Appendix

1. Member List of the Study Team
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1. Member List of the Study Team

1. The name and belong members

(1)	Masaaki Uehara	:	Project Leader/ Airport Planning 1 (Nippon Koei Co., Ltd.)
(2)	Yasushi Inoue	:	Airport Planning 2 (Nippon Koei Co., Ltd.)
(3)	Masahiro Yasue	:	Deputy Project Manager/ Electrical Facility Planning (Azusa Sekkei Co., Ltd.)
(4)	Masaichi Yamamoto	:	Architectural Planning (Azusa Sekkei Co., Ltd.)
(5)	Jun Hayatsu	:	Structural Planning (Azusa Sekkei Co., Ltd.)
(6)	Akita Sho	:	Facilities Planning (Azusa Sekkei Co., Ltd.)
(7)	Anna Ishikawa	:	Construction Planning/ Procurement (Nippon Koei Co., Ltd.)
(8)	Yukimi Tajima	:	Air Navigation System (Japan Airport Consultant, Inc)
(9)	Tomomi Kageyama	:	Equipment Planning/ Procurement (Nippon Koei Co., Ltd)
(10)	Ryuichi Nagai	:	Air Navigation System Switching Survey (Japan Radio Air Navigation Systems Association)
(11)	Samim, Ahmad Sabour	:	Natural Condition Survey (Nippon Koei. Co., Ltd.)
(12)	Junko Masaki	:	Environmental and Social Concerns (Nippon Koei Co., Ltd.)
(13)	Chiang, Jiun Jie	:	Administration (Nippon Koei Co., Ltd.)

2. Study Schedule

2. Study Schedule

Table- 1 1st Study Schedule (2023.7)

Date		Project Leader	Deputy Project Manager/ Electrical Facility Planning	Air Navigation System	Natural Condition Survey	Administration	Facilities Planning
		Masaaki Uehara	Masahiro Yasue	Yukimi Tajima	Samim, Ahmad Sabour	Chiang, Jiun Jie	Sho Akita
7/5	Wed	Domestic Activities	Domestic Activities	Domestic Activities	NRT Dep.	Domestic Activities	Domestic Activities
7/6	Thu				FRU Arr.		
7/7	Fri				Meeting with KAN/ Local		
7/8	Sat						
7/9	Sun	FRU Arr.				FRU Arr.	
7/10	Mon	Meeting with JICA / CAA / KAN					Domestic Activities
7/11	Tue	Site Survey (Osh Airport)		Meeting with KAN	Site Survey (Osh Airport)		
7/12	Wed	Site Survey (Issyk-kul Airport)			Natural Condition Survey (Osh Airport)	Site Survey (Issyk-kul Airport)	
7/13	Thu	Meeting with KAN / M/D signature					
7/14	Fri	Meeting with EOJ		Meeting with KAN/ Work			
7/15	Sat						
7/16	Sun						FRU Arr.
7/17	Mon	Meeting with KAN/ Information Collection	Meeting with KAN	Meeting with KAN/ Material Creation	Natural Condition Survey (Osh Airport)	Meeting with KAN	
7/18	Tue	Meeting with KAN/ Information Collection	Meeting with KAN	Meeting with KAN/ Material Creation	Natural Condition Survey (Osh Airport)	Meeting with KAN	
7/19	Wed	FRU Dep.	Meeting with KAN/ Local Hearing	Meeting with KAN/ Material Creation	Meeting with KAN/ Local Hearing		
7/20	Thu	HND Arr.	Meeting with KAN/ Local Hearing	Meeting with KAN/ Material Creation	Meeting with KAN/ Local Hearing		
7/21	Fri		Meeting with KAN/ Local Hearing		FRU Dep.	FRU Dep.	Meeting with KAN/ Local Hearing
7/22	Sat				HND Arr.	NRT Arr.	FRU Dep.
7/23	Sun						
7/24	Mon	-	Meeting with KAN/ Drawing Creation	Domestic Activities	Domestic Activities	Domestic Activities	Domestic Activities
7/25	Tue		Meeting with KAN/ Drawing Creation				
7/26	Wed		Meeting with KAN/ Drawing Creation				
7/27	Thu		Meeting with KAN/ Drawing Creation				
7/28	Fri		Meeting with KAN/ Drawing Creation				
7/29	Sat						
7/30	Sun						
7/31	Mon		Meeting with KAN/ Drawing Creation				
8/1	Tue		FRU Dep.				

Table- 2 2nd Survey Schedule (2023.8)

Date		Project Leader	Air Navigation System	Equipment Planning/ Procurement	Natural Condition Survey	Air Navigation System Switching Survey	Construction Planning/ Procurement	Environmental and Social Concerns
		Masaaki Uehara	Yukimi Tajima	Tomomi Kageyama	Samim, Ahmad Sabour	Ryuichi Nagai	Anna Ishikawa	Junko Masaki
8/13	Sun					NRT Dep.		
8/14	Mon	Domestic Activities	Domestic Activities	HND Dep.／FRU Arr.	NRT Dep.	FRU Arr.	NRT Dep.	Domestic Activities
8/15	Tue			Meeting with KAN	FRU Arr.		FRU Arr.	
8/16	Wed			Site Survey (Osh Airport)			Visit Construction Company/ Estimation Information Collection	
8/17	Thu							
8/18	Fri							
8/19	Sat							HND Dep.
8/20	Sun	NRT Dep.	NRT Dep.					FRU Arr.
8/21	Mon	FRU Arr.	FRU Arr.	Estimation Information Collection/ Consier Equipment Plan		Meeting with KAN/ Consider Switching Plan	Conrtruction Condition Survey/ Estimation Information Collection	Meeting with KAN/ Local Hearing
8/22	Tue	On-site activities	Meeting with KAN/ Material Creation					
8/23	Wed							
8/24	Thu							
8/25	Fri							
8/26	Sat						FRU Dep.	
8/27	Sun						NRT Arr.	
8/28	Mon	Meeting with KAN / MD signature						Meeting with KAN/ Local Hearing
8/29	Tue	On-site activities	FRU Dep./ HND Arr.	Estimation Information Collection		Consider Switching Plan		
8/30	Wed	FRU Dep.		FRU Dep.	FRU Dep.	FRU Dep.		FRU Dep.
8/31	Thu	NRT Arr.		NRT Arr.	NRT Arr.	NRT Arr.		HND Arr.

Table- 3 DOD Schedule (2024.2)

Date		Project Leader/ Airport Planning	Deputy Project Leader/ Electrical Planning	Building Planning	Air Navigation Systems
		Masaaki UEHARA	Masahiro YASUE	Masaichi YAMAMOTO	Yukimi TAJIMA
2/3	Sat	10:15 NRT Dep. (TK051)	10:15 NRT Dep. (TK051)	10:15 NRT Dep. (TK051)	10:15 NRT Dep. (TK051)
2/4	Sun	9:20 FRU Arr. (TK344)	9:20 FRU Arr. (TK344)	9:20 FRU Arr. (TK344)	9:20 FRU Arr. (TK344)
2/5	Mon	Meeting with JICA Team Meeting			
2/6	Tue	Discussion on DFR with KAN			
2/7	Wed	Discussion on DFR with KAN			
2/8	Thu	Discussion on M/D with KAN			
2/9	Fri	Sign M/D Meeting with Embassy			
2/10	Sat	10:45 FRU Dep. (TK345)			10:45 FRU Dep. (TK345)
2/11	Sun	8:30 NRT Arr. (TK050)	10:45 FRU Dep. (TK345)	10:45 FRU Dep. (TK345)	8:30 NRT Arr. (TK050)
2/12	Mon		19:45 HND Arr. (TK198)	19:45 HND Arr. (TK198)	

3. List of Parties Concerned in the Recipient Country

3. List of Parties Concerned in the Recipient Country

■ Investigation (2023.7-8)

Organization	Title	Name
Kyrgyz Air Navigation: (KAN)	Director General	Mr. Shakir Djangaziev
	First Deputy Director General	Mr. Torokelidi Omurov
	Deputy Director General	Mr. Akhmed Toktosunov
	Chief Engineer	Mr. Bakytbek Kemelbekov
	Head of Air Traffic Management	Mr. Dmitrii Chetvertak
	Deputy Head of Air Traffic Management	Mr. Taalaibek Alisherov
	Advisor of Aviation Security	Mr. Azamat Dzharkimbaev
	Head of Meteorological Department	Ms. Irina Pavlova
	Head of International Relations Department	Ms. Chinara Matmusina
	The Leading Specialist of Building facilities	Mr. Zhenishbek Aliev
Kyrgyz Air Navigation: Osh Branch	Director of KAN	Mr. Jorobaev Satygul
	Vice director of the Air traffic management	Mr. Tashmatov Azim
	Vice director of the Radio technical support of flights	Mr. Karimov Alisher
	Lawyer	Ms. Suerkulova Nazgul
	Supervisor of administration and maintenance department	Ms. Eralieva Gulsun
	Senior system administrator of Air traffic control tower	Mr. Moldotashov Melis

■ DOD (2024.2)

Organization	Title	Name
Kyrgyz Air Navigation: (KAN)	Director General	Mr. Torokelidi Omurov
	First Deputy Director General	Mr. Berkut Kalmuratov
	Chief Engineer	Mr. Bakytbek Kemelbekov
	Head of Air Traffic Management	Mr. Dmitrii Chetvertak
	Head of International Relations Department	Ms. Chinara Matmusina
Kyrgyz Air Navigation: Osh Branch	Head of the Radiotechnical flight providing center of Osh Branch	Mr. Karimov Alisher
	Lawyer (Legal adviser of Osh Branch)	Ms. Suerkulova Nazgul
State Agency of Architecture, Construction and Housing and Communal Services	Secretary	Ms. Adilai
	Osh Branch Chief	Mr. Askar Altynbekovich
JICA Kyrgyz Office	Representative	Mr. Hajime Watanabe
	Program Officer	Ms. Nazgul Moldokllova
Embassy of Japan in Kyrgyz	Ambassador Extraordinary and Plenipotentiary	Mr. Hideki Goda
	Specialized Investigator	Ms. Minori Shimizu

4.Minutes of Discussion

Minutes of Discussions
on the Preparatory Survey for
the Project for Improvement of Air Traffic Control Facilities at International Airports

Based on the several preliminary discussions between the Government of Kyrgyz Republic and the Kyrgyz Republic Office of Japan International Cooperation Agency (hereinafter referred to as "JICA"), JICA dispatched the Preparatory Survey Team for the Outline Design (hereinafter referred to as "the Team") of the Project for Improvement of Air Traffic Control Facilities at International Airports (hereinafter referred to as "the Project") to the Kyrgyz Republic.

The Team held a meeting with the officials of the Government of Kyrgyz Republic and conducted a field survey during its stay in the Kyrgyz Republic. In the course of the discussion, both sides have confirmed the main items described in the attached sheets.

Bishkek, 14 July 2023

Hiroyuki Ueda
Leader
Preparatory Survey Team
Japan International Cooperation Agency
Japan

Shakir K. Djangaziev
Director General
SE "Kyrgyzaeronavigatsia"
Kyrgyz Republic

ATTACHMENT

1. Objective of the Project

The objective of the Project is to improve quality of air traffic control services by the construction of new air traffic control facilities at Osh International Airport and the renewal of air traffic control systems at three international airports in Manas, Osh and Issyk-kul, thereby contributing to enhancement aviation safety and flight handling capacity in the Kyrgyz Republic.

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 Air Traffic Control Facilities at International Airports".

3. Project Site

Both sides confirmed that the sites of the Project are international airport in Manas, Osh and Issyk-kul, which are shown in Annex 1.

4. Responsible Authority for the Project

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

4-1. SE "Kyrgyzaeronavigatsia" (hereinafter referred to as "KAN") will be the executing agency for the Project (hereinafter referred to as "the Executing Agency"). The Executing Agency shall coordinate with all the relevant authorities to ensure smooth implementation of the Project and ensure that the undertakings for the Project shall be managed by relevant authorities properly and on time. The organization chart of KAN is shown in Annex 2.

4-2. The line ministry of the Executing Agency is the State Civil Aviation Agency (hereinafter referred to as "CAA") under the Cabinet of Ministers. The CAA shall be responsible for supervising the Executing Agency on behalf of the Government of Kyrgyz Republic.

5. Items requested by the Government of Kyrgyz Republic

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

a) New Air Traffic Control Tower at Osh International Airport

b) New Air Traffic Control Center Building at Osh International Airport

c) Air Traffic Control Systems at three international airports in Manas, Osh and Issyk-kul

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

5-3. The Government of the Kyrgyz Republic shall submit an official request to the Government of Japan through a diplomatic channel before the appraisal of the Project, which is scheduled in January 2024.

6. Procedures and Basic Principles of Japanese Grant

6-1. The Kyrgyz side agreed that the procedures and basic principles of Japanese Grant (hereinafter referred to as "the Grant") as described in Annex 3 shall be applied to the Project. As for the monitoring of the implementation of the Project, JICA requires the Kyrgyz side to submit the Project Monitoring Report that the form is attached as Annex 4.

6-2. The Kyrgyz side agreed to take the necessary measures, as described in Annex 5, for smooth implementation of the Project. The contents of the Annex 5 will be elaborated and refined during the Preparatory Survey and be agreed in the mission dispatched for explanation of the Draft Preparatory Survey Report. The contents of Annex 5 will be updated as the Preparatory Survey progresses, and eventually, will be used as an attachment to the Grant Agreement (hereinafter referred to as "G/A").

7. Schedule of the Survey

7-1. The Team will proceed with further survey in the Kyrgyz Republic in July and August 2023.

7-2. JICA will prepare a draft Preparatory Survey Report in English and dispatch a mission to the Kyrgyz Republic in order to explain its contents around January 2024.

7-3. If the contents of the Draft Preparatory Survey Report are accepted and the undertakings for the Project are fully agreed upon by the Kyrgyz side, JICA will finalize the Preparatory Survey Report and send it to the Kyrgyz Republic around April 2024.

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

8. Environmental and Social Considerations

8-1. The Kyrgyz Republic side confirmed to give due environmental and social considerations before and during implementation, and after completion of the Project, in accordance with the JICA Guidelines for Environmental and Social Considerations (January 2022).

8-2. The Project is categorized as "B" from the following considerations:

The project is not considered to be a large-scale airport project, is not located in a sensitive area, and has none of the sensitive characteristics under the JICA Guidelines for Environmental and Social Considerations (January 2022), it is not likely to have a significant adverse impact on the environment.

8-3. The EIA report may be required for the Project in the country's legal system. In the case where the EIA report is required, the Kyrgyz side confirmed to conduct necessary procedures concerning EIA, and make the EIA report of the Project. The EIA approval shall be received from the Ministry of Natural Resources, Ecology and Technical Supervision (hereinafter referred to as "MoNR") and submitted to JICA by within one month from the signing of the G/A.

8-4. The Team will confirm the ongoing land acquisition process of the Project complies with the JICA Guidelines for Environmental and Social Considerations (January 2022).

9. Other Relevant Issues

9-1. Gender Mainstreaming

Both sides confirmed that following gender elements shall be duly reflected in the scope of Preparatory Survey.

a) Collection of information and gender disaggregated data for assessment of gender needs.

b) Examination of gender-responsive measures based on the assessment, such as:
   - Selection of equipment that reflects gender-specific needs and ensure usability by women.
   - Evaluation on possibilities of women's employment opportunities and capacity building regarding ANS operation.

9-2. The Kyrgyz side shall ensure that the customs duties, internal taxes and other fiscal levies, which may be imposed in the Kyrgyz Republic with respect to the purchase of the products and/or the services, should be either exempted or borne by its designated authority without using the Grant.

9-3. The Kyrgyz side understood the principle of the Japan's Development Cooperation Charter, which stresses that ODA must not be utilized for military purpose or promoting international conflicts, and agreed to ensure that the facilities and equipment to be procured in the Project will never be used for any military purposes.

9-4. Both sides confirmed that the Government of Kyrgyz Republic has no intention to transfer the Osh International Airport with the statement of CAA in Annex 6.

Annex 1: Project Site

Annex 2: Organization Chart

Annex 3: Japanese Grant
Annex 4: Project Monitoring Report (template)
Annex 5: Major Undertakings to be taken by the Government of Kyrgyz Republic
Annex 6: CAA's Statement regarding the Transfer of the Osh International Airport

PROJECT SITES

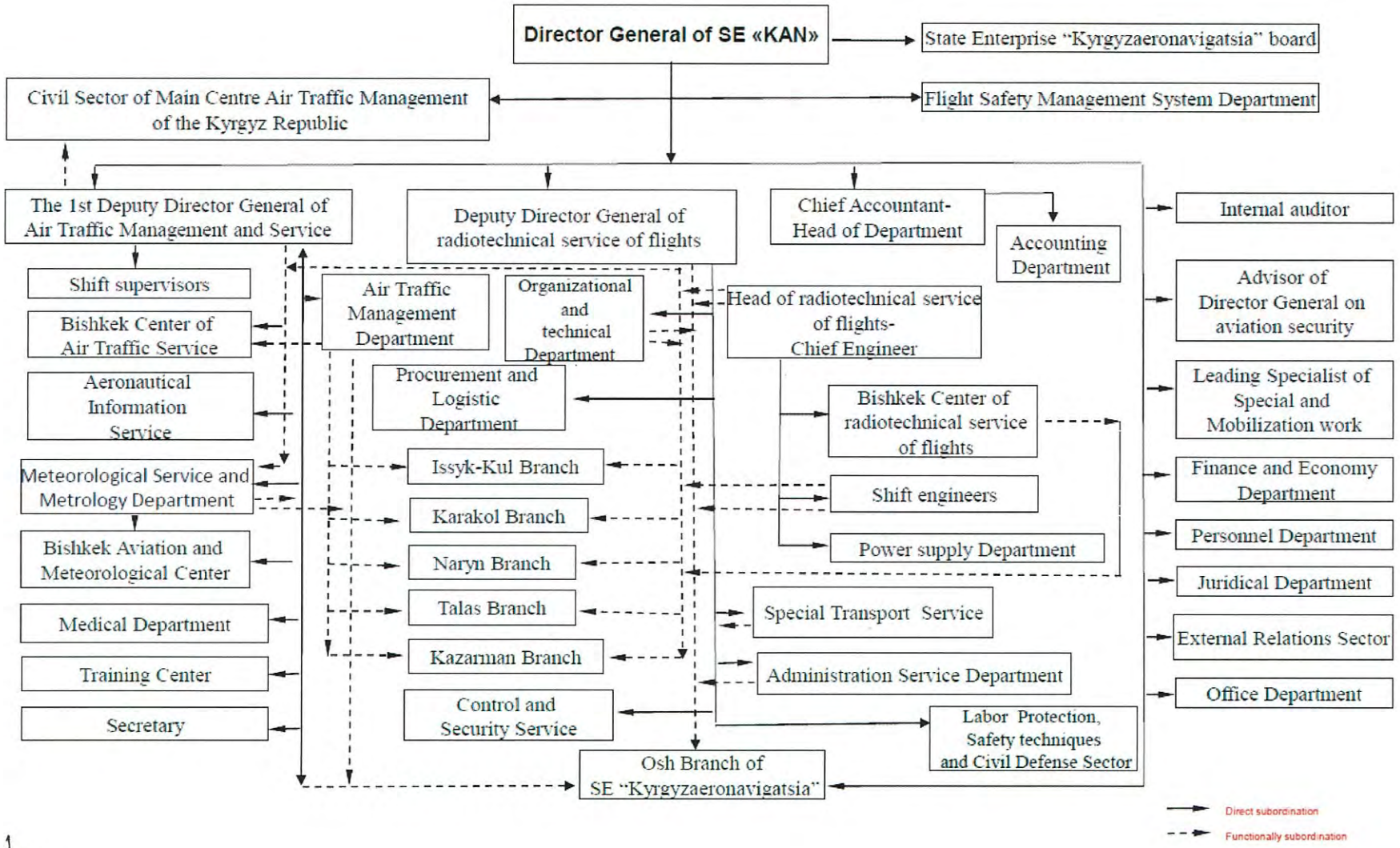
Annex 1

Base 803157AI (G00230) 12-05

«Кыргызаэронавигация»
мамекеттик ишканасы

Annex 2

ORGANIZATION CHART OF KAN



«Кыргызаэронавигация»
мамлекеттик ишканасы

Annex 3

JAPANESE GRANT

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

1. Procedures of Project Grants

Project Grants are conducted through following procedures (See "Attachment-1: 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 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 signed 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 "Attachment 2: Financial Flow of Japanese Grant (A/P Type)" for details)

1) 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.

2) 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 (January, 2022).

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) Measures to ensure more efficient implementation of the Grant

i) In the event that the E/N and the G/A concerning a project cannot be signed by the end of the following Japanese fiscal year of the cabinet decision concerned by the GOJ, the authorities concerned of the two Governments will discuss the cancellation of the project.

ii) In the event that the period, specified in the G/A, during which the grant is available expires before the completion of the disbursement, the authorities concerned of the GO J will thoroughly review the status, situation and perspective of the implementation of the project concerned before extending the said period. The authorities concerned of the two Governments will discuss the termination of the project including a refund, unless there are concrete prospects for its completion.

iii) Regardless of the period mentioned in ii) above, the authorities concerned of the two Governments will, in the event that five years have passed since the cabinet decision concerned by the GOJ before the completion of the disbursement, except as otherwise confirmed between them, discuss the termination of a project including a refund, unless there are concrete prospects for its completion

4) 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.

5) 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

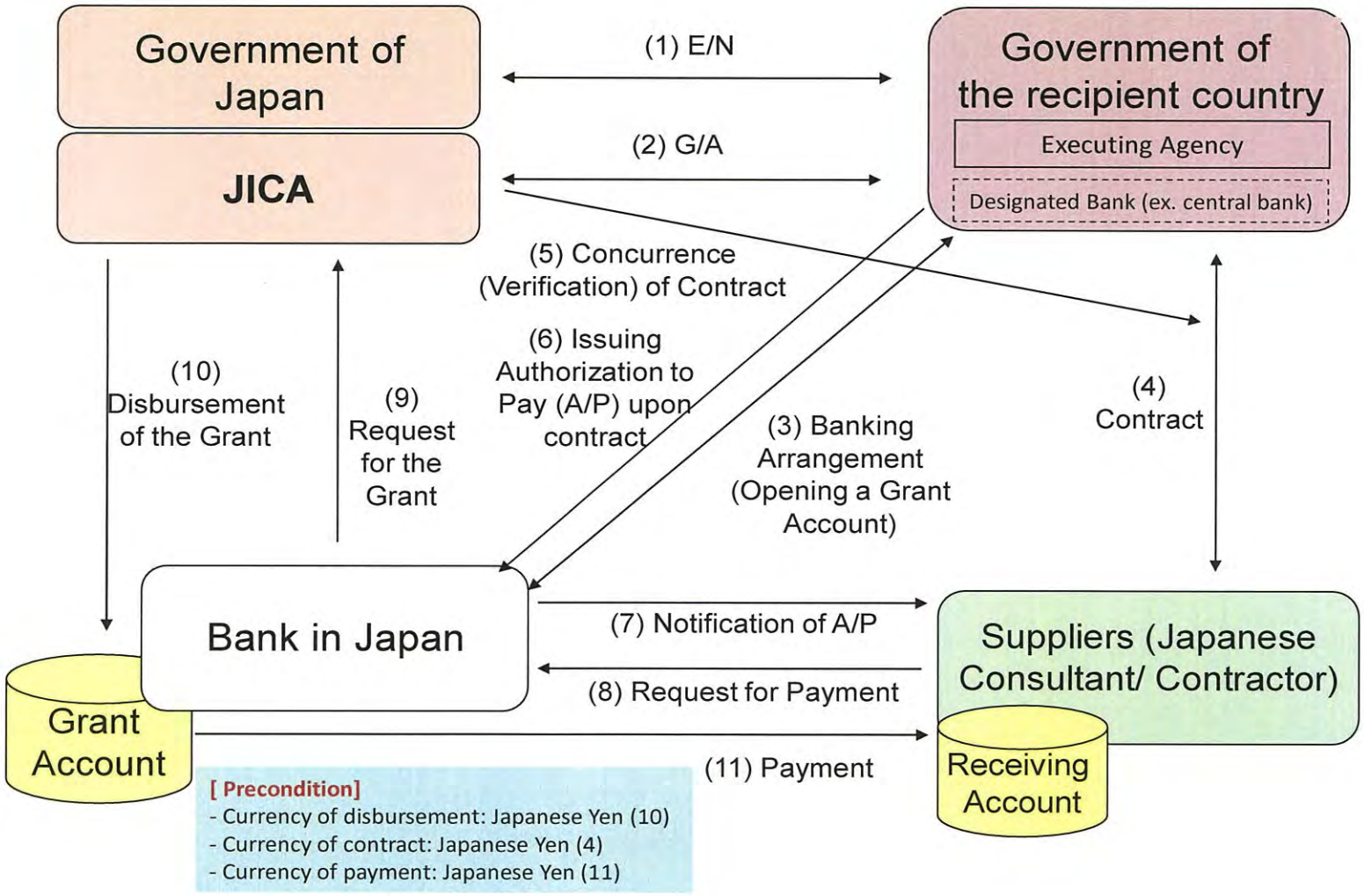
Stage	Procedures	Remarks	Recipient Government	Japanese Government	JICA	Consultants	Contractors	Agent Bank
Official Request	Request for grants through diplomatic channel	Request shall be submitted before appraisal stage.	x	x				
1. Preparation	(1) Preparatory Survey Preparation of outline design and cost 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)



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

2 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)
12. Report on the Management of Safety for Construction Works

Monitoring sheet on price of specified materials

1. Initial Conditions (Confirmed)

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

2. Monitoring of the Unit Price of Specified Materials

(1) Method of Monitoring：●●

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

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

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

-
-
-

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%)	

Report on the Management of Safety for Construction Works

Month/Year	Cumulative number of labor	Cumulative number of public accident	Cumulative hours worked	Number of deaths and injuries due to industrial accidents				Frequency rate	Severity rate
					Death and injuries	Aggregated number of calendar days absent	Aggregated number of work-days lost		
This Month				Death					
				More than 4 calendar days absent					
				1 to 3 calendar days absent					
				Total					
Total including this month				Death					
				More than 4 calendar days absent					
				1 to 3 calendar days absent					
				Total					

Note

1. Frequency rate is the frequency of occurrence of industrial accidents.
   Frequency rate = (Number of deaths and injuries due to industrial accidents ÷ Cumulative hours worked) × 1,000,000

2. Severity rate is degree of seriousness of the industrial accident.
   Severity rate = (Aggregated number of work-days lost ÷ Cumulative hours worked) × 1,000

3. Aggregated number of work-days lost = Aggregated number of calendar days absent ×(300÷365)
   Death (7,500 days) : death as a result of an industrial accident includes not only instantaneous death but also death as a result of occupational injury or disease.

4. Frequency rate and severity rate are rounding off the third decimal place.

Annex 5

MAJOR UNDERTAKINGS TO BE TAKEN BY THE GOVERNMENT OF KYRGYZ REPUBLIC

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

(1) Before the Tender

No.	Items	Deadline	In charge	Estimated Cost	Ref.
1	To sign the banking arrangement (B/A) with a bank in Japan (the Agent Bank) to open bank account for the Grant	within 1 month after signing of the G/A	MoF/ KAN		
2	To issue A/P to the Agent Bank for the payment to the consultant	within 1 month after signing of the agreement with the consultant	MoF/ KAN		
3	To bear the following commissions to the Agent Bank for the banking services based upon B/A				
	1) Advising commission of A/P	within 1 month after signing of the agreement with the consultant	MoF/ KAN		
	2) Payment commission for A/P	every payment for the consultant	MoF/ KAN		
4	To approve EIA report and submit it to JICA (in the case where the EIA report is required.)	within 1 month after signing of the G/A	MoNR/ KAN		
5	To acquire the following land - Project site for new ATC tower and new ATC center building	before notice of the bidding documents	KAN		
6	To secure the following land - Temporary construction yard and stock yard with good access to the Project area	before notice of the bidding documents	KAN		
7	To implement social monitoring, and to submit the monitoring results to JICA, by using the monitoring form, on a quarterly basis as a part of Project Monitoring Report	until land acquisition and compensation complete	KAN		
8	To obtain permission and other necessary procedures for the Project.	before notice of the bidding documents	KAN		
9	To submit Project Monitoring Report (with the result of Detailed Design)	before preparation of the bidding documents	KAN		

B/A: Banking Arrangement
A/P: Authorization to Pay
MoF: Ministry of Finance, Strategic Planning, National Development and Statistics
MoNR: Ministry of Natural Resources, Ecology and Technical Supervision

(2) During the Project Implementation

No	Items	Deadline	In charge	Estimated Cost	Ref.
1	To issue A/P to the Agent Bank for the payment to the supplier and the contractor	within 1 month after signing of the contract(s)	MoF		
2	To bear the following commissions to the Agent Bank for the banking services based upon the B/A				
	1) Advising commission of A/P	within 1 month after signing of the contract(s)	KAN		
	2) Payment commission for A/P	every payment	KAN		
3	To ensure prompt customs clearance and to assist the contractor(s) and/or supplier(s) with internal transportation in the country of Recipient	during the Project	SCS/ KAN		
4	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 such facilities as may be necessary for their entry into the country of the Recipient and stay therein for the performance of their work	during the Project	MoFA/ KAN		
5	To ensure that customs duties, internal taxes and other fiscal levies which may be imposed in the country of the Recipient with respect to the purchase of the products and/or the services be exempted or be borne by its designated authority without using the Grant	during the Project	SCS/ KAN		
6	To bear all the expenses, other than those covered by the Grant, necessary for the implementation of the Project	during the Project	KAN		
7	To notify JICA promptly of any incident or accident, which has, or is likely to have, a significant adverse effect on the environment, the affected communities, the public or workers.	during the construction	KAN		
8	1) To submit Project Monitoring Report after each work under the contract(s) such as shipping, hand over, installation and operational training	within 1 month after completion of each work	KAN		
	2) To submit Project Monitoring Report (final) (including as-built drawings, equipment list, photographs, etc.)	within 1 month after issuance of Certificate of Completion for the works under the contract(s)	KAN		
9	To submit a notice concerning completion of the Project	within 6 months after completion of the Project	KAN		
10	To provide facilities for electric power supply and other incidental facilities necessary for the implementation of the Project	before start of the construction	KAN		

11	To ensure the safety of persons engaged in the implementation of the Project	during the Project	KAN		
12	To take necessary measures for safety of the Project site 1) maintaining the safety of workers and the general public by thorough implementation of safety measures and immediate action in the case of accident 2) traffic control around the site(s) and on transportation routes of construction materials	during the construction	KAN		
13	To implement Environmental Management Plan (EMP) and Environmental Monitoring Plan (EMoP)	during the construction	KAN		
14	To submit results of environmental monitoring to JICA, by using the monitoring form, on a quarterly basis as a part of Project Monitoring Report	during the construction	KAN		

B/A: Banking Arrangement
A/P: Authorization to Pay
MOF: Ministry of Finance
SCS: State Customs Services
MoFA: Ministry of Foreign Affairs

(3) After the Project

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

2. Other obligations of the Government of Kyrgyz Republic funded with the Grant

No.	Items	Deadline	Amount (Million Japanese Yen)*
1	1) To construct following buildings - New Air Traffic Control Tower at Osh International Airport - New Air Traffic Control Center Building at Osh International Airport		
	2) To procure and install the following equipment: - Air Traffic Control Systems at three international airports in Manas, Osh and Issyk-kul		
	3) To implement detailed design, bidding support and procurement supervision (Consulting Service)		
2	Contingencies		
3	Total		To be estimated

* The Amount is provisional. This is subject to the approval of the Government of Japan.

