environmental Monitoring Form (During Construction)

1. Water Pollution, Soil Erosion, Bottom Sediments and Protected Area

Monitoring Item	Conditions during Reporting Period	Frequency
Conditions of the fences enclosing the major water supply facilities including their buffer spaces for preventing water pollution		Once a month (before completion of the construction)
Implementation of soil erosion control measures at project sites		Once a month
Earthmoving works during rainy season		Once a month (rainy season)
Lake water quality near the protected area which may be affected by the soil erosion from the project sites (Turbidity and TSS (Total Suspended Solid)		Once a year (rainy season)

2. Solid Waste

Monitoring Item	Conditions during Reporting Period	Frequency
Disposal of construction wastes at disposal sites designated by BDCA		Once a month
Storage of spoil soil, construction materials at places where rainwater won't wash away		Once a month
Reuse of spoil soil and efficient uses of construction materials such as remaining cut pipes		Once a month

3. Fauna and Flora

Monitoring Item	Conditions during Reporting Period	Frequency
Minimization of logging of mature trees while planting native young trees instead		Once a month

4. Noise / Vibration

Monitoring Item	Conditions during Reporting Period	Frequency
Periods of installing water pipes in residential areas (confirming whether installing pipes during daytime on weekdays as far as possible at site while checking the construction schedule)		Once a week
Use of sound-proof sheet in case that pipe installation during night time and weekends cannot be avoided		Once a week

5. Air Pollution

Monitoring Item	Conditions during Reporting Period	Frequency
Watering to prevent excessive dust during pipe installation in residential areas, etc.		Once a week
Whether construction machineries and vehicles discharging exhaust gas are well		Once a month

maintained		

6. Soil Pollution

Monitoring Item	Conditions during Reporting Period	Frequency
Whether construction machineries and vehicles, which may leak fuel and machine oil, are well maintained		Once a month

7. Traffic, Children and Residents

Monitoring Item	Conditions during Reporting Period	Frequency
Whether the installation of pipes across roads is conducted during the time having especially low traffic		Once a week
Ex-ante coordination with the organization managing roads and traffic for smooth pipe installation along roads		Once a month
Allocation of sufficient traffic control persons at construction sites		Once a week
Whether electrically-lighted signboards are placed to avoid traffic collision around the construction sites during night		Once a week
Whether pipe installation sites are enclosed so that children and others won't fall into the ditches and whether refill of the ditches after laying pipes are not delayed		Once a week
Usage status of HDPE pipe which can be laid quickly and is hard to cause water leakage		Every day

8. Land Use

Monitoring Item	Conditions during Reporting Period	Frequency
Management of spoil soil around the construction sites		Once a month
Whether pipe installation under farmlands during rainy season is avoided as far as possible		Twice a month
Whether pipe installation ditches are refilled with original fertile surface soil after laying pipes under farmlands		Twice a month

9. Public Health and Workers

Monitoring Item	Conditions during Reporting Period	Frequency
Support to the construction workers such as education on HIV-AIDS, distribution of condoms and prevention of prostitution		Once a month
Cleanness at camp for construction workers and implementation of on-site prevention measures against water-borne and mosquito-borne diseases		Once a month
Accident prevention measures carried out at construction sites		Once a month

10. Landscape and Cultural Property

Monitoring Item	Conditions during Reporting Period	Frequency
Construction hours of pipe installation around religious places, tourist sites, etc. (e.g. avoiding pipe installation during the events and service hours of these places)		Once a week
Whether construction machineries, materials, etc. are placed at and around the construction sites in the way not disturbing the surrounding sceneries		Once a month

11. Property and Public Facility

Monitoring Item	Conditions during Reporting Period	Frequency
Coordination with the organizations managing utility lines such as underground telephone and electricity cables to avoid damages on their utility lines		Once a month
Ex-ante coordination to minimize the interruption of other utility services when relocation of other utility lines is unavoidable to install water pipes		Once a month

12. Land Use Right

Monitoring Item	Conditions during Reporting Period	Frequency
Refer to monitoring plan in the Abbreviated Resettlement Action Plan	Refer to monitoring plan in the Abbreviated Resettlement Action Plan	Once a month (until the end of livelihood restoration program (In case that livelihood restoration program is provided))

Environmental Monitoring Form (During Operation)

1. Water Pollution

Monitoring Item	Conditions during Reporting Period	Frequency
Advancement of industries having high risk of polluting groundwater and discharge of untreated industrial effluents, in cooperation through development committee of BDCA		Once a month

2. Water Pollution (Surface Water) and Protected Area

Monitoring Item	Conditions during Reporting Period	Frequency
Implementation of the promotion plan for disseminating onsite-sanitation.		Once a year
Water quality of the river which may be further polluted by the increased wastewater discharged resulting from the water supply increase (pH, TDS, SO_4, NO_3, PO_4, Turbidity, Faecal Coliform, BOD_5 and DO)		Semi-annually up to 2025 (rainy and dry seasons)

