

Environmental and Social Monitoring Report

Document Stage: Draft Final
Project Number: 44239-014
Grant Number: 0484-BHU
November 2021

Bhutan: Air Transport Connectivity Enhancement Project - Additional Financing

Prepared by Department of Air Transport, Ministry of Information and Communications for the Royal Government of Bhutan for the Asian Development Bank.

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CURRENCY EQUIVALENTS

(As of December 16, 2019)

Currency unit	–	Bhutanese Ngultrum
Nu 1.00	=	\$ 0.014
\$1.00	=	Nu 71.09

ABBREVIATIONS

ADB	-	Asian Development Bank
AIDS	-	Acquired Immunodeficiency Syndrome
ATCEP	-	Air Transport Connectivity Enhancement Project
ATCEP-AF	-	Air Transport Connectivity Enhancement Project Additional Financing
BBSC	-	Bhutan Broadcasting Service Corporation
BDA	-	Bumthang Domestic Airport
CSC	-	Construction Supervision Consultant
DOAT	-	Department of Air Transport
DOL	-	Department of Livestock
EA	-	Executing Agency
EMP	-	Environmental Management Plan
GA	-	Grant Agreement
GDA	-	Gelephu Domestic Airport
HIV	-	Human Immunodeficiency Virus
IA	-	Implementing Agency
ICAO	-	International Civil Aviation Organization
IEE	-	Initial Environmental Examination
LEAPP	-	Leading Edge Aviation Planning Professionals
MOAF	-	Ministry of Agriculture and Forests
MOIC	-	Ministry of Information and Communications
MOF	-	Ministry of Finance
NEC	-	National Environment Commission
OHS	-	Occupational Health and Safety
PAM	-	Project Administration Manual
PC	-	Project Coordinator
PIU	-	Project Implementation Unit
RGOB	-	Royal Government of Bhutan
RP	-	Resettlement Plan
SPS	-	Safeguard Policy Statement
YDA	-	Yonphula Domestic Airport

GLOSSARY OF TERMS

Chorten	-	Stupa
Dzongkhag	-	District
Gewog	-	Block (subdivision of district)
Lhakhang	-	Temple

NOTE

In this report, "\$" refers to US dollars.

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EXECUTIVE SUMMARY

1. This document reports on the environmental and social safeguards compliance of the Air Transport Connectivity Enhancement Project Additional Financing (ATCEP-AF) - hereafter referred to as a "Project". It covers the pre-construction, construction and operational phases. The project was financed through an ADB grant (No.0484-BHU) of US\$ 4.0 million, approved on 29 September 2016. It aimed at improving the infrastructure of the Bumthang, Gelephu, and Yonphula domestic airports, as well as the Paro international airport. It will also further strengthen safety and security and enhance the capacity of these airports. The overall air connectivity enhancement projects support the government's plan to develop a safe, reliable, and efficient air transport system connecting urban and rural centres. Thus, helping overcome the limitations of road transport, improve accessibility, and promote tourism and high-value agriculture in less-developed regions of the country. The financial savings from the project was used for the installation of an automated parking management system at the Paro International Airport (PIA). The parking management system has solved the parking crisis and generated revenue for the PIA.

2. The Ministry of Information and Communication (MOIC) is the Executing Agency (EA) while the Department of Air Transport (DoAT) is the Implementing Agency (IA) for the Project. The Project is supervised by the National Construction Supervision Consultants (CSC) - Gyaltsen Consultancy firm based in Thimphu.

3. Overall, environmental and social safeguards mitigation measures have been implemented in compliance with ADB's Safeguards Policy Statement 2009, the grant covenants, and the proposed mitigation measures prescribed in the Environmental Management Plan (EMP and contract specifications). The project would be 100% complaint if not for the one issue that remained unresolved. The overall issues are detailed out in the following sections.

A. RGOB Financed Airports Construction Project

1. Bumthang Domestic Airport (BDA)

4. Relocation of Brown Swiss Farm: DoAT was supposed to carry out the complete takeover of Brown Swiss Farm from the Department of Livestock (DOL) by early 2019. However, the DOL requested the DoAT for a time extension of one more year since the new farm at Lebi is not yet ready for relocation. As per the latest communication between the DoAT and Department of Livestock or Brown Swiss farm management, they agreed to complete handover by June 2022.

5. Bumthang Dzongkhag Administration has constructed a motorable bridge with pedestrian walkways on both sides as a mitigation measure against the demolition of the pedestrian suspension bridge between Batpalathang and Dekiling town. Cash compensation for the acquisition of 0.10-acre land has been paid and the issue is now resolved.

2. Gelephu and Yonphula Domestic Airport

6. There are no pending environmental and social safeguard issues for Gelephu and Yonphula airports. The land acquisitions and the subsequent compensation and land substitutions to the affected persons were completed before the implementation of the ADB financed ATCEP. The land acquisition was not undertaken in anticipation of ADB financing.

B. Air Transport Connectivity Enhancement Project (ATCEP) Financing

1. Bumthang and Gelephu Domestic Airports

7. Land acquisition: No private land and structures were acquired as the construction activities of Bumthang airport were carried out within the airport boundary. For the construction of the new terminal building at Gelephu airport, 0.67 acres of private land had to be acquired from one affected person. The person was provided land substitution as per the resettlement plan.

2. Yonphula Domestic Airport

8. All pending issues such as the construction of footpath to the stupa, dredging or rehabilitation of pond and the construction of gabion walls for slope protection near the pond at Yonphula domestic airport have been completed.

C. Air Transport Connectivity Enhancement Project (ATCEP) Additional Financing

1. Bumthang and Yonphula Domestic Airports and PIA

9. No issues related with the implementation of ATCEP-AF for Bumthang and Yonphula domestic airports as well as Paro international airport.

2. Gelephu Domestic Airport

10. The contractor has complied with the EMP, by cleaning and removing all construction waste from the construction site to the designated landfill in Bhur, Gelephu. The finished site can be seen in a photograph provided under Annex 7, figure No.16.

11. Unanticipated issue: an immediate mitigation measure to repair the damaged fence is being carried out. In addition, ADB organised a knowledge-sharing webinar in December 2021 with the help of an Asian elephant expert from IUCN. at the orientation webinar was organized to sensitize the Gelephu airport staff to reduce the risks of Human-Elephant Conflict (HEC). One of the recommendations of the webinar was the installation of elephant awareness signboards along the Gelephu-Sarpang highway. The long-term measure of providing an elephant corridor requires extensive cooperation and coordination among various stakeholders, which is beyond the scope of the project.

D. Conclusion

12. The project is almost fully compliant with ADB safeguard regulations except for the issues of the handover of the Brown Swiss farm to the Bumthang domestic airport and the installation of HEC awareness signboards at Gelephu. The complete handover of the Brown Swiss farm structures is to be done in June 2022, while the installation of signboards is planned for early 2022.

I. Introduction

A. Purpose of the Report

1. In June 2012, the Asian Development Bank (ADB) financed the Air Transport Connectivity Enhancement Project (ATCEP) through a grant (No.0295-BHU) worth US\$ 6.92 million. Subsequently, with the request from the RGOB, additional finance of US\$ 4.00 million was provided through a second grant project -Grant 0484-BHU: Air Transport Connectivity and Enhancement Project - Additional Financing (which is hereafter referred to as the project). It will improve safety, security, and capacity at Bumthang, Gelephu, and Yonphula domestic airports by providing necessary infrastructures. Further, it will improve passenger convenience in terms of the level of service at these airports. A portion of the savings from grant proceeds has been used to develop an automated parking management system at the Paro International Airport (PIA). Details on the investments under the Project is provided in section 1.5. Overall, the project is in line with the "Transport 2040 Integrated Strategic Vision¹," which aims to provide the entire population with a safe, reliable, affordable, convenient, cost-effective and environment-friendly transport system in support of strategies for the socio-economic development of the country.

2. The objective of this environmental and social safeguards compliance report is to assess compliance of the Project with the Asian Development Bank's (ADB) Safeguards Policy Statement (SPS), 2009, the grant covenants, and the proposed mitigation measures prescribed in the Environmental Management Plan (EMP and contract specifications). This report is prepared annually and disclosed on ADB's website as required under the loan agreement.

3. The assessment during the project preparation has revealed that the project would not cause significant environmental impacts. Hence, it was placed under environmental category B. The Initial Environmental Examination (IEE) and the Environmental Management Plan (EMP) were prepared as part of the project preparation and disclosed on ADB website in 2016.

4. The project was categorized as "C" for Involuntary Resettlement impacts, as no impacts were envisaged. Similarly, the project was categorized as "C" for Indigenous Peoples' impacts as no impacts on indigenous peoples was envisaged.

5. The report: (i) evaluates the progress of the implementation of the environmental management plan (EMP), (ii) evaluates the progress of the implementation of the resettlement plan and other social impacts and mitigation measures; (iii) detects non-compliances and recommends corrective actions, and (iv) identifies unanticipated impacts and recommends necessary mitigation measures.

B. Scope and Methodology

6. This report was prepared based on field investigations and observations and the review of the following documents:

- The grant agreement signed between RGOB and ADB
- The project administration manual (PAM),
- The Contract Agreements signed between the Contractors and the DoAT
- The Safeguard Policy Statement (SPS) 2009

¹ <https://www.adb.org/sites/default/files/publication/30268/bhutan-transport-2040.pdf>

- IEE report for ATCEP
- Quarterly Progress Reports of the Project implementation
- Annual monitoring reports on Social and environmental safeguards for Air Transport Enhancement Connectivity Project concerning the improvement of Bumthang, Yonphula and Gelephu domestic airports, and
- Consultation with affected individuals, communities and key stakeholders.

C. Project Description

7. The Project is being implemented to improve infrastructure at the three domestic airports. The project components include - (i) construction of a passenger terminal building at Bumthang Domestic Airport (BDA), (ii) construction of aviation security staff quarters at Gelephu Domestic Airport (GDA) and (iii) installation of a low-level safety barrier around the perimeter of the apron at Yonphula Domestic Airport (YDA). In addition, a portion of the savings from grant proceeds has been used for the installation of an automated parking management system at PIA.

8. The existing passenger terminal at BDA has limited capacity, which is unable to handle increasing passenger numbers flying in and out of the airport. Hence, construction of a new terminal building with modern facilities in line with the International Civil Aviation Organization (ICAO) regulations has been started. In addition, an extension of apron has been proposed as the new terminal lies about some 50-60m away.

9. GDA, being close to the international boundary, is managed by the Royal Bhutan Army (RBA) to secure the airport perimeter. Lack of accommodation facilities within the airport boundaries caused the security personnel to travel from the RBA barracks at Lodarai, some 8 km away from the airport on a regular basis. Therefore, under this project, DoAT constructed living quarters for the security personnel to have permanent and round the clock presence to secure the airport.

10. At YDA, the aircraft apron is elevated by one meter from the ground, posing a safety risk for aircraft in operation and passengers disembarking and boarding the plane. Initially, the construction of a low-level safety barrier was proposed. However, instead, the airside fence was constructed as an alternative.

11. PIA has seen a substantial increase in air travel passengers over the years with a simultaneous increase in the number of vehicles ferrying passengers in and out of the airport. The installation of an automated parking management system was proposed and subsequently installed. It is helping the PIA to manage the limited parking space and generate revenue.

12. Overall, the project supports the government's plan to develop a safe, reliable, and efficient air transport system that connects urban and rural centers to help overcome the current limitations of road transport and improve accessibility to comparatively remotely located parts of the country. The project will also contribute to the development of the tourism industry, stimulate private sector development, and generate employment opportunities for the poor. The immediate outcome will be improved safety, security, and capacity at three domestic airports in Bumthang, Gelephu, and Yonphula and eased parking problems at the PIA.

13. The civil works for the project started in October 2017 and planned for completion by May 2019. But due to the inclement winter weather in Bumthang resulting in a shorter

construction period, the project got delayed, and the project completion deadline got postponed to May 2020. It was further extended by more than a year to December 2021, considering the lost working duration due to the COVID-19 restriction imposed by the government. The subproject at Gelephu domestic airport, the construction of security quarters for the Royal Bhutan Army personnel was completed within the deadline of April 2019. The additional work under the project such as installation of the parking management system at the PIA was completed in October 2021.