Annex 6

CAA's Statement regarding the Transfer of the Osh International Airport

КЫРГЫЗ РЕСПУБЛИКАСЫНЫН МИНИСТРЛЕР КАБИНЕТИНЕ КАРАШТУУ ЖАРАНДЫК АВИАЦИЯ МАМЛЕКЕТТИК АГЕНТТИГИ

720044, Кыргыз Республикасы,
Бишкек ш., Ажыбек-Баатыр көч.,1
Тел.: +996 (312) 25 16 19;
факс: +996 (312) 25 16 20
www.caa.kg E-mail: mail@caa.kg

ГОСУДАРСТВЕННОЕ АГЕНТСТВО ГРАЖДАНСКОЙ АВИАЦИИ ПРИ КАБИНЕТЕ МИНИСТРОВ КЫРГЫЗСКОЙ РЕСПУБЛИКИ

720044, Кыргызская Республика,
г.Бишкек, ул. Ажыбек-Баатыра, 1
Тел.: +996 (312) 25 16 19;
факс:+996 (312) 25 16 20
www.caa.kg E-mail: mail@caa.kg

STATE CIVIL AVIATION AGENCY UNDER THE CABINET OF MINISTERS OF THE KYRGYZ REPUBLIC

720044, 1, Ajybek-Baatyr Str., Bishkek, Kyrgyz Republic
Tel.: +996 (312) 25 16 19; fax: +996 (312) 25 16 20. www.caa.kg E-mail: mail@caa.kg

_____№_____

На №_____от_____

ГП «Кыргызаэронавигация»

Государственное агентство гражданской авиации при Кабинете Министров Кыргызской Республики (далее – Государственное агентство) в дополнение к ранее направленному письму исх. № 02/1844 от 14.06.2023 сообщает, что Государственное агентство, как орган, определяющий политику в области гражданской авиации Кыргызской Республики, не имеет намерений по переносу международного аэропорта «ОШ».

Врио директора **Д.К. Бостонов**

Начальник УПП и КР
Б.А. Джумалиев
+996 (312) 25 16 89

ДОКУМЕНТ ЭЛЕКТРОНДУК САНАРИП КОЛТАМГАСЫ МЕНЕН БЕКИТИЛГЕН

Чыг. № 03/1905, 19.06.2023

Кол койгон: Бостонов Д.К., 19.06.2023

«Кыргызаэронавигация»
мамлекеттик ишканасы

Minutes of Discussions
on the Preparatory Survey for the Project for
the Improvement of Air Traffic Control Facilities at International Airports
(Explanation on Draft Preparatory Survey Report)

With reference to the minutes of discussions signed between SE "Kyrgyzaeronavigatsia" (hereinafter referred to as "KAN") and the Japan International Cooperation Agency (hereinafter referred to as "JICA") on 14 July 2023, 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 the Improvement of Air Traffic Control Facilities at International Airports (hereinafter referred to as "the Project").

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

Bishkek, 8 February 2024

Hiroyuki Ueda
Leader
Preparatory Survey Team
Japan International Cooperation Agency
Japan

Omurov Torokeldi Kamchibekovich
Director General
SE "Kyrgyzaeronavigatsia"
Kyrgyz Republic

ATTACHEMENT

1. Contents of the Draft Report

   After the explanation of the contents of the Draft Report by the Team, the Kyrgyz side agreed to its contents. JICA will finalize the Preparatory Survey Report based on the confirmed items. The report will be sent to the Kyrgyz side around April 2024.

2. Cost estimate

   Both sides confirmed that the cost estimate including the contingency explained by the Team is provisional and 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.

3. Confidentiality of the cost estimate and technical specifications

   Both sides confirmed that the cost estimate and technical specifications of the Project should never be disclosed to any third parties until all the contracts under the Project are concluded.

4. Timeline for the project implementation

   The Team explained to the Kyrgyz side that the expected timeline for the project implementation is as attached in Annex 1.

5. Expected outcomes and indicators

   Both sides agreed that key indicators for expected outcomes are as follows. The Kyrgyz side will be responsible for the achievement of agreed key indicators targeted in year 2030 and shall monitor the progress for Ex-Post Evaluation based on those indicators.

   [Quantitative indicators]

Indicator	Base Value (Before implementation)	Target Value (After implementation)
Percentage of runway sections visible from the control tower at Osh Airport	63.1%	100%
Number of aircraft that the ATC system can handle simultaneously.	400	2,000

6. Ex-Post Evaluation

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

7. Technical assistance ("Soft Component" of the Project)

Considering the sustainable operation and maintenance of the products and services granted through the Project, following technical assistance is planned under the Project.

- Transfer of operation from the exiting ATC system to the new ATC system
- Capacity development for operation and maintenance of new ATC system

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

8. Undertakings of the Project

Both sides confirmed the undertakings of the Project as described in Annex 2. With regard to exemption of customs duties, internal taxes and other fiscal levies as stipulated in 1. (2) 5 of Annex 2, both sides confirmed that such customs duties, internal taxes and other fiscal levies, which shall be clarified in the bid documents by the Executing Agency during the implementation stage of the Project.

The Kyrgyz side assured to take the necessary measures and coordination including allocation of the necessary budget which are preconditions of implementation of the Project. It is further agreed that the costs are indicative, i.e. at Outline Design level. More accurate costs will be calculated at the Detailed Design stage.

Both sides also confirmed that the Annex 2 will be used as an attachment of Grant Agreement (G/A).

9. 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 (PMR) attached as Annex 3. The timing of submission of the PMR is described in Annex 2.

10. 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 by the Executing Agency, but in any event not later than six months after completion of the Project.

11. Environmental and Social Considerations

11-1 General Issues

11-1-1 Environmental Guidelines and Environmental Category

The Team explained that 'JICA Guidelines for Environmental and Social Considerations (January 2022)' (hereinafter referred to as "the Guidelines") is applicable for the Project. The Project is categorized as B because the Project is not considered to be a large-scale airport project, is not located in a sensitive area, and has none of the sensitive characteristics under the Guidelines, it is not likely to have a significant adverse impact on the environment.

11-1-2 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 4. The Kyrgyz side assured that they shall take the necessary measures in accordance with the Environmental Checklist. Both sides agreed that in case of major modification of the content of the Environmental Checklist, the Kyrgyz side shall submit the modified version to JICA in a timely manner.

11-2 Environmental Issues

11-2-1 Environmental Impact Assessment (EIA)

Both sides confirmed the EIA report is not required for the Project in the country's legal system. The environmental issues will be considered during the state expertise for the Project.

11-2-2 Environmental Management Plan and Environmental Monitoring Plan

Both sides confirmed Environmental Management Plan (EMP) and Environmental Monitoring Plan (EMoP) of the Project is as Annex 5. 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.

11-2-3 Consultation with Local Stakeholders

The Kyrgyz side explained that local stakeholder meetings on the Project with relevant stakeholders and local residents with particular attention to directly affected peoples by the Project will be held at the Osh office. JICA requested and the Kyrgyz side agreed that English version of preparatory survey report is disclosed on KAN's website by June 2024.

11-3 Social Issues

11-3-1 Land Acquisition and Resettlement

Both sides confirmed approximately 2.34 ha of land would be acquired for the Project, and five owners of land would be affected.

Such land acquisition shall be implemented based on the Land Acquisition and Resettlement Action Plan as Annex 6 which was prepared in line with the Guidelines and authorized by the Kyrgyz side. KAN will secure budget for the land acquisition by early 2024.

11-4 Environmental and Social Monitoring

11-4-1 Environmental Monitoring

Both sides agreed that the Kyrgyz side will submit results of environmental monitoring to JICA as a part of Monthly Progress Report by using the monitoring form attached as Annex 7. The timing of submission of the monitoring form is described in Annex 2. In case JICA finds that there is a need for improvement in a situation with respect to environmental considerations after the agreed monitoring period, JICA may request to extend the period of monitoring and reporting until JICA confirms the issues have been properly addressed. The extension of the monitoring will be decided in accordance with the agreement between the Kyrgyz side and JICA.

11-4-2 Social Monitoring

Both sides confirmed that the Kyrgyz side will implement social monitoring about land acquisition proposed in the RAP. The Kyrgyz side agreed that progress of land acquisition and implementation of RAP will be monitored until land acquisition and resettlement activities including livelihood restoration program are completed. The Kyrgyz side and the Team agreed that the Executing Agency will submit results of social monitoring to JICA by using the monitoring form attached as Annex 7.

In case there is a remaining issue that needs to be addressed, JICA may request to extend the period of monitoring and reporting until JICA confirms the issues have been properly addressed and solved. The extension of the monitoring will be decided in accordance with the agreement between the Kyrgyz side and JICA.

11-4-3 Information Disclosure of Monitoring Results

Both sides confirmed that it will take stipulated procedures for information disclosure in accordance with Regulation on the Procedure for Conducting Environmental Impact Assessment. In addition, the Team requested the Kyrgyz side to disclose results of environmental and social monitoring to local stakeholders and the Kyrgyz side agreed to disclose monitoring results through their website/in their field offices without delay.

The Kyrgyz side agreed JICA will disclose results of environmental and social monitoring submitted by the Kyrgyz side as the monitoring forms attached as Annex 7 on its website. If the third parties request further information, JICA disclose the information, which is

subject to approval by the Kyrgyz side.

12. Other Relevant Issues

12-1 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.

12-2 Gender Mainstreaming

Both sides confirmed that gender mainstreaming should be duly practiced for the Project implementation. In particular, both sides agreed on the following gender elements to be integrated into the Project.

(a) Facility design that reflects gender-specific needs. Rest room and Shower room, Locker room will be installed to meet the needs of women working at the airports.

Annex 1 Project Implementation Schedule
Annex 2 Major Undertakings to be taken by the Government of Kyrgyz Republic
Annex 3 Project Monitoring Report (template)
Annex 4 Environmental Check List
Annex 5 Environmental Management Plan/Environmental Monitoring Plan
Annex 6 Abbreviated Resettlement Action Plan
Annex 7 Environmental and Social Monitoring Form

PROJECT IMPLEMENTATION SCHEDULE

The estimated timeline of the Project Implementation is as follows:

- Exchange of Note (E/N) and Grant Agreement (G/A): June 2024
- Ratification of the Grant Project by the Kyrgyz Government: June 2024
- Opening of Bank Account for Grant: June 2024
- Consulting Service Agreement: July 2024
- Detailed Design: August 2024 – December 2024
- Procurement of the Contractor/Supplier: January 2025 – March 2025
- Construction Works: April 2025 – April 2027
- Defect Liability Inspection (Facility): October 2027
- Defect Liability Inspection (Eqent): March 2028

MAJOR UNDERTAKINGS TO BE TAKEN BY THE GOVERNMENT OF KYRGYZ REPUBLIC

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

(1) Before the Tender

NO	Items	Deadline	In charge	Estimated Cost	Ref.
1	To sign the banking arrangement (B/A) with a bank in Japan (the Agent Bank) to open bank account for the Grant	within 1 month after the signing of the G/A	MoF/ KAN		
2	To issue A/P to the Agent Bank for the payment to the consultant	within 1 month after the signing of the contract	MoF/ KAN		
3	To bear the following commissions to the Agent Bank for the banking services based upon B/A			JPY 2.245 million	
	1) Advising commission of A/P	within 1 month after the signing of the contract	MoF/ KAN		
	2) Payment commission for A/P	every payment	MoF/ KAN		
4	To secure the necessary budget for implementation of EMP and EMoP	within 1 month after the signing of the G/A	KAN		
5	To establish grievance redness system for stakeholders during construction phase	before tender announcement	KAN		
6	To conduct the buried cultural property survey under Law of the Kyrgyz Republic on the Protection and Use of the Historical and Cultural Heritage	before tender announcement	KAN		
7	To secure the necessary budget and implement land acquisition and compensation with full replacement cost in accordance with RAP	before tender announcement	KAN		
8	To compensate with full replacement cost in accordance with RAP	before any physical impact by land acquisition	KAN		
9	To secure the following lands 1) Project sites for new control tower/ACC building and the access road 2) Temporary yard for the Contractor to temporarily store materials, equipment, etc. near the Project area	before tender announcement	KAN	KGS 30.48 million	
10	To implement social monitoring, and to submit the monitoring results to JICA, by using the monitoring form, on a quarterly basis as a part of Project Monitoring Report	until land acquisition and resettlement complete	KAN		
11	To obtain permission and other necessary procedures for the Project	before tender announcement	KAN		
12	To submit Project Monitoring Report (with the result of Detailed Design)	before tender announcement	KAN		

(B/A: Banking Arrangement, A/P: Authorization to pay, MoF: Ministry of Finance, Strategic Planning, National Development and Statistics)

(2) During the Project Implementation

NO	Items	Deadline	In charge	Estimated Cost	Ref.
1	To issue A/P to the Agent Bank for the payment to the supplier and the contractor	within 1 month after the signing of the contract(s)	MoF/ KAN		
2	To bear the following commissions to the Agent Bank for the banking services based upon the B/A			included in (1) 3	
	1) Advising commission of A/P	within 1 month after the signing of the contract(s)	MoF/ KAN		
	2) Payment commission for A/P	every payment	MoF/ KAN		
3	To ensure prompt customs clearance and to assist the constructor(s) and/or the supplier(s) with internal transportation in the country of the Recipient	during the Project	SCS/ KAN		
4	To accord Japanese physical persons and/or physical persons of third countries whose services may be required in connection with the supply of the products and the services such facilities as may be necessary for their entry into the country of the Recipient and stay therein for the performance of their work	during the Project	MoFA/ KAN		
5	To ensure that customs duties, internal taxes and other fiscal levies which may be imposed in the country of the Recipient with respect to the purchase of the products and/or the services be exempted or be borne by its designated authority without using the Grant	during the Project	KAN/ MoF/ STS/ SCS		
6	To bear all the expenses, other than those covered by the Grant, necessary for the implementation of the Project	during the Project	KAN		
7	To notify JICA promptly of any incident or accident, which has, or is likely to have, a significant adverse effect on the environment, the affected communities, the public or workers	during the construction	KAN		
8	To submit Project Monitoring Report after each work under the contract(s) such as shipping, hand over, installation and operational training	within 1 month after completion of each work	KAN		
	To submit Project Monitoring Report (final) (including as-built drawings, equipment list, photographs, etc.)	within 1 month after issuance of Certificate of Completion for the works under the contract(s)	KAN		
9	To submit a notice concerning completion of the Project	within 6 months after completion of the Project	KAN		
10	To construct access roads for the Project site	Before starting construction work	KAN	KGS 7.44 million	
11	To provide electric power supply for the Project site	Before starting construction work	KAN	KGS 2.54 million	
12	To provide water supply for the Project site	Before starting construction work	KAN	KGS 7.02 million	
13	To ensure the following preparation in Bishkek Air Traffic Control Center				
	1) Provision of new ACC/APP operation room and ATC training simulator room	Before arriving shipped equipment	KAN	included in (2) 13 2)	
	2) Procurement of new ATC console: Enroute console x2, Approach console x3, Operational supervisor console x1, Flight information service console x1	Before arriving shipped equipment	KAN	KGS 56.89 million	

	3) Relocation of existing equipment, which are installed in the existing console such as direction finder monitor, NAV-aid monitor and necessary radio equipment/telephone set, to new consoles	Before starting site acceptance test	KAN	KGS 9.97 million	
	4) Procurement and installation of UPS and AVR (Automatic Voltage Regulator) for new air traffic control system	Before arriving shipped equipment	KAN	KGS 5.95 million	
	5) Removal, temporary installation, or dismantling of existing equipment for securing installation space of new equipment	Before arriving shipped equipment	KAN	KGS 2.97 million	
14	To ensure the following preparation in Osh Air Traffic Control Center		KAN		
	1) Procurement of new ATC console: Enroute console x1, Approach console x1, aerodrome control console x1	Before arriving shipped equipment	KAN	included in (2) 13 2)	
	2) Relocation of existing console including associated equipment to new air traffic control center and control tower: operational supervisor console x1, technical supervisor console x1, aerodrome control console x1	Before starting equipment installation work	KAN	included in (2) 13 3)	
	3) Relocation of existing air traffic control equipment and NAV-aid equipment to new air traffic control center and control tower	Before starting equipment installation work	KAN	included in (2) 13 4)	
	4) Procurement and installation of UPS and AVR (Automatic Voltage Regulator) for new air traffic control system	Before arriving shipped equipment	KAN	included in (2) 13 5)	
	5) Installation of a new fiber-optic terminal (Optical Node) to be connected to existing airport fiber-optic network	Before starting equipment installation work	KAN	KGS 8.98 million	
15	To perform necessary procedures for entry permits and construction permits for equipment installation	during the Project	KAN		
16	To ensure the safety of persons engaged in the implementation of the Project	during the Project	KAN		
17	To take necessary measures for security and safety of the Project site	during the construction	KAN		
18	To implement EMP and EMoP	during the construction	KAN		
19	To submit results of environmental monitoring to JICA, by using the monitoring form, on a quarterly basis as a part of Project Monitoring Report	during the construction	KAN		
20	To obtain permission and necessary procedures for the completion of building	during the construction	KAN		

(B/A: Banking Arrangement, A/P: Authorization to pay, MoF: Ministry of Finance, Strategic Planning, National Development and Statistics, STS: State Tax Services, SCS: State Customs Services, MoFA: Military of Foreign Affairs)

(3) After the Project

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

2. Other obligations of the Government of Kyrgyz Republic funded with the Grant

This Page is closed due to the confidentiality.

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 spare parts, 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)

Monitoring sheet on price of specified materials

1. Initial Conditions (Confirmed)

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

2. Monitoring of the Unit Price of Specified Materials

(1) Method of Monitoring：●●

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

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

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

-
-
-

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%)	

ENVIRONMENTAL CHECK LIST

JICA Environmental Checklist 10: Airports Points to Note:

1. Answers should not be limited to only Yes/No, but the rationale of the answer and mitigation measures should also be described in the "Confirmation of Environmental Considerations" column.
2. If you have any questions about terminology, etc., please refer to "Japan International Cooperation Agency Guidelines For Environmental and Social Considerations (January 2022)" (the JICA Guidelines) and "Answers to Frequently Asked Questions about the Japan International Cooperation Agency Guidelines For Environmental and Social Considerations (January 2022)" (FAQ).

Category	Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
1. Permits and Consultations	(1) Environmental Assessment and Environmental Permits	(a) Have EIA reports been already prepared in official process? (b) Are the EIA reports written in the official or widely used language of the host country? (c) Have EIA reports been approved by authorities of the host country government? (If not yet approved, write the expected date of the approval in the "Confirmation of Environmental Considerations" column.) (d) Have EIA reports been approved with any conditions? If conditions are imposed on the approval of EIA reports, are the conditions satisfied? (e) In addition to the above approvals, have other required environmental permits been obtained from the appropriate regulatory authorities of the host country's government? (f) Do the EIA reports cover the items described in Appendix 2 of the JICA Guidelines? (The scope and detail of the impact assessment may be adjusted according to the impact of the project.) (g) Do the environmental and social consideration confirmation cover the project's whole scope, cumulative impacts, derivative and secondary impacts, as well as impacts of indivisible projects?	(a) N (b) N (c) N (d) N (e) Y (f) N (g) N	(a) A hearing was held with the Osh City Office of the Ministry of Environment with a summary of the project plan, and it was determined that the project does not require EIA procedures under Kyrgyz's legislation. It should be noted that as the project progresses, a Technical Note (construction permit) will need to be prepared, indicating the detailed design and construction process, as part of which a simplified environmental impact assessment, including a field survey, will need to be included. (b) The project did not require an EIA procedure under Kyrgyz's legislation. (c) Ditto. (d) Ditto. (e) KAN is due to carry out a survey of archaeological sites. (f) The project did not require an EIA procedure under Kyrgyz's legislation. (g) Same as (a). The project is a new control tower and is a small-scale construction project. No cumulative impacts etc. are of concern.

Category	Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
	(2) Explanation and Consultation with Local Stakeholders	(a) Are local stakeholders properly analyzed and identified? (b) Does the project provide appropriate explanations to local stakeholders about the content and impact of the project, and gain their understanding, through the process of ensuring meaningful consultation including information disclosure? (c) For local stakeholder consultations, are records of consultations prepared, including the gender and other attributes of the participants? (d) Have comments from local stakeholders (such as local residents) been reflected to the project design, etc.?	(a) N (b) N (c) N (d) N	(a) KAN has started negotiations with the landowners and has reached an agreement on land acquisition. The survey team has offered to KAN to conduct stakeholder consultations in the most recent settlement in the future. (b) The landowners have already been consulted and their understanding of the project and the sale of the land has been obtained. (c) Same as (a) (d) Ditto.
	(3) Examination of Alternatives	(a) Is the project/plan's scope of multiple alternatives adequately considered? (b) Are alternatives that are feasible in terms of technical, financial, and environmental and social aspects considered from the view point of environmental and social items and, if necessary, reducing total greenhouse gas emissions? (c) Are comparisons made with the "without project" scenario?	(a) Y (b) N (c) Y	(a) The alternatives were (i) a proposal not to implement the project and (ii) the planned project sites at three locations. The alternatives were evaluated in terms of cost, technology, environment and land acquisition, and the best alternative was the one with the highest technical evaluation. (b) Ditto. (c) Comparisons were made with proposals that did not implement the project.
2. Pollution Control	1) Air Quality	(a) Are there any impacts from air pollutants emitted from aircrafts, etc.? Do the air pollutants meet the environmental standards of the host country, etc.? Are necessary mitigation measures taken? (b) Do air pollutants emitted from the project cause areas that do not comply with the ambient air quality standards of the host country? (c) Where air pollution already exceed the environmental standards near the airport and its associated facilities, will the project make the air pollution worse? (d) Does the construction have negative impacts? Are there any mitigation measures in place for the impacts?	(a) - (b) N (c) N (d) N	(a) The project is the construction of an off-site control tower at an existing airport facility and the impact of air pollutants from aircraft using the existing airport is not considered. The project is a control tower and air quality impacts are not a concern. (b) Not applicable. (c) Not applicable. (d) Not applicable.

Category	Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
	(2) Water Quality	(a) Do items such as BOD, COD, SS, and oil content, etc. contained in wastewater from related facilities and ancillary equipment, etc. meet the effluent standards of the host country? (b) Does the quality of sanitary wastewater and stormwater comply with the effluent standards of the host country, etc.? (c) Do effluents from the project cause areas that do not comply with the ambient water quality standards of the hostcountry, etc.? (d) Does the construction have negative impacts? Are there any mitigation measures in place for the impacts?	(a) N (b) Y (c) N (d) N	(a) Construction effluent will be discharged after appropriate treatment. When in service, toilet and domestic wastewater generated from the control tower will be treated and treated in septic tanks and disposed of by infiltration of treated water, so there is no concern about significant impact on the surrounding area. (b) No emission standards or other standards have been specified for the country concerned. (c) Ditto. (d) The contractor will discharge wastewater from the construction site after it has been treated using turbid water treatment equipment etc.
	(3) Wastes	(a) Are wastes generated from the airport and its associated facilities properly treated and disposed of in accordance with regulations of the host country? (b) Does the construction have negative impacts? Are there any mitigation measures in place for the impacts?	(a)Y (b)Y	(a) Waste generated from the project will be disposed of in accordance with the regulations of the country concerned. In order to improve the soil, approximately 6,000 m3 of soil needs to be replaced due to soil quality issues, but the soil on the project site is currently used as agricultural land and is fertile soil, so it will not be used as construction soil, but will be moved once and reused in other agricultural land, etc. instead of being disposed of. (b) Ditto.
	(4) Soil Contamination	(a) Has the soil at the project site been contaminated in the past? (b) Are adequate measures taken to prevent soil contamination by leakage of aircraft fuel, etc.? (c) Does the construction have negative impacts? Are there any mitigation measures in place for the impacts?	(a)N (b)N (c)Y	(a) Not applicable. On the other hand, the project site is currently a farmland and approximately 6,000 m3 of soil needs to be replaced due to soil quality issues. The soil on the project site is currently used as agricultural land and is fertile, so it will not be used as construction soil, but will be moved once and reused for other agricultural land, instead of being disposed of. If the soil contains toxic substances such as heavy metals, it will be properly disposed of using the disposal methods stipulated by law. (b) The project is the construction of a control tower

Category	Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
				and no aircraft fuel or other materials will be used. (c) Same as (a).
	(5) Noise and Vibration	(a) Does the noise generated by aircrafts comply with standards of the host country? (b) Are there any adverse impacts from noise and vibration from vehicles of airport users or vehicles associated with airport operations? (c) Does the construction have negative impacts? Are there any mitigation measures in place for the impacts?	(a)- (b)N (c)N	(a) The project involves the construction of a control tower off the site of existing airport facilities and airport noise etc. is not a consideration. (b) Although the project involves the construction of a new control tower, the project site is sufficiently distant from residential areas and is not a facility that generates noise or vibration on a continuous basis, so it is not applicable. (c) Ditto.
	(6) Subsidence	(a) Is there a possibility that the extraction of a large volume of groundwater causes subsidence? (b) Does the construction have negative impacts? Are there any mitigation measures in place for the impacts?	(a)N (b)N	(a) Not applicable. (b) Not applicable.
	(7) Odor	(a) Are there any odor sources? Are adequate odor control measures taken? (b) Does the construction have negative impacts? Are there any mitigation measures in place for the impacts?	(a)N (b)N	(a) Not applicable. (b) Not applicable.
3. Natural Environment	(1) Protected Areas	(a) Is the project site located in protected areas designated by the country's laws or international treaties/ conventions? (b) Does the project affect the protected areas? (c) Does the construction have negative impacts? Are there any mitigation measures in place for the impacts?	(a)N (b)N (c)N	(a) Not applicable. (b) Not applicable. (c) Not applicable.

Category	Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
	(2) Biodiversity	(a) Does the project site encompass primary forests, natural forests in tropical areas, habitats with important ecological value (coral reefs, mangrove wetlands, tidal flats, etc.)? (b) Does the project site encompass habitats of rare species that require protection under domestic legislation, international treaties, etc.? (c) Are there any concerns about the significant impact on biodiversity by the project, with significant conversion or significant degradation of critical habitats or critical forests? If yes, are appropriate measures taken to address the impact on biodiversity? (d) Does the amount of water (e.g. surface water, groundwater) used by the project have a negative impact on the aquatic environments such as rivers? Are measures taken to reduce the impacts on aquatic organisms? (e) Are measures taken to prevent aircraft wildlife collisions and wildlife entering into the airport? (f) If there are any other concerns about significant impacts on biodiversity, are measures taken to reduce the impacts on biodiversity? (g) Does the construction have negative impacts? Are there any mitigation measures in place for the impacts?	(a)N (b)N (c)N (d)Y (e)N (f)N (g)N	(a) Not applicable. (b) Not applicable. (c) Not applicable. (d) Not applicable. (e) Not applicable. (f) Not applicable. (g) Not applicable.
	(3) Hydrology	(a) Does the construction of the airport and related facilities adversely affect surface water and groundwater flows due to changes in the water system? (b) If the airport is constructed in a marine area, does it have a negative impact on current conditions, waves, tides, and incoming river water flow, etc.? (c) Does the construction have negative impacts? Are there any mitigation measures in place for the impacts?	(a)N (b)N (c)N	(a) No direct impacts will occur as there are no water systems in the vicinity of the proposed project site. On the other hand, contaminated water generated during construction will be properly treated in a water storage tank before disposal. (b) Not applicable. (c) Not applicable.

Category	Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
	(4) Topography and Geology	(a) Are the topography and geological structure in the vicinity of the proposed site modified to a large extent as a result of extensive land development? (b) Is the stability of the existing topographic conditions adequately considered for alteration of topographic features, such as earth cut and fill operations? (c) Does soil runoff result from cut and fill areas, waste soil disposal sites, and borrow sites? (d) In the case of offshore projects, does the project erode natural beaches? (e) Does the construction have negative impacts? Are there any mitigation measures in place for the impacts?	(a)Y (b)N (c)Y (d)N (e)Y	(a) The proposed project site is currently a field site, which means that approximately 4,000 m^2 of flat area of soil needs to be replaced due to soil quality issues. (b) Not applicable. (c) The project site is currently field land and requires the replacement of approximately 6,000 m^3 of soil due to soil quality issues. The soil on the project site is currently used as agricultural land and is fertile, so it will not be used as construction soil, but will be moved once and reused for other agricultural land, instead of being disposed of. If the soil contains toxic substances such as heavy metals, it will be disposed of appropriately using the disposal methods stipulated by law. (d) Not applicable. (e) As stated in (c).

Category	Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
4. Social Environment	(1) Resettlement and Land Acquisition	(a) Is land acquisition with involuntary resettlement caused by project implementation? If yes, please describe the scale of land acquisition and resettlement. (b) Are efforts made to minimize the impacts caused by the resettlement? Are there any other land acquisition or loss of livelihoods? (c) Is adequate explanation on compensation and livelihood restoration program given to affected people prior to resettlement? (d) Is the resettlement plan, including compensation with full replacement costs, restoration of livelihoods and living standards, developed based on socioeconomic studies on resettlement? (e) Are the compensations paid prior to the resettlement? (f) Are the compensation policies prepared in document? (g) Does the resettlement plan pay particular attention to vulnerable social groups, such as women, children, elderly peoples, people in poverty, persons with disabilities, refugees, internally displaced persons, and minorities? (h) Are the compensation to be agreed are explained to the project affected persons in writing, and are agreements with the affected people obtained prior to resettlement? (i) Is the organizational framework established to properly implement resettlement? Are the capacity and budget secured to implement the plan? (j) Are any plans developed to monitor the impacts of resettlement? (k) Is the grievance redress mechanism established?	(a)N (b)Y (c)Y (d)Y (e)Y (f)Y (g)N (h)N (i)N (j)Y (k)Y	(a) No involuntary resettlement will occur under the project. (b) The affected population is minimized at the planning stage. As for land acquisition, the project requires the acquisition of 4,000 m^2 of land that is currently used as agricultural land; KAN has already identified three landowners. KAN started direct negotiations with these three landowners in January 2023, and an agreement has been reached on the sale of the land for the site. (c) Not applicable as resettlement will not occur. (d) Same as above. (e) Compensation will be paid before the delivery of the site, as the acquisition of the site will be carried out in accordance with Kyrgyz legislation. (f) Land acquisition procedures are carried out by the KAN and the process is recorded. (g) Not applicable as resettlement will not occur. (h) Not applicable. (i) KAN, is already negotiating with the landowners and past experience shows no problems with implementation capacity. Budgetary measures are also planned appropriately. (j) Land acquisition will be monitored by KAN. (k) A grievance mechanism has been established in the KAN.