3. Solid Waste

Monitoring Item	Conditions during Reporting Period	Frequency
The management of and pollution from the disposal sites under the control of BDCA and the proposal for their improvement.		Twice a year

4. Soil Erosion and Fauna and Flora

Monitoring Item	Conditions during Reporting Period	Frequency
Installed condition of storm water drains and surrounding vegetation		Once a year (rainy season)

5. Flow of Groundwater and Water Uses

Monitoring Item	Conditions during Reporting Period	Frequency
Discharge of production wells		Every day up to 2025
Recovery of groundwater level by the groundwater recharge during rainy season and change of groundwater level over years (Static and dynamic groundwater levels)		Every day up to 2025
Implementation status of the promotion activities		Twice a year up to 2025
Regular record of the static water level and the dynamic water level		Every month up to 2025

6. Noise and Vibration

Monitoring Item	Conditions during Reporting Period	Frequency

Operation of transmission pumps (whether doors and windows of the pump house kept open)		Quarterly up to 2025

7. Soil Pollution

Monitoring Item	Conditions during Reporting Period	Frequency
Operation and maintenance of stand-by power generators which may leak fuels and machine oil		Quarterly up to 2025

8. Worker

Monitoring Item	Conditions during Reporting Period	Frequency
Use of rubber gloves, mask for dust removal and protective eye shield, etc. in the disinfection of water.		Quarterly up to 2025

Annex 17

Social Monitoring Form

1) Land Acquisition in the Project

No.	Project Affected Persons at Selected Project Sites	Size of Acquired Land (m^2)	Paid Land Compensation (Birr)	Date of Payment	Living Conditions	Records of Livelihood Support	Records of complains and their handlings
I	**Charchara TW-No.1**						
1	*Eniy Addis*	539					
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1	*Dires Milikit*	378					
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1	*Ato Dejen Wole's Family*	3,149					
	Sub Total	3,149					
VI	**Diaspora Reservoir Expansion Site**						
1	*Kesis Tefera Desse*	473					
2	*Kesis Ademe Eniyew*	244					
3	*W/o Qeye Yimer*	594					
4	*Ato Adella Molla*	239					
5	*Ato Tebikewy Molla*	225					
6	*Ato Chekol's Family*	1,065					
	Sub Total	2,840					

Total	**26 Persons**	19,266					

2) BDCA's Land Acquisition and Construction of Planned Permanent Roads

- Total length of planned permanent roads which need to be constructed: 9.5 km
- Total area which needs to be acquired: 253,200 m^2

Date	**Land Area Already Acquired (Length Already Acquired)**	**Land Area Where Road Base Construction Finished Already (Length of Finished Road Base Construction)**
28th Nov. 2016	126,400 m^2 (5.4 km)	0 m^2 (0 km)

Annex 18

Major Undertakings for Moving Forwards to the Project Implementation by Both Sides

No	Deadline	Undertakings	In charge
1	Until middle of December 2016	Send JICA an EIA approval letter from EFWPA and final EIA report	BoWIED
2	After receiving EIA report	Disclose the EIA report on JICA's website.	JICA
3	Until end of December 2016	Conduct survey about the income level and livelihood conditions of the 26 affected households	BDWSSS
4	Parallel to the survey about the income level and livelihood conditions	Consider more appropriate income restoration programs referring to the survey result of the income level and livelihood conditions of the 26 affected households	BDWSSS and BDCA
5	1) Early January, 2017 2) Before the middle of January 2017	1) Have a meeting to explain the water pipe installation plan under agricultural land and the measure to avoid the land acquisition to the farmers 2) Submit a document which shows the farmers' agreement	BDWSSS and BDCA
6	Before middle of January 2017	Submit the revised Abbreviated RAP to JICA	BDWSSS and BDCA
7	Monthly, until income restoration program finishes	Implement social monitoring, and submit the monitoring results to JICA by using the monitoring form (Annex 17)	BDWSSS
8	February 2017	Finalize the Preparatory Survey Report and sent to the Ethiopian side	JICA
9	Immediately after receiving the Preparatory Survey Report	Start to consult with a power company	BoWIED and BDWSSS
10	1) Around March to April 2017 2) End of June 2017	1) Apply the budget for the Project through BoFEC to the Amhara Regional Council 2) Secure the budget	BoWIED
11	1) Around May 2017 2) End of June 2017	1) Apply the budget as a part of its Annual Budget Plan to the Board of Director 2) Secure the budget	BDWSSS
12	Before April 2017	Finish necessary procedure to secure the budget allocation from BoFEC to bear indirect taxes	BoWIED
13	Till June 2017	Finish the road base construction	BDCA
14	Timely Manner	Submit the Modified version (Environmental Checklist) in case of major modification to JICA	BoWIED