Table 1: List of RGOB and ADB financed Activities of three domestic airports

Domestic Airport	Activities Carried out by RGOB	Activities under ATCEP G0295-BHU	Activities under ATCEP – AF G0484-BHU
Bumthang	1. Runway construction 2. Passenger Terminal Building Construction	1. Install perimeter fence 2. Provide new access road 3. Construct apron and taxiway 4. Construct car park	Construction of New Passenger terminal building, security fence
Yonphula	1. Existing Runway Improvement 2. Passenger Terminal Building construction	1. Remove hills beside the runway 2. Reshaping runway 3. Provide asphalt on the runway 4. Provide access road 5. Provide a new car park 6. Extend apron for ATR craft 7. Remove and reconstruct perimeter fence 8. Relocate stupa	Construction of low safety barrier, gabion wall, dredging of pond, footpath
Gelephu	1. Runway construction 2. Passenger Terminal Building Construction	1. Install perimeter fence 2. Construct drainage system 3. Construct flood protection system 4. Construct new terminal building	Construction of quarters for RBA personnel
Paro International Airport	None	None	Installation of Parking Management System

D. Project Implementation and Arrangement

14. The Ministry of Information and Communication (MOIC) under the RGOB is the executing agency (EA) responsible for overall coordination for project implementation, and interagency coordination.

15. The Department of Air Transport (DoAT) is the implementing agency (IA). The project is implemented through the Project Implementation Unit (PIU) headed by the Project Director who is in turn supported by the respective Project Coordinators (PC) of sub-projects of Bumthang, Yonphula and Gelephu domestic airports. The Project Coordinators also act as the environmental/social focal persons to monitor the implementation of the environmental and social safeguards. The PIU is responsible for:

- day-to-day project management,
- recruitment of design and supervision consultants,
- Procurement of works

- Project accounts management – maintain second-generation imprest account, preparing withdrawal applications and supporting documentation, including procedures for State-of-Expenditure, and submitting through Department of Public Accounts, Ministry of Finance.
- Project progress reports

Figure 1: Location of Sub-projects in Bhutan



16. The Project hired a Construction Supervision Consultant (CSC)- Gyaltsen Consultancy for construction supervision and monitoring of the work. The CSC mobilized environmental and social safeguard specialists to look after implementation and monitoring of the safeguard's measures associated with the Project and as suggested by the approved environmental management plan.

17. The Department of Macroeconomic Affairs (DMA), Ministry of Finance (MOF) were responsible for the preparation of project progress reports, establishing and maintaining first-generation imprest account, and forwarding DoAT's withdrawal applications and supporting documentation to ADB establish second-generation imprest account.

18. ADB monitors and reviews the overall implementation of the project in consultation with the EA/PIU. It conducts missions to monitor progress and social and environmental safeguards of the project.

E. Project Implementation Status

19. The construction works for the new passenger terminal building of Bumthang domestic airport started in September 2017. At the end of December 2021, the project could complete only about 88% of the physical work. The delay was caused due to the harsh winter weather conditions and the COVID-19 restrictions imposed by RGOB. For GDA, the construction of security quarters that commenced on October 16, 2017 was completed in April 2019. The installation of an

automated parking management system at PIA was completed in October 2021. Refer to Table 2 and Figure 2 for project work progress details.

Table 2: Project Implementation Status (physical works)

Airports	Description of Activities	Contract Award Date	Implementation Status as of December 2021	
			Target	Achievement
Bumthang	Construction of New Passenger terminal building	5 August 2017	100%	88%
Bumthang	Extension of security fence	28 September 2020	100%	100%
Gelephu	Construction of quarters for RBA security personnel	29 September 2017	100%	100% completed
Yonphula	Airside fence erection	Not yet commenced	100%	100%
	Construction of gabion walls, dredging works of pond and construction of footpath (Safeguards works)	September 2020	100%	100%
Paro	Installation of Automated Parking Management System	25 June , 2021	100%	100%

Figure 2: Bumthang New Terminal Building Work progresses as of December 2021



II. Summary of Environmental Monitoring

A. Summary of Inspection Activities

20. The airport managers of the three domestic airports of Bumthang, Yonphula and Gelephu have been designated as the Project Coordinators (PCs). The PCs are the environmental safeguards focal persons at the site level, and responsible for monitoring the implementation of EMP by the contractor. They were supported by the environment specialist² of the CSC.

21. EMP implementation records in the form of monthly or quarterly checklists were maintained by the contractor and cross-checked by the environment safeguards focal person at the site level. These are then reviewed by the environment specialist of the CSC and serves as one of the bases for the annual monitoring report. This report is then submitted to the overall environment safeguards coordinator under DoAT for submission to ADB for disclosure on its website.

B. Noise Monitoring

22. The noise monitoring was done as part of the IEE study of the ATCEP-AF Project. The pre-construction noise level survey results are provided in following Table 3 along with Bhutan's national noise level standards- Environmental Discharge Standard 2010 published by the National Environmental Commission (NEC), RGOB:

Table 3: Result of Noise Level Monitoring (dBA) of three domestic airports of ATCEP Financing

Airport	Pre-Construction		Noise Level Limit, Environment Standards 2010, NEC	
	Ld (Day)	Ln (Night)	Ld (Day)	Ln (Night)
Bumthang	71.55 dBA	40.11 dBA	75 dBA	65 dBA
Yonphula	61.46 dBA	32.25 dBA	65 dBA	55 dBA
Gelephu	52.49 dBA	33.42 dBA	55 dBA	45 dBA

Source: IEE Report 2012 and Ambient Noise Level Monitoring Survey December 2015

Note: NA – Not Available; and TCO-To be Carried Out after the completion of construction activities, if required.

23. Noise levels recorded for all the three airports during the pre-construction stage under ATCEP-AF financing were well within the national limits of a mixed area.

24. Subsequent noise monitoring activities for the subprojects were not conducted since the scope of the project work was drastically reduced to mere construction of a terminal building in Bumthang, construction of low safety barriers in Yonphula, and the construction of security quarters in Gelephu. These activities generate negligible noise.

C. Air Quality

² CSC has recruited new Environmental Specialist as former expert has resigned voluntarily.

25. The ambient status of five major air pollutants viz. Total Suspended Particulate Matter (TSPM), PM10, Sulphur Dioxide (SO₂), Oxides of Nitrogen (NO_x) and Carbon Monoxide (CO) representing air pollution level has been assessed by monitoring air quality at Bumthang, Yonphula and Gelephu airports as part of the IEE studies for the Project (Table 4).

Table 4: Ambient Air Quality Monitoring Results

Airport	Monitoring Stage	Parameter (measured in µg/m ³)				
		TSPM	PM10	SO _x	NO _x	CO
Bumthang	Pre-Construction	NA	76.83	BDL	BDL	BDL
Yonphulha	Pre-Construction	NA	26.75	BDL	BDL	BDL
Gelephu	Pre-Construction	NA	32.5	BDL	BDL	BDL

Source: IEE Report, February 2016

Note: NA = Not Available; BDL = Below detectable limits, TCO = To be Carried Out after the completion of construction activities if required.

Table 5: NEC's Ambient Air Quality Standards (Maximum Permissible Limits in µg/m³)

Parameter	Industrial Area	Mixed Area*	Sensitive Area**
Total Suspended Particulate Matter (TSPM)			
24 Hour Average	500	200	100
Yearly Average	360	140	70
Respirable Particulate Matter (PM 10)			
24 Hour Average	200	100	75
Yearly Average			
Sulfur Dioxide			
24 Hour Average	120	80	30
Yearly Average			
Nitrogen Oxides			
24 Hour Average	120	80	30
Yearly Average			
Carbon Monoxide			
8 Hour Average	5000	2000	1000
1-hour Average			

* **Mixed Area** means an area where residential and commercial activities take place,

** **Sensitive Area** means an area where sensitive targets are in place like hospitals, schools, sensitive ecosystems.

26. The pre-construction air quality monitoring result shows that the air quality particularly the TSPM and PM10 within the project areas of Bumthang, Yonphula and Gelephu are within the acceptable limits specified in the Environmental Discharge Standard, 2010 by the National Environment Commission (Refer to Table 5 for Environmental Discharge Standards of Bhutan). Other pollutants such as SO₂, NO_x, and CO were found to be below detectable limits.

27. Subsequent ambient quality monitoring activities for the subprojects were not conducted since the scope of the project work was drastically reduced to mere construction of a terminal building in Bumthang, construction of low safety barriers in Yonphula, and the construction of security quarters in Gelephu. The air pollutants generated by the project activities are expected to be well within the acceptable limits.

D. Water Quality

28. Water samples were collected from Chamkhar Chhu/River close to Bumthang domestic airport and the small pond northwest end of the runway at Yonphula airport on December 16-30 to check the quality of the water as part of the Initial Environmental Examination studies for ATCEP AF in February 2016. The Chamkhar Chhu/River run is close to Bumthang domestic airport, the untreated wastewater from the airport improvement activities may pollute the river water. Similarly, the large portion of the runoff from the runway of Yonphula domestic airport directly discharges into the small pond on the northwest end of the airport. It is imperative for the project to capture water quality baseline data so the changes in the water qualities in the respective water bodies could be monitored in the future. The baseline water quality analysis results are compared with Environmental Discharge Standard 2010, NEC. The water test results are summarized and presented in Table 6.

29. Chamkhar Chhu River Water: In general, Chamkhar Chhu/River water can be considered fairly good as per the classification provided in the Environmental Discharge Standards, NEC 2010, except that it has a high content of ammonia (1.19mg/l) which is an indication of water pollution from wastewater. The source of wastewater could be from the nearby Brown Swiss Cattle farm and leakage of household sewage water. The ammonia content of the water may diminish with the relocation of the cattle farm.

Table 6: Results of Water Quality Analysis

Parameters	Unit	Standard 2010, NEC (A)	Water Sample 1 (Chamkhar Chhu)	Water Sample 2 (Yonphula Pond)
			Preconstruction	Preconstruction
Temperature	°C	-	3.8	5
pH		6.5-8.5	7.2	7.5
Turbidity	FAU	-	4	245
Color	CU	5	3	>1000
Smell		UNO	UNO	UNO
Copper	mg/l	0.05	0.08	0.25
Chlorine	mg/l	50	0	0.06
Chromium	mg/l	0.05	0	0
Iron	mg/l	-	0.08	>6.0
Phosphate	mg/l	0.5	0.05	0.45
Ammonia Nitrogen	mg/l	0.05	1.19	0.72
Silica	mg/l	-	>4.0	2.82
Nitrate NO3	mg/l	10	0.12	0
Fluoride	mg/l	1	0	0
Sulphate	mg/l	25	10	6
Total Hardness	mg/l	-	58	0
Total Alkalinity	mg/l	-	-	-

Source: IEE Report, February 2016 (Note: NA – Not Available; UNO - Unobjectionable and TCO – To be carried out).

Figure 3: Pond on the northwest of Yonphula airport runway in August 2011 before the implementation of ATCEP



Figure 4: Pond on the northwest of Yonphula airport runway in December 2015 (partial siltation seen after the start of ATCEP)



Figure 5: Pond on the northwest of Yonphula airport runway as of December 2018



Figure 6: Gabion walls constructed for slope stabilizations and to prevent silt from entering the pond (Photo: Kuensel Online 6th May 2021)



Figure 7: Restored Pond at Yonphula Airport, DoAT October 2021)



30. Pond water: Water quality sampled and tested during the pre-construction stage of ATCEP AF was poor due to the ongoing works of ATCEP – airport improvement works. The turbidity level of water was high to almost 245FAU. The ammonia content (0.72mg/l) in the water indicates water pollution from wastewater generated from the construction area of ATCEP. There are no human settlements within the immediate vicinity other than the temporary construction camps for the airport construction works. Pond restoration works by dredging the silt from the pond have been completed. Figures 3, 4, 5 6, and 7 illustrate conditions of the pond during pre-construction of ATCEP, Construction stage and the Post construction of ATCEP or Pre-construction stage of ATCEP-AF.

31. Water quality monitoring during the construction and post-construction periods of the project was deemed unnecessary as the scope of the works is small and their impacts on the water resources minimal.

E. Unanticipated Wildlife Issue: Human-Elephant Conflict

32. Deforestation and habitat loss both within Bhutan and in the neighboring Indian states have led to increased human-elephant conflicts (HEC) all along the southern foothills of Bhutan, which encompasses the Gelephu and Sarpang regions as well. ADB study under the Gelephu airport expansion project revealed that about 60-70 elephants in several groups have

entered the Gelephu airport and its surrounding areas from June to July 2021 alone. Elephants have damaged the perimeter fenceings as well as the boundary walls, endangering the safety and lives of the airport workers and the RBA security personnel.