Category	Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
	(2) Living and Livelihood	(a) Does the project adversely affect the living conditions of the inhabitants? Are adequate measures considered to reduce the impacts, if necessary? (b) Does the project adversely affect road traffic in the surrounding areas, land use and water use by local residents? (c) Is sufficient infrastructure (e.g., access roads) available for the project implementation? If insufficient, are there any development/improvement plans? (d) Do airport facilities and structures cause a sun shading and radio interference? (e) Does the project have a negative impact on ecosystem services (provisioning services and regulating services) and affect health and safety of the community (especially indigenous peoples who depend on the services)? (f) Does the construction have negative impacts? Are there any mitigation measures in place for the impacts?	(a)Y (b)Y (c)N (d)N (e)N (f)Y	(a) The project will acquire land from the farmers who are the landowners, but compensation to the target population will be provided by KAN in monetary terms, based on the wishes of the target population. No significant impact on other means of livelihoods of the population is envisaged as a result of the Project. (b) Temporary traffic congestion due to construction equipment and vehicles is envisaged on the dirt roads around the proposed site during construction. The contractor will set speed limits for construction vehicles and place signs and protective facilities to prevent accidents. (c) Access roads may be maintained under the responsibility of the KAN as necessary. Transmission lines, internet cables and other facilities are also planned to be provided at KAN's expense. (d) The proposed project site is sufficiently far from the settlement that it is not likely to cause sun blockage or radio interference. (e) The proposed project site is currently used as field land and is not expected to have any impact on ecosystem services, etc. (f) Negative impacts during construction are envisaged and necessary mitigation measures will be implemented during construction.
	(3) Vulnerable Social Groups	(a) Is appropriate consideration given to vulnerable social groups, such as women, children, elderly peoples, people in poverty, persons with disabilities, refugees, internally displaced persons, and minorities? (b) Does the construction have negative impacts? Are there any mitigation measures in place for the impacts?	(a)Y (b)Y	(a) Not applicable in operation phase. There is concern about temporary impacts from construction vehicles travelling during construction. (b) The construction works will be planned so that construction vehicles will not be allowed to pass during school and return times, and further hazard prediction activities (e.g. installation of road signs) will be carried out.

Category	Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
	(4) Heritage	(a) Does the project damage any archeological, historical, cultural, and religious heritage? Are adequate measures considered to protect these sites in accordance with the laws of the host country? (b) Does the construction have negative impacts? Are there any mitigation measures in place for the impacts?	(a)Y (b)Y	(a) There are no cultural or other heritage sites in and around the project site. On the other hand, Kyrgyz's legislation requires a survey of buried cultural heritage prior to construction. The procedure will be carried out by KAN as the responsible body after the acquisition of the land. (b) Ditto
	(5) Landscape	(a) Does the project adversely affect landscapes that require special considerations? (b) Does the construction have negative impacts? Are there any mitigation measures in place for the impacts?	(a)N (b)N	(a) Not applicable. (b) Not applicable.
	(6) Ethnic Minorities and Indigenous Peoples	(a) Are considerations given to reduce impacts on the culture and lifestyle of ethnic minorities and indigenous peoples? (b) Are all of the rights of ethnic minorities and indigenous peoples in relation to land and resources to be respected? (c) Is an indigenous peoples plan prepared and published, if necessary? (d) Do the project make efforts to obtain the Free, Prior, and Informed Consent (FPIC) of the affected indigenous peoples? (e) Does the construction have negative impacts? Are there any mitigation measures in place for the impacts?	(a)N (b)N (c)N (d)N (e)N	(a) Not applicable, as no ethnic minorities or indigenous peoples have been identified as living in the project area. (b) Not applicable. (c) Not applicable. (d) Not applicable. (e) Not applicable.
	(7) Working Conditions	(a) Does the project comply with laws related to occupational health and safety of the host country? (b) Are tangible safety considerations in place for individuals involved in the project, such as installation of safety equipment which prevents industrial accidents, and management of hazardous materials, etc.? (c) Are intangible measures being planned and implemented for individuals involved in the project, such as development of health and safety plans, and conducting safety trainings (including traffic safety and public health) for workers etc.?	(a)Y (b)Y (c)Y	(a) The project implementer will comply with the Kyrgyzstan Labor Code's laws and regulations relating to employment conditions, IFC guidelines, World Bank EHS guidelines, etc. (b) Specific safety considerations will be implemented for project personnel, such as the installation of safety equipment to prevent industrial accidents and control of hazardous substances. (c) As a mitigation measure, the project will require the project operator and industrialists to implement health and safety and environmental training programs for construction personnel, including security personnel.

Category	Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
	(8) Health, Safety and Security of Local Communities	(a) Are there any negative impacts on health/hygiene of the local community, such as disease outbreaks (including HIV and other infectious diseases) due to the influx of workers, etc. associated with the project? Are there any mitigation measures in place for the impacts? (b) Are there any negative impacts on the safety of the local community, such as deterioration of public safety, due to the influx of workers, etc. associated with the project? Are there any mitigation measures in place for the impacts? (c) When security guards are hired for the project or other personnel are deployed to ensure and maintain the security of the project area as well as the persons related to the implementation of the project during the project preparation and implementation, are any appropriate measures taken for such personnel not to use any force to provide security except for preventive and defensive purposes? (d) Does the construction have negative impacts? Are there any mitigation measures in place for the impacts?	(a)Y (b)Y (c)Y (d)Y	(a) Not applicable as the scale of construction is small and a large influx of workers is not expected. On the other hand, safety training and environmental health programs for construction personnel, including security personnel, are mandatory. (b) Ditto (c) Ditto (d) Ditto
5. Others	(1) Monitoring	(a) Does the project proponent develop and implement monitoring program for the environmental and social items that are considered to have potential impacts? (b) What are the items, methods and frequencies of the monitoring program? (c) Does the project proponent establish an adequate monitoring framework (organization, personnel, equipment, and 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 reporting the monitoring results from the project proponent to the regulatory authorities? (e) Is the grievance redress mechanism regarding environmental and social considerations established?	(a)Y (b)Y (c)Y (d)Y (e)Y	(a) KAN is required to submit a Technical Note containing an EMP and EMoP prior to project commencement, and this study proposed an Environmental Monitoring Plan (EMOP) within the report. (b) The proposed EMOP contains information on items, methods, frequency, implementing agencies, etc., and is adequate. (c) Monitoring will be carried out under the responsibility of the Head Office and Osh Office of the project operator, KAN, and the Project Management Unit. (d) Monitoring and reporting is not required under the project in line with national legislation, but the proposed EMOP specifies the method and frequency for reporting to JICA. (e) A grievance mechanism will be established within the KAN.

Category	Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
6. Note	(1) Reference to Checklist of Other Sectors	(a) Where necessary, pertinent items described in the Roads, Railways, and Bridges checklists should also be checked (e.g., projects including construction of access road to the airport). (b) If the airport is constructed on the sea, pertinent items described in the Ports and Harbors checklist should also be checked. (c) Where necessary, pertinent items described in the Forestry Projects checklist should also be checked (e.g., projects including large areas of deforestation).	(a)N (b)N (c)N	(a) Not applicable. (b) Not applicable. (c) Not applicable.
	(2) Note on Using Environmental Checklist	(a) Where 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 or global warming). (b) For projects that are expected to generate more than a certain amount of greenhouse gas emissions, is the total amount of the greenhouse gas emissions estimated before the project implementation?	(a)N (b)N	(a) Not applicable. (b) Not applicable.

ENVIRONMENTAL MANAGEMENT PLAN /ENVIRONMENTAL MONITORING PLAN

1. Environmental Management Plan

No	Factor	Mitigation Measures	Responsible Section	Cost
	Water Quality	DC: The consultant and contractor will utilize sedimentation treatment facilities or similar equipment to process runoff from the construction site before discharging it.	Contractor	Included in the construction cost
		OP: At the control tower, toilets and domestic wastewater are generated. These will be treated using a septic tank, and the treated water will be disposed of by infiltration.	KAN	KAN Budget
	Waste/Hazardous Substances	DC: Regarding the treatment of construction-generated soil, if the soil quality is deemed acceptable, It is planned to transport it to an appropriate disposal site or former mining area. If residents in the vicinity express a desire, distribution will be considered. If, however, hazardous substances such as heavy metals are present, proper disposal methods regulated by law will be implemented.	Contractor	Included in the construction cost
	Soil contamination	DC : The consultant and contractor will rigorously perform daily maintenance checks on construction machinery to ensure there are no leaks, including gasoline, and to prevent any environmental hazards.	Contractor	Included in the construction cost
	Topography and Geology	Same as above.	KAN	Same as above.
	Land Acquisition and resettlement	BC : KAN will provide compensation to affected residents in accordance with the laws of Kyrgyzstan.	KAN	KAN Budget
6	Local Economy, Including Employment and Livelihood Opportunities	DC : If there are preferences expressed by the neighboring residents, priority will be given to hiring them as workers.	Contractor	Included in the construction cost
	Existing Social Infrastructure and Social Services	During construction : The contractor will implement speed limits for construction vehicles and install signs, protective facilities, and other measures to prevent accidents.	Contractor	Included in the construction cost

No	Factor	Mitigation Measures	Responsible Section	Cost
	Cultural Heritage	DC/OP : According to the laws of Kyrgyzstan, it is necessary to conduct an investigation of buried cultural properties before construction. The procedures for this will be carried out by KAN as the responsible authority after land acquisition. If cultural properties are confirmed, consultations will be held with the Cultural Agency to undertake the necessary procedures.	KAN	KAN Budget
	Gender	DC: Construct gender related facilities as designed DC: Ensure gender equality in unit labour cost	Contractor	Included in the construction contract
		OP: Ensure gender considerations in constructed facilities	KAN	
	Children's right	DC : Construction plan will be developed to ensure that construction vehicles do not pass through during school commuting and homecoming hours. Additionally, hazard anticipation activities, such as the installation of road signs, will be implemented.	Contractor	Included in the construction cost
	Community health, safety and security	DC : Same as children's right Provide health and safety training to construction workers	Contractor	Included in the construction cost
	Occupational safety and health	DC : To prevent injuries and accidents among the workforce, the contractor mandates the use of work uniforms and helmets for the workers. The contractor conducts awareness campaigns on occupational health through morning briefings and training sessions. Additionally, an emergency response system is established to address incidents when they occur.	Contractor	Included in the construction cost
	Accident	DC : The contractor will implement safety measures to prevent and address accidents. This includes maintaining safety equipment for work at heights, stocking first aid supplies, deploying an adequate number of traffic controllers, implementing emergency response plans, conducting safety education, holding daily meetings, and engaging in hazard anticipation activities (such as installing road signs). Additionally, an environmental health and safety manager will be appointed to address hygiene and environmental issues, and to appropriately record and report construction-related accidents.	Contractor	Included in the construction cost

Remark : BC : Before Construction, DC : During Construction, OP : Operation Phase

(Source: JICA Study Team)

2. Environmental Monitoring Plan

No	Factor	Monitoring Items	Responsible Section	Cost
	Water Quality	Installation of sedimentation treatment facilities: Monthly	Contractor	Included in the construction cost
		Confirmation of septic tank installation: Once	KAN	KAN Budget
	Waste/Hazardous Substances	Confirmation of soil treatment methods: Once	Contractor	Included in the construction cost
	Soil contamination	Rigorous daily maintenance checks	Contractor	Included in the construction cost
	Topography and Geology	Same as above.	KAN	Same as above.
	Land Acquisition and resettlement	Confirmation of land handover: Once Verification of compensation-related documents: Once	KAN	KAN Budget
6	Local Economy, Including Employment and Livelihood Opportunities	Confirmation of employment status: Quarterly	Contractor	Included in the construction cost
	Existing Social Infrastructure and Social Services	Verification of complaints related to traffic congestion: Promptly upon receiving each complaint	Contractor	Included in the construction cost
	Cultural Heritage	Confirmation of the results of the buried cultural property survey: After the survey is conducted.	KAN	KAN Budget
	Gender	Regular monitoring of wage payment registers of prime contractors, subcontractors and sub-subcontractors: monthly	Contractor	Included in the construction cost
		Ensuring gender considerations in constructed facilities	KAN	
	Children's right	Safety and health plan review: Monthly Accident reports: Promptly upon the occurrence of each accident	Contractor	Included in the construction cost
	Community health, safety and security	Health and safety training checks / monthly	Contractor	Included in the construction cost
	Occupational safety and health	Verification of work attire and helmet usage: Daily Monitoring of awareness campaign implementation: Monthly Accident reporting: Promptly upon the occurrence of each accident	Contractor	Included in the construction cost
	Accident	Safety and Health Plan Review: Monthly Accident Reports: Promptly upon the occurrence of each accident	Contractor/Contractor	Included in the construction cost

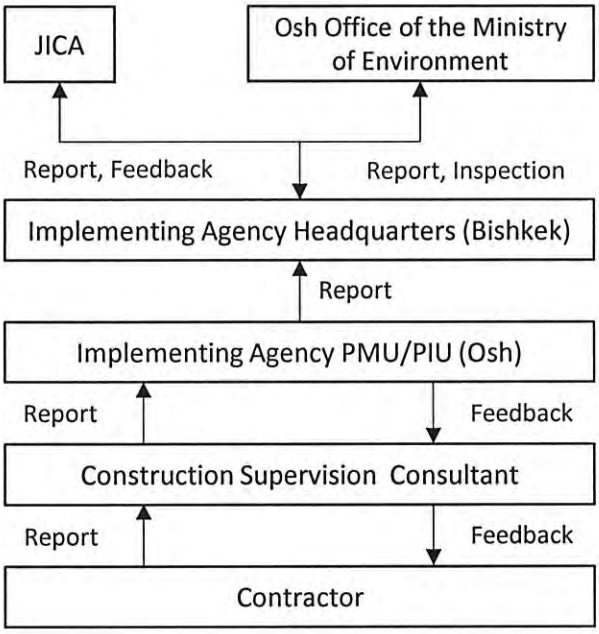
Remark : BC : Before Construction, DC : During Construction, OP : Operation Phase

(Source: JICA Study Team)

3. Implementation Framework

(1) Under Construction

Following figure shows the implementation framework of EMP (Environmental Management Plan) and EMoP (Environmental Monitoring Plan) under construction phase.

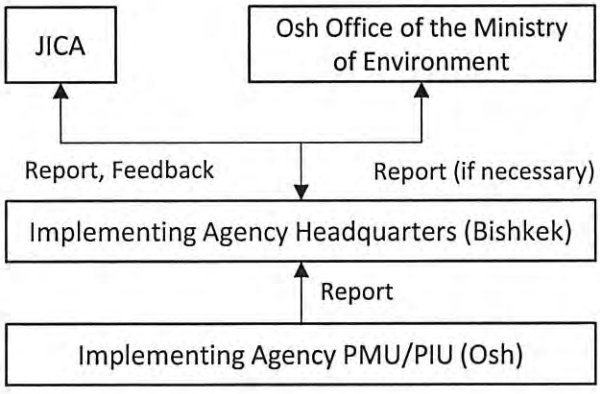


(Source: JICA Study Team)

Implementation framework of EMP and EMoP (Under construction)

(2) Operation Phase

Following figure shows the implementation framework of EMP and EMoP in service phase.



(Source: JICA Study Team)

Implementation framework of EMP and EMoP (Operation Phase)

ABBREVIATED RESETTLEMENT ACTION PLAN

(1) Necessity of Land Acquisition and Resettlement

In the Project, the project area will be the land adjacent to the current airport, which is currently used as a field. Resettlement will not occur, and land acquisition will be required.

(2) Legal Framework for Land Acquisition and Resettlement

1) Overview of the relevant national legal framework for land acquisition and resettlement

Land Acquisition and Resettlement in Kyrgyzstan are carried out in accordance with the Constitution of the Kyrgyz Republic (June 27, 2010), the Civil Code (No. 16 of May 8, 1996) and the Land Code (No. 45 of June 2, 1999). The following table shows the laws and regulations regarding land acquisition and involuntary resettlement in Ki Country and a summary of these laws and regulations.

Table 1 Land Acquisition Laws and Regulations

Name	Year	Outline
Constitution of Kyrgyz Republic	2010	The diversity of land ownership, protection of land ownership rights, and the possibility of acquiring land for public purposes through fair and prior compensation are stipulated.
Land Code	1999	Land acquisition is conducted with the approval of the relevant authority and the consent of the current landowner (user). Compensation is based on market prices, considering the value of the land and losses incurred. Alternatively, it may involve providing equivalent land as compensation.
Civil Code	1996	The regulations define the types and amounts of losses to be compensated in the case of land acquisition and involuntary resettlement of residents.
Law on Grievances	2007	Provisions are in place to record and justly address complaints from the public related to activities such as land acquisition.

(Source: JICA Study Team)

2) JICA's policy on land acquisition

JICA's policy on land acquisition is shown in the table below. Note that the project does not include resettlement, so only items related to site acquisition (loss of livelihoods) were extracted.

Table 2 JICA's Policy on Land Acquisition

The key principles of JICA policies on involuntary resettlement
1. Loss of means of livelihood are to be avoided when feasible by exploring all viable alternatives. If avoidance is not possible even after such examination, effective measures to minimize impacts and to compensate for losses must be taken upon agreement with the affected people. 2. Project affected people, such as people who may lose their livelihoods by the project, must be provided sufficient compensations, and supports by the project proponents in a timely manner. Compensations must be calculated at full replacement cost as much as possible and provided in advance. Measures to achieve this may include Providing land or monetary compensations for losses of land or assets, supporting for alternative sustainable livelihood. 3. Compensation standards are disclosed and consistently applied. The project affected persons need to be aware of the compensation standards. In principle, the contents of the individual compensation to be agreed are explained to the project affected persons in writing, and the project affected persons can

The key principles of JICA policies on involuntary resettlement
confirm the contents at any time. 4. Appropriate participation of the project affected people and their communities must be promoted in the planning, implementation, and monitoring of measures against loss of livelihood.
Above principles are complemented by World Bank ESS5, since it is stated in JICA Guideline that "JICA confirms that environmental and social considerations of a project do not deviate significantly from the World Bank's environmental and social policies." Additional key principle based on World Bank ESS5 is as follows.
1. The Borrower will, as part of the environmental and social assessment, conduct a census to identify the persons who will be affected by the project, to establish an inventory of land and assets to be affected, to determine who will be eligible for compensation and assistance, and to discourage ineligible persons, such as opportunistic settlers, from claiming benefits. (ESS5 para20). 2. Affected persons may be classified as persons: (a) Who have formal legal rights to land or assets; (b) Who do not have formal legal rights to land or assets, but have a claim to land or assets that is recognized or recognizable under national law; or (c) Who have no recognizable legal right or claim to the land or assets they occupy or use. (ESS5 para10) The Borrower will offer affected persons compensation at replacement cost, and other assistance as may be necessary to help them improve or at least restore their standards of living or livelihoods, subject to the provisions of paragraph 26 through 36 of this ESS. (ESS5 para 12) 3. Particular attention will be paid to gender aspects and the needs of the poor and the vulnerable. (ESS5 para26)
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; institutional framework for implementation; monitoring and evaluation mechanism; time schedule for implementation; and, detailed Financial Plan etc.

(Source: JICA Study Team)

3) Gap analysis between JICA's policy on land acquisition and Kyrgyz Legislation

The gaps between the JICA guidelines and the Kyrgyz legal system for land acquisition are summarized in the table below. Note that the project does not include resettlement, so only items related to land acquisition (loss of livelihoods) were extracted.

Table 3 Gap analysis between JICA's policy on land acquisition and Kyrgyz Legislation

No.	JICA Guidelines	Laws and Guidelines of the Kyrgyz Republic	Gaps with JICA Guidelines	Policy by the Project
1	Involuntary resettlement and loss of means of livelihood are to be avoided when feasible by exploring all viable alternatives. (JICA GL)	The Constitution of the Kyrgyz Republic (2010), Land Code (1999), Civil Code (1996)	None	Same as JICA GL
2	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)	The Constitution of the Kyrgyz Republic (2010), Land Code (1999), Civil Code (1996)	None	Same as JICA GL
3	Compensation must be based on the full replacement cost as much as possible. (JICA GL)	The Valuation of properties is carried out according to market value and market price.	None	Same as JICA GL
4	Compensation and other kinds of assistance must be provided prior to displacement. (JICA GL)	The Constitution of the Kyrgyz Republic (2010), Land Code (1999), Civil	None	Same as JICA GL

No.	JICA Guidelines	Laws and Guidelines of the Kyrgyz Republic	Gaps with JICA Guidelines	Policy by the Project
		Code(1996)		
5	When consultations are held, explanations must be given in a form, manner, and language that are understandable to the affected people. (JICA GL)	Not specified.	Although there is no mention of the use of language, in practice negotiations are conducted using a common language.	Same as JICA GL
6	Appropriate and accessible grievance mechanisms must be established for the affected people and their communities. (JICA GL)	Law on Grievances (2007)	None	Same as JICA GL
7	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 of others who wish to take advance of such benefits. (WB OP4.12 Para.6)	Not specified.	Identification of affected people is not specified. In practice, land owners were identified at an early stage in this Project.	Same as JICA GL
8	Eligibility of benefits includes, 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. (WB OP4.12 Para.15)	The only PAPs who have formal right to property are eligible for compensation only. (Land Code)	PAPs without formal land ownership are not entitled to compensation.	This project is not applicable because the official identity of the landowner has been confirmed.
9	Provide support for the transition period (between displacement and livelihood restoration). (WB OP4.12 Para.6)	Not specified about livelihood restoration.	No support for transition agencies is envisaged.	Additional cash compensation will be paid based on KAN proposal.
10	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. (WB OP4.12 Para.8)	Not specified.	Special considerations for vulnerable groups are not specified.	This project is not applicable because landowners are not included in vulnerable groups.

(Source: JICA Study Team)

(3) Scale and Scope of Land Acquisition and Resettlement

The site subject to land acquisition is 4,000 m^2. It is currently used as a field and no buildings exist. Three owners of the subject site have been identified.

KAN is also in discussions with the landowners with a view to purchasing up to approximately 20,000 m^2 of land adjacent to the project site, including the planned project site (4,000 m^2), for temporary land acquisition (temporary yard), a site for an access road at KAN's expense and security measures, although not for the project site. In that case, two additional landowners will be added to the three landowners in the project area, bringing the total number of landowners to five. The table below shows the number of these five landowners and their family members, and the area of land covered by the project. (This area is the total area of the project area and its surroundings). The purchase plan will be finalized once the project is implemented, and specific negotiations on the area to be purchased will be carried out after the project is finalized, but according to KAN, the owner is willing to sell the land as the current land has low profitability as agricultural land.

Table 4 Information of Landowners

No.	Landowners	Number of families	Area of Land Acquisition (ha)[Noe1、Note2]
1	Landowner Mr. K.I	7	0.56
2	Landowner Mr. A.A	10	0.36, 0.40
3	Landowner Mr. A.D	6	0.28
4	Landowner Mr. M.I	4	0.42
5	Landowner Mr. M.M	5	0.32
Total			2.34

(Source: JICA Study Team)

(Note 1: The above land acquisition area is based on information provided by KAN and is the sum of the area where the Project is implemented and the area KAN is considering acquiring on its own.)

(Note 2: The subject site is agricultural land and no buildings or other facilities or trees are located there.)

(4) Specific Measures for Compensation and Support

1) Compensation for Loss

As of November 2023, KAN is negotiating with the landowners, but all three landowners want to be compensated in money. In addition, if agricultural crops were being grown on the land at the time of land acquisition, they will be compensated in accordance with Ki State legislation.

2) Livelihood Restoration

According to the KAN, landowners are highly interested in selling their land as the income from their current agricultural land is not significant. In addition, landowners have not requested assistance for reacquisition of alternative agricultural land to continue farming in the future. The land acquisition price includes consideration for livelihood restoration, and the landowners are satisfied with the posted price, which is several times the price of the implemented land price. In addition, as part of the environmental and social considerations mitigation measures, it is proposed that the landowners will be employed as construction workers on a priority basis if they so wish.

3) Entitlement Matrix for the Project

The entitlement matrix for land acquisition for the project is shown in the table below.

Table 5 Entitlement Matrix

No.	Type of loss	Entitled Persons (Beneficiaries)	Entitlement (Compensation Package)	Implementation issues/Guidelines	Responsible Organization
1	Loss of agricultural land	Legal owner(s) of land	i. Replacement value of land (Cash Compensation under Law), including support cost for livelihood restoration (cash) ii. Costs and taxes related to land sale and purchase procedures	i. Payment of Cash Compensation under Law	KAN
2	Loss of crop	Legal owner(s) of land	i. If some crop is grown on site at the time of the land sale, the cost of the Crop is covered.	i. Payment of Cash Compensation under Law	KAN
3	Loss of Livelihoods	Legal owner(s) of land	i. Cash compensation of land including support cost for livelihood restoration ii. Employment as a construction worker if requested by the landowner	i. Payment of Cash Compensation under Law	KAN

(Source: JICA Study Team)

(5) Implementation Structure (Identification of the agency responsible for resettlement and its responsibilities)

KAN is the responsible agency for land acquisition before the signing of the Exchange of Notes (E/N) between the Kyrgyz government and the Japanese government regarding grant assistance.

(6) Implementation Schedule (Physical relocation will begin after completion of compensation payment for lost assets)

As of December 2023, it has been confirmed that KAN is the responsible authority for various applications and compensations. Negotiations for land acquisition have been ongoing with landowners since early 2023, and compensation and land acquisition are scheduled to commence in 2024.

(7) Costs and Financial Resources

The cost of land acquisition is currently being negotiated by KAN with the landowner and will be estimated according to Kyrgyz legislation, but the cost includes (i) land price, (ii) costs required to change land ownership, (iii) taxes, and (iv) compensation costs as livelihood restoration support. The price of the land is currently under negotiation, but according to KAN, the price offered is several times the actual land price, including livelihood restoration assistance, and the landowner is currently satisfied with the amount offered. The actual land acquisition costs shall be borne by KAN, with formal budgetary measures to be taken in early 2024.

(8) Monitoring System and Monitoring Form by Implementing Agencies

KAN will monitor the landowner's living conditions after the land transfer and any complaints during the construction. The monitoring form is presented in the table below.

Table 6 Monitoring Form (Land Acquisition)

No.	Monitoring Items	Period	Status during the reporting period.
1	Land transfer status (payment status)	After transfer of land	
2	Living conditions of landowners	Once during construction and once	
3	Complaint lodged regarding land acquisition		

(Source: JICA Study Team)

(9) Stakeholder Meeting

KAN is currently in negotiations with three landowners. According to KAN, agreements have already been reached regarding the transfer of land, and negotiations are ongoing concerning the land price and compensation.

The JICA survey team has requested KAN to conduct local stakeholder consultations for neighboring community. The stakeholder meetings will be conducted mainly by the KAN Osh office in the future.

Table 7 Meeting Records between KAN and Landowners

No.	Date	Participants	Contents of meeting
1	12 January 2023	AN, 2 landowners (Mr.K.I, Mr.A.A)	Confirms with the landowner the plans for the project and whether or not there is interest in acquiring the land for the project. Landowner expresses high interest in sale, but is willing to discuss details of compensation policy.
2	9 February 2023	Same as above	Confirmation of landowner's formal land ownership documentation by KAN.
3	24 March 2023	KAN, Mr.K.I	Discussion and confirmation of agreement with Mr K.I. regarding field survey and soil investigation.
4	May 2023	KAN, Land owner 2 (Mr.K.I, Mr.A.A)	Confirmation of the existing irrigation facilities on the land to be acquired and discussion on the progress of the project.
5	May 12 2023	KAN, Landowner 3 (Mr.K.I Mr.A.A, and Mr.A.D)	Discussed land acquisition and compensation policy with one new landowner. The landowner has almost agreed to sell the land. Discussions on the compensation policy will continue.
6	June 2023	KAN, Mr.K.I	Re-discussed with Mr K.I. the timing of surveying and other site investigations. Agreed on the timing and location of the survey.
7	July 2023	Ditto	Continued discussions with the landowner.
8	23 August 2023	KAN General Secretary, Mr.K.I	Discussions were held between KAN Director General and Mr K.I., the representative of the landowner, on the price for selling the land; the amount offered by KAN was agreed and the schedule for the future was shared.
9	4 October 2023	KAN, 5 landowners (Mr.K.I Mr.A.A, Mr.A.D, Mr.M.I, and Mr.M.M)	In consideration of the future acquisition of land in line with KAN's plans, including the project implementation area, discussions were held between KAN and five landowners, including two additional landowners from the surrounding area, in addition to the three owners of the project implementation area up to now. The two additional owners have also expressed a high

No.	Date	Participants	Contents of meeting
			level of interest in selling their land. Negotiations will start again with the owners of the surrounding land once the project has been decided in the future.

(Source: JICA Study Team)

ENVIRONMENTAL AND SOCIAL MONITORING FORM

Water Quality

Monitoring items (frequency)	Status during the reporting period.
Installation of turbid water treatment equipment (monthly)	
Check installation of septic tanks (once after service)	

Waste/ Hazardous Substances

Monitoring items (frequency)	Status during the reporting period.
Confirmation of soil treatment methods (once after implementation)	

Soil Contamination （Topography and Geology）

Monitoring items (frequency)	Status during the reporting period.
Thorough daily maintenance checks (daily)	
Check soil treatment methods (once after implementation)	

Land Acquisition/Resettlement

Monitoring items (frequency)	Status during the reporting period.
Confirmation of site handover/once	
Confirmation of documents relating to compensation/once	

Local Economy, Including Employment and Livelihood Opportunities

Monitoring items (frequency)	Status during the reporting period.
Employment status checks (quarterly)	

Existing Social Infrastructure and Social Services

Monitoring items (frequency)	Status during the reporting period.
Confirmation of the nature of the complaint due to the occurrence of road congestion (each time a complaint is accepted).	

Cultural Heritage

Monitoring items (frequency)	Status during the reporting period.
Confirmation of the results of the archaeological survey / after the survey has been carried out.	

Gender

Monitoring items (frequency)	Status during the reporting period.
Checking wage payment registers (monthly)	
Confirmation of gender considerations for new control towers (when in service)	

Children's right

Monitoring items (frequency)	Status during the reporting period.
Health and safety plan checks (monthly)	
Accident reporting (per accident)	

Community health, safety and security

Monitoring items (frequency)	Status during the reporting period.
Confirmation of the results of the archaeological survey / after the survey has been carried out.	

Occupational safety and health

Monitoring items (frequency)	Status during the reporting period.
Check on the wearing of work clothes and helmets (daily)	
Checks on the implementation of awareness-raising activities (monthly)	
Accident reporting (every accident)	

Accident

Monitoring items (frequency)	Status during the reporting period.
Accident reporting (per incident)	

5. Soft Component Plan

1. Purpose of Soft Component

1.1 Background of Soft Component Plan

The grant aid will improve the safety of air transport and strengthen its functions by rebuilding the control facilities at Osh International Airport and updating the air traffic control system at the Bishkek Area Control Center (ACC) and Osh ACC. The introduction of the new air traffic control system is expected to improve the reliability and continuity of air traffic control services by renewing ageing systems. On the other hand, if the air traffic control system to be introduced through this grant aid should fail, there is concern that it will have a significant impact on the safety of aircraft operations, not only in the Kyrgyz, but also in neighboring Central Asian countries. Therefore, in order to ensure the smooth and stable operation of the air traffic control system that has been developed, it is necessary to improve the capacity of the Kyrgyz air traffic control engineers to operate and maintain the system, and to improve their practical skills in the supply and management of spare parts in order to respond quickly in the event of a failure.