33. To minimize the risks of HEC - an immediate mitigation measure of repairing the damaged fence was carried out. In addition, ADB organised a knowledge-sharing webinar in December 2021 with the help of an Asian elephant expert from IUCN. That was a measure aimed at sensitizing the Gelephu airport staff on safety from elephant encounter in order to reduce the risks of Human elephant conflict (HEC). One of the recommendations of the webinar was the installation of elephant awareness signboards along the Gelephu-Sarpang highway for sensitizing the local community. The long-term measure of providing an elephant corridor requires extensive cooperation and coordination among various stakeholders, which is beyond the scope of the project.

Figure 8: Herd of elephants crossing Gelephu-Thimphu Highway close to the airport



Source: <https://www.facebook.com/bhutantimes1/photos/pcb.1669447463241095/166944737657443>

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Figure 9: Mother elephant and calf inside the airport boundary



Source: ADB, July 2021

III. SUMMARY OF SOCIAL AND RESETTLEMENT MONITORING

A. Bumthang Domestic Airport Projects

1. Loss of Land and Structures

a. Under RGOB's Financed Airport Project

34. **Impact on structures** — The construction of Bumthang airport took place within the Brown Swiss Farm area without requiring the demolition of any of its structures. The structures like office buildings, cattle sheds, feed stores, seed stores, silos and staff quarters belonging to Brown Swiss Farm and the National Feed and Fodder Development Program under the Department of Livestock were partially handed over to the Department of Air Transport. The remaining ones are planned to be taken over in a phased manner to allow gradual relocation and redevelopment of farm activities at the new farm site. The relocation of the farm to the new site is yet to be complete as a new farm at Lebi is still under development. It was delayed because of the COVID-19 hindrances. The latest communication between the Bumthang airport manager and the farm manager indicates the final handing-taking over of the farm structures will be done by June 2022. (Refer Annex 8 – Correspondences between the Secretaries of MOIC and MOFA in 2018, and letter exchanged between Bumthang airport manager and farm manager in Sept 2021 & Oct. 2021). Figure 8 shows the new Brown Swiss Farm location.

Figure 10: Location of New Brown Swiss Farm Location at Lebi, Bumthang



Source: Google earth imagery February 2016 and Field investigation December 2015.

b. Under ATCEP Financing

35. **Land Acquisition:** There were no land acquisitions for Bumthang under ATCEP.

36. **Impacts on Structures:** There was no impact on structures on Bumthang under ATCEP financing.

c. Under ATCEP Additional Financing

37. **Land Acquisition:** There were no land acquisitions for Bumthang under ATCEP-AF. The construction of the new terminal building is being built on the DoAT owned land.

38. **Impacts on Structures:** There will be no impact on structures in Bumthang under ATCEP-AF.

2. Protection and Relocation of Community, Religious and Heritage Structures

a. RGOB's Financed Airport Project

39. **Demolition of Pedestrian Suspension Bridge at Batpalathang:** For the safe operation of the aircraft, the pedestrian suspension bridge close to the runway, which connected Batpalathang to Wangdicholing settlements was demolished. To mitigate the disruption of pedestrian movements, the Bumthang dzongkhag administration has built a replacement – a motorable bridge with pedestrian walkways on both sides to the north of the airport over Chamkhar Chhu. The construction started in 2017 and was completed in early 2019.

Figure 11: Pedestrian Suspension Bridge demolished under RGOB airport component 2011



Figure 12: Motorable bridge with 2 sides pedestrian walkway built over Chamkhar Chhu, 2019.



b. ATCEP Financing

40. There were no impacts on the community, heritage and religious structures under ATCEP.

c. ATCEP Additional Financing

41. There were no impacts on the community, heritage and religious structures under ATCEP- AF.

3. Occupational Health and Safety

a. RGOB's Financed Airport Project

42. Government carried out the monitoring .

b. ATCEP Financing

43. The laborers were provided fair compensation or wages for the work they have carried out. In addition, the project provided free health care services for all construction workers. For minor injuries, the contractor had first aid provisions. For emergencies and serious medical conditions, the laborer had free access to Bumthang district hospital.

c. ATCEP Additional Financing

44. The project employed around 22 national and 13 skilled non-national workers for new terminal development works in the construction period from January to September 2021. The construction workers are supplied with personal protection equipment (PPE) such as helmets, safety goggles, boots, earplugs etc., for the safety of the workers. However, the PPE usage amongst the workers remains partial. The minor injuries are treated at the work sites using the first aid kit. When a serious medical condition arises, the patient is referred to the district hospital at Bumthang. No serious accidents have been recorded during the project implementation period so far.

4. HIV/AIDS and Trafficking Prevention Program

a. RGOB's Financed Airport Project

45. No monitoring was conducted at the time of RGOB financed project work.

b. ATCEP Financing

46. The awareness programs on HIV/AIDS and trafficking prevention programs were carried out by the Project.

c. ATCEP Additional Financing

47. The awareness programs on HIV/AIDS and trafficking prevention programs were carried out by the Project.

5. Labor and Employment under ATCEP

a. RGOB's Financed Airport Project

48. No monitoring was conducted.

b. ATCEP Financing

49. There were no reports of labor abuses, particularly related to unfair payments, discrimination and forced or child labor under airport improvement works of Bumthang.

c. ATCEP Additional Financing

50. There were no reports of labor abuses, particularly related to unfair payments, discrimination and forced or child labor under airport improvement works of Bumthang.

Figure 13: Construction workers' camp at Bumthang Domestic Airport construction site, September 2021 (Source: DOAT)



Figure 14: First AID Box at the construction site for OHS, September 2021(source: DOAT)



Figure 15: Hand Wash facility for COVID-19 Safety protocol, September 2021(source: DOAT)



B. Yonphula Domestic Airport Projects

1. Loss of Land and Structures

a. RGOB's Financed Airport Project

51. **Land Acquisition:** No private agricultural land has been acquired in Yonphula.
52. **Impact on Structure:** The RGOB's domestic airport improvement works at Yonphula did not require the demolition or relocation of any structures.

b. ATCEP Financing

53. Land Acquisition: There were no land acquisition and resettlement issues for Yonphula airport as the planned project components were implemented within airport property boundaries.

54. Impact on Structure: There were no impacts on structures under the ATCEP financing besides for impact on the stupa.

c. ATCEP Additional Financing

55. Land Acquisition: There were no land acquisition and resettlement issues for Yonphula airports as the planned Project components were implemented within airport property boundaries.

56. Impact on Structure: There were no impacts on structures under the ATCEP-AF.

2. Protection and Relocation of Community, Religious and Heritage Structures

a. RGOB's Financed Airport Project

57. No impact was recorded.

b. ATCEP Financing

58. Footpath: The construction of a footpath to the stupa started in October 2020 and was completed by February 2021.

c. ATCEP Additional Financing

59. There were no impacts on the community, heritage and religious structures under ATCEP AF.

3. Occupational Health and Safety

a. RGOB's Financed Airport Project

60. No monitoring was conducted at the time of RGOB financed project work of Yonphula being carried out.

b. ATCEP Financing

61. The laborer were provided fair compensation or wages for the work they have carried out. In addition, the project provided free health care services for all construction workers. For minor injuries, the contractor had first aid provisions. For emergencies and serious medical conditions, the laborer had free access to Trashigang district hospital.

c. ATCEP Additional Financing

62. The rehabilitation or dredging of the silted pond was done using the excavator, thus requiring no involvement of laborer. However, the construction of footpath and gabion walls were carried out using the local laborer as the import of laborer were restricted due to the COVID-19 pandemic. There are no reports of accidents or any serious health issues during the construction.

4. HIV/AIDS and Trafficking Prevention Program

a. RGOB's Financed Airport Project

63. No monitoring was conducted at the time of RGOB financed project work.

b. ATCEP Financing

64. The awareness programs on HIV/AIDS and trafficking prevention programs were carried out by the Project.

c. ATCEP Additional Financing

65. HIV/AIDS awareness was carried out.

5. Labour and Employment under ATCEP

a. RGOB's Financed Airport Project

66. No monitoring was conducted.

b. ATCEP Financing

67. Issues of child labor and labor conditions and their wellbeing were regularly monitored by the Regional Labour Officer of Trashigang, the Ministry of Labour and Human Resources. There were no reports of labor abuses, particularly related to unfair payments, discrimination and forced or child labor under airport improvement works of Yonphula.

c. ATCEP Additional Financing

68. No child labor was involved.

C. Gelephu Domestic Airport Projects

1. Loss of Land and Structures

a. RGOB's Financed Airport Project

69. **Land Acquisition:** All issues from RGOB's finance project were resolved.

b. ATCEP Financing

70. **Land Acquisition:** All issues resolved.

71. **Impact on Structure:** There was no impact on structures under ATCEP financing.

c. ATCEP Additional Financing

72. **Land Acquisition:** There were no land acquisition and resettlement issues for Gelephu airport as the planned Project components were implemented within the airport property boundaries.

73. **Impact on Structure:** There were no impacts on structures.

2. Protection and Relocation of Community, Religious and Heritage Structures

a. RGOB's Financed Airport Project

74. There were no impacts to any of the religious, historical, and cultural assets under the RGOB's funded Gelephu airport construction project.

b. ATCEP Financing

75. No impacts.

c. ATCEP Additional Financing

76. No impacts.

3. Occupational Health and Safety

a. RGOB's Financed Airport Project

77. No records are available.

b. ATCEP Financing

78. The laborers were provided fair compensation or wages for the work they have carried out. In addition, the project provided free health care services for all construction workers. For minor injuries, the contractor had first aid provisions. For emergencies and serious medical conditions, the laborer had free access to Gelephu regional referral hospital.

c. ATCEP Additional Financing

79. The construction of security quarters had around 50 personnel working at the site. It was observed the personnel protection equipment (PPE) such as helmets were provided and are being used by the laborers.

4. HIV/AIDS and Trafficking Prevention Program

a. RGOB's Financed Airport Project

80. No monitoring was conducted at the time of RGOB financed project work.

b. ATCEP Financing

81. The awareness programs on HIV/AIDS and trafficking prevention programs were carried out by the Project.

c. ATCEP Additional Financing

82. The awareness programs on HIV/AIDS and trafficking prevention programs were carried out by the Project.

5. Labour and Employment under ATCEP

a. RGOB's Financed Airport Project

83. No monitoring was conducted.

b. ATCEP Financing

84. Issues of child labor and labor conditions and their wellbeing were regularly monitored by the Regional Labor Officer of Gelephu, the Ministry of Labour and Human Resources. There were no reports of labor abuses, particularly related to unfair payments, discrimination and forced or child labor under airport improvement works of Gelephu.

c. ATCEP Additional Financing

85. There were no reports of labor abuses, particularly related to unfair payments, discrimination and forced or child labor under the ATCEP-AF project.

D. Paro International Airport (PIA)

1. Loss of Land and Structures

a. RGOB's Financed Airport Project

86. **Land Acquisition:** None.

d. ATCEP Financing

87. **Land Acquisition:** None as there was no component under ATCEP.

88. **Impact on Structure:** None as there was no component under ATCEP.

e. ATCEP Additional Financing

89. **Land Acquisition:** None as the sub-project was implemented within the airport owned land.

90. **Impact on Structure:** None.

2. Protection and Relocation of Community, Religious and Heritage Structures

a. RGOB's Financed Airport Project

91. None as a project was implemented only under ATCEP-AF.

f. ATCEP Financing

92. None as a project was implemented only under ATCEP-AF.

g. ATCEP Additional Financing

93. No impacts.

3. Occupational Health and Safety

a. RGOB's Financed Airport Project

94. None as a project was implemented only under ATCEP-AF.

h. ATCEP Financing

95. None as a project was implemented only under ATCEP-AF.

i. ATCEP Additional Financing

96. The DoAT hired three skilled workers for the installation of a parking management system at PIA. Hence, there was no major issue related to occupational health and safety. All health and safety protocols under the RGOB's occupational health and safety regulations have been observed.

4. HIV/AIDS and Trafficking Prevention Program

a. RGOB's Financed Airport Project

97. None as the project is to be implemented only under ATCEP-AF.

j. ATCEP Financing

98. None as the project was implemented only under ATCEP-AF.

k. ATCEP Additional Financing

99. The installation of an automated parking management system was short-term work involving only three technicians. The short-term nature of work did not warrant the need for HIV/AIDS awareness program. Hence, DOAT did not carry out the awareness program.

5. Labour and Employment under ATCEP

a. RGOB's Financed Airport Project

100. No monitoring was conducted.

l. ATCEP Financing

101. None as the project was implemented only under ATCEP-AF.

m. ATCEP Additional Financing

102. The issue of labor abuses, unfair payment and engagement of child labor was strictly monitored and complied with.

Table 7: Summary on impacts on private land, structures and community properties

Projects/ Airport Location	Land	Structure	Community Properties	Pending Action	STATUS as of Dec 2021
Bumthang Domestic Airport Projects					
RGBOB	No issue	Structures for Brown Swiss Farm and National Feed and Fodder Development Programme under Department of Livestock	Pedestrian Suspension Bridge at Batpalathang destroyed and not rebuilt – cannot be rebuilt by Dzongkhag until DoAT finalizes airport perimeters	The complete Brown Swiss Farm relocation will take June 2022. DoAT to expedite finalization of airport perimeter and support reconstruction of pedestrian/vehicular bridge	Time extension provided by the DoAT. Motorable with pedestrian walkway built-in end of 2017 and completed January 2019.
ATCEP	Issue of erosion of right bank of Chamkhar chhu/river adjacent to Chakhar Lhakhang	No impact	No impact	Bumthang Dzongkhag Administration agreed to carry out mitigation measures by constructing river protection works on the right bank below Chakhar Lhakhang.	Riverbank protection works were carried out and completed by the end of 2018.
ATCEP-AF	No impact	No impact	No impact	None	-
Yonphula Domestic Airport Projects					
RGBOB	Land issue resolved	No impact	Sacred pond: community requested the project to include the pond within the airport's boundaries and provide	Allow community residents to access the pond for their ritual. This should be monitored and reported on in the Safeguards Monitoring Report.	Pond rehabilitation work began by October 2020 and was completed by February 2021

Projects/ Airport Location	Land	Structure	Community Properties	Pending Action	STATUS as of Dec 2021
			access to it for their ritual		EMP for rehabilitation works has been prepared.
ATCEP	No impact	No impact	Footpath: Footpath to Yulay Namgyal stupa is not yet constructed.	Construction of a well-paved footpath connecting Yulay Namgyal stupa is still pending	Footpath construction work began in October 2020 and was completed by February 2021. ³
ATCEP-AF	No impact	No impact	No impact	None	-
Gelephu Domestic Airport Projects					
RGOB	Land substitution and compensation paid. Hence no issue	Structures loss compensated. Hence no issue.	No impact	None	-
ATCEP	Land acquisition has been substituted. Hence no issue	No impact	No impact	None	-
ATCEP-AF	No impact	No impact	No impact	None	-
Paro International Airport					
RGOB	None	None	None	-	-
ATCEP	None	None	None	-	-
ATCEP-AF	No impact	No impact	No impact	No impact	No impact

³ A separate EMP has been prepared to be included with the contract document for bidding & subsequent implementation as well.

IV. Consultation

A. Public/Stakeholder Consultations under ATCEP / ATCEP-AF

103. Public and stakeholder consultations were carried out during the implementation of the ATCEP AF by the respective PIUs of Bumthang and Yonphula domestic airports. The important consultations that were carried out are provided in Table 8.

Table 8: Summary of consultations carried out during monitoring fieldwork

Airport	Stakeholders	Issue	Response by DoAT
Bumthang	Bumthang Airport management, Supervision consultant, Contractor's Engineer	Pending issues from RGOB & ATCEP financing: i. Brown Swiss Farm complexes takeover by DoAT	A complete takeover of Brown Swiss Farm complexes is to be done by the end of June 2022 as per the Airport Manager of Bumthang domestic airport.
Yonphula	Yonphula Airport management, Supervision consultant, Contractor's Engineer and Senior monk Mr Jigme Tenzin of Yonphula Monastery	ATCEP financing: i. Siltation of pond ii. Gabion wall construction iii. Construction alternative footpath	Pond rehabilitation work completed. Gabion wall construction completed. Footpath construction to the stupa completed.
Gelephu	Gelephu Airport Manager, Project Engineer from DOAT, ADB Mission members, Executive Secretary, and Chief Planning Officer of Gelephu Thromde	ATCEP-AF financing: i. Human-wildlife conflict is an unanticipated issue that arose due to the airport's location close to the international border where the elephant is known to traverse from the Indian forest	Gelephu thromde/municipality and Gelephu airport management expressed the need for proper study and cooperation amongst various stakeholders to resolve the Human-elephant conflict which has become a major issue for both Gelephu municipality and the airport.
Paro	DoAT Director, Project Engineer and ADB Mission members,	ATCEP-AF Financing: Schedule for implementation or installation of the automated parking Management system at the	Work was awarded in June 2021 and completed the installation by October 2021.

V. COMPLIANCE WITH GRANT AGREEMENT, PROJECT ADMINISTRATION MANUAL, WORK CONTRACT AGREEMENT AND EMP

A. Compliance with Grant Agreement and Project Administration Manual

104. The environmental and social safeguards requirements were explicitly provided in the Grant Agreement (GA) between the ADB and the Royal Government of Bhutan (RGOB); whereas the Project Administration Manual (PAM) described how the project shall be implemented. Summary safeguard compliance status with GA and PAM is provided in the following sections. The detailed safeguard compliance with the GA and PAM are provided in Annex 1 and 2.

1. Environment

105. Grant agreement (GA), the project administration manual (PAM), IEE, and EMP were prepared in accordance with the ADB's Safeguard Policy Statement (SPS) 2009. The National Environment Commission (NEC) granted the project approval before the award of the works contract. All relevant provisions from the EMP were incorporated into the works contract

2. Social – Involuntary Resettlement

106. The Project is classified as category B in accordance with ADB's Safeguard Policy Statement (SPS) 2009.

107. No private land had to be acquired for all three airport works under ATCEP-AF since the construction activities were undertaken within the respective airport boundaries. So, there were no involuntary resettlements or resettlement plans required to be prepared. Hence, only due diligence was carried out.

108. Overall, the project complied with safeguard measures for the prevention of involuntary resettlement provisions of the GA and PAM.

3. Labor Standards and Occupational Health and Safety (OHS)

109. The project complied with the relevant national and international labor standards as required by the GA and PAM for YDA and GDA works. For Bumthang, it is being complied with as the construction works are ongoing.

110. Occupational health and safety provisions such as first aid kits, emergency medical services, safe drinking water, adequate shelter, toilet facilities, cooking fuel, etc. were provided. No child laborers were engaged in the project activities. The specific clauses on labor and OHS are incorporated into the works contract.

4. HIV/AIDS

111. The project has carried out HIV/AIDS awareness workshops for construction workers for all three airports under ATCEP-AF. Therefore, the HIV/AIDS awareness provisions of GA and PAM were complied with.

5. Safeguard Monitoring and Reporting

112. The safeguard monitoring and reporting were carried out as required by the GA and PAM.

The monitoring was done at different levels – by ADB safeguard specialists, the project coordinators, and the CSC. The ADB monitored the project through the fielding of missions at various stages of its implementation - from inception to interim and to the completion stages.

113. The project coordinators at BDA, GDA, YDA and PIA improvement works act as focal persons for safeguard monitoring; and monitor the project regularly with the support of site engineers of the CSC. The site engineers carry out daily monitoring of the implementation of the resettlement plan and the environmental management plan. CSC team also includes social and environmental safeguard specialists who monitor the project and prepare their respective annual monitoring reports.

114. The project complied with the provision of safeguard monitoring requirements of GA and PAM for all three airports improvement works.

B. Compliance with Work Contract Agreement

115. The contractor is obliged to comply with the safeguard clauses included in the contract agreement. The contractors of BDA, YDA, GDA and PIA improvement works have complied with safeguard provisions on environment, social, OHS and Health and HIV/AIDS listed in the contract agreement.

116. The details on compliance with the works contract agreement are provided in Annex 3.

C. Compliance with EMP

117. The Environmental Management Plan (EMP) provided in Chapter IX of the IEE report of 2012 is an integral part of the contract document. The activities under the environmental management plan are grouped into three implementation phases- pre-construction, construction and operation. The summary of EMP compliance status for each airport improvement work is shown in the following sections. The detailed EMP compliance status is provided in Annex 4.

1. Preconstruction Phase

118. The Project complied with the EMP by implementing the environmental management activities of the preconstruction phase such as the incorporation of seismic design into the project designs since Bhutan falls under high seismic risk zone IV and V. Seismic events may cause damage to the structure and adjacent property, and result in loss of life.

2. Construction Phase

119. Though many of the provisions of EMP under construction phase are complied with, full compliance is yet to be reached due to the failure to implement the EMP provisions such as proper waste management and strict adherence to occupational health and safety measures (e.g. wearing of PPE). Therefore, the EMP has been partially complied with.

120. Air, noise and water quality monitoring activities were not implemented during the construction stage since the project activities were expected to generate an insignificant level of air, noise and water pollutants.

3. Operational Phase

121. The major environmental issues during operations revolve mainly around ambient air and noise level, waste, and safety of aircraft operations. Air safety and waste management plans are in place. Due to low air traffic volume, only three flights per week to Bumthang and Yonphula, and once a week to Gelephu, the issue of noise and air pollution were insignificant. Hence, the noise and air pollution abatement measures recommended in EMP were not carried out.

VI. CONCLUSION AND RECOMMENDATIONS

122. To achieve 100% safeguard compliance project needs to resolve one outstanding issue related with Brown Swiss Farm. A complete handover of Brown Swiss Farm structures to DoAT is yet to happen. As per the latest communications between the Brown Swiss Farm and BDA management in September 2022 - a complete handover is planned to be carried out by the end of June 2022.

123. During the project implementation period, an unanticipated issue of human-elephant conflict has propped up in 2018. To address human-elephant conflict (HEC) within the airport: two short-term mitigation measures were recommended - a repair of the damaged airport security fence and an HEC awareness session for airport personnel. The ADB organised sharing knowledge-sharing webinar in December 2021 for Gelephu airport staff, DoAT officials, Sarpang territorial forest officials and Gelephu Municipality staff. The presentation was done by the Asian elephant expert from the IUCN with the support of a national environmental expert.

124. There are no pending safeguard issues of YDA and GDA; hence, 100% compliance achieved.

125. The installation of the parking management system PIA has been completed and is operational since October 2022. 100% compliance achieved.

**ANNEX 1: COMPLIANCE TO SAFEGUARDS PROVISIONS IN AGREEMENTS UNDER THE
PROJECT**

ANNEX 1: COMPLIANCE TO SAFEGUARDS PROVISIONS IN AGREEMENTS UNDER THE PROJECT

1. The environmental and social safeguard requirements are explicitly provided in Grant Agreement 0295-BHU between ADB and RGOB through the MOIC and DoAT. These grant agreement provisions and compliance status are provided in Table 9.