In this grant assistance, some of the existing equipment will be relocated to the new control tower and ACC. Therefore, it is necessary to formulate a carefully coordinated transition plan by the relevant organizations, conduct transition tests that do not affect current operations, and make transition decisions on the day of the transition and switch back in the event of an emergency. For this reason, training on the methodology related to the procedures from the planning stage to the transition is necessary.

In addition, the project is expected to involve changes that may affect the safety of air navigation services in the Kyrgyz, such as changes in the organizational structure for conducting air navigation services in the country, changes related to hardware and software such as systems and equipment, and changes related to the operation of the services, as a result of a series of facility improvements. Therefore, it is also necessary to identify possible risks and consider measures to mitigate each risk in advance to ensure that safety is not compromised by these changes.

Furthermore, when updating the air traffic control system, it is essential that the work proceeds without suspending air traffic control operations and that 24-hour air traffic control is provided. For this reason, it is necessary to conduct the switchover to the newly installed equipment while continuing the operation of the existing equipment in the renewal of the Bishkek ACC system, which is capable of controlling air routes all over the Kyrgyz in the KAN. As for Osh ACC, since Bishkek ACC can temporarily cover the air traffic control operations of Osh ACC, it was decided to suspend the operations of Osh ACC's air route control for a certain period of time to conduct the work of updating the air traffic control system. As a result, the Osh Airport Control Tower was relocated, the Bishkek ACC was also relocated, and the Osh ACC suspended its operations to conduct the update. Furthermore, in line with the relocation, the timing of the installation of systems other than those to be upgraded in this facility development on the KAN side is to be prepared on the KAN side, so it is necessary to consider the timing of their installation during the entire process.

When relocating, it is necessary to formulate a transition plan that is closely coordinated by the relevant organizations, conduct transition tests that do not affect current operations, and make decisions on the day of transition and on emergency cutbacks. On the other hand, the KAN requested that air traffic controllers have a period of familiarization for the operation of the system to be updated to this maintenance, and it was decided to select an appropriate time before and after the relocation to provide a period of familiarization after the completion of the updated installation. This makes the relocation of multiple control facilities more complex, and relocation planning requires training in methods pertaining to procedures from the planning stage to the transition.

Multi Radar Data Processing System (MSDPS)
(Center of the console and subject to renewal in the project)

Automated Weather Observing System (AWOS)
(subject to relocation by the KAN)

Figure 1 Existing Aerodrome Control System at Osh Tower

2. Objective of Soft Component

2.1 Effect of Soft Component

The status to be achieved as a result of the soft component implementation is as follows.

- Transition plans for Bishkek ACC, Osh Control Tower and Osh ACC are developed and the necessary concepts are mastered. These transition plans represent individual plans, but the three transition plans are linked, including equipment installation works, personnel training, etc.
- The knowledge required for KANs to proactively identify and assess risks related to operations and develop risk reduction measures will be acquired.
- The skills required to operate and maintain the maintenance equipment and existing equipment associated with the project will be acquired. In addition, personnel will be trained to train the air traffic control technical officers who will conduct maintenance and management tasks. Maintenance and safety management skills related to the operation of the system are acquired.

The following measures will be implemented to achieve the above.

- Introduce examples of system migration in Kyrgyz to help KANs understand the work required to continue the operation of the Osh Airport Control Tower and ACC, and to resume air traffic control and operations after the relocation; discuss the work process (migration steps) and necessary documentation with the persons in charge, so that they can develop their own migration plans; and Improve the project implementation capacity of the field personnel in Kyrgyz so that they are able to smoothly transition and respond to any problems on their own. Table shows the considerations required for transition planning and Table shows a general example of the work process.
- Teach KAN control technical officers the need to analyze possible risks to the transition plan and instruct them on the methodology for conducting the actual risk analysis. This will enable them to implement risk mitigation measures during and after the introduction of new systems and operations, so that stable operations can continue. In addition, lectures on appropriate methods of operation and maintenance of the target equipment will be given to KAN ATC officers to improve their operation and maintenance management skills at the field level.

Table 1 Considerations required for transition planning

(1) Transition plan - Clarification of preconditions - What level of impact on control operations is acceptable? - Review of final draft plan (2) System - A high level person needs to be in charge of the transition to make the Go/No Go decision and to determine the completion of the transition. -The responsible person should also be clarified in the implementing department (control department, control engineering department). (3) Risk assessment. - Assessment of the various risks assumed during the implementation of the transition work, analysis of the hazards and decision on acceptability. - Consideration of proposed hazard countermeasures. - The person responsible for (2) makes the final decision on the results of the evaluation. (4) System configuration - Identify equipment and systems required for the transition.

(Source: JICA Study Team)

Table 2 A general example of the work process

Transition steps (Equipment system)	Transition steps (Radio systems)
(1) Checking the number of personnel (2) Appearance check (3) Check unit mounting (4) Equipment cable wiring (5) Check input/output power supply. (6) UPS installation (7) Check construction wiring. (8) Install additional equipment. (9) Check operation of equipment alone (10) Functional operation check (11) Level acquisition (12) Check system functions. (13) Interconnection test (14) Preparation for operational transition (2 rehearsals and transition)	(1) Line switching procedure (2) Execution of the outage procedure (3) Line restoration (4) Test signal transmission (5) Rehearsal confirmation (6) Performance check through actual operation (for a certain period)

(Source: JICA Study Team)

2.2 Methods for checking achievement of results

- **Objective 1 related:**

For system migration, have a draft migration plan prepared for one of the equipment in this maintenance (e.g., Multi-Sensor Data Processing System (MSDPS) or communication equipment) and judge it according to its completeness.

- **Objective 2 related:**

To have a risk management table prepared for the identification and analysis of possible risks in the implementation of the developed transition plan, and to be judged on the basis of the completeness of the risk management table.

- **Objective 3 related:**

The operation and maintenance management capabilities of Multi-Sensor Data Processing Systems (MSDPS), etc., shall be judged by the degree of completion of the operation and maintenance management manuals and their deliverables.

- **Objective 4 related:**

Safety management of air traffic control operations is judged by the degree of completion of the safety assessment hazard table.

2.3 Soft component activities (input plans)

The content and scale of inputs on the Japanese and Kyrgyz side are planned as follows.

Table 3 Objective 1: Improve capacity to develop a system migration plan for the relocation of the control tower and ACC

Training item	Japanese side	Kyrgyz side
<Achievements> KANs can develop their own transition plan based on an understanding of the work process (transition steps) and documentation required, etc., for the relocation of ACC and control tower.		
1. Activities		
Required skills/industries	Activity 1. Lecture on the concept and implementation of system transition planning as practised in Japan. Activity 2. Guidance on the preparation of a draft transition plan chart by KAN.	-2 ATC technical officers from Bishkek ACC -2 ATC technical officers from Osh Airport -2 ATC technical officers from Osh ACC (Total: 6 persons)
Current required level of technology	—	**Current situation:** The case involves the relocation of Bishkek ACC, the relocation of Osh control tower and the relocation of Osh ACC, all of which will be conducted in the close timing. For the relocation, a transition plan needs to be developed to ensure that airport operations are not suspended. The KAN has limited experience and history in developing in-depth transition plans. **Planning:** As a requirement for a smooth and safe system migration, in terms of equipment maintenance, it is necessary to formulate a plan for identifying faulty parts in the event of a failure, switching channels, and returning back to the operation by existing system in case of fail. KAN will be provided with knowledge on system migration in Japan, including these tasks, and will be asked to formulate a migration plan.
Participants (target group)	—	ATC technical officers to develop plans for the development of communication and surveillance systems
2. Implementation method		
Implementation resources	1 Japanese consultant with a background as an air traffic control engineer with the Japanese Civil Aviation Authority. (1.5 man/month(M/M) local work)	Provision of training facilities
Type of deliverables	Training texts and planning summaries based on experience of implementation in Japan (planned outcomes, activities, achievements, etc.)	Proposed transition plan
3. Contents of training		
Overview	Classroom instruction on how to develop an equipment transition plan sheet using actual examples of system transitions implemented at Japanese air stations. The knowledge on how to ensure a smooth and reliable transition is taught through practical training in the formulation of a draft plan for the equipment operation tasks required for the transition of ACC air traffic control operations, airport approach control operations and airfield control operations associated with this project.	
Training item	- Explanation of Japan's transition plan - Arrangement of work related to the transition of maintenance equipment - Preparation of draft transition plan	

Table 4 Objective 2: Improve risk avoidance and trouble-shooting capacity during operational transition

Training item	Japanese side	Kyrgyz side
< Achievements > A risk analysis methodology for the operational transition procedures of the systems required to start operations following the relocation of the Bishkek ACC, Osh Airport Control Tower and Osh ACC is acquired and the transition plan is faithfully implemented.		
1. Activities		
Required skills/industries	**Activity 1.** Lecture on system migration risk management as practiced in Japan. **Activity 2.** Advise on risk avoidance and troubleshooting during migration, based on Japanese experience.	-2 ATC technical officers from Bishkek ACC -2 ATC technical officers from Osh Airport -2 ATC technical officers from Osh ACC (Total: 6 persons)
Current required level of technology	—	**Current situation:** In the operational transition, it is necessary to monitor the normal operation of the information processing and communication systems of air traffic control, as well as to maintain the normal operation of the conventional aircraft at Bishkek ACC and Osh Airport. In the event of equipment operational failures, it is necessary to implement close coordination of equipment operations, including, if necessary, switching back to conventional equipment. KAN lacks experience in similar operational transitions. **Planning:** Prior to the system transition, a risk analysis should be conducted to ensure that the air traffic control system will not be down, and the ability to instantly respond to any problems that may occur during the transition should be developed. This will ensure that normal equipment operation is maintained during the transition and that air traffic control operations of ACC and airports, and aircraft operations are not affected.
Participants (target group)	—	ATC technical officers in charge of managing the transition of various departments during the transition of ACC and airport systems
2. Implementation method		
Implementation resources	1 Japanese consultant with a background as an air traffic control engineer with the Japanese Civil Aviation Authority. (0.50 man/month(M/M) local work)	Provision of training facilities
Type of deliverables	Training texts, materials related to risk management in the context of transition.	Risk management tables associated with the transition. (Air traffic control operations version and equipment operation operations version).
3. Contents of training		
Overview	Examples of risk management and risk analysis of system migrations conducted in the HMA will be presented.	
Training item	Risk management for the transition. Measures to be taken to deal with potential problems during transition. Preparation of a risk management chart for the transition.	

Table 5 Objective 3: Improve the operational and maintenance capacity of the air traffic control system

Training item	Japanese side	Kyrgyz side
< Achievements > Skills required for the operation and maintenance of MSDPS, and communication systems are acquired, and operation and maintenance inspection capabilities are improved.		
1. Activities		
Required skills/industries	**Activity 1.** Lecture on Japanese operation and maintenance management systems and practices **Activity 2.** Guidance on the preparation of operation and maintenance manuals **Activity 3.** Lecture on how to implement supply management in Japan	ATC technical officers responsible for the maintenance and management of the KAN system (2 communications (C), 2 surveillance (N) and 2 information processing systems) (Total: 6 persons)
Current required level of technology	—	**Current situation:** Operation, maintenance, and inspection work is conducted in accordance with the manufacturer's manuals, which results in inconsistent work depending on the person in charge of implementation. Some equipment is not responsibly managed, for example, maintenance support is not available for some equipment. **Planning:** An operation manual and maintenance manual can be prepared to establish common work procedures and ensure appropriate equipment operation.
Participants (target group)	—	Control technicians responsible for maintaining communications, surveillance, and information processing equipment.
2. Implementation method		
Implementation resources	1 Japanese consultant with a background as an air traffic control technician for the Japan Civil Aviation Authority (0.50 M/M local work).	Provision of training facilities
Type of deliverables	Training texts, etc.	Operation and maintenance manuals (including maintenance equipment)
3. Contents of training		
Overview	The maintenance and management system for air navigation radio facilities in Japan is explained and efficient and appropriate implementation methods are taught in classroom lectures. Practical training is provided to enable the preparation of operation and maintenance manuals that can be properly operated and maintained, for example by using manufacturer's manuals and photographs of operations and maintenance work on actual equipment.	—
Training item	A classroom lecture on Japan's equipment maintenance management system. Explanation of the Japanese supply management system. Lecture on inspection, maintenance, and restoration. Preparation of operational manuals Preparation of maintenance management manuals	—

Table 6 Objective 4: Improve safety management capacity for the operation of information processing and communication systems

Training item	Japanese side	Kyrgyz side
< Achievements > The knowledge required to proactively identify and assess hazards and formulate operational risk reduction measures for the operation and maintenance of information processing and communication systems has been acquired and safety management skills have been improved.		
1. Activities		
Required skills/industries	**Activity 1.** Lecture on basic issues relating to safety management. **Activity 2.** Lecture on safety management as practised in Japan regarding the maintenance of new equipment. **Activity 3.** Guidance on the preparation of risk assessments, including hazard identification and mitigation measures, for the equipment in this project.	-6 ATC technical officers from KAN (Total: 6)
Current required level of technology		**Current situation:** To safely and reliably conduct air traffic control operations at Bishkek ACC and Osh Airport using the equipment in this project, it is necessary to maintain the equipment used in the control system in good working order at all times. Therefore, it is necessary to identify hazards that hinder this and to establish measures to mitigate them. Although there are provisions for safety management, safety management as a practice and risk analysis have not yet been implemented. **Planning:** Teach safety management and risk assessment methods for the operation and maintenance of ATC equipment in the Japanese Civil Aviation Authority, so that maintenance equipment can be operated continuously, and ACC and airport control services can be provided safely.
Participants (target group)		ATC technical officers in charge of maintaining the system.
2. Implementation method		
Implementation resources	1 Japanese consultant with a background as an air traffic control technician for the Japan Civil Aviation Authority (0.50 M/M local work).	Provision of training facilities
Type of deliverables	Training texts on safety management and risk assessment in relation to equipment.	Hazard extraction Risk management table (equipment version)
3. Contents of training		
Overview	To explain the approach and practice of safety management in the Japanese Civil Aviation Authority and to teach the need for safety management and hazard analysis. Conduct a risk assessment of the equipment involved in the maintenance of the aircraft, and teach the hazard risks and mitigation measures, and have the participants prepare a risk management chart (equipment version).	—
Training item	Safety management of equipment. Safety assessment of equipment. Preparation of risk management charts for equipment.	—

3. Implementation Schedule

3.1 Implementation Schedule of Soft Component

The implementation schedule of the soft component will be aligned with the project's main project implementation schedule. The operational transition of Bishkek ACC, Osh ATC, and Osh ACC will be carried out after the completion of equipment delivery. Therefore, the transition planning for the soft component should be conducted in a process that takes into account the preparation period for the operational transition by KAN. In addition, the plan for operation and maintenance management capability and safety management should be implemented after the completion of technology transfer related to transition plan development.

The implementation process for the soft component, taking into consideration items such as a plan that does not affect the operation of the current air traffic control and management system, familiarization period for air traffic controllers to operate the equipment, interconnection test, and operational familiarization, is shown below, along with the implementation process for the main body of the grant aid project.

In addition, the details of the training contents are described in the following pages and thereafter.

Table 7 Implementation Schedule of Soft Component

Months			1	2	3	4	5	6	Number of Person	M/M
Year / Month			December 2026	January 2027	February 2027	March 2027	April 2027	May 2027		
Grant aid Procurement of equipment			Unpacking, delivery, installation, adjustment							
				Initial operation training						
							Acceptance and handover			
Soft Component	Objective 1	ATSEP							1	1.50
	Objective 2	ATSEP							1	0.50
	Objective 3	ATSEP							1	0.50
	Objective 4	ATSEP							1	0.50

The following items are to be considered in Objective 2, Improve the capacity for transition planning and troubleshooting.

- Since Bishkek ACC is an important facility that provides air route control covering the entire Kyrgyz, it is necessary to constantly monitor for problems during the switchover and make decisions on whether to cancel or continue the transition. Switchover should be implemented instantaneously, and careful observation should be made for any problems that may occur as a result of the transition.
- In the Osh tower relocation, it is necessary to minimize the time period during which air traffic control services cannot be provided because it is difficult to switch over instantaneously due to the control equipment, control equipment, and weather-related equipment to be relocated from the old control tower.

3.2 Personnel Input Plan

This training will be provided to a total of six persons, two from each of the persons in charge of telecommunications, monitoring, and information processing systems. The training is scheduled to last for a total of three months: two months for training related to Objective 1 and 2, and one month for training related to Objective 3 and 4.

In this soft component, the ATSEP in Kyrgyz will develop their own transition plan for the system and operational transition associated with this project. Therefore, in this soft component activity, Japanese experts will first conduct training to support the "transition planning work" and provide technology transfer and planning support for the actual work. In addition, to enable the identification of risks that may occur during the transfer and the formulation of countermeasures, training will be provided to ATSEP on "risk analysis methods," and human resources will be developed who can continue risk analysis of the operation in the future. In addition, in order to manage risks during the transition of the project's equipment, Japanese experts will provide technical guidance on the concept of "transition planning risk management" and support the preparation of documents necessary for risk management.

Training for the acquisition of skills required for operation and maintenance management and human resource development of ATSEP who perform maintenance management tasks will also be conducted as one of the soft components of the "Maintenance Management Capacity Improvement" program. The training will include education on equipment management and safety assessment.

Table 8 and 9 show the process related to training and education.

Table 8 Training program for Transition plan (Objective 1&2)

Day	1st month	2nd month
1	Move from Japan to Bishkek	Preparation for training
2	Meeting with KAN at Bishkek, Equipment confirmation.	Creation of Risk management chart (Bishkek ACC)
3	Meeting about Osh Tower, Equipment confirmation.	Confirm Risk management chart (Bishkek ACC)
4	Meeting about Osh ACC, Equipment confirmation.	Practical classroom lecture on troubleshooting measures in Japan (ACC)
5	Transition plan schedule study	Practical classroom lecture on troubleshooting measures in Japan (ACC)
6	Practical classroom training on transition planning chart preparation by Japanese experts.	Practical classroom lecture on troubleshooting measures in the site (ACC)
7	Classify the training results	Classify the training results
8	Preparation for training	Preparation for training
9	Practical classroom training on transition planning chart preparation procedures	Practical classroom lecture on troubleshooting measures in the site (ACC)
10	Organizing work for transition of maintenance equipment	Preparation for Transition Simulation (Bishkek ACC)
11	Organizing work for transition of maintenance equipment	Preparation for Transition Simulation (Bishkek ACC)
12	Creation of Transition Plan Chart (ACC)	Transition Simulation, troubleshooting (Bishkek ACC)
13	Creation of Transition Plan Chart (TWR)	Confirm a result of Risk management
14	Classify the training results	Classify the training results
15	Preparation for training	Preparation for training
16	Risk identification work (ACC Function)	Move from Bishkek to Osh
17	Risk identification work (ACC Function)	Confirm Risk identification work
18	Risk identification work (TWR Function)	Creation of Risk management chart (TWR)
19	Risk identification work (TWR Function)	Creation of Risk management chart (TWR)
20	Practical classroom training for Risk management (Bishkek ACC)	Practical classroom lecture on troubleshooting measures in Japan (TWR)
21	Classify the training results	Classify the training results
22	Preparation for training	Preparation for training
23	Practical classroom training for Risk management (Bishkek ACC)	Practical classroom lecture on troubleshooting measures in the site (TWR)
24	Practical classroom training for Risk management (TWR)	Preparation for Transition Simulation (TWR)
25	Practical classroom training for Risk management (TWR)	Preparation for Transition Simulation (TWR)
26	Practical classroom training for Risk management (Osh ACC)	Transition Simulation, troubleshooting (TWR)
27	Practical classroom training for Risk management (Osh ACC)	Confirm a result of Risk management
28	Classify the training results	Move from Osh to Bishkek
29	(Move to 2nd month)	Classify the training results
30		Evaluation outputs
31		Move from Bishkek to Istanbul
		Move from Istanbul to Japan

Table 9 Training program for Operation and Maintenance management (Objective 3&4)

Day	3rd month		
1	Move from Japan to Bishkek	15	Preparation for training
2	Equipment operation and management system survey at Kyrgyz	16	Practical training on safety assessment
3	Maintenance system survey at Kyrgyz	17	Practical training on hazard management for equipment
4	Safety management and hazard analysis survey at Kyrgyz	18	Practical training on hazard management for equipment
5	Move from Bishkek to Osh/ Operation management survey	19	Practical explanation of Safety Management (Change Management Procedures) Overview
6	Operation management hazard analysis survey at Osh airport	20	Practical training on the operation of equipment in Japan
7	Move from Osh to Bishkek	21	Classify the training result
8	Preparation for training	22	Preparation for training
9	Practical classroom lecture on the equipment maintenance management system in Japan	23	Preparation of operational guidelines (ACC/TWR)
10	Practical explanation of the supply management system in Japan	24	Preparation of operational procedure deliverables
11	Practical classroom training on inspection, maintenance, and restoration	25	Preparation of maintenance and inspection manuals (ACC/TWR)
12	Practical training on safety management of equipment	26	Preparation of deliverables for maintenance and inspection procedures
13	Practical training on safety management of equipment	27	Evaluation outputs
14	Classify the training result	28	Classify the training result
		29	Move from Bishkek to Istanbul
		30	Move from Istanbul to Japan

The items to be implemented in this plan regarding the preparation of the Transition Plan Table, Transition Plan Risk Management Table, Operation Procedures, and Maintenance Procedures are as follows.

A) Transition Plan Chart

The schedule for the transition of Bishkek ACC, Osh Control Tower, and Osh ACC will be managed, and practical training will be conducted to prepare a plan table that clearly describes the work to be performed at each point in time, as well as presentation and guidance on the deliverables.

B) Transition Plan Risk Management Chart

Based on the risk analysis method, the trainees will learn about various troubles that may occur during the transition, identify risks during the transition, practice creating a transition plan risk management chart, and present and teach the deliverables.

C) Operational Procedures

Lectures on the outline of operation manuals, operation of maintenance equipment and various parameter change items, practical training in creating operation manuals, and presentation and instruction of the results.

D) Maintenance Manual

The trainees will be given an overview of maintenance manuals, lectures on major maintenance and inspection items required for maintenance equipment, practical training in preparing maintenance manuals, and presentation and instruction of the results.

3.3 Output of Soft Component

Outputs or deliverables of the Soft Component are as follows:

(1) Deliverables to the Project Owner

i. Final Report of Soft Component on the Completion of Activities
ii. Textbooks

(2) Deliverables to JICA

i. Progress Report of Soft Component
   - Initial targets / results
   - Progress status of initially-planned inputs and activities
   - Results thus far (test results)
   - Project Owner's feedback

ii. Completion Report of Soft Component
   - Outline of Project (name of Project, signing dates of E/N and G/A, maximum grant amount stipulated in E/N and G/A, amount of Consultant Agreement)
   - Outline of Soft Component (costs, background, planned objectives, expected results, planned activities, assistance providers and participants, implementation schedule (timing and M/M), actual activities conducted, actual outcomes produced in comparison with planned outcomes)
   - Remaining tasks and recommendations for sustaining and developing the effects to meet the objectives.
   - Attached documents (Soft Component implementation schedule, participants list, attendance record, list of outputs (document titles, names of authors, summaries))
   - Packet of reference materials (outputs (Completion Report to the Project Owner, O&M manuals produced, textbooks used, results of retention tests, etc.) video clips, photos, and newspaper articles.)

6. Other Relevant Data

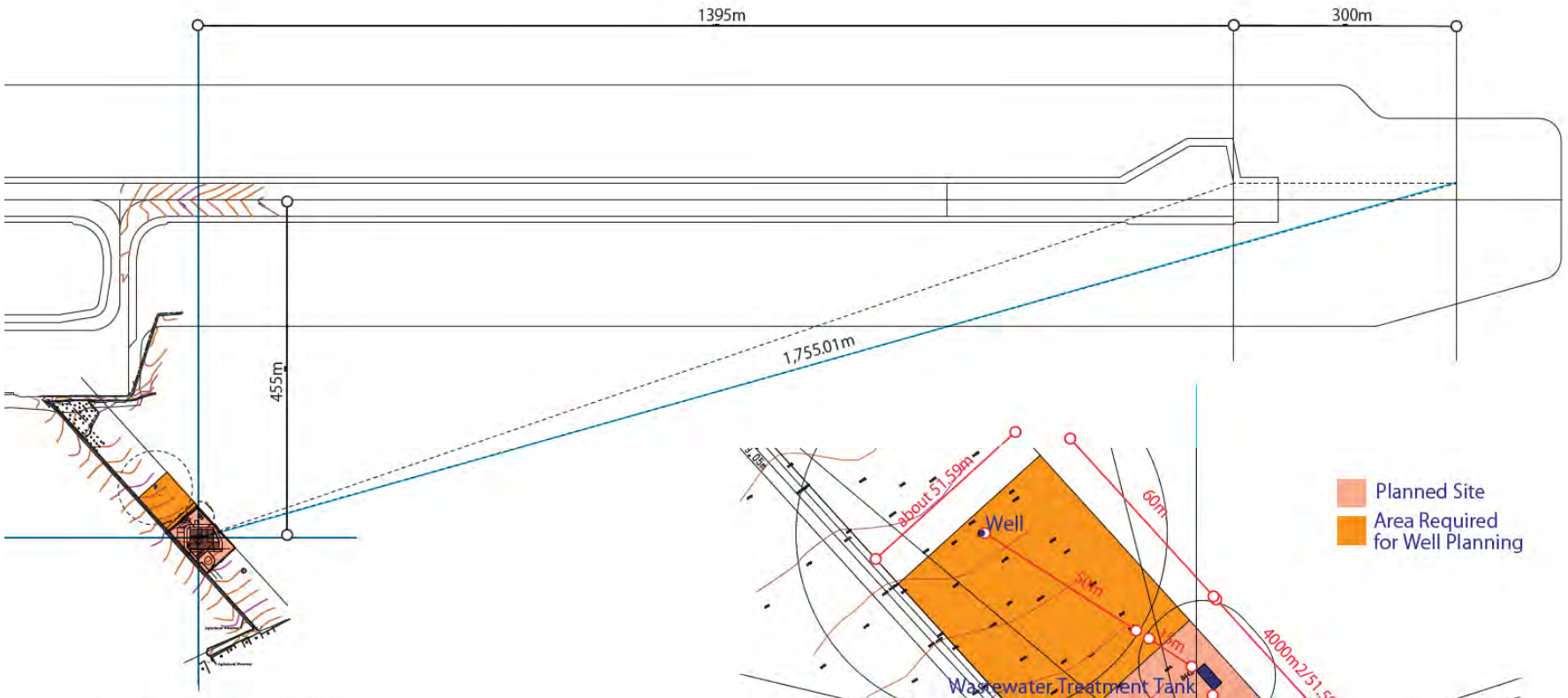
Air Traffic Control Tower/ Area Control Center (Osh)

A-001	Location Plan
A-002	Site PLAN S＝1/500
A-003	1st Floor PLAN S＝1/300
A-004	2nd Floor PLAN S＝1/300
A-005	3rd to 8th Floor PLAN S＝1/300
A-006	Elevation S＝1/500
A-007	Section S＝1/300
A-008	Substation S＝1/300

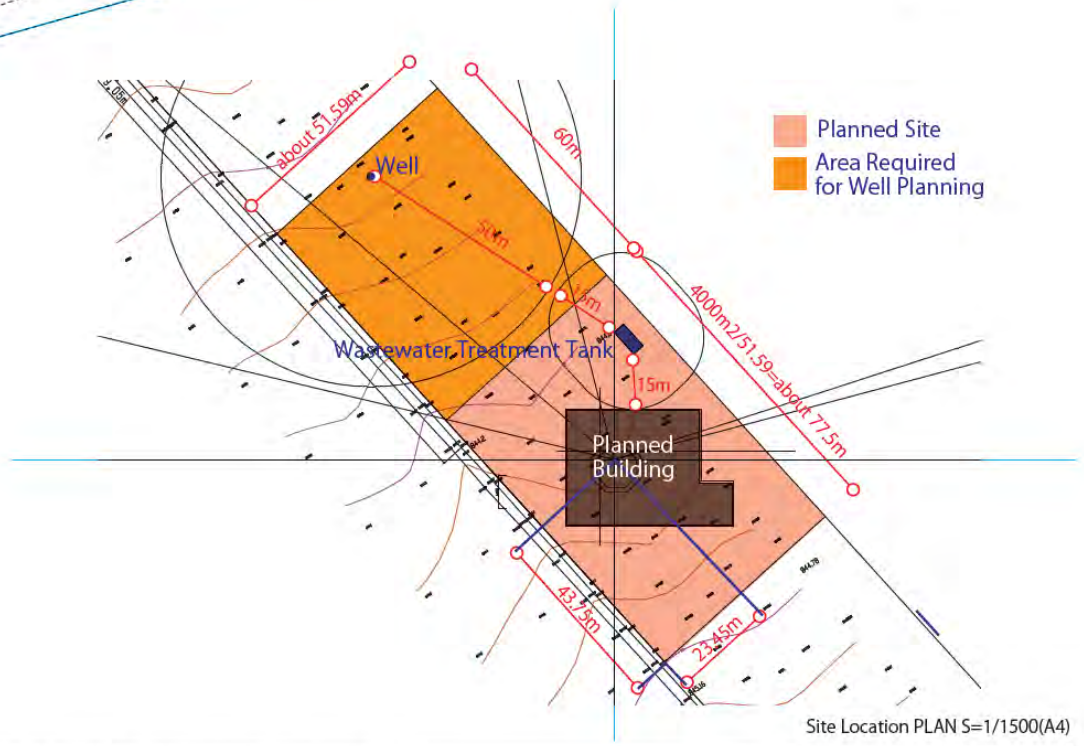
Air Navigation System (Bishkek/ Osh/ Issyk-Kul)

0	All Airports VPN Data Diagram
1	MSDPS System Diagram (Bishkek/ Issyk-Kul)
2	MSDPS System Diagram (Osh)
3	Simulator System Diagram
4	VCCS System Diagram (Bishkek)
5	VCCS System Diagram (Simulator)
6	VCCS System Diagram (Osh)