Table 9: Status of Compliance to Environmental / Social Provisions of the Loan Agreement

No.	Environmental & Social Provisions	Compliance Status
1.	<p>Schedule 3. Item 5.</p> <p><u>Conditions for Award of Contract</u></p> <p>The Recipient shall not award any work contracts until:</p> <p style="padding-left: 40px;">a) the National Environment Commission of Bhutan has granted the final approval of the IEE; and</p> <p style="padding-left: 40px;">b) the Recipient has incorporated the relevant provisions from the EMP into the Works contract</p>	<p>Complied.</p> <p>Environmental clearances are issued by the Dzongkhag Environmental Office as the nature, scope and scale of works under ATCEP-AF are small.</p> <p>Environmental Management Plan (EMP) is a part of the bidding document.</p>
2.	<p>Schedule 3. Item 6.</p> <p>The Recipient shall not award any Works contract which involves involuntary resettlement impacts, until the Recipient has prepared and submitted to ADB the final resettlement plan based on the Project's detailed design, and obtained ADB's clearance of such resettlement plan.</p>	<p>Not Applicable as ATCEP-AF did not require the acquisition of private land and structures.</p> <p>All activities are carried out within the confines of airport boundaries of all 4 airports.</p>
3.	<p>Schedule 3. Item 7.</p> <p>The Recipient shall not award any Works contract which involves the impact on indigenous peoples until the Recipient has prepared and submitted to ADB the final indigenous peoples' plan, and obtained ADB's clearance of such indigenous peoples' plan.</p>	<p>Not Applicable since all activities are carried out within the confines of airport boundaries of all 4 airports where no indigenous people are residing.</p>
4.	<p>Schedule 4. Item 1.</p> <p><u>Implementation Arrangement</u></p> <p>The Recipient and the Project Executing Agency shall ensure that the Project is implemented following the detailed arrangements outlined in the PAM.</p>	<p>Complied.</p> <p>The project is being implemented following the PAM</p>

No.	Environmental & Social Provisions	Compliance Status
5.	<p>Schedule 4. Item 2.</p> <p><u>Environment</u></p> <p>The Recipient shall ensure or cause the Project Executing Agency to ensure that the preparation, design, construction, implementation, operation and decommissioning of the Project and all Project facilities comply with (a) all applicable laws and regulations of the Recipient relating to the environment, health and safety; (b) the Environmental Safeguards; and (c) all measures and requirements outlined in the IEE, the EMP, and any corrective or preventative actions outlined in the Safeguards Monitoring Report.</p>	<p>Being complied.</p> <p>Relevant laws and regulations on the environment and occupational health and safety are being adhered to.</p> <p>The requirements of IEE and EMP are partly complied with and being implemented.</p>
6.	<p>Schedule 4. Item 3.</p> <p><u>Land Acquisition and Involuntary Resettlement: Indigenous People</u></p> <p>The Recipient shall ensure that the Project does not have any Indigenous Peoples Safeguards and Involuntary Resettlement Safeguards impacts. If the Project does have any such impact, the Recipient shall take all steps required to ensure that the Project complies with the applicable laws and regulations of the Recipient and with ADB's Safeguard Policy Statement.</p>	<p>Not Applicable as ATCEP-AF did not require the acquisition of private land and structures.</p> <p>All activities are carried out within the confines of airport boundaries of all 4 airports.</p>
7.	<p>Schedule 4. Item 4.</p> <p><u>Human and Financial Resources to Implement Safeguard Requirements</u></p> <p>The Recipient shall make available or cause the Project Executing Agency to make available necessary budgetary and human resources to fully implement the EMP, any resettlement plan and any indigenous peoples' plan.</p>	<p>Complied.</p>
8.	<p>Schedule 4. Item 5.</p> <p><u>Safeguards – Related Provisions in Bidding Documents and Works Contracts</u></p> <p>The Recipient shall ensure or cause the Project Executing Agency to ensure that all</p>	<p>Complied.</p> <p>Requirements for complying with the IEE and EMP were included in the bidding</p>

No.	Environmental & Social Provisions	Compliance Status
	<p>bidding documents and contracts for Works contain provisions that require contractors to:</p> <p>a) comply with the measures relevant to the contractor set forth in the IEE, the EMP, any resettlement plan and any indigenous peoples' plan (to the extent they concern impacts on affected people during construction), and any corrective or preventative actions set forth in the Safeguards Monitoring Report;</p>	documents for all three airports.
9.	<p>Schedule 4. Item 5.</p> <p><u><i>Safeguards – Related Provisions in Bidding Documents and Works Contracts</i></u></p> <p>b) make available a budget for all such environmental and social measures;</p>	Complied.
10.	<p>Schedule 4. Item 5.</p> <p><u><i>Safeguards – Related Provisions in Bidding Documents and Works Contracts</i></u></p> <p>c) provide the Recipient with written notice of any unanticipated environmental, resettlement or indigenous people's risk or impacts that arise during construction, implementation or operation of the Project that was not considered in the IEE, the EMP, any resettlement plan and any indigenous peoples' plan;</p>	<p>Human-elephant conflicts (HEC) were unanticipated impacts for GDA. ADB organized knowledge-sharing webinar in December 2021 with IUCN's Asian elephant expert to minimize the HEC. Complied.</p> <p>No unanticipated issue for BDA and YDA.</p>
11.	<p>Schedule 4. Item 5.</p> <p><u><i>Safeguards – Related Provisions in Bidding Documents and Works Contracts</i></u></p> <p>d) adequately record the condition of roads, agricultural land and other infrastructure prior to starting to transport materials and construction;</p>	<p>Complied for YDA, GDA and PIA airport works</p> <p>Being complied Bumthang airport works.</p>

No.	Environmental & Social Provisions	Compliance Status
12.	<p>Schedule 4. Item 5.</p> <p><u>Safeguards – Related Provisions in Bidding Documents and Works Contracts</u></p> <p>e) reinstate pathways, other local infrastructure, and agricultural land to at least their pre-project condition upon the completion of construction.</p>	Complied
13.	<p>Schedule 4. Item 6.</p> <p><u>Safeguards Monitoring and Reporting</u></p> <p>a) submit semiannual Safeguards Monitoring Reports to ADB and disclose relevant information from such reports to affected persons promptly upon submission;</p> <p>b) if any unanticipated environmental and/or social risks and impacts arise during construction, implementation or operation of the Project that was not considered in the IEE, the EMP, any resettlement plan and any indigenous peoples' plan, promptly inform ADB of the occurrence of such risks or impacts, with a detailed description of the event and proposed corrective action plan; and</p> <p>c) report any actual or potential breach of compliance with the measures and requirements set forth in the EMP, any resettlement plan or any indigenous peoples' plan promptly after becoming aware of the breach.</p>	<p>Complied.</p> <p>a) Since the scope of the project was small with minimal social impacts only annual monitoring reports were prepared and submitted.</p> <p>b) No unanticipated safeguards issues for Bumthang, Yonphula and Paro airports. To minimize human-elephant conflicts ADB organized knowledge-sharing webinar in December 2021.</p> <p>c) There were no breaches in compliance with the EMP and RP</p>
14.	<p>Schedule 4. Item 8.</p> <p><u>Labour Standards</u></p> <p>The Recipient and the Project Executing Agency shall ensure that (a) civil works contractors comply with all applicable labour laws and regulations, do not allow employment of child labour for construction and maintenance activities, encourage the employment of the poor, particularly women, and provide appropriate facilities for women and children in construction campsites; (b) people directly affected by the Project are</p>	<p>Complied for Paro, Gelephu and Yonphula airport works.</p> <p>Being complied Bumthang airport works.</p>

No.	Environmental & Social Provisions	Compliance Status
	given priority to be employed by the Project; (c) contractors do not differentiate wages between men and women for work of equal value, and (d) specific clauses ensuring these will be included in bidding documents.	
15.	<p>Schedule 4. Item 9.</p> <p><u>Health</u></p> <p>The Recipient and the Project Executing Agency shall ensure that contractors provide adequately for the health and safety of construction workers and further ensure that bidding documents include measures on how contractors will address this, including information and awareness-raising activities for construction workers on sexually transmitted diseases, HIV/AIDS, and human trafficking.</p>	<p>Complied for Paro, Gelephu and Yonphula airport works;</p> <p>Being complied for Bumthang airport works;</p>

ANNEX 2: COMPLIANCE TO PROJECT ADMINISTRATION MANUAL

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2. The Project Administration Manual (PAM) describes how the DoAT will implement the project and deliver the results on time, with quality, within budget, and in accordance with RGOB and Asian Development Bank (ADB) policies and procedures. The PAM is mandatory and serves as the main document describing implementation details. The status of implementing the safeguards requirements set out in PAM is provided in Table 10.

Table 10: Compliance with PAM

SNo	Details	Compliance
1.	<p>Section VII</p> <p>Safeguards</p> <p>a) Environment</p> <p>An Initial Environmental Examination (IEE) report including an Environment Management Plan (EMP) covering generic and site-specific issues has been prepared in accordance with the ADB's <i>ADB's Safeguard Policy Statement, 2009</i>. The EMP will be attached to the bidding documents and made mandatory for implementation by the respective contractor. Hence, EMP implementation and its related costs will be the responsibility of the contractor while monitoring and technical guidance will be provided by the environmental specialist under the supervision consultant's team. DCA's project coordinator of the respective domestic airports will also be responsible for ensuring proper implementation and monitoring of the EMP by the contractor and supervision consultant respectively. Any updates to the EMP, if required, will be made by the environmental specialist under the supervision consultants and reviewed and approved by the overall environment safeguards coordinator of DCA. An initial coordination cum training workshop will be conducted by ADB before the start of construction works for DCA, contractors, and supervision consultant to agree on modalities for implementing the EMP and carrying out necessary monitoring and reporting activities.</p>	<p>Complied.</p> <p>Project coordinators of three domestic airports have been assigned a role to oversee the effective implementation of the EMP during project implementation.</p> <p>CSC's Environmental Specialist supported the project coordinators in monitoring and reporting on environmental safeguards</p>
2.	<p>Section VII Safeguards</p> <p>b) Social – Involuntary Resettlement</p> <p>The project is classified as category C in accordance with ADB's Safeguard Policy Statement (2009). The civil works for the project will be undertaken within the airport boundaries. There will be no acquisition of private land or property. A due diligence was undertaken to find out about the status of compensation paid to the affected people for</p>	<p>Complied.</p>

SNo	Details	Compliance
	land acquired by DCA during the previous development undertaken by the government. For these, all the affected people have either been paid cash compensation or provided with land for land.	
3.	<p>Section VII</p> <p>Safeguards</p> <p>c) Social – Indigenous People</p> <p>As the civil works will be undertaken within the airport boundary, there will be no acquisition of private land or property. There are no indigenous people present in the project area. As there will be no physical or economic displacement, no impact on indigenous people is envisaged.</p>	Not Applicable.
4.	<p>Section VIII</p> <p>Gender and Social Dimension</p> <p><u>Gender Consultation and Participation</u></p> <p>The project will have no direct interface with the community as it is confined within the airport boundaries. However, gender participation was ensured during the socio-economic study by undertaking the process of gender analysis to assess the possible gender impacts. Women from the project influence area are mainly engaged in agriculture and home-based income generation activities. Focus group discussions were undertaken with women belonging to different socio-economic groups. The majority of women felt positive about the possible benefits including employment opportunities during construction and tourism growth. Equal benefits for women are expected to be attained under the project. Provisions in bidding documents require contractors to ensure that all civil works comply with all applicable labour laws; do not employ child labour for construction or maintenance; encourage the employment of the poor, particularly women; and do not differentiate wages between men and women, particularly for work of equal value.</p>	Complied.

SNo	Details	Compliance
5.	<p>Section VIII</p> <p>Gender and Social Dimension</p> <p><u>HIV and AIDS</u></p> <p>Bhutan continues to have a low HIV prevalence. The Royal Government of Bhutan acted early and initiated HIV/AIDS prevention activities in the country. DCA will ensure that all civil works contractors (i) carry out awareness programs for labour on the risks of sexually transmitted diseases/ AIDS and human trafficking; and (ii) disseminate information at worksites on the risks of sexually transmitted diseases and HIV/AIDS as part of health and safety measures for those employed during construction. Contracts for the project will include specific clauses on these undertakings and compliance will be strictly monitored by DCA, with the support of construction supervision consultants during the project implementation.</p>	<p>Complied.</p> <p>The contractors have organized an awareness program on HIV/AIDS</p>
6.	<p>Section VIII</p> <p>Gender and Social Dimension</p> <p><u>Health</u></p> <p>DCA shall ensure that contractors provide adequately for the health and safety of construction workers and further ensure that bidding documents include measures on how contractors will address this, including information and awareness-raising campaigns for construction workers on sexually transmitted diseases, HIV/AIDS, and human trafficking. Contractors will carry out HIV/AIDS awareness activities for labourers at worksites, which will be monitored by the supervision consultants.</p>	<p>Complied</p>
7.	<p>Section VIII</p> <p>Gender and Social Dimension</p> <p><u>Labour</u></p> <p>DoAT shall ensure that (i) civil works contractors comply with all applicable labor laws and regulations, do not</p>	<p>Complied</p>

SNo	Details	Compliance
	<p>employ child labor for construction and maintenance activities, and provide appropriate facilities for women and children in construction campsites; (ii) people directly affected by the project are given priority to be employed by the contractor; (iii) contractors do not differentiate wages between men and women for work of equal value; and (iv) specific clauses ensuring these will be included in bidding documents. The construction supervision consultants monitor the provisions.</p>	
8.	<p>Section IX</p> <p>B. Monitoring</p> <p>Compliance Monitoring</p> <p>Compliance with covenants will be monitored through ADB's Project Administration Missions – including project inception mission to discuss and confirm the timetable for compliance with the loan covenants; project review missions to review the borrower's compliance with particular loan covenants and, where there is any noncompliance or delay, discuss proposed remedial measures with the Government; and mid-term review mission if necessary, to review covenants to assess whether they are still relevant or need to be changed, or waived due to changing circumstances.</p>	Complied.
9.	<p>Section IX</p> <p>B. Monitoring</p> <p>Safeguard Monitoring - Environment</p> <p>The respective project coordinator of the three domestic airports will also be the environmental safeguards, focal persons, at the site level, and will monitor implementation of the EMP by the contractor with the support of the environment specialist of the supervision consultants.</p> <p>EMP implementation records in the form of monthly or quarterly checklists will be maintained by the contractor and cross-checked and verified by the environment safeguards focal person at the site level. These will</p>	<p>Complied.</p> <p>The Project Coordinator of the three airports also played the role of the environmental focal person who was supported by the CSC environment specialist.</p>

SNo	Details	Compliance
	<p>also be reviewed by the environment specialist of the supervision consultants. Based on these checklists and site observations, the environmental specialist will prepare an annual monitoring report and submit it to the overall environment safeguards coordinator under DCA. After review and approval by DCA, the report will be forwarded to ADB for disclosure on the ADB website in accordance with the requirements of ADB's SPS 2009.</p>	<p>Complied.</p> <p>Annual safeguards monitoring reports have been prepared for the three airports and disclosed on the ADB website.</p>
10.	<p>Section IX</p> <p>B. Monitoring</p> <p>Safeguard Monitoring - Resettlement</p> <p>This will be carried out by the supervision consultants. If there are any IR impacts during project implementation such issues should be included in the semiannual safeguards monitoring report. Semiannual monitoring reports will be submitted to EA and ADB.</p>	<p>Complied.</p> <p>Annual safeguards monitoring reports including social and resettlement issues have been prepared for the three airports and disclosed on the ADB website.</p>

ANNEX 3: COMPLIANCE TO THE CIVIL WORKS CONTRACT AGREEMENT

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3. The contractor is obliged to comply with the safeguards clauses included in the contract agreement. Table 11 below provides an update on the status of safeguards compliance by the civil works contractor.

Table 11: Compliance to Civil Works Contract Agreement

S No	Conditional Clauses	Compliance
1.	<p>Section 4 – Particular Conditions of Contract</p> <p>Additional Clauses</p> <p><u>3. Quarries and Spoil Disposal</u></p> <p>Any quarry operated as part of this Contract shall be maintained and left in a stable condition without steep slopes and be either refilled or drained and be landscaped by appropriate planting. Alluvial/river materials taken from a river shall be removed over some distance to limit the depth of material removed at any one location, not disrupt the river flow or damage or undermine the river banks.</p> <p>The Contractor shall not deposit excavated material on land in Government or community or private ownership except directed by the Project Manager in writing or by permission in writing of the authority responsible for such land in Government ownership, or of the community or private owner or responsible representative of the community or owner of such land in private ownership, and only then in those places and under such conditions as the authority, owner or responsible representative may prescribe.</p>	<p>Not Applicable to the project as no new quarries were required to be established under this project. All construction materials are purchased from already established RGOB approved quarries and mines.</p> <p>Complied with PIA, GDA and YDA improvement works.</p> <p>Being complied for Bumthang airport works.</p>
2.	<p>Section 4 – Particular Conditions of Contract</p> <p>Additional Clauses</p> <p><u>4. Traffic Diversion</u></p> <p>The Contractor shall include the necessary safety procedures regarding traffic diversion or temporary road closures that are needed in the execution of the works. The Contractor shall include in his costing of works, any temporary</p>	<p>Not applicable since all construction activities are carried out within confines of the</p>

S No	Conditional Clauses	Compliance
	<p>works or diversion that are needed during the construction period.</p> <p>All traffic diversion or temporary road closures should be designed for the safety of both the motoring public and the men at work. It shall ensure the uninterrupted flow of traffic for traffic diversions and minimum inconvenience to the public for temporary road closures during the period concerned. As such, adequate warning signs, flagmen and other relevant safety precautionary measures shall be provided as approved by the Project Manager to warn motorists well ahead of the intended diversion or road closure. For temporary road closures, the Contractor shall be fully responsible for informing and seeking approval from all the relevant authorities and providing adequate closure notices in accordance with the timing laid out by the relevant authorities or regulations.</p> <p>All traffic devices used shall be designed in accordance with prevailing DOR Guidelines or as instructed by the Project Manager.</p>	<p>airport boundaries and did not require traffic diversion.</p>
3.	<p>Section 4 – Particular Conditions of Contract</p> <p>Additional Clauses</p> <p><u>6. Employment of Local Personnel</u></p> <p>The Contractor is encouraged, to the extent practicable and reasonable, to employ staff and labour with appropriate qualifications and experience from sources within the project area.</p>	<p>Partially compiled as there are no skilled laborers within the project area. It is a result of the COVID-19 Pandemic, which restricted the movement of personnel from one region to another to prevent the spread of disease.</p>
4.	<p>Section 4 – Particular Conditions of Contract</p> <p>Additional Clauses</p> <p><u>7. Reinstatement and Compensation for Damage to Persons or Property</u></p> <p>The Contractor shall reinstate all properties whether public or private which are damaged in consequence of the execution and maintenance of the works to a condition as specified and at</p>	<p>No damages to Persons or Properties are recorded during</p>

S No	Conditional Clauses	Compliance
	<p>least to that obtaining before his first entry on them. If in the opinion of the Project Manager the Contractor shall have failed to take reasonable and prompt action to his obligations in the matter of reinstatement, the Project Manager will inform the Contractor in writing of his opinion, in which circumstance the Employer reserves the right to employ others to do the necessary work of reinstatement and to deduct the cost thereof from any money due or which shall be due from the Employer to the Contractor.</p>	<p>construction so far for all 4 airports.</p>
5.	<p>Section 4 – Particular Conditions of Contract</p> <p>Additional Clauses</p> <p><u>16. Materials and Other Objects found in Excavation</u></p> <p>All materials and things of archaeological, religious and cultural significance obtained from excavations or found on or under the Site or under any additional site which the Contractor may be allowed to occupy shall remain the property of the Employer and shall not be used in the Works or sold or otherwise disposed of without the written authority of the Employer unless otherwise expressly provided in the Specification. No additional excavations are to be made upon the Site beyond those shown on the Drawings or described in the Specification without the previous written authority of the Project Manager. Provided always that the Employer shall make no charge against the Contractor for materials excavated by the Contractor on the Site and used in the Works.</p>	<p>No archaeological, religious and culturally significant items have been found during excavation.</p>
6.	<p>Section 4 – Particular Conditions of Contract</p> <p>Additional Clauses</p> <p><u>17. Protection from Weather. Storage</u></p> <p>The Contractor shall carefully protect all work and materials that may be affected by weather from injury thereby. The Contractor shall provide storage to the satisfaction of the Project Manager for materials to be incorporated in the Works or to be delivered to the Employer. Such storage shall be of a kind that will prevent loss of, or damage</p>	<p>Complied for Gelephu and Yonphula airport works. First aid kits were available at the construction site.</p>

S No	Conditional Clauses	Compliance
	to, the materials. The Contractor shall take particular care to ensure the security of stores containing materials the loss of which would be likely to cause significant delay to the completion of the works or part thereof.	Being complied Bumthang airport works.
7.	<p>Section 4 – Particular Conditions of Contract</p> <p>Additional Clauses</p> <p><u>18. Use of Child Labour</u></p> <p>The Contractor and his Sub-Contractors shall not employ any child who has not attained the age of eighteen years in any work as a laborer.</p> <p>During the continuance of the contract, the Contractor and his Sub-contractors shall abide at all times by all labor laws, including child labor related enactment, and rules made hereunder.</p>	<p>Complied with Paro, Gelephu and Yonphula improvement works.</p> <p>Being complied Bumthang airport works.</p>
8.	<p>Section 4 – Particular Conditions of Contract</p> <p>Additional Clauses</p> <p><u>19. Local Custom</u></p> <p>The Contractor shall make himself aware of local customs and practices and observe them as far as possible, bearing in mind his obligations under the Contract.</p>	<p>Complied with PIA, GDA & YDA improvement works.</p> <p>Being complied Bumthang airport works.</p>
9.	<p>Section 4 – Particular Conditions of Contract</p> <p>Additional Clauses</p> <p><u>20. First AID and Lifesaving apparatus</u></p> <p>The Contractor shall provide on the Site such lifesaving apparatus as may be appropriate and an adequate and easily accessible first aid outfit or such outfits as may be required in any government ordinances, factories, acts etc., subsequently published and amended from time to time.</p> <p>In addition, an adequate number of persons permanently on the Site shall be instructed in their use, and the persons so designated shall be made known to all employees by the posting of their</p>	<p>Complied with Paro, Gelephu and Yonphula airport works.</p> <p>Being complied Bumthang airport works.</p>

S No	Conditional Clauses	Compliance
	names and designations in a prominent position on Site.	
10.	<p>Section 4 – Particular Conditions of Contract</p> <p>Additional Clauses</p> <p><u>21. Maintenance of other Services and Structures</u></p> <p>The Contractor shall ascertain the location of all watercourses, irrigation channels, sewers, drains, water pipes, electricity and telecommunication cables, and other services and structures which may be encountered during the execution of the works. He shall take proper care, temporarily support or divert and subsequently reinstate all such services and</p> <p>structures as necessary and to the satisfaction of the Project Manager.</p> <p>As soon as any such service or structure is encountered, on, over, under, in or through the site during the performance of the contract, the Contractor shall make a record of the location and description of such service or structure and shall send the same forth to the Project Manager.</p> <p>Any damage to such service or structure caused due to the negligence of the Contractor or his Sub-contractors shall be reinstated by the Contractor at no extra cost to the Employer.</p> <p>Where permanent diversion or support of such service or structure is rendered necessary as the unavoidable result of the execution and maintenance of the works in accordance with the Contract, the Project Manager, after consultation with the Employer, will instruct the Contractor as to the diversion or support to be provided and the Contractor shall be paid the actual cost plus ten per cent extra to this as his overhead and profit.</p>	No such services or structures were impacted under ATCEP – AF
11.	<p>Section 4 – Particular Conditions of Contract</p> <p>Additional Clauses</p> <p><u>24. Health and Safety</u></p>	

S No	Conditional Clauses	Compliance
	<p>The Contractor shall take due care and ensure that medical staff, first aid room are available at the camps, housing and on the Site at all times throughout the Contract and that suitable arrangements are made for the prevention of epidemics and all necessary welfare and hygiene requirements.</p>	<p>Complied with Paro, Gelephu and Yonphula improvement works.</p> <p>Being complied Bumthang airport works.</p>
12.	<p>Section 4 – Particular Conditions of Contract</p> <p>Additional Clauses</p> <p><u>25. Prevention of HIV/AIDS</u></p> <p>The Contractor shall make his staff and labour aware of the dangers of HIV/AIDS and educate them in measures to prevent the transmission of these and other sexually transmitted diseases.</p>	Complied
13.	<p>Section 4 – Particular Conditions of Contract</p> <p>Additional Clauses</p> <p><u>26. Obligation of the contractor</u></p> <p>The Contractor shall pay compensation for all temporary use of private or community/village lands and any loss of livelihood arising therefrom.</p>	<p>Not applicable as the construction works are carried out within the airport boundaries.</p>
14.	<p>Section 4 – Particular Conditions of Contract</p> <p>Additional Clauses</p> <p><u>27. Environmental Management Plan</u></p> <p>The Contractor shall be responsible for the implementation of the Environmental Management Plan (EMP) and comply with the requirements of EMP in the execution of the Works. In addition, the Contractor shall abide by the terms and conditions set forth in the</p>	<p>Complied with PIA, GDA and YDA improvement works.</p> <p>Being complied Bumthang airport works.</p>

S No	Conditional Clauses	Compliance
	environmental clearance provided by the relevant authority.	
15.	<p>Section 4 – Particular Conditions of Contract</p> <p>Additional Clauses</p> <p><u>28. Routine Maintenance of Road and Reinstatement of Damages</u></p> <p>The Contractor at own cost shall be responsible for the reinstatement of the damages to completed works (pavement, pavement surfacing, shoulder or any other works) caused due to the contractor's poor routine maintenance of drains, drainage channels, culverts, shoulders; lacking clearance of obstructions such as landslides etc. other than those occurred due to earthquake. The obligations to this requirement shall remain during the construction and defects liability period in accordance with the provision of the contract.</p>	<p>Not applicable as the construction works are carried out within the airport boundaries.</p>