A-001 Location Plan

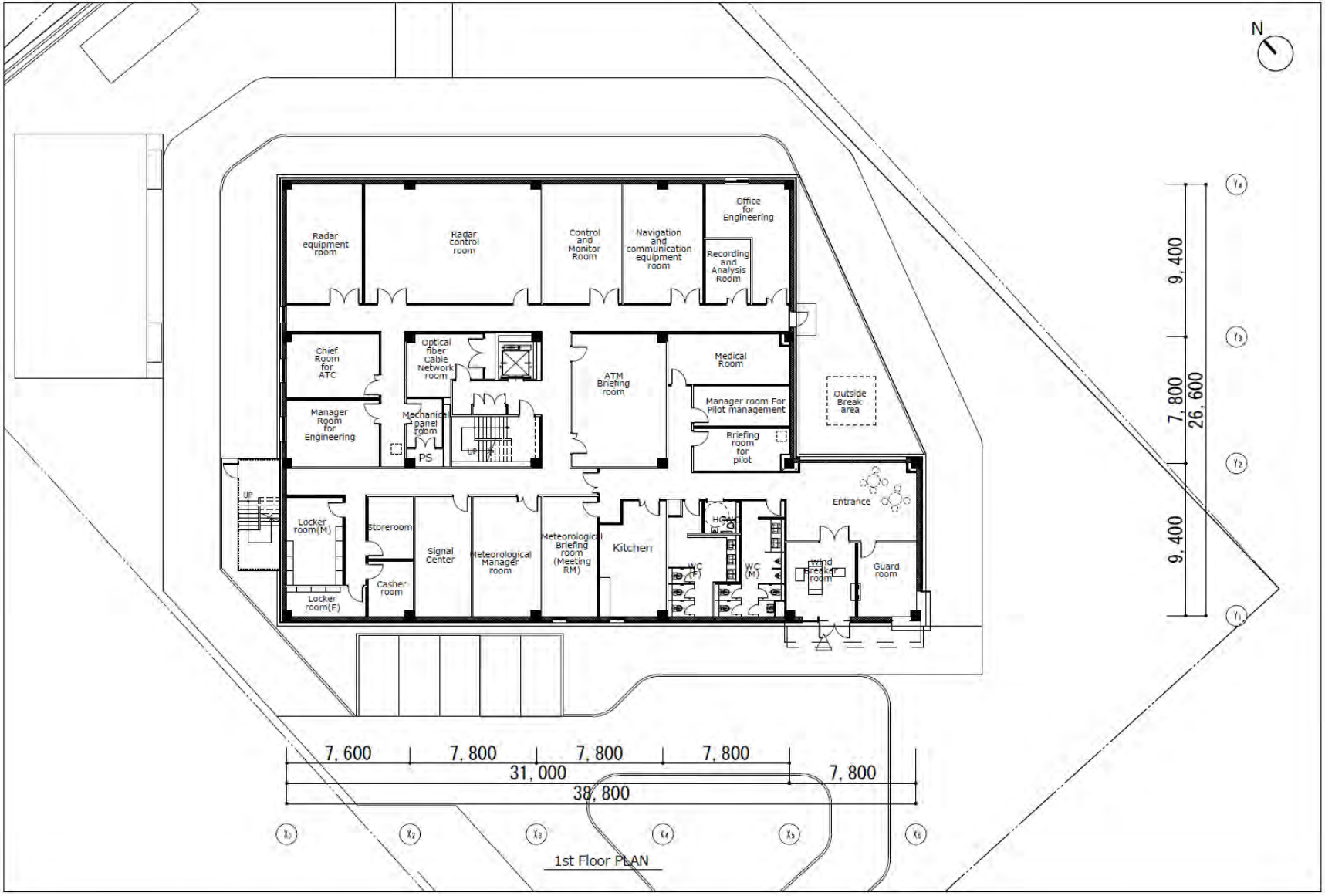


Site Location PLAN S=1/7500(A4)
(Relationship Diagram
between Runway and Planned Site)

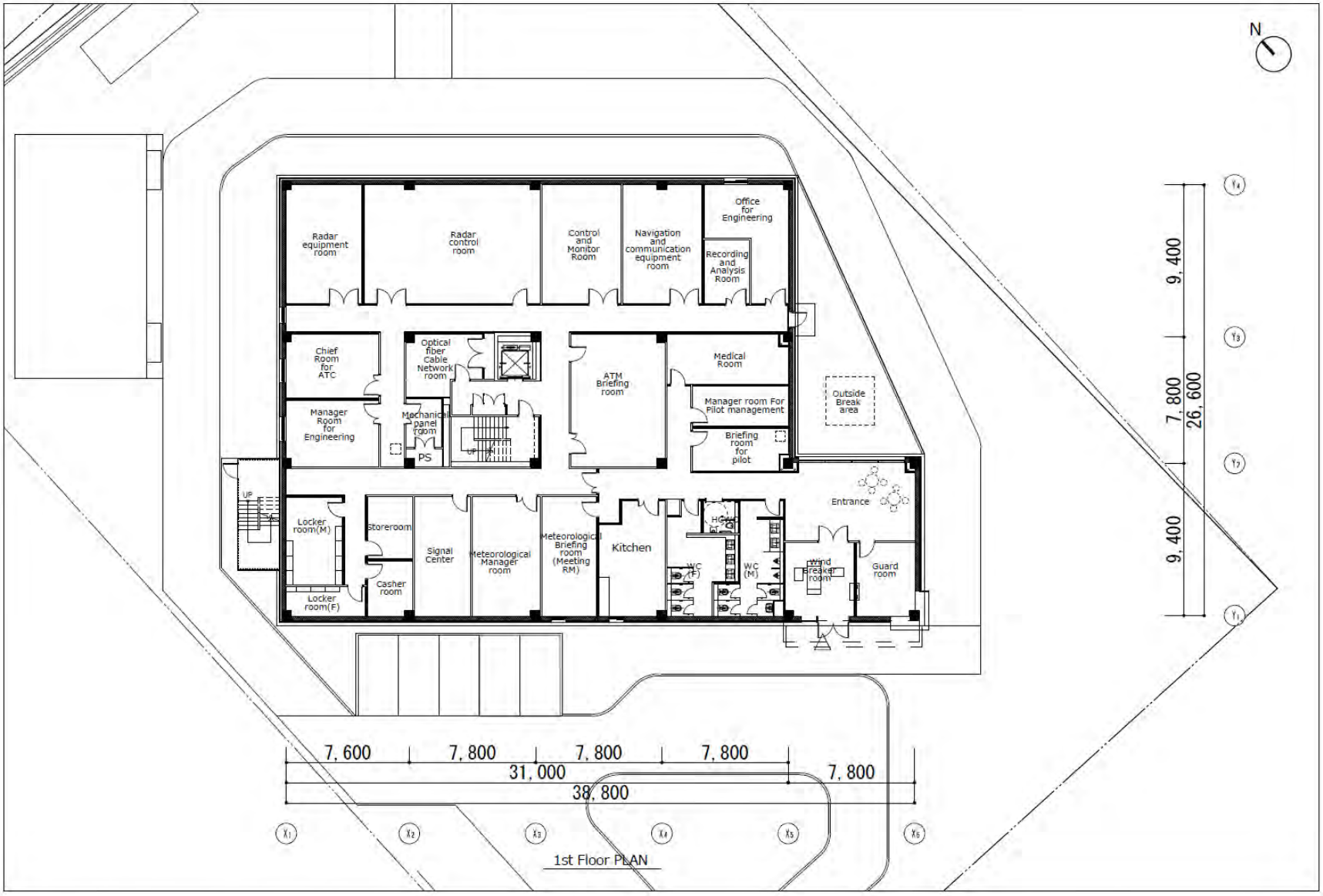


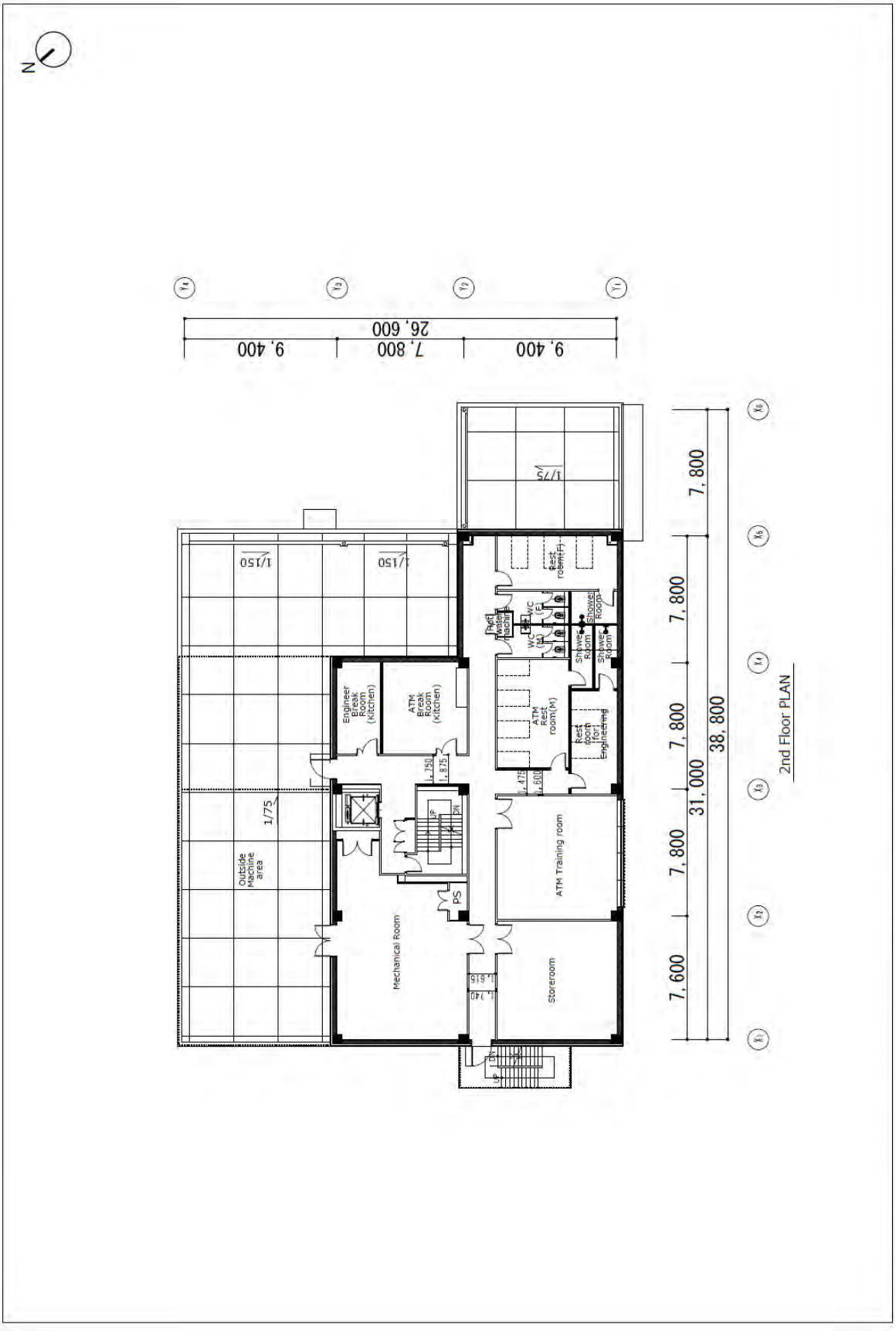
Site Location PLAN S=1/1500(A4)

A-002 Site PLAN S＝1/500



A-003 1st Floor PLAN S＝1/300





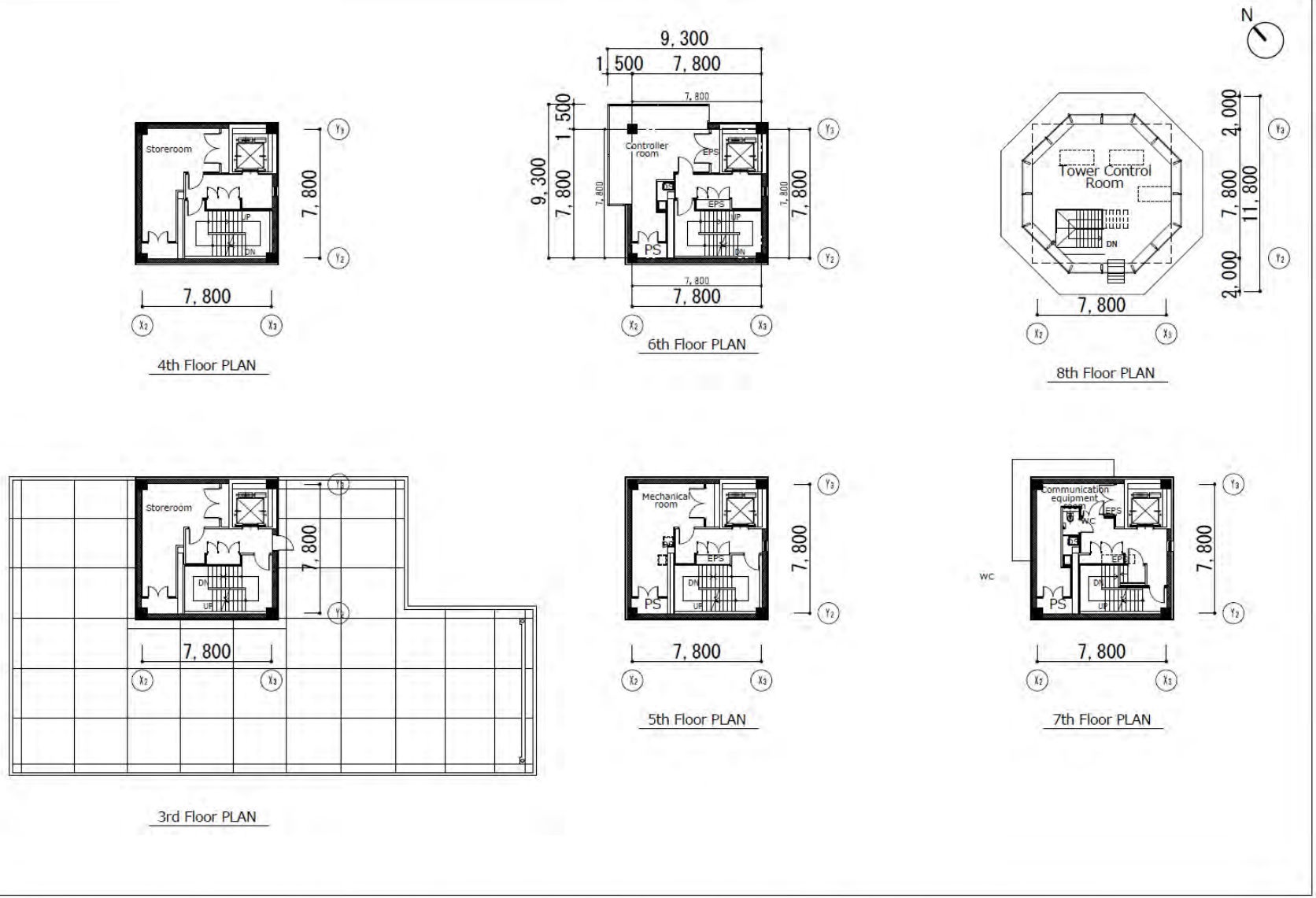
THE PREPARTORY SURVEY FOR THE PROJECT FOR IMPROVEMENT OF AIR TRAFFIC CONTROL FACILITIES AT INTERNATIONAL AIRPORTS IN THE KYRGYZ REPUBLIC

2nd Floor PLAN S=1/300(A4)

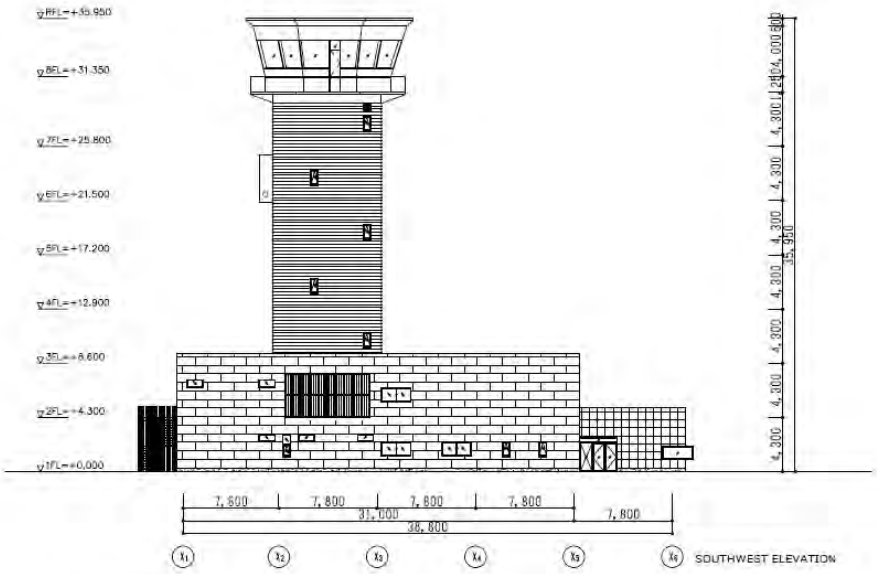
A-004

A-004 2F Floor PLAN S＝1/300

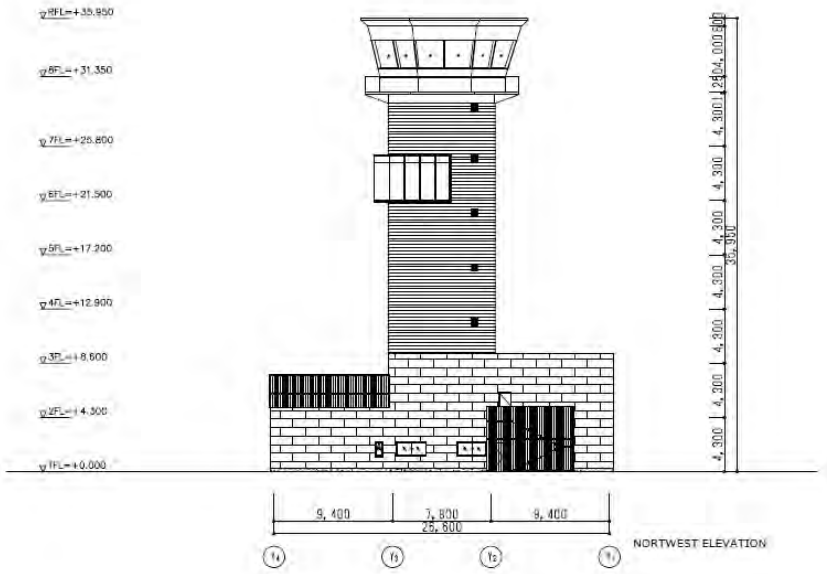
A-005 3F to 8F Floor PLAN S＝1/300



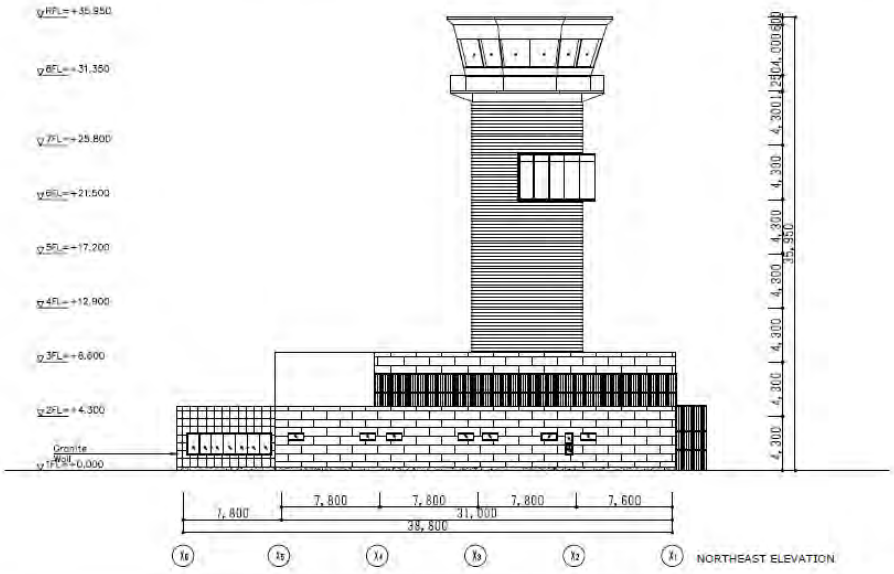
A-006 Elevation S＝1/500



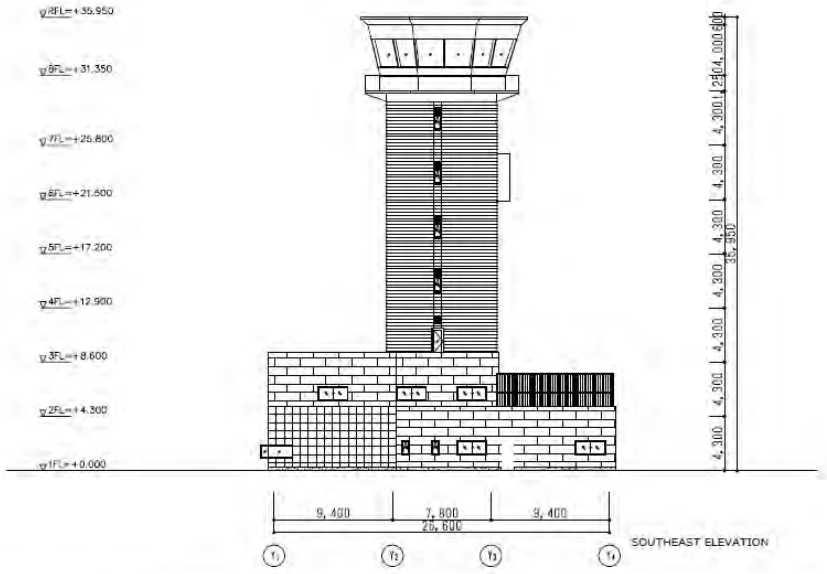
SOUTHWEST ELEVATION



NORTWEST ELEVATION



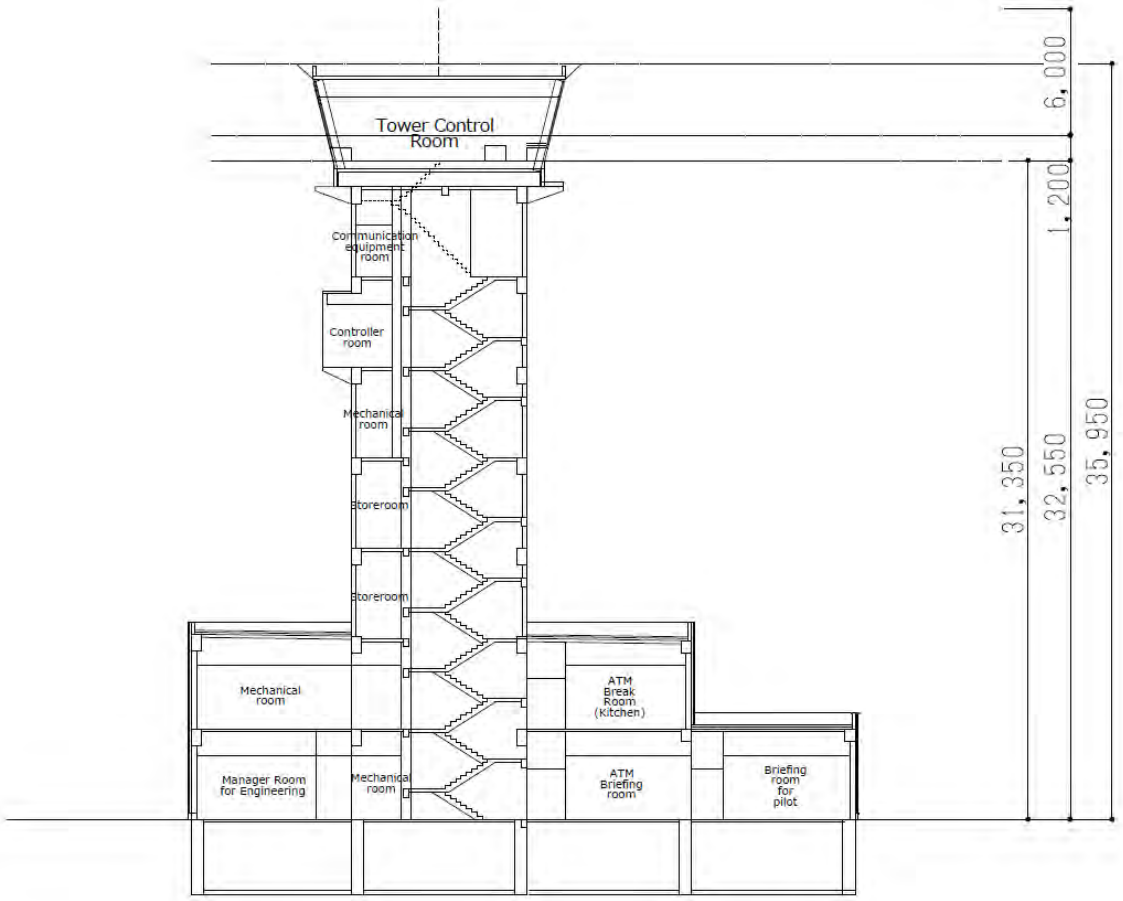
NORTHEAST ELEVATION



SOUTHEAST ELEVATION

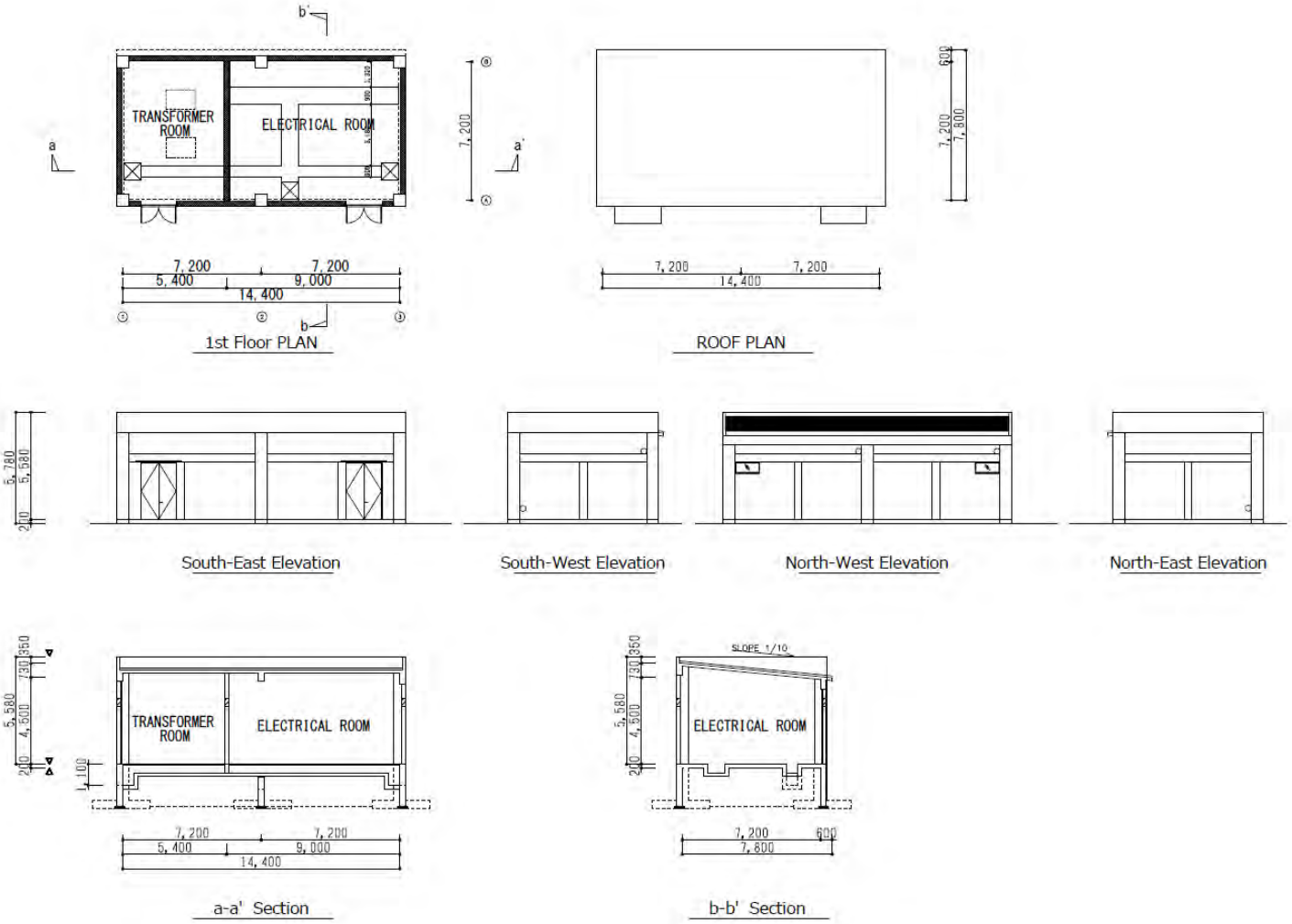
THE PREPARTORY SURVEY FOR THE PROJECT FOR IMPROVEMENT OF AIR TRAFFIC CONTROL FACILITIES AT INTERNATIONAL AIRPORTS IN THE KYRGYZ REPUBLIC | Elevation S=1/500(A4) | A-006