ANNEX 4: COMPLIANCE TO ENVIRONMENTAL MANAGEMENT PLAN

ANNEX 4: COMPLIANCE TO ENVIRONMENTAL MANAGEMENT PLAN

4. The environmental management plan (EMP) for the project was provided in Chapter IX of the IEE report and also attached to the contract documents. As per EMP, environmental management activities were categorized to be implemented during the pre-construction, construction and operational stages. The following Table 16 lists out the status of activities during the pre-construction and construction stage as of December 2019:

Table 12: Status of Compliance to the Environmental Management Plan

SNo	Activity	Mitigation Measures	Compliance attained (Yes, No, Partial)	Comment/Reasons for Partial or Non-Compliance
Preconstruction Stage				
1.	Detailed Design: Seismicity Bhutan fall under high seismic risk zone IV and V. Seismic events may cause damage to the structure and adjacent property, and result in loss of life.	<ul style="list-style-type: none"> • To minimize seismic related structural damage and injury or loss of life. Detailed Consultant shall incorporate earthquake risk into the detailed design of a new terminal building of BDA and Security Staff quarter of GDA. • For analysis, design and detailing of structures, the design consultant shall refer to Bhutan Building Rules (BBR) 2002. • For analysis of structure BBR code, 9.2.2 IS 1893 – criteria for earthquake resistant design of structures, • For the design of a structure, BBR code 9.3.2 IS 4326 – Earthquake resistant design and construction of the building, <p>For detailing of structure, BBR code 9.4.2 IS 13920-1993; Ductile detailing of concrete</p>	Complied	

SNo	Activity	Mitigation Measures	Compliance attained (Yes, No, Partial)	Comment/Reasons for Partial or Non-Compliance
		structures subjected to seismic forces.		
Construction Stage				
2.	Earthwork, Excavation and Spoil Disposal	<ul style="list-style-type: none"> Excavated material/spoil from YDA pond rehabilitation and footpath construction works will be dumped in the designated area. Excavated material from BDA's new terminal building works shall be disposed of to the designated dumpsite southwest of the runway. Excavated material from GDA's security quarter construction works shall be disposed of to the designated dumpsite behind the construction. All disposal areas shall be compacted and watered to prevent dust pollution and soil erosion. 	Complied	
3.	Transportation or haulage of construction materials for airport improvement works	<ul style="list-style-type: none"> Construction material such as stone aggregates and sand shall be sourced from RGOB approved existing mines at Bumthang, Gelephu and Trashigang. The contractor shall mandate the material transporter to comply 	<p>Complied for GDA and YDA</p> <p>Being complied for Bumthang airport's new terminal building construction works.</p>	

SNo	Activity	Mitigation Measures	Compliance attained (Yes, No, Partial)	Comment/Reasons for Partial or Non-Compliance
		<p>with good practices of material transportation. All vehicles carrying hazardous, dust-generating construction material shall be properly covered during transportation to minimize dust pollution.</p> <ul style="list-style-type: none"> • All-access roads, wherever there are possibilities of generating dust pollution within contractors' jurisdiction, shall be sprayed with water at least twice daily. • The contractor shall demand the transporters to carry out vehicular emission testing to limit the exhaust related pollution. Similarly, the contractor shall carry out regular maintenance of transport and construction vehicles/machinery 		
4.	Water Environment (Surface and groundwater)	<ul style="list-style-type: none"> • Discharge of sediment-laden construction water directly into surface water bodies shall be avoided. • Wastewater/sewage and hazardous waste shall not be dumped into the surroundings to prevent surface and groundwater contamination. Pit toilet constructed Gelephu airport shall 	<p>Complied for GDA and YDA</p> <p>Being complied for Bumthang airport's new terminal building construction works</p>	<p>Erosion and siltation have resulted in drying of the pond which is located northwest of the runway. It has been observed that the lack of slope protection works has resulted in heavy siltation of the pond leading to complete drying of the pond.</p>

SNo	Activity	Mitigation Measures	Compliance attained (Yes, No, Partial)	Comment/Reasons for Partial or Non-Compliance
		<p>be line with cement to prevent leakage of sewage into the groundwater chamber,</p> <ul style="list-style-type: none"> • Dumping of construction waste into stormwater drainage shall be avoided to minimize the siltation of pond water at Yonphula airport, 		However, the pond has been restored by dredging the silt, and simultaneously slope protection works were done by constructing the gabion walls at the base of the eroding slope.
5.	Solid Waste	<ul style="list-style-type: none"> • Construction worker shall sort their garbage into biodegradable and non-biodegradable • For all campsites, the contractors shall construct garbage pits. • Biodegradable waste shall be put into a garbage pit while non-biodegradable waste shall be handed over to scrap dealers for recycling. • After completion of usage of garbage pit, the contractor shall decommission the pit by covering it with soil and suitably compact it to prevent leakage. • Hazardous waste such as spent batteries, acidic substances and used fuels shall be stored properly and will be sent to India recycling. 	<p>Being complied for Bumthang BDA works</p> <p>Complied for PIA, GDA and YDA works</p>	Waste management still needs to be improved for BDA construction works

SNo	Activity	Mitigation Measures	Compliance attained (Yes, No, Partial)	Comment/Reasons for Partial or Non-Compliance
6.	Sewage/Waste Water	<ul style="list-style-type: none"> • For sewage/wastewater treatment ordinary pit toilet will be constructed at BDA and YDA campsites; • However, for GDA, a cement-lined pit toilet shall be constructed to prevent leakage of untreated sewage into the underground water chamber; • Pit toilets once completed their usage shall be decommissioned by covering with soil and compacting it to prevent leakage of sewage into the surrounding environment. 	<p>Being complied for BDA works</p> <p>Complied for GDA and YDA works.</p> <p>No issue with PIA works</p>	
7.	Air Environment	<ul style="list-style-type: none"> • Regular spraying of the work area and haulage route. River water from Chamkhar chhu could be used for spraying the work area at BDA; Stream water Barizhong under Khaling Geog could be used for YDA, and Gelephu airport groundwater from the bore well could be used for dust suppression at GDA. • covering construction material during transportation; • Timely and regular maintenance of construction equipment and 	<p>Being complied for BDA works</p> <p>Complied for GDA and YDA works</p> <p>No issue with PIA works</p>	

SNo	Activity	Mitigation Measures	Compliance attained (Yes, No, Partial)	Comment/Reasons for Partial or Non-Compliance
		machineries to reduce gaseous emissions; • Provision for gas/facemasks for construction workers to prevent direct inhalation of dust		
8.	Noise environment	• Limit the working hours to daylight hours (8 am-5.30 pm) • Provision for earplugs and use of construction equipment that produce less noise.	Being complied for BDA works Complied for GDA and YDA works No issue with PIA works	
9.	Ecological Environment: Pressure on Forest product	• The contractor shall provide cooking fuel either LPG or the fuelwood from the legal supplier to reduce competition local forest supply; • The contractor shall make timely wage payments for labourers to buy foodstuff to prevent labourers from foraging for forest produce in competition with the local population.	Being complied for BDA works Complied for GDA and YDA works No issue with PIA works	
10.	Ecological Environment: Impact on wildlife and habitat	• PCU/Contractor in coordination with Forest Range Office at Bumthang shall carry out an awareness campaign to deter illegal fishing in Chamkhar Chhu.	Being complied for BDA works Complied for GDA and YDA works	

SNo	Activity	Mitigation Measures	Compliance attained (Yes, No, Partial)	Comment/Reasons for Partial or Non-Compliance
		<ul style="list-style-type: none"> • Similarly, PCU/Contractor along with the Forest Range office of Yonphula and Gelephu shall carry out an awareness campaign to deter wildlife poaching, trapping and hunting etc. • Forest officials from respective project areas of Bumthang, Yonphula and Gelephu shall make surprise checking to discourage the construction workers from illegal activities; • Contractors shall be held accountable for any illegal activities that are carried out by their workforce. 	No issue with PIA works	
11.	Socio-economic Environment: Occupational Health and Safety	<ul style="list-style-type: none"> • Construction workers shall be provided with adequate and appropriate shelter which are wind and rainproof; • Camps shall be located within the airport boundaries away from the local settlements; • First aid kit shall be provided for all the project sites • In an emergency, workers shall be allowed to avail the medical services at Bumthang, 	<p>Being complied for BDA works</p> <p>Complied for GDA and YDA works</p> <p>Complied for PIA works</p>	

SNo	Activity	Mitigation Measures	Compliance attained (Yes, No, Partial)	Comment/Reasons for Partial or Non-Compliance
		<p>Trashigang and Gelephu hospitals free cost.</p> <ul style="list-style-type: none"> • Clean drinking water, construction of pit toilets, and garbage disposal sites shall be provided; • Labour officers of respective regions of Gelephu, Trashigang and Bumthang shall make surprise checks on compliance of occupational health and safety. 		
12.	Socio-economic Environment: HIV/AIDS and Communicable Diseases; Gender violence and Human trafficking	<ul style="list-style-type: none"> • Although RGOB makes it mandatory for the labourers to check for communicable diseases before the issuance of the work permits to prevent the spread of diseases; still the project shall carryout following measures to minimize the risk of spread of communicable diseases and the gender issues: • The project shall invite Health officials from respective project sites of Bumthang, Yonphula and Gelephu to provide awareness education on communicable diseases to the construction workers; 	<p>Being complied for BDA works</p> <p>Complied for GDA and YDA works</p> <p>Not applicable for PIA works as it engaged only 2 experts from outside.</p>	
Operational Phase				

SNo	Activity	Mitigation Measures	Compliance attained (Yes, No, Partial)	Comment/Reasons for Partial or Non-Compliance
13.	Air and Noise Environment	<ul style="list-style-type: none"> Air and noise pollution as a result of the operation of airport terminal buildings and security quarters will be negligible. <ul style="list-style-type: none"> Renewal energy shall be utilized for the heating and cooling of building operations. There will be no major noise generating equipment installed in the buildings. 	<p>Being complied for BDA works</p> <p>Complied for GDA and YDA works.</p> <p>No noise issue with PIA works</p>	
14.	Solid Waste	<ul style="list-style-type: none"> Airport management of BDA, PIA YDA and GDA shall sort their waste into biodegradable and non-biodegradable. Biodegradable shall be recycled or disposed of to the landfill; Non-biodegradable waste such as plastics, pet bottles, bottles, metal scraps, papers etc. could be sold or handed over to scrap dealers for recycling. Hazardous waste such as spent batteries, acidic substances and used fuels shall be properly stored and sent for recycling to India. 	<p>Being complied for BDA works</p> <p>Complied for GDA and YDA works.</p> <p>Complied for PIA works.</p>	
15.	Waste Management: Sewage/ Wastewater	<ul style="list-style-type: none"> BDA and GDA buildings constructed shall have 	Being complied for BDA works	

SNo	Activity	Mitigation Measures	Compliance attained (Yes, No, Partial)	Comment/Reasons for Partial or Non-Compliance
		<p>independent septic tanks and soak pits for wastewater treatment to prevent pollution of local water resources</p> <ul style="list-style-type: none"> • Septic tanks and soak pits shall be replaced with more advanced wastewater treatment plants such as Sequential Batch Reactor (SBR) in future as the amount of wastewater generation increases beyond the capacity for septic tanks and soak pits to handle. 	<p>Complied for GDA and YDA works</p> <p>No issue with PIA works</p>	

ANNEX 5: PHOTOGRAPHS OF BUMTHANG DOMESTIC AIRPORT

Figure 16: Panoramic view of BDA (ADB, March 2018)



Figure 17: Airside Fencing works at BDA (Source: QPR: March 2021)



Figure 18: New Terminal Building at BDA (Source: QPR: March 2021)

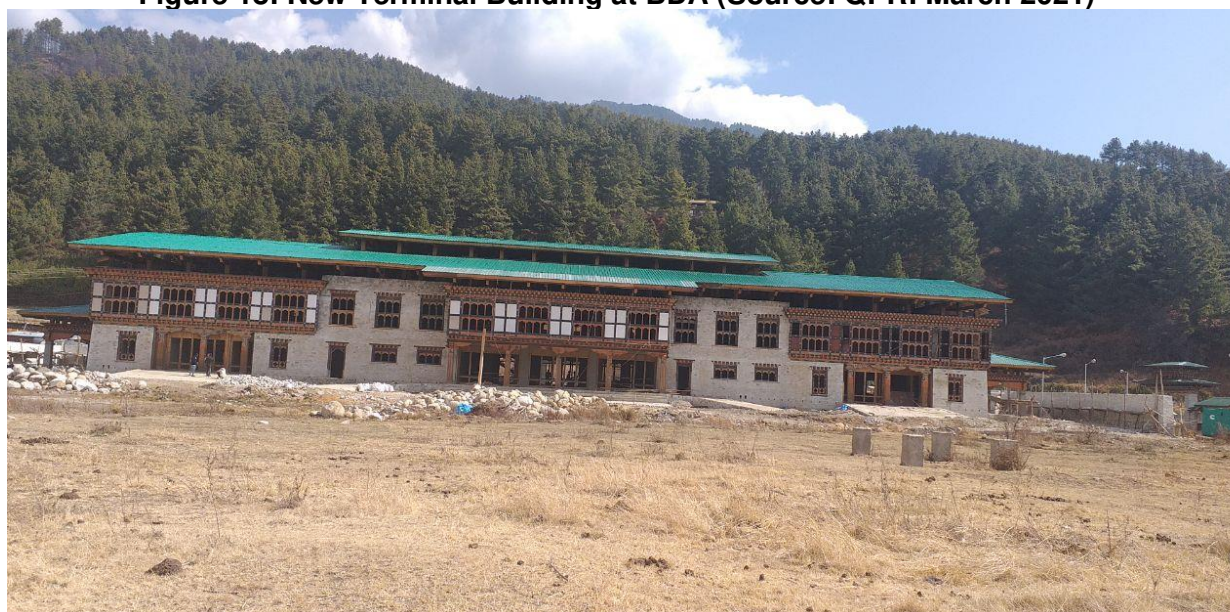
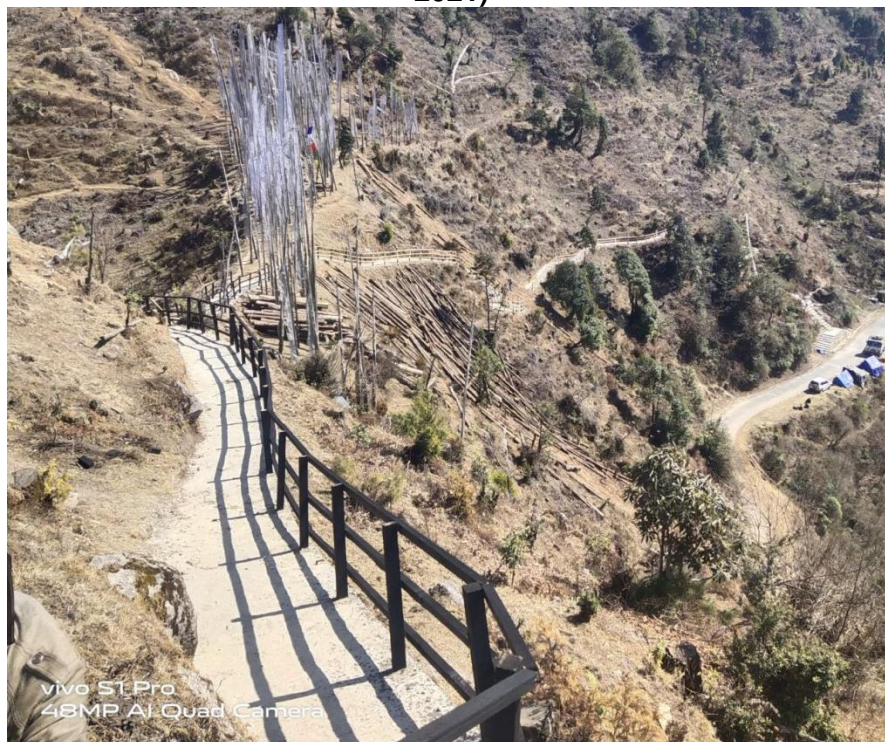


Figure 19: Gabion wall construction for slope protection at YDA (Source: QPR, March 2021)



Figure 20: Footpath to Khamsum Yulay Namgyal Stupa at YDA (Source: QPR, March 2021)



ANNEX 6: PHOTOGRAPHS OF YONPHULA DOMESTIC AIRPORT

Figure 21: Restored Pond and Gabion wall construction for slope protection at YDA
(Source: DoAT, October 2021)



ANNEX 7: PHOTOGRAPHS OF GELEPHU DOMESTIC AIRPORT

Figure 22: Security quarters construction at GDA (July 2018)



Figure 23: Finished surrounding of Security Quarters of GDA (July 2018)



**ANNEX 8: COPY OF LETTERS RECEIVED FROM MINISTRY OF AGRICULTURE &
FORESTS**

ཏུང་ཆེན།

BHUTAN - INDIA
An Enduring Friendship

13th April, 2018

Sub: Handing taking over of the infrastructure to Bumthang Domestic Airport

Dasho,

We are in receipt of the letter No. MoIC/Sec-06/2017-18/207 dated 2nd April, 2018 pertaining to complete handing over of the infrastructure which is currently operated as Brown Swiss Farm under Department of Livestock (DoL) to Bumthang Domestic Airport. As agreed in the minutes of meeting dated 21st May, 2014 between erstwhile Department of Civil Aviation (DCA) and DoL, the Department of Livestock had taken the following proactive measures;

1. Issuance of no objection letter to DCA for the construction of road diversion through farm land.
2. Handed over the quarter of Program Director, National Centre for Animal Nutrition to DCA.

However, handing over the complete land and farm infrastructures adjacent to airport has not been materialized yet as it was subject to the completion of our farm infrastructure at the new location. Owing to this fact, the dismantling of dairy shed and two unit staff quarter are still not executed. Moreover, as agreed in the earlier minutes, dated 21st May, 2014, the Ministry has not yet realized the budget for construction of two unit staff/attendant quarters from your Ministry.

Further, for smooth operation of the airport, the Department was very much committed to complete the farm infrastructure development works at the new location and shift the entire facilities including farm animals. However, the works could not be completed on time due to slow progress, even after imposing repeated fines and penalties to the defaulting contractor.



ལོ་ནམ་དང་ནགས་ཚལ་ལྷན་ཁག།
ROYAL GOVERNMENT OF BHUTAN
Ministry of Agriculture & Forests
Tashichhodzong, Thimphu : Bhutan



SECRETARY

Currently, 70 % of sheds construction and site development works have been completed. The construction of office, attendant quarters, farm bio-security and other facilities at new location are required to be put in place for operation of the farm.

While our Ministry fully understands the safety and security concerns to flight operation in the airport, we are left with no option but need some more time to complete the on-going and planned infrastructure development works at the new location. Upon completion, which we are expediting, we will then intimate your Ministry for complete handing over of the facilities to the Department of Air Transport (DoAT).

We thank you for your continued support and cooperation.

Yours Sincerely,

Dr. Tashi Samdup

OFFTG. SECRETARY

Copy to:

1. His Excellency the Hon'ble Minister, MoAF for kind information.
2. His Excellency the Hon'ble Minister, MoIC for kind information and necessary support.
3. Dasho Secretary, MoAF, for kind information.
4. Director General, DoL for information and necessary action.
5. Director, DoAT, MoIC, for kind information and support.
6. Specialist (Advisor) DoL for information and follow up.
7. Farm Manager, BS Farm, Bumthang for information and follow up.
8. Offtg. Chief, LPD, DoL for information and record.
9. Site Engineer, DoL for information and with an advice to expedite the infrastructure development works at the site.



Royal Government of Bhutan
MINISTRY OF AGRICULTURE & FORESTS
DEPARTMENT OF LIVESTOCK
BROWN-SWISS CATTLE FARM
Bumthang



BSCBF/Adm-6/2018-2019/ **243**

Date: April 2, 2019

To
 Airport Manager
 Bumthang Domestic Airport
 Department of Air Transport
 Bumthang

Subject: Handing over of remaining infrastructure

Ref: DAT/BDA/ADM/2019/210 dated 01/04/2019

Dear Madam,

With reference to your letter no. DAT/BDA/ADM/2019/210 dated 01/04/2019, here we would like to inform you that Hon'ble Secretary, MOAF has already written to Hon'ble Secretary, MoIC vide letter No. DOL/GEN-23/2017-18/16630 dated 13th April 2018 concerning this matter, which is self-explanatory. We fully understand your concern and we are also expediting the completion of the infrastructures at the earliest possible. Due to this, we also have to implement some of the unplanned activities like fencing with Bamboo Mat for both Beautiful Bumthang and own Farm Bio-security measures. Therefore, we are left with no other options for complete handing over of the remaining infrastructures till all required infrastructure developments in the new location, Lebi are completed.

Thanking you

Yours Sincerely,


 (Padam B. Gurung)
 FARM MANAGER

Copy to:

1. Director General, DoL, Thimphu, for kind information, please
2. Chief Livestock Officer, LPD, DoL, Thimphu for kind information, please
3. Office copy.

Telephone No: Farm Manager: +975 3 631238, General Office: +975 3 631158, Email: brownswissfarm@gmail.com



ཨ་ཨ། ལན་མ་གྱི་ཕྱི་འདྲེན་ལམ་ཁྲུང་།
 ཨ་ཨ་ བད་དོན་དང་བརྒྱུད་འབྲེལ་རྒྱུ་ལག་། དཔལ་ལྷན་འབྲུག་གཞི་དག་།
DEPARTMENT OF AIR TRANSPORT
MINISTRY OF INFORMATION AND COMMUNICATIONS
ROYAL GOVERNMENT OF BHUTAN
BUMTHANG DOMESTIC AIRPORT



DoAT/BDA/APM/2021-2022/87

Date: 22nd September; 2021

To
 The
 Farm Manager
 Regional cattle breeding centre
 Department of live stock
 Bumthang, Bhutan.

Sub: Notification on taking over of old structures.

Sir,
 This is to appraise you that, the office of the Bumthang domestic airport, Department of air transport would like to take over the remaining old structures which are located in the airport premises latest by 31st December;2021. This is as per the directives of ADB on airport safe guard issues and mainly to dwell all the staffs in the office staff quarters as some of the staffs are still residing in private apartment beyond the airport.

The staffs residing beyond airport have been facing many inconveniences during emergency/or ad-hoc flight operations due to long distance travel from home to airport and the quick response time is not meet.

The farm structures will be allotted to all the DoAT staffs, with the intension to keep all the DoAT staffs within airport premises and overcome such lamentable situations in future.

Therefore, you are required to hand over entire old structures to DoAT within the above mentioned time.

Looking forward for your co-operation.

Thanking you

Sincerely

(Jamyang Sherub)
 Offtg. Airport manager
 BDA

Copy to:

1. Director General of DoAT for kind information.
2. Division chiefs of DoAT for kind information.
3. Executive Engineer of DoAT for kind information.



དཔལ་ལྷན་འབྲུག་གཞུང་།

མོན་པ་དང་ནགས་ཚལ་ལྷན་ཁག་ སློ་རྩིས་ལས་ཁུངས་ ལུང་ཕྱགས་རྩིས་རིགས་སྒེལ་བ།

ROYAL GOVERNMENT OF BHUTAN

Ministry of Agriculture and Forests

Department of Livestock

REGIONAL CATTLE BREEDING CENTRE

BUMTHANG



RCBC-B/Adm-6/2021-2022/

107

Date: October 6, 2021

✓ Officiating Airport Manager
Bumthang Domestic Airport
Dept. of Air Transport
Bumthang

Subject: **Handing Taking Over of Old Structures**

Ref: **DoAT/BDA/APM/2021-2022/87 dated 22/9/2021**

Sir,

This is to inform you that the construction activities in new location at Lebi are progressing well and expected to complete all the basic required infrastructures within this FY 2021-2022. We have the plans to shift the entire centre to Lebi as soon as these infrastructure developments are completed. Therefore, we may not be position to hand over the old structures of the Airport premises within 31st December 2021. Therefore, we would like to request to kindly consider in final handing taking over of the old structures latest by June 2022.

Submitted for kind information and consideration.

Yours Sincerely,

(Padam B. Gurung)
FARM MANAGER

Copy to:

1. Director, DoL, MoAF, Thimphu for kind information, please
2. Offg. Chief Livestock Officer, DoL, MoAF, Thimphu, for kind information, please
3. Office copy