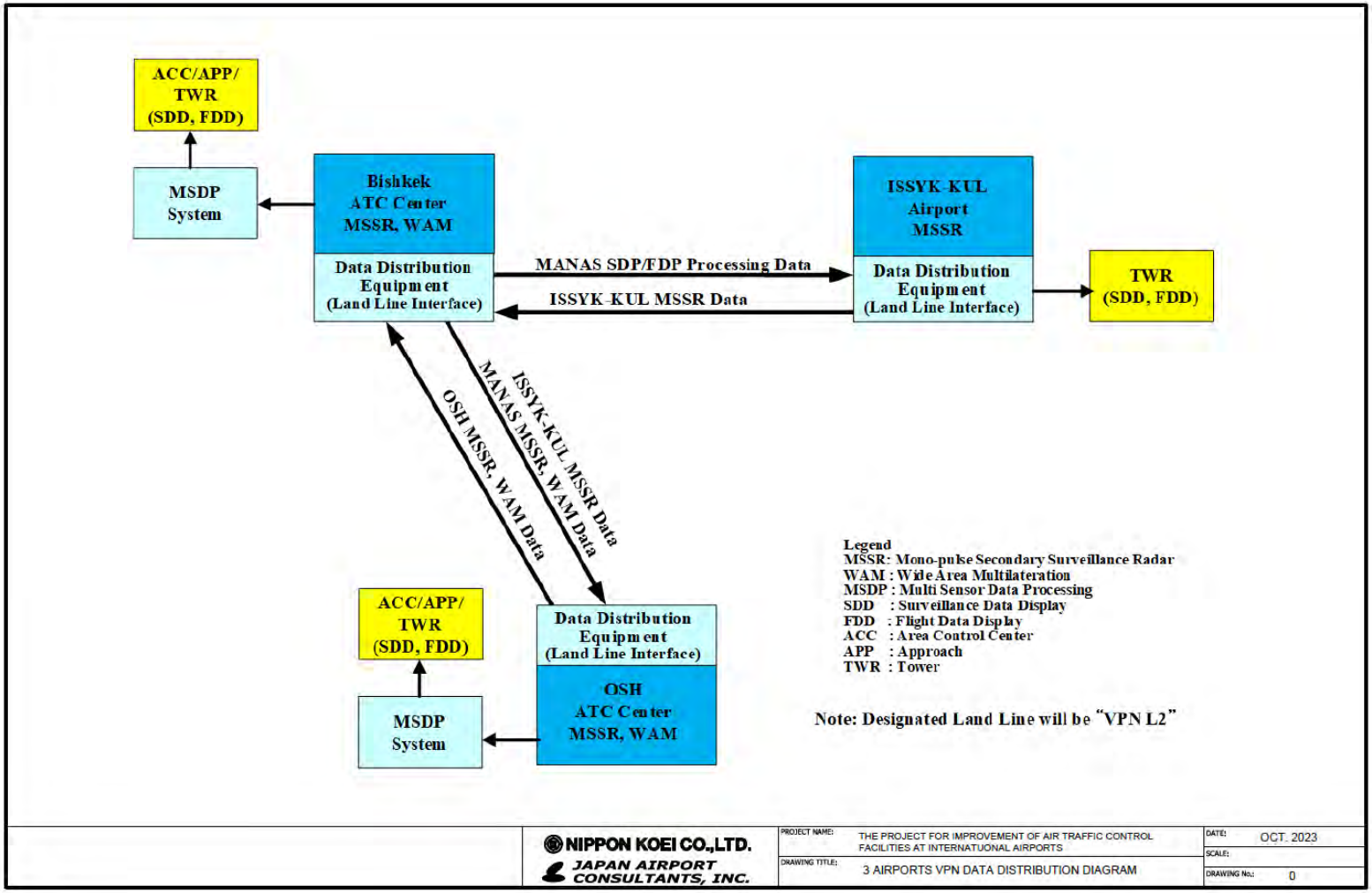
A-007 Section S＝1/300

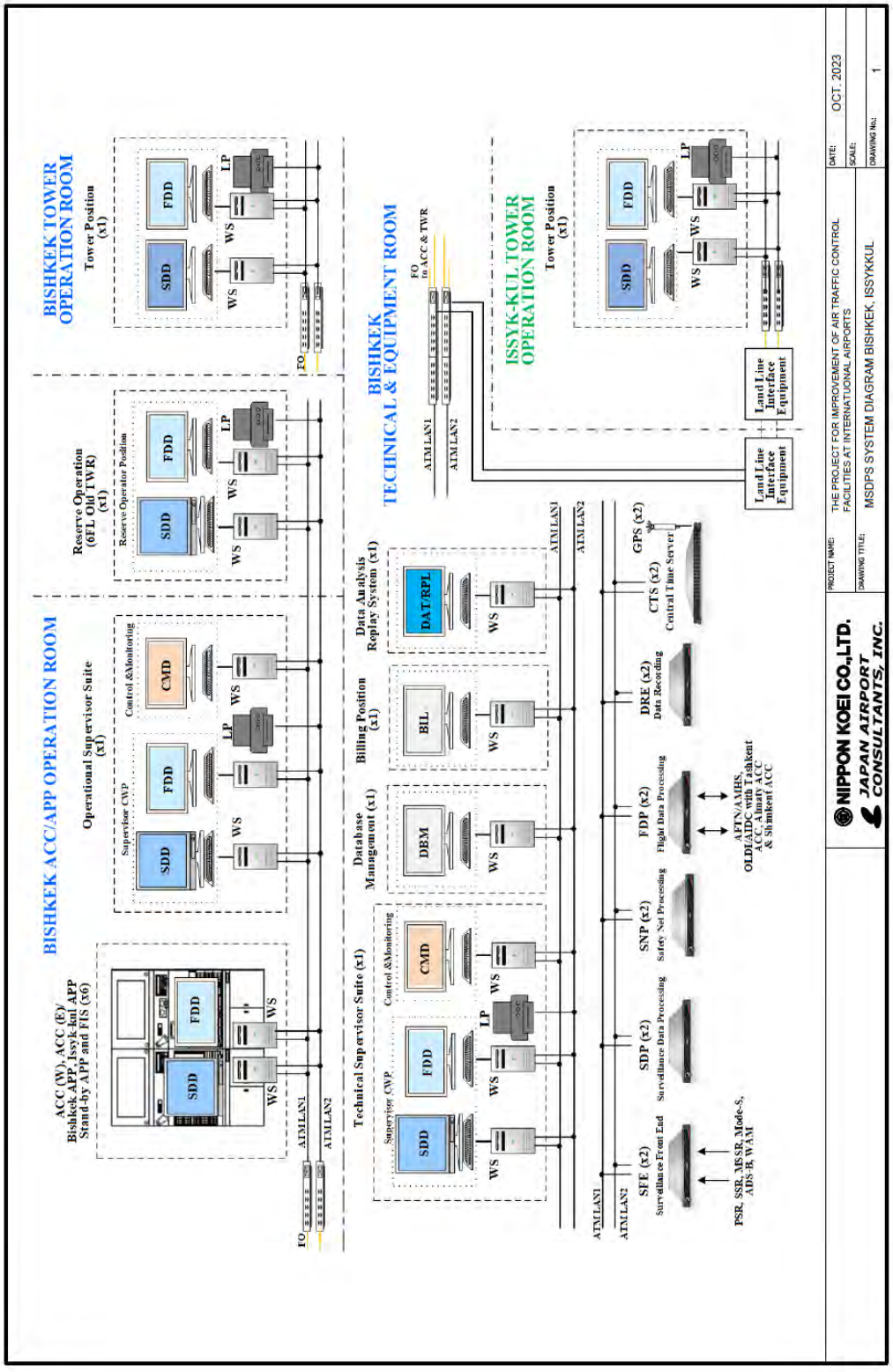


東西 断面図

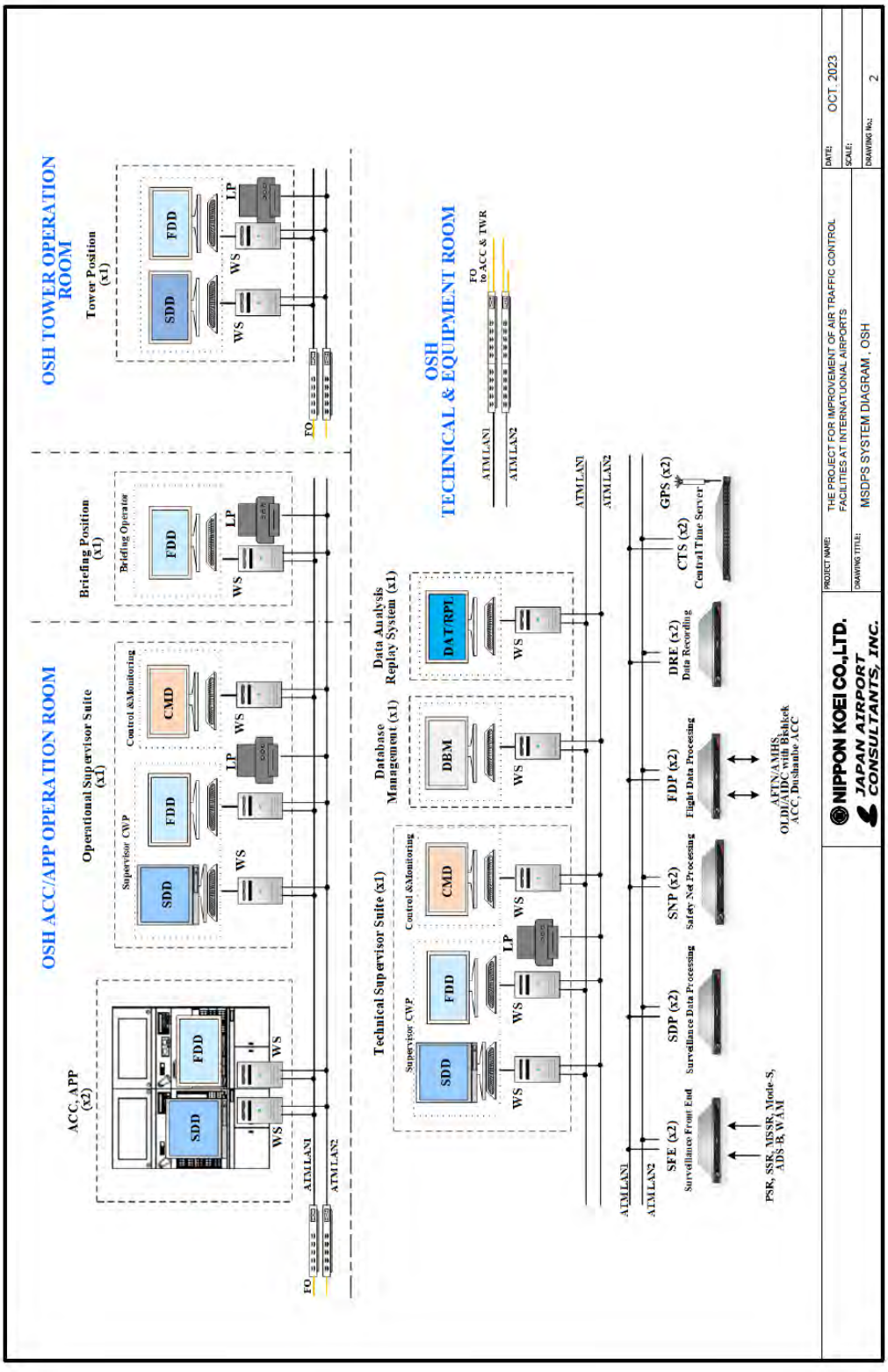
A-008 Substation S＝1/300



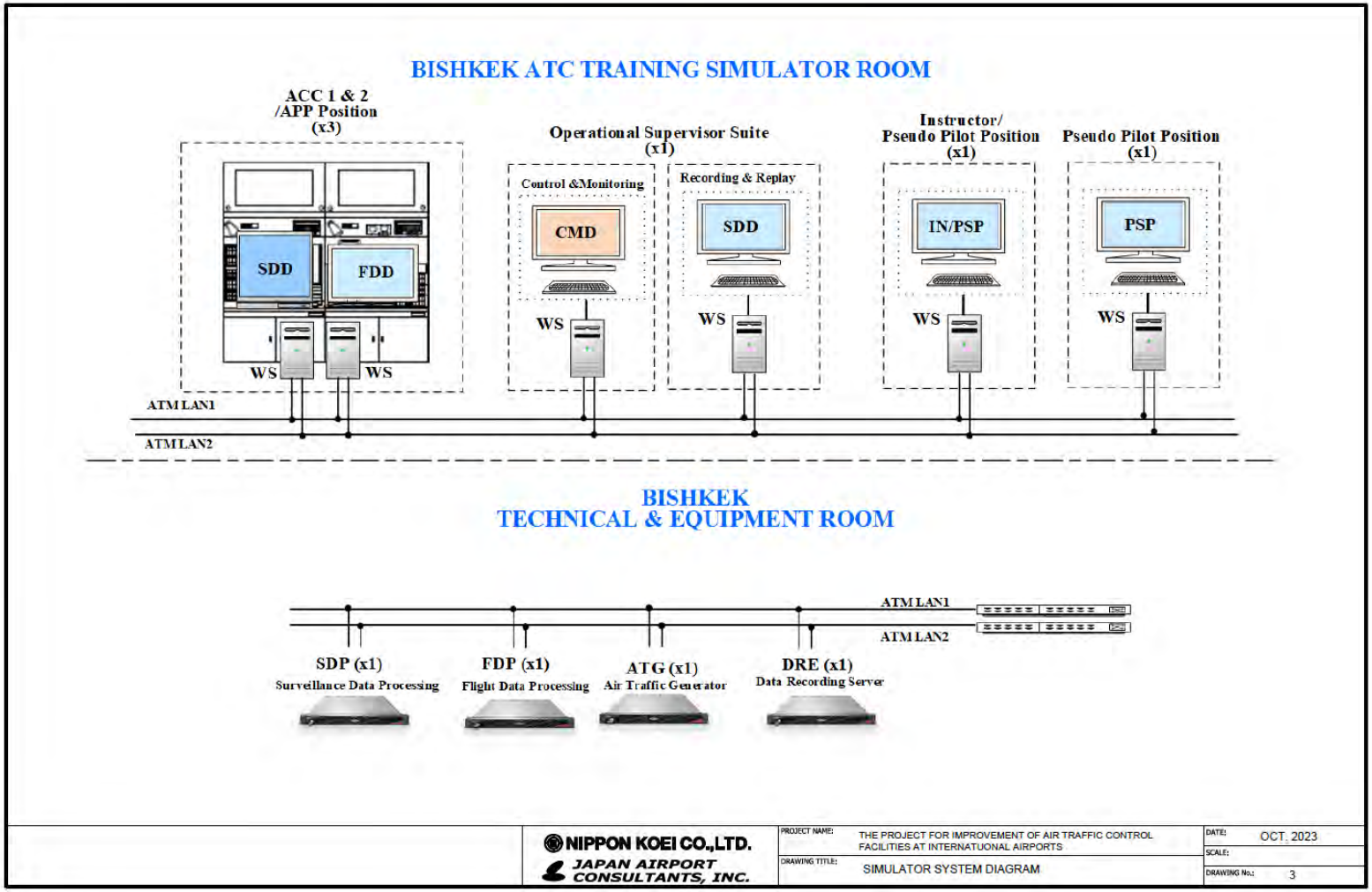

ACC/APP/
TWR
(SDD, FDD)
MSDP
System
Bishkek
ATC Center
MSSR, WAM
Data Distribution
Equipment
(Land Line Interface)
MANAS SDP/FDP Processing Data
ISSYK-KUL MSSR Data
ISSYK-KUL
Airport
MSSR
Data Distribution
Equipment
(Land Line Interface)
TWR
(SDD, FDD)
ISSYK-KUL MSSR Data
MANAS MSSR, WAM Data
OSH MSSR, WAM Data
ACC/APP/
TWR
(SDD, FDD)
Data Distribution
Equipment
(Land Line Interface)
MSDP
System
OSH
ATC Center
MSSR, WAM
Legend
MSSR: Mono-pulse Secondary Surveillance Radar
WAM : Wide Area Multilateration
MSDP : Multi Sensor Data Processing
SDD : Surveillance Data Display
FDD : Flight Data Display
ACC : Area Control Center
APP : Approach
TWR : Tower
Note: Designated Land Line will be "VPN L2"
NIPPON KOEI CO.,LTD.
JAPAN AIRPORT CONSULTANTS, INC.
PROJECT NAME: THE PROJECT FOR IMPROVEMENT OF AIR TRAFFIC CONTROL FACILITIES AT INTERNATUONAL AIRPORTS
DRAWING TITLE: 3 AIRPORTS VPN DATA DISTRIBUTION DIAGRAM
DATE: OCT. 2023
SCALE:
DRAWING No.: 0



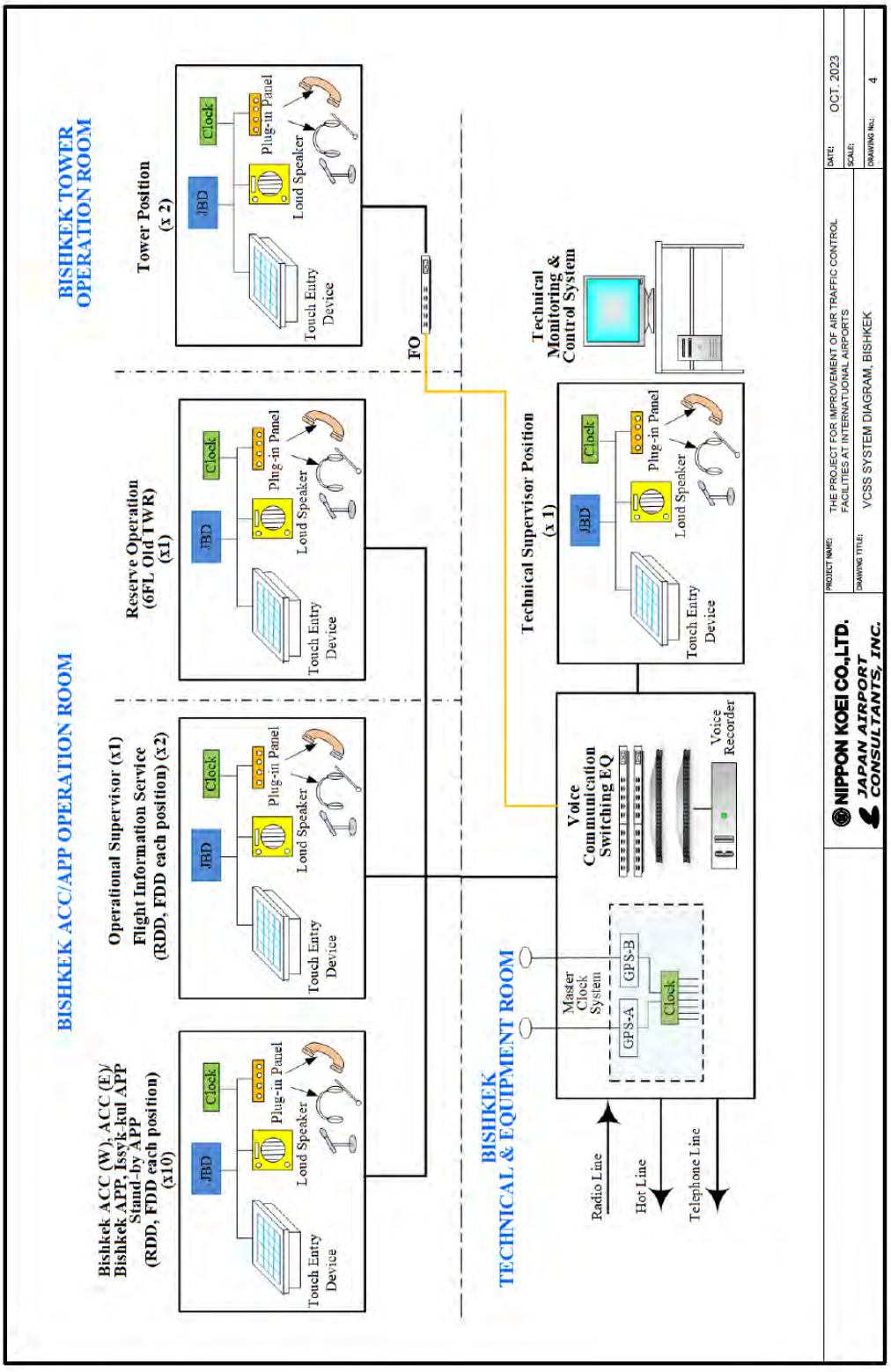
1. MSDPS System Diagram (Bishkek/ Issyk-Kul)



2. MSDPS System Diagram (Osh)

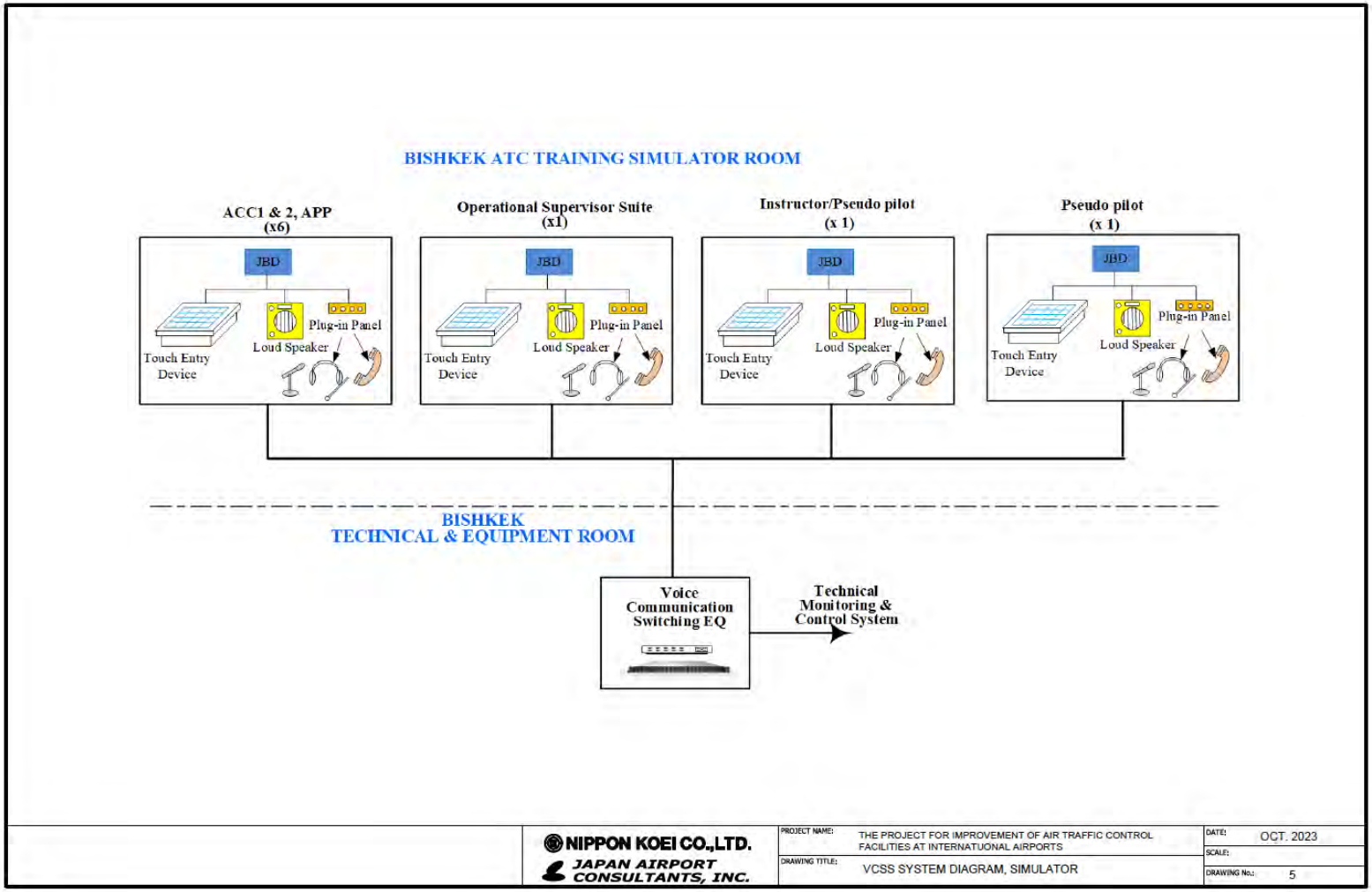


NIPPON KOEI CO.,LTD. JAPAN AIRPORT CONSULTANTS, INC.	PROJECT NAME: THE PROJECT FOR IMPROVEMENT OF AIR TRAFFIC CONTROL FACILITIES AT INTERNATUONAL AIRPORTS	DATE: OCT. 2023	
	DRAWING TITLE: SIMULATOR SYSTEM DIAGRAM	SCALE:	
		DRAWING No.: 3	

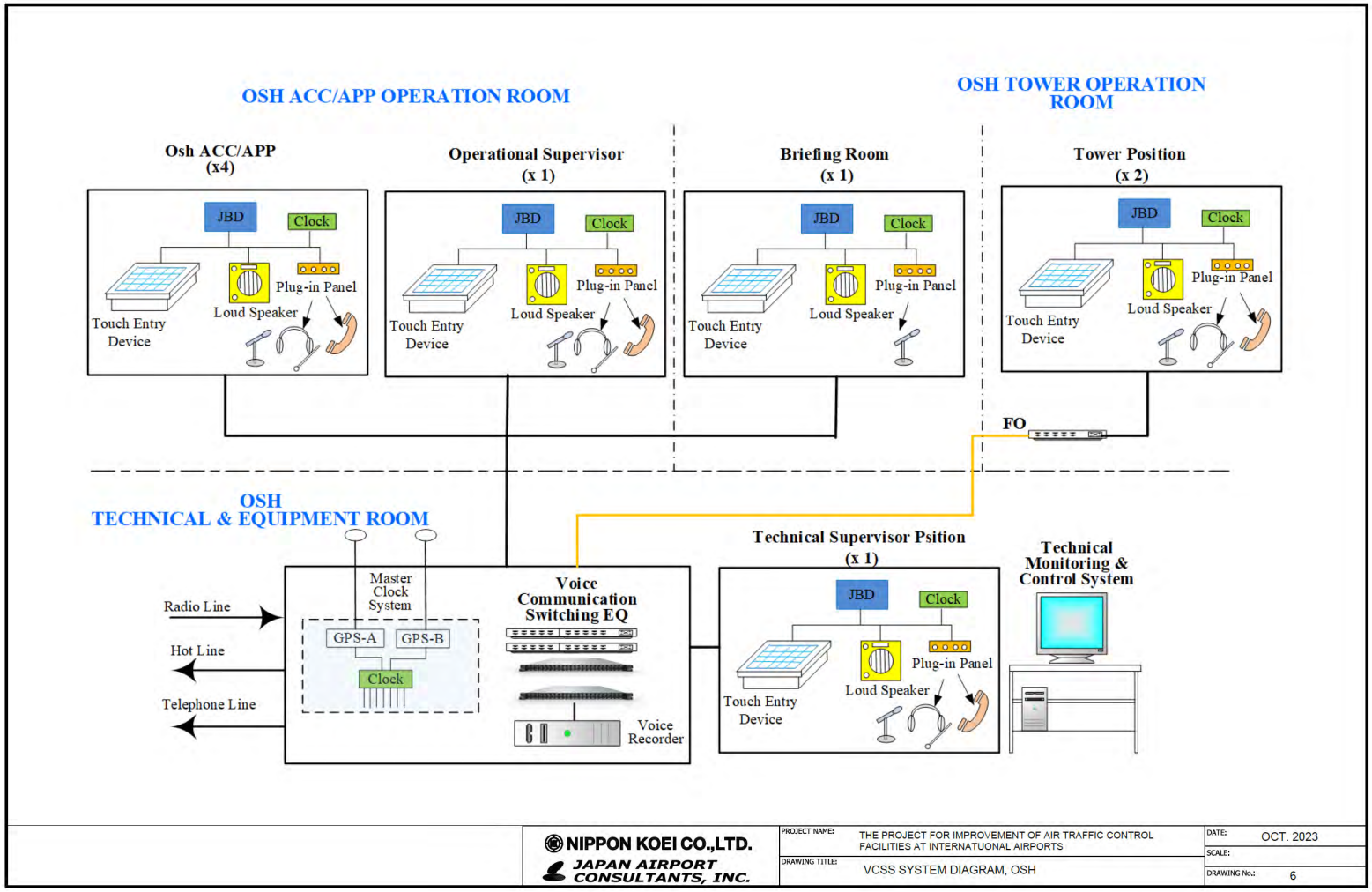


4. VCCS System Diagram (Bishkek)

5. VCCS System Diagram (Simulator)



6. VCCS System Diagram (Osh)



7. References

TECHNICAL MEMORANDUM
ON
THE PREPARATORY SURVEY
FOR
THE PROJECT
FOR
IMPROVEMENT OF AIR TRAFFIC CONTROL FACILITY
AT INTERNATIONAL AIRPORTS
IN
THE KYRGYZ REPUBLIC

(Architecture)

Based on the Minutes of Discussion dated 14 July 2023 signed by Mr. Shakir K. Djangaziev, Director General of SE "Kyrgyzaeronavigatsia" and Mr. Hiroyuki Ueda, Leader of Preparatory Survey Team of JICA, the Survey Team held technical discussions with officials concerned of SE "Kyrgyzaeronavigatsia" for the above-captioned survey to wrap-up the works carried out during their stay in the Kyrgyz Republic.

In the course of technical discussions and field survey, both sides confirmed the main items described in the attached sheets.

Bishkek, 29 August 2023

Masaaki Uehara	Shakir K. Djangaziev
Consultant Leader	Director General
JICA Survey Team	SE "Kyrgyzaeronavigatsia"

ATTACHMENT

1. Construction of Air Traffic Control Tower and ATM Center Building

The Air Traffic Control Tower and ATM Center Building will be designed with the following basic technical requirements:

(1) Construction Site

SE "Kyrgyzaeronavigatsia" (KAN) will prepare the necessary land for the construction of the Air Traffic Control Tower and ATM Center Building. The anticipated site is shown in Appendix -1.

(2) Land Clearance

SE "Kyrgyzaeronavigatsia" (KAN) is responsible to clear the land (to exclude the existing grass, trees, and other obstacles) before the construction starts.

(3) Land Acquisition

SE "Kyrgyzaeronavigatsia" (KAN) will acquire the land necessary for the construction of the Air Traffic Control Tower and ATM Center Building. The area of the Site should not make major changes, in consideration to the future negotiation with Landowners. Land acquisition procedure should be according to the JICA environmental and social guidelines and Kyrgyz rule.

(4) Road Construction

SE "Kyrgyzaeronavigatsia" (KAN) will prepare the road to the Construction Site, if necessary.

(5) Utilities

KAN will prepare the utilities such as Electrical, Communications System and Water Supply to the Construction Site, if necessary.

(6) Air Traffic Control Tower and ATM Center Building Plan

a. Necessary Function;

Air Traffic Control Tower and ATM Center Building Plan should consist of the following rooms.

Facility	Room Name
Air Traffic Control Tower	Tower Control Room, Communication Equipment Room
ATM Center Building	Radar Control Room, Radar Equipment Room, Optical fiber Cable Network Room, ATM Manager Room, ATM Briefing Room, ATM Training Room, ATM Restroom (M&F), ATM Shower Room, ATM Break Room, Navigation, and Communication Equipment Room, Control and Monitor Room, Recording and Analysis Room, Manager Room for Engineering, Office for Engineering, Restroom for Monitoring,

	Meteorological Manager Room, Meteorological Briefing Room, Manager Room for Pilot Management, Briefing Room for Pilot Management, Signal Room, Casher room, Kitchen, Medical Room, Locker Room (M&F), Guard Room, Security Control Room, Entrance and other common spaces

b. Total Floor Area:

The total floor area of the Air Traffic Control Tower and ATM Center Building will be around from 1,700 to 2,000 square meters.

(7) Conditions to Determine the Location and the Height of the Air Traffic Control Tower and the ATM Center Building

The following conditions should be taken into consideration to determine the location and the height of the ATC Tower and ATM Center Building.

a. The Location:

- The easiness of acquiring the necessary land
- The approach road
- The withdrawal of infrastructure: supply and sewerage water/electricity

b. The Height:

- Inner transitional surface or inner horizontal surface by ICAO Annex-14
- LoS (Line of Sight) restriction by FAA Order 6480-b: 0.8 degrees from the eye level of the air controller to the edge of the Runway on its both sides.
- The extension of the Runway by 300 meters to the Runway 30 side

(8) Location of Construction Site

The most suitable construction site was proposed among several candidate locations, in consideration of the LoS (Line of Sight) by air traffic controllers to the edge of Runway and to the height restrictions. (See the Appendix-1)

(9) Avoidance of Visual Intrusion

In order to keep the said visibility from the control tower, any obstacles that may be located in the area between ATC Tower and Runway, Taxiway, and Aprons, specified in the future airport development plan, should be restricted in their location, height, and figure to avoid the visual intrusion.

(10) Procedure and Commission Fee for the Design Expertise

SE "Kyrgyzaeronavigatsia" (KAN) will execute an application for the design commencement permission and/or the building permit to the Osh city government. In addition, SE "Kyrgyzaeronavigatsia" (KAN) will pay the commission fee for the architectural expertise.

(11) Layout of the Air Traffic Control Tower and ATM Center Building

The Survey Team proposed a draft eight-story plan of the Air Traffic Control

Tower and ATM Center Building. The comments from KAN have been revised. KAN and the Survey Team agreed to continue discussion, but major changes should not be made.

The draft plan is shown in Appendix -2

(12) Section of the Air Traffic Control Tower and ATM Center Building

The Survey Team proposed a draft eight-story section of the Air Traffic Control Tower and ATM Center Building. This section was drawn regarding (7), (8) and Appendix -1. KAN and the Survey Team agreed to continue discussion.

(13) The draft section is shown in Appendix -3Structural Plan

The Air Traffic Control Tower and ATM Center Building will basically consist of the reinforced concrete main structure and the partial steel structure only on the top floor.

(14) Electricity Supply

a. High Voltage

The two lines of high voltage - 6kV are already supplied for the existing airport facilities. The electricity will be supplied to the Air Traffic Control Tower and ATM Center Building by utilizing and separating the existing electricity.

b. Low Voltage Facility

The electricity will be supplied to the said building by providing the new transformer in the electricity room of the building.

(15) Mechanical and Electrical Technical Data Table

The Survey Team proposed a draft M&E technical data table of the Air Traffic Control Tower and ATM Center Building. KAN and the Survey Team agreed to continue discussion.

The draft plan is shown in Appendix -4

(16) Water Supply

The water will be supplied to the Air Traffic Control Tower and ATM Center Building from the new well, which will be prepared before construction begins.

(17) Sewerage

The sewerage from the Air Traffic Control Tower and ATM Center Building will be connected to the new septic tank, which will be developed in the construction stage.

(18) Confirmation of Development Plan in Osh International Airport by Civil Aviation Authority (CAA)

CAA and SE "Kyrgyzaeronavigatsia" (KAN) clarified as per following development plan in Osh International Airport.

① Runway Extension by 300 meters to the Runway 30 side

CAA stated runway extension plan in Osh International Airport which will be included in "Civil Aviation Concept" Document.

② Construction of New Maintenance Repair Overhaul (MRO) hanger

CAA and SE "Kyrgyzaeronavigatsia" (KAN) confirmed that there is not any plan of new MRO hanger. In case any MRO service companies propose to build new MRO hanger which will be located in front of ATC tower, CAA shall not approve such plan.

2. Clarification of Collected Data and Information

The Survey Team requested further collaboration with SE "Kyrgyzaeronavigatsia" (KAN) for clarification of data and information collected as well as collection of additional data and information if such necessity arises. SE "Kyrgyzaeronavigatsia" (KAN) accepted the request.

3. Confidentiality

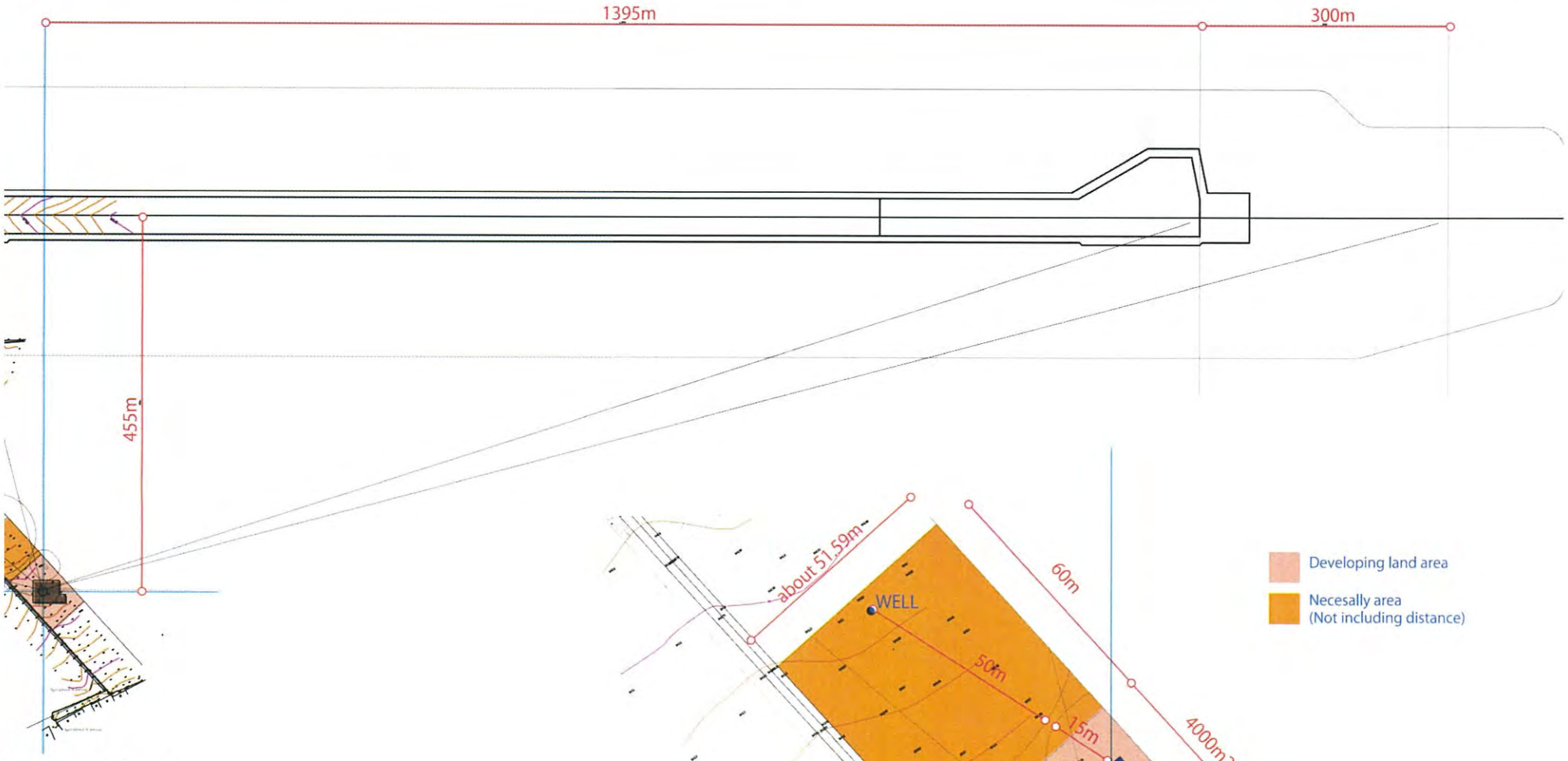
Since this Technical Note includes outline specifications of the facility and the equipment to be provided by the Project, both Japan and Kyrgyz sides confirmed that this Technical Note should be treated as confidential, taking into consideration a fair and transparent competition for the supply of the equipment.

4. Note

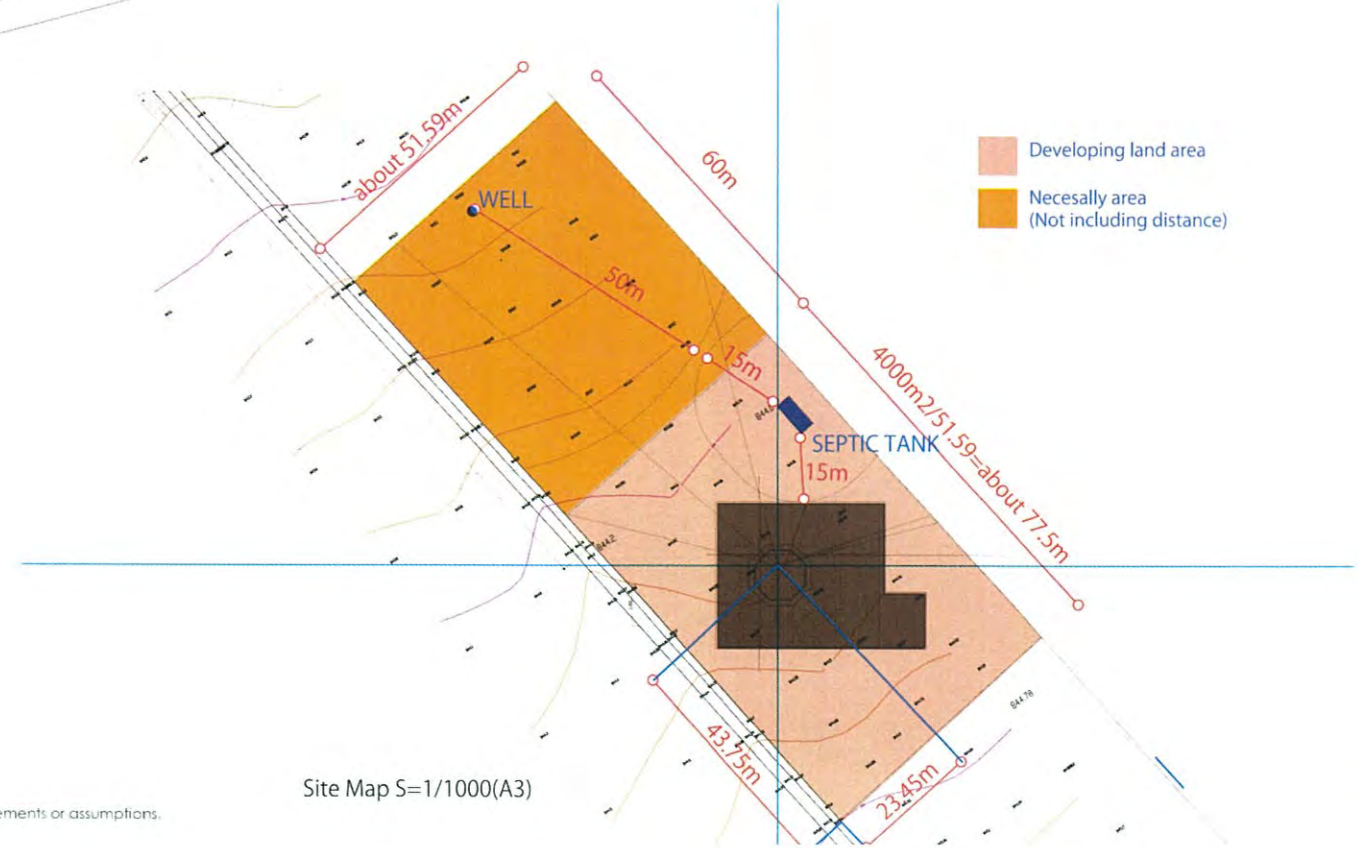
At this time, the details of the project and whether or not it will be implemented have not yet been determined. Therefore, the contents of this Technical Note will be utilized as just materials for decision making of project selection.

- END -

Appendix -1



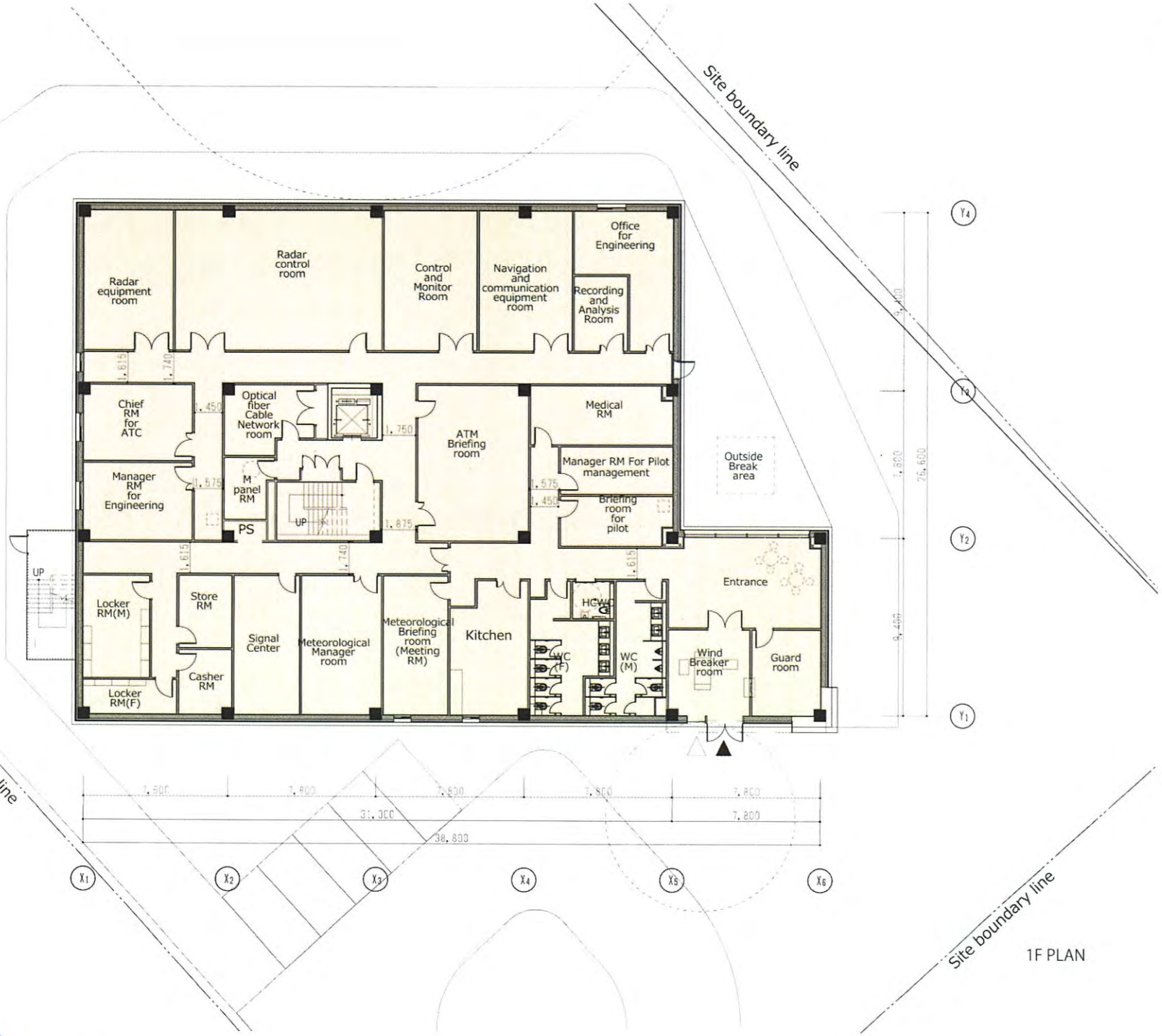
Site Map S=1/5000(A3)



Site Map S=1/1000(A3)

y change after further detail study, authority preconsultation, change of design requirements or assumptions.

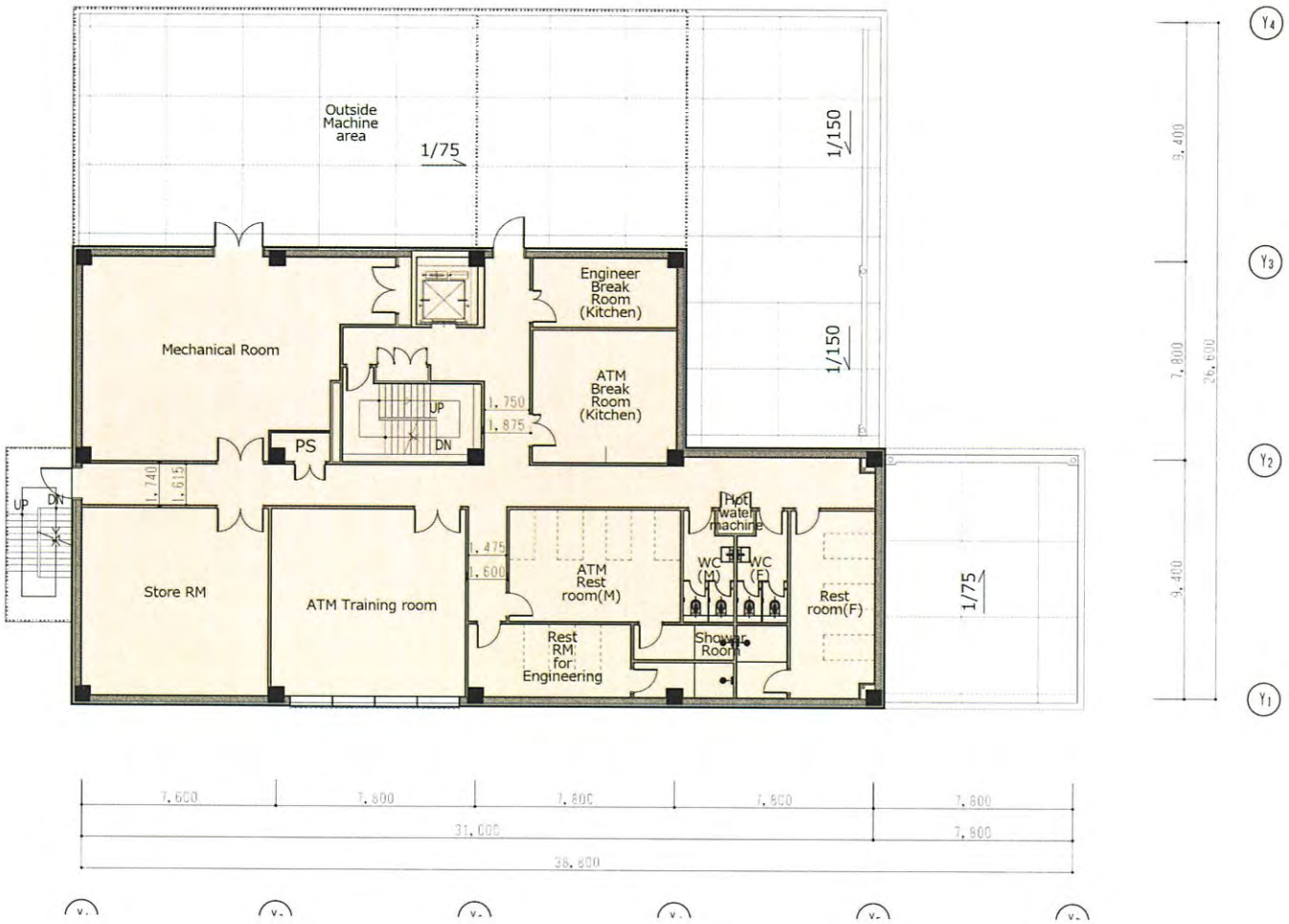
Appendix -2



1F PLAN

y change after further detail study, authority preconsultation, change of design requirements or assumptions.

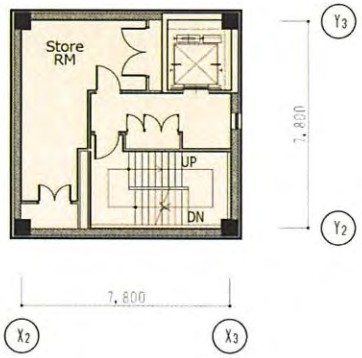
Appendix -2



2F PLAN

Current stage study may change after further detail study, authority preconsultation, change of design requirements or assumptions.

Appendix -2



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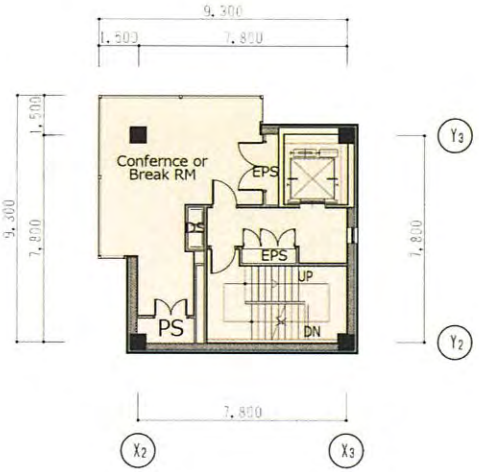
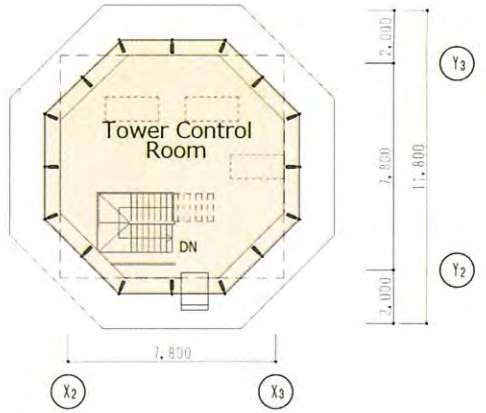
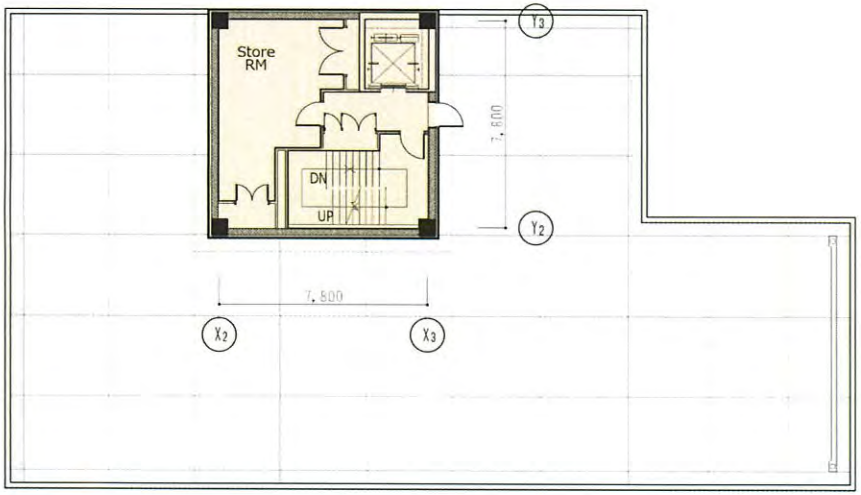


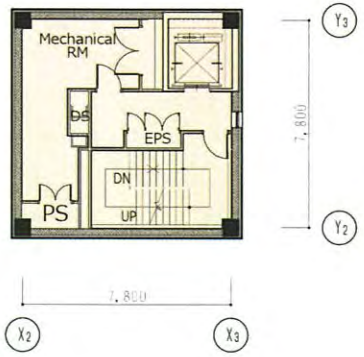
6F PLAN



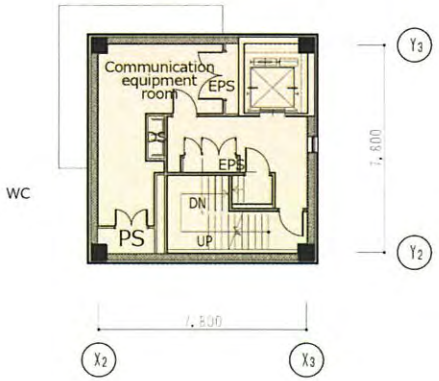
8F PLAN



3F PLAN



5F PLAN



WC

7F PLAN

Current stage study may change after further detail study, authority preconsultation, change of design requirements or assumptions.

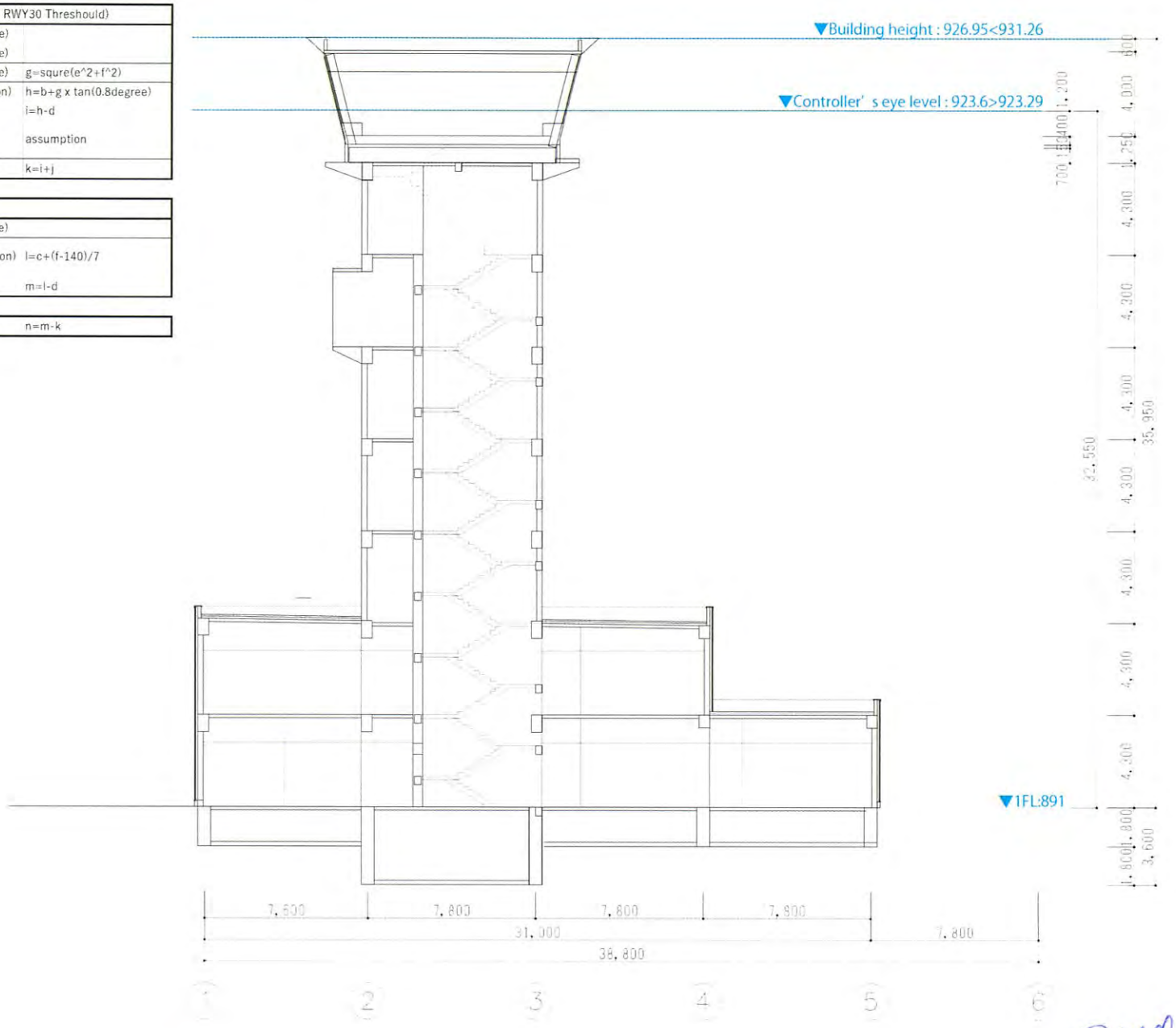
Appendix -3

Groound Elevation of X	a	896.38	m(elevation)	survey data
Groound Elevation of Xo	b	898.78	m(elevation)	a+2.4m(300mxslope0.8%)
Ground Elevation of Ao	c	886.26	m(elevation)	survey data
Ground Elevation of A	d	891	m(elevation)	assumption

Minimum Control Tower Height Requirement (with regard to minimum Linf of Sight (LOS) angle to RWY30 Threshould)				
Distance Xo to Ao	e	1,695	m(distance)	
Distance A to Ao	f	455	m(distance)	
Distance Xo to A	g	1,755.01	m(distance)	g=squre(e^2+f^2)
Minumum Elevation of Controller's Eye level	h	923.29	m(elevation)	h=b+g x tan(0.8degree)
Minumum Hight of Controller's Eye level from Ground	i	32.29		i=h-d
Height between Controller's Eye Level and Top of Control Tower (including antenna on the roof)	j	6	m(height)	assumption
Minimum Tower Height	k	38.29	m(height)	k=i+j

Maximum Control Tower Height (with regard to Inner horizontal surface Restriction)				
Distance A to Ao	f	455	m(distance)	
Maximum Elevation of Tower at A due to Inner horizontal surface Restriction	l	931.26	m(elevation)	l=c+(f-140)/7
Maxium Tower Hight above ground	m	40.26	m(height)	m=l-d

Distance between Maxium and Minimum Tower height	n	1.97	m(height)	n=m-k



Current stage study may change after further detail study, authority preconsultation, change of design requirements or assumptions.

TECHNICAL MEMORANDUM
ON
THE PREPARATORY SURVEY
FOR
THE PROJECT
FOR
IMPROVEMENT OF AIRTRAFFIC CONTROL FACILITY
AT INTERNATIONAL AIRPORTS
IN
THE KYRGYZ REPUBLIC

(Air Traffic Control System)

Based on the Minutes of Discussion dated 14 July 2023 signed by Mr. Shakir K. Djangaziev, Director General of SE "Kyrgyzaeronavigatsia" and Mr. Hiroyuki Ueda, Leader of Preparatory Survey Team of JICA, the Survey Team held technical discussions with officials concerned of the SE "Kyrgyzaeronavigatsia" for the above-captioned survey to wrap-up the works carried out during their stay in the Kyrgyz Republic.

In the course of technical discussions and field survey, both sides confirmed the main items described in the attached sheets.

Bishkek, 22 August 2023

Masaaki Uehara	Shakir K. Djangaziev
Consultant Leader	Director General
JICA Survey Team	SE "Kyrgyzaeronavigatsia"

ATTACHMENT

Air Traffic Control System

1. Basic Technical Requirements of the Systems

The detailed system configuration of each project component will be designed with the following basic technical requirements:

- The system equipment characteristics will follow and conform to any relevant ICAO Standards and Recommended Practices (SARPs), and other related national or international regulations and practices.
- The designs for the system will take into account human engineering considerations; for example, Human-Machine Interface (HMI) of the operational and technical position will be of window type, multi-color and user-friendly
- graphical environment.
- The hardware of data processing system and relevant systems should be as much as practicable Commercial Off-The-Shelf (COTS) products with state-of-the-art technology.

2. Design Policy of the Air Traffic Control System

In this system renewal by the Japanese grant, the scale, efficiency, economy, and maintainability of the system will be taken into consideration, further, the cost aspect is also considered.
Currently, Surveillance Data Processing System/Flight Data Processing System (SDPS/FDPS) are installed at Bishkek, Osh, and Issyk-Kul.
The SDPS/FDPS at Bishkek and Osh are installed to implement area control and terminal radar approach control, respectively, while the SDPS/FDPS at Issyk-Kul is primarily for tower control only.

Based on the above, we would like to plan the following system design:

(1) Introduction of Multi Sensor Data Processing System (MSDPS) including flight data processing for Bishkek area control, approach control, and tower control by Japanese grant.
(2) Introduction of MSDPS for Osh area control, approach control and tower control by Japanese grant.
(3) Introduction of ATC training simulator for ACC and APP by Japanese grant.
(4) Introduction of Voice Communication Switching System (VCSS) for Bishkek area control, approach control and tower control by Japanese grant.
(5) Introduction of VCSS for Osh area control, approach control and tower control by Japanese grant.
(6) Surveillance data of Issyk-Kul should be transmitted to Bishkek and Osh and input into their respective MSDPS.

(7) The processed surveillance data and flight plan data by Bishkek MSDPS are transmitted to Issyk-Kul airport for implementing tower control. Surveillance Data Display (SDD) and Flight Data Display (FDD) are installed at the tower control position by Japanese grant.

(8) Approach control for Issyk-Kul airport will be implemented at Bishkek.

(9) New control consoles should be procured by SE "Kyrgyzaeronavigatsia" (KAN).
The number of new control console is as follows.

- Bishkek: ACC x2, APP x3, Operational Supervisor x1, FIS x 1
- Osh: ACC x1, APP x1, TWR x1

(10) Following control consoles with relevant equipment should be relocated from existing operation room to new ATC center building by KAN.

- Osh: Operational Supervisor x1, TWR x1

(11) ATC equipment, which has been installed in the existing operation building at Osh, should be relocated to new ATC center building by KAN.

- Existing ATC equipment: VHF, MET display, AFL display, etc.
- Existing NAV equipment: ILS remote, DVOR/DME remote, DF, etc.

(12) VHF transceiver for Tower control at Osh will be installed by Japanese grant.

(13) New ACC/APP operation room and ATC training simulator room at Bishkek ATC center should be prepared by KAN. Size of existing simulator room is not enough space, so KAN should provide at least 70m2 room space.

(14) Power supply system (UPS, Stabilizer) for MSDPS, ATC training simulator and VCSS at Bishkek ATC center should be installed by KAN. Capacity must be at least 30kVA.

(15) Power supply system (UPS, Stabilizer) for MSDPS, VCSS and existing ATC/NAV equipment at Osh ATC center should be installed by KAN. Capacity must be at least 30kVA.

(16) A new fiber-optic terminal of existing airport fiber-optic network at Osh airport should be installed at new ATC center by KAN.

Demarcation of the scope of works between Japanese side and Kyrgyz side is summarized as below.

Table 2-1 Demarcation of the Scope of Works

Project to be Covered by Japanese Grant Aid	Project to be Covered by Kyrgyz Side
1. Procurement, installation, and adjustment of equipment **Bishkek ATC Center** (1) Multi Sensor Data Processing System (MSDPS) (2) ATC Training Simulator for ACC, APP (3) Voice Communication Switching System (VCSS)	1. Site preparation, design, and procurement work **Bishkek ATC Center** (1) Preparation of new ACC/APP operation room and ATC training simulator room (2) Procurement of control console: ACC x2, APP x3, OP-SV x1, FIS x1 (3) Relocation of existing DF monitor, NAV monitor, necessary radio & telephone from existing

Osh ATC Center (1) Multi Sensor Data Processing System (MSDPS) (2) Voice Communication Switching System (VCSS) (3) VHF Air-ground Transceiver for Tower control (VHF A/G) 2. Maintenance Education and Training of Equipment 3. Marine and Inland Transportation of Equipment	ACC/APP/SV console to new console. (4) Removal, temporary installation, or dismantling of existing equipment for securing installation space of new equipment (5) Procurement of power supply system such as UPS and Stabilizer for ATC equipment **Osh ATC Center** (6) Procurement of control console: ACC x1, APP x1, TWR x1 (7) Relocation of control console with relevant equipment to new ATC center & control tower building: OP-SV x1, Tech-SV, TWR x1 (8) Relocation of existing ATC & NAV equipment to new ATC center & control tower building (9) Procurement of power supply system such as UPS and Stabilizer for ATC equipment (10) Installation of a new fiber-optic terminal of existing airport fiber-optic network at ATC center building. 2. Transportation, storage, recycling, and disposal of dismantled equipment 3. Allocation of counterpart personnel 4. Participation of equipment installation and adjustment, including trial operation and site acceptance test

3. Equipment Configuration of the Systems

System equipment configuration for each system based on the basic technical requirements is shown in the following Table;

Note: Further analysis for equipment configuration of each system will be implemented during the works for the preparation of Draft Final Report & Equipment Specifications by the Survey Team.

3.1 Bishkek ATC Center and Issyk-kul Airport

3.1.1 Multi Sensor Data Processing System (MSDPS)

Table 3.1.1 MSDPS Equipment Configuration

No.	Equipment	BISHKEK			ISSYK-KUL	
		TECH EQ Room	ATC OPS Room	TWR	EQ Room	TWR
Multi-sensor Data Processing System						
1	Surveillance Front End Server	2				
2	Surveillance Data Processing Server	2				

3	Safety Net Processing Server	2				
4	Flight Data Processing Server	2				
5	Data Recording Server	2				
6	Central Time Server + GPS	2				
7	Database Management System	1				
8	Billing System	1				
9	Data Analysis/Replay System	1				
10	Technical Supervisor Suite	1				
11	ACC West Position		1			
12	ACC East Position		1			
13	Bishkek APP Position		1			
14	Issyk-kul APP Position		1			
15	Stand-by APP Position		1			
16	Operational Supervisor Suite		1			
17	FIS Position		1			
18	Reserve Operational Position (6F old TWR)			1		
19	Tower Position			1		1
20	Data Distribution Equipment (L/L Interface)	1			1	
21	LAN Network Equipment	1			1	
22	Power Distribution Box	1				

Outline of system diagram is as shown below:

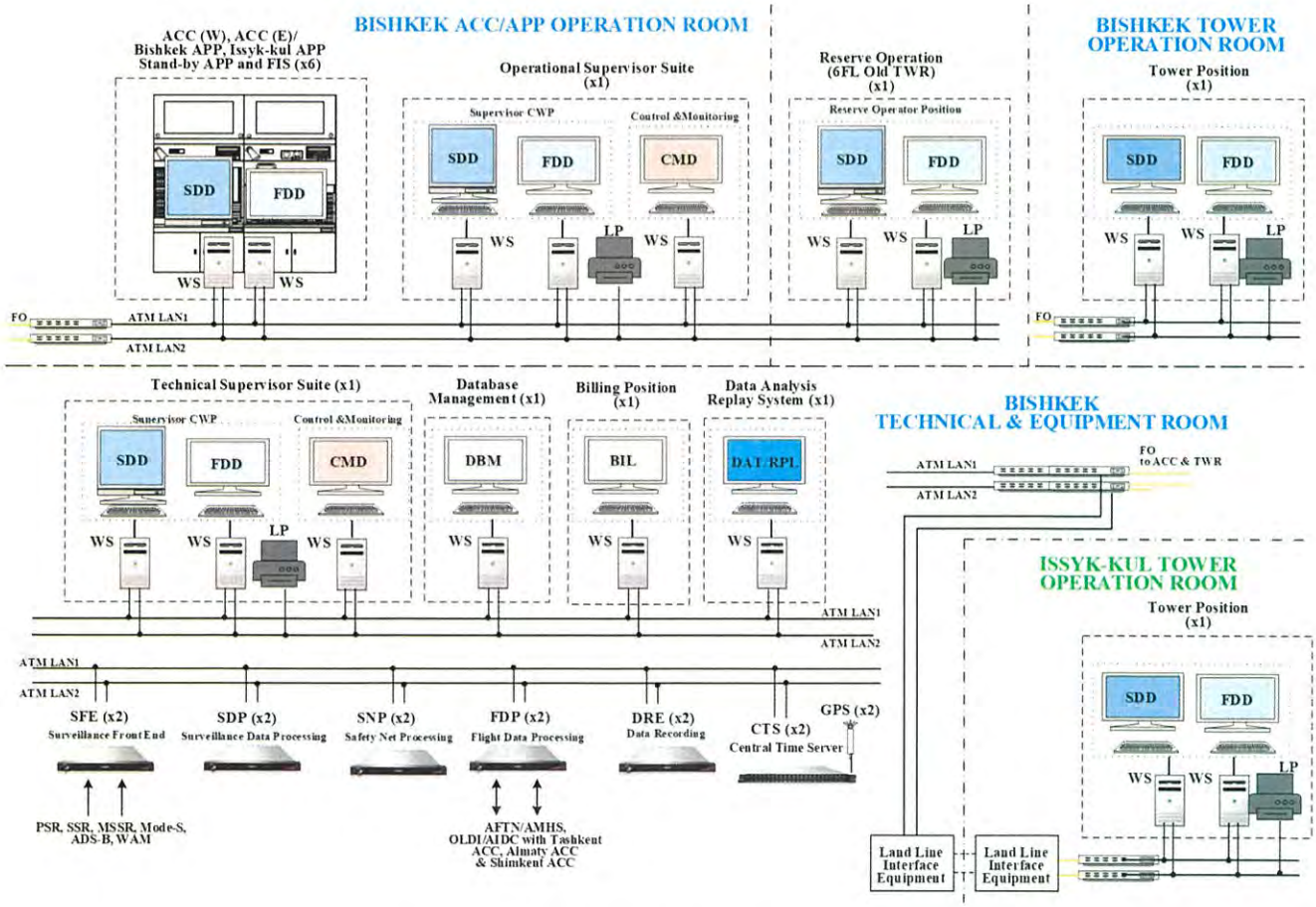


Figure 3.1.1 MSDPS System Diagram

3.1.2 ATC Training Simulator System

Table 3.1.2 ATC Training Simulator Equipment Configuration

No.	Equipment	BISHKEK	
		TECH EQ Room	SIM Room
ATC Training Simulator System			
1	Surveillance Data Processing Server	1	
2	Flight Data Processing Server	1	
3	Air Traffic Generator	1	
4	Data Recording Server	1	
5	ACC Position		2
6	APP Position		1
7	Operational Supervisor Suite		1
8	Instructor / Pseudo Pilot Workstation		1
9	Pseudo Pilot Workstation		1
10	LAN Network Equipment		1
11	Power Distribution Box		1

Outline of the system diagram is as shown below:

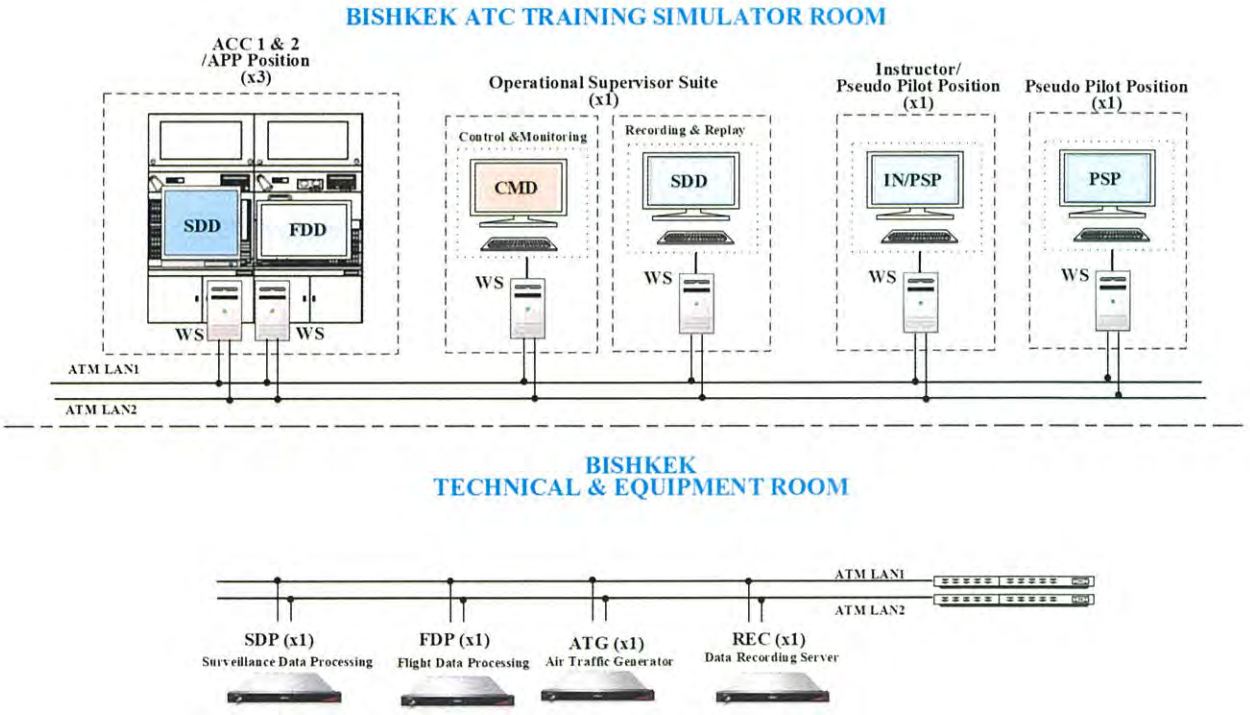


Figure 3.1.2 ATC Training Simulator System Diagram

3.1.3 Voice Communication Switching System (VCSS)

Table 3.1.3 VCSS Equipment Configuration

No.	Equipment	BISHKEK			
		TECH EQ Room	ATC OP Room	SIM Room	TWR+ Old TWR
1	Voice Communication Switching Equipment	1			
2	Controller Working Position	1	7*	6*	3
2-1	Touch Entry Device	1	13	9	3
2-2	Plug-In-Panel	1	13	9	3
2-3	Loudspeaker	2	26	18	6
2-4	Microphone	1	13	9	3
3	Technical Monitoring & Control System	1			
4	Master Clock System	1			
4-1	Master Clock Unit	1			
4-2	Desk Mount Slave Clock	1	13		3
5	Voice Recorder	1			
6	Accessary				
6-1	Headset		24	12	3
6-2	Handset	1	13		3

* CWP is as follows.

- Bishkek: ACC (W), ACC (E), APP (Bishkek), APP (Issyk-kul), APP (Stand-by), OP Supervisor, FIS
- SIM: ACC x2, APP, Operational Supervisor, Instructor/Pseudo pilot, Pseudo pilot

Outline of the system diagram is as shown below:

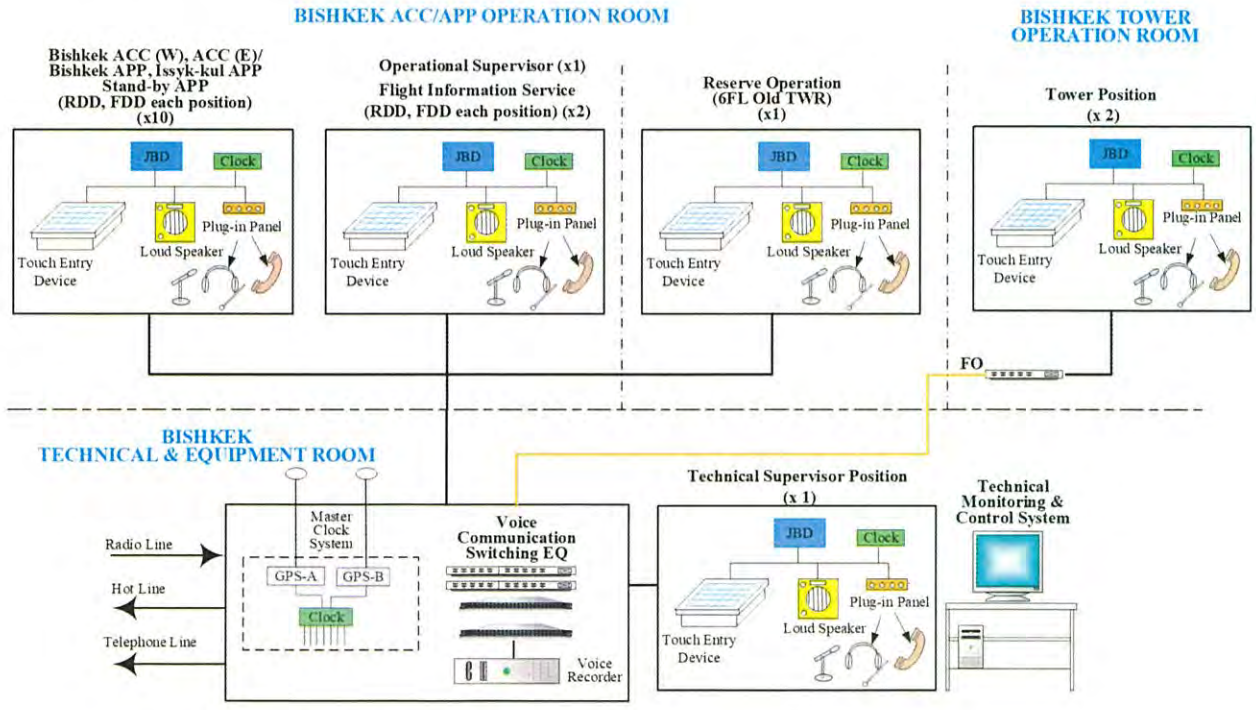


Figure 3.1.3 VCSS System Diagram for ATC Operation

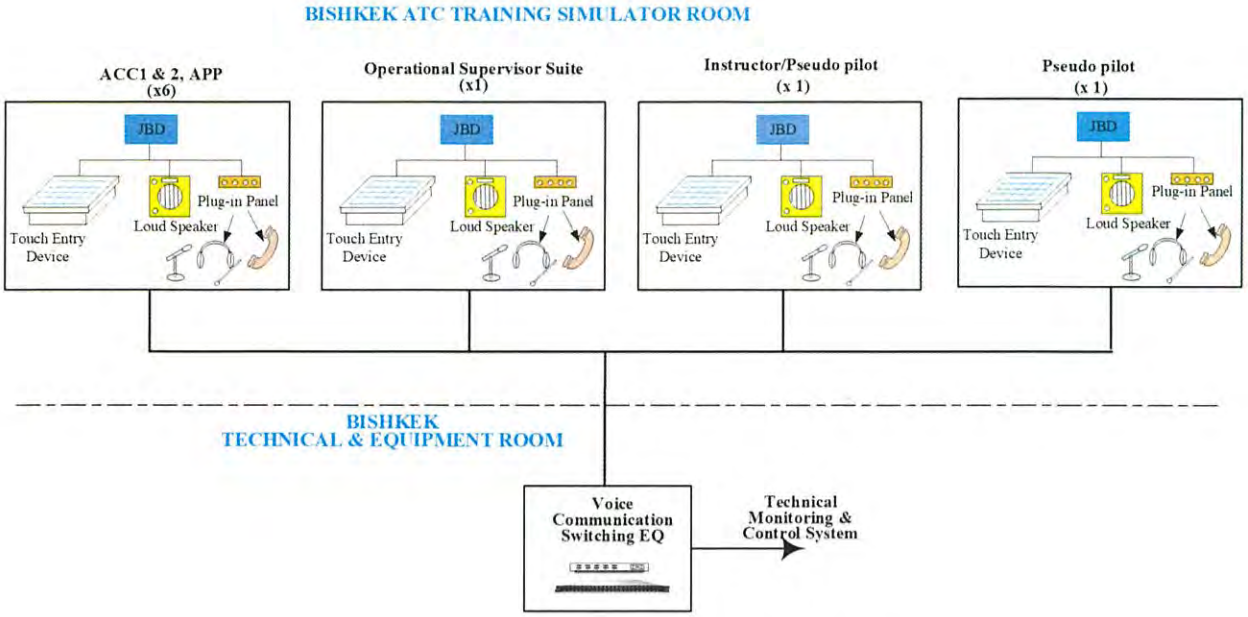


Figure 3.1.4 VCSS System Diagram for Training Simulator

3.2 Osh ATC Center

3.2.1 Multi Sensor Data Processing System (MSDPS)

Table 3.2.1 MSDPS Equipment Configuration

No.	Equipment	OSH			
		TECH EQ Room	ATC OPS Room	TWR	Briefing Room
Multi-sensor Data Processing System					
1	Surveillance Front End Server	2			
2	Surveillance Data Processing Server	2			
3	Safety Net Processing Server	2			
4	Flight Data Processing Server	2			
5	Data Recording Server	2			
6	Central Time Server + GPS	2			
7	Database Management System	1			
8	Data Analysis/Replay System	1			
9	Technical Supervisor Suite	1			
10	ACC Position		1		
11	APP Position		1		
12	Operational Supervisor Suite		1		
13	Briefing Position				1
14	Tower Position			1	
15	Data Distribution Equipment (L/L Interface)	1			
16	LAN Network Equipment	1			
17	Power Distribution Box	1			

Outline of system diagram is as shown below:

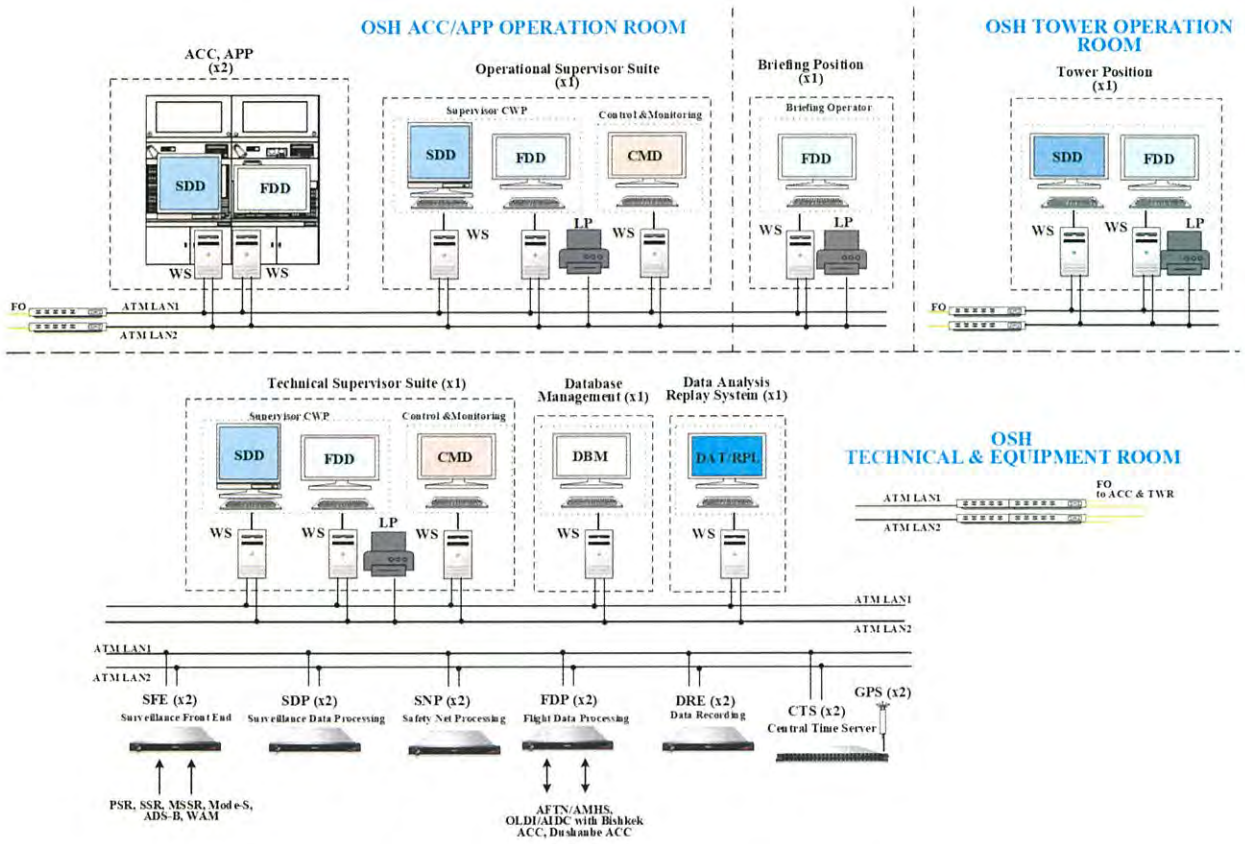


Figure 3.2.1 MSDPS System Diagram

3.2.2 Voice Communication Switching System (VCSS)

Table 3.2.2 VCSS Equipment Configuration

No.	Equipment	OSH			
		TECH EQ Room	ATC OP Room	TWR	Briefing Room
1	Voice Communication Switching Equipment	1			
2	Controller Working Position	1	3*	2	1
2-1	Touch Entry Device	1	5	2	1
2-2	Plug-In-Panel	1	5	2	1
2-3	Loudspeaker	2	10	4	2
2-4	Microphone	1	5	2	1
3	Technical Monitoring & Control System	1			
4	Master Clock System	1			
4-1	Master Clock Unit	1			
4-2	Desk Mount Slave Clock	1	5	2	1
5	Voice Recorder	1			
6	Accessary				
6-1	Headset		12	2	
6-2	Handset	1	5	2	

* CWP is as follows.

- ACC, APP, OP Supervisor

Outline of the system diagram is as shown below:

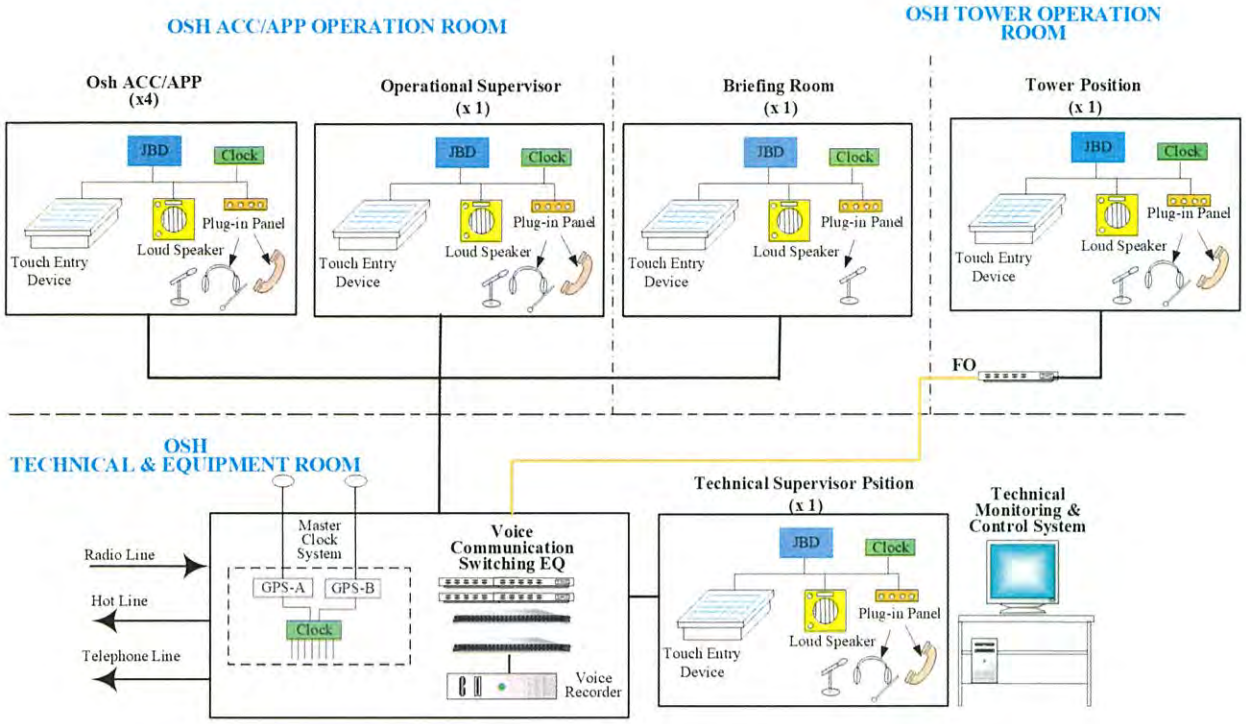


Figure 3.2.2 VCSS System Diagram for ATC Operation

3.2.3 VHF Air-Ground Communication System for Tower Control

Table 3.2.3 VHF Air-Ground Communication System Equipment Configuration

No.	Equipment	OSH
		TWR
1	VHF Air-Ground Transceiver (118.3 main, stand-by and 121.5)	3
2	VHF Antenna	3

3.3 Data Distribution System by Land Line (VPN L2)

KAN will improve Data Distribution System for ATC operation between Bishkek, Osh and Issyk-kul. Outline of system diagram is as shown below:

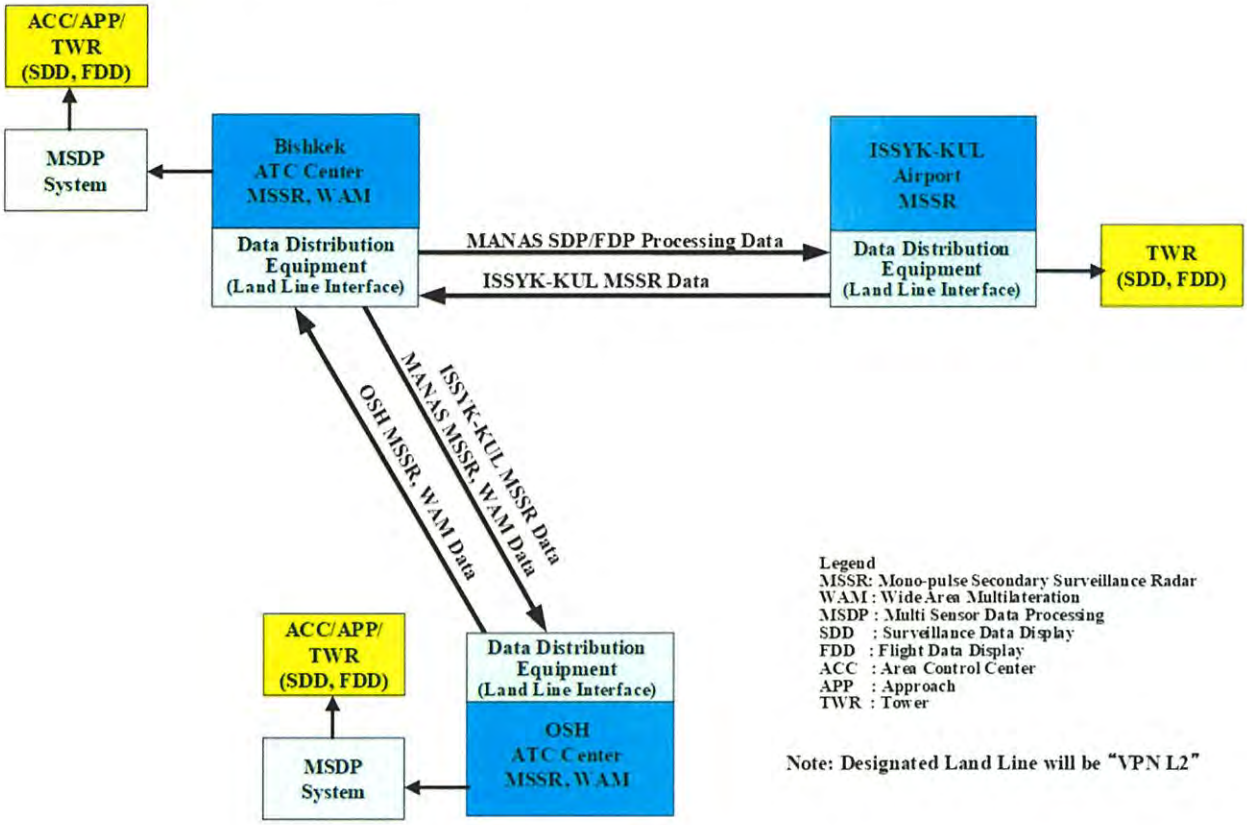


Figure 3.3.1 Data Distribution System by Land Line (VPN L2)

4. Clarification of Collected Data and Information

The Survey Team requested further collaboration with KAN for clarification of data and information collected as well as for collection of additional data and information if such necessity arises. The Kyrgyz side accepted the request.

5. Confidentiality

Since this Technical Memorandum includes outline specifications of the equipment to be provided by the Project, both Japanese and Kyrgyz sides confirmed that this Technical Memorandum should be treated as confidential, taking into consideration a fair and transparent competition for the supply of the equipment.