

Due Diligence Report Output 1

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Republic of Maldives: Enhancing Climate Resilience and Food Security Project

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Abbreviations

ADB	-	Asian Development Bank
AH	-	Affected Household
AIA	-	Addu International Airport
AP	-	Affected Person
AWS	-	automated weather stations
DDR	-	Due Diligence Report
DP	-	Displaced Person
EA	-	Executing Agency
EMP	-	Environmental Management Plan
GRC	-	Grievance Redress Committee
GRF	-	Grievance Recording Form
GRM	-	Grievance Redress Mechanism
IA	-	Implementing Agency
ICEM	-	International Centre for Environmental Management
IP	-	Indigenous People
IR	-	Involuntary Resettlement
LAR	-	Land Acquisition and Resettlement
MAAW	-	Ministry of Agriculture and Animal Welfare
MCCEE	-	Ministry of Climate Change, Environment and Energy
MHLUD	-	Ministry of Housing, Land and Urban Development
MLA	-	Maldives Land Act
MMS	-	Maldives Meteorological Service
MNDF	-	Maldives National Defense Force
MRC	-	Maldives Red Crescent
PMU	-	Project Management Unit
RF	-	Resettlement Framework
RP	-	Resettlement Plan
SP	-	Subproject
SPS	-	ADB Safeguard Policy Statement (2009)
WDC	-	Women Development Committee

Weights and Measures

ha	-	hectares
m, m ² , m ³	-	metre, square metre and cubic metres
km	-	kilometre

Glossary

Affected Person (AP): Any person, households (AHs), firms, or private institutions who, on account of changes that result from the project will have their (i) standard of living adversely affected; (ii) right, title, or interest in any house, land (including residential, commercial, agricultural, forest, and/or grazing land), water resources, or any other moveable or fixed assets acquired, possessed, restricted, or otherwise adversely affected, in full or in part, permanently or temporarily; and/or (iii) business, occupation, place of work or residence, or habitat adversely affected, with or without displacement

Compensation: Payment made in cash to the project-affected persons/households for the assets to be acquired or affected for the project at replacement cost at current market value.

Cut-off Date: Means the date after which people will NOT be considered eligible for compensation, i.e., they are not included in the list of APs/DPs as defined by the census. Normally, the cut-off date is the date of the detailed measurement survey. However, this Date can be established from the date of conducting consultation and information sharing.

Displaced Person (DP): In the context of this document, displaced persons are those who are physically displaced (relocation, loss of residential land, or loss of shelter) and/or economically displaced (loss of land, assets, access to assets, income sources or means of livelihoods) as a result of involuntary acquisition of land involuntary restrictions on land use or on access to legally designated parks and protected areas. This project is not expected to create any physical displacement.

Economic Displacement: Loss of land, assets, access to assets, income sources, or means of livelihoods as a result of (i) involuntary acquisition of land, or (ii) involuntary restrictions on land use or on access to legally designated parks and protected areas.

Encroachers: The people who move into the project area after the cut-off date and are therefore not eligible for compensation or other rehabilitation measures provided by the project. The term also refers to those extending attached private land into public land.

Entitlement: Means the range of measures, comprising cash or kind compensation, relocation cost, income rehabilitation assistance, transfer assistance, income substitution, and relocation due to business restoration that are due to affected people, depending on the type and degree of their losses, to restore their social and economic base.

Household: A household includes all persons living and eating together (sharing the same kitchen and cooking food together as a single-family unit).

Indigenous Peoples: Unless they are already recognized, the Indigenous Peoples are identified in particular geographic areas based on these four characteristics: (i) self-identification as members of a distinct indigenous cultural group and recognition of this identity by others; (ii) collective attachment to geographically distinct habitats for ancestral territories in the project area and to the natural resources in these habitats and territories; (iii) customary cultural, economic, social, or political institutions that are separate from those of the dominant society and culture; and (iv) an indigenous language, often different from the official language of the country or region.

Involuntary Land Acquisition: The process whereby a person is compelled by a public agency to alienate all or part of the land s/he owns or possesses to the ownership and possession of that agency, for public purposes, in return for fair compensation.

Meaningful Consultation: A process that (i) begins early in the project preparation stage and is carried out on an ongoing basis throughout the project cycle; (ii) provides timely disclosure

of relevant and adequate information that is understandable and readily accessible to APs; (iii) is undertaken in an atmosphere free of intimidation or coercion; (iv) is gender inclusive and responsive, and tailored to the needs of disadvantaged and vulnerable groups; and (v) enables the incorporation of all relevant views of affected people and other stakeholders into decision making, such as project design, mitigation measures, the sharing of development benefits and opportunities, and implementation issues.

Physical Displacement: Relocation, loss of residential land, or loss of shelter as a result of (i) involuntary acquisition of land, or (ii) involuntary restrictions on land use or on access to legally designated parks and protected areas. This project is not expected to create any physical displacement.

Project: Enhancing Climate Resilience and Food Security Project.

Replacement Cost: The method of valuing assets to replace the loss at current market value, or its nearest equivalent, and is the amount of cash or kind needed to replace an asset in its existing condition, without deduction of transaction costs or for any material salvaged.

Significant impact: Significant is defined as 200 or more people will experience major impacts, which are defined as (i) being physically displaced from housing; or (ii) or losing 10 per cent or more of their productive assets (income generation).

Vulnerable: People who might suffer disproportionately or face the risk of being marginalized from the effects of resettlement and includes: (i) female-headed households with dependents; (ii) disabled household heads; (iii) poor households that fall on or below the poverty line (within the meaning given previously); (iv) landless; (v) elderly households with no means of support; (vi) households without security of tenure; (vii) households of indigenous population or ethnic minority.

Executive Summary

This document presents the Due Diligence Report (DDR) for Output 1 of the proposed *Enhancing Climate Resilience and Food Security Project* (the Project) of the Republic of Maldives (the Government). This DDR confirms that the physical implementation of the subproject (SP) components under Output 1 are free of involuntary land acquisition and resettlement (LAR) impacts such as land acquisition, physical displacement, economic displacement, impact on livelihood, community properties or any other impacts based on a review of land registries, consultations and field visits to the proposed locations. Any temporary disturbance will be mitigated through the Environmental Management Plan (EMP).

The Project's Output 1, for which this DDR has been prepared, includes five SPs:

- (i) SP 1.1: Addu weather radar system, including radar tower.
- (ii) SP 1.2: Malé radar upgrades.
- (iii) SP 1.3: Pilot agro-climate advisories.
- (iv) SP 1.4: Behavior change communication program.
- (v) SP 1.5: Capacity building program for Maldives Meteorological Service (MMS), including on improved models and software packages.

Physical works of SP components under Output 1 are only undertaken for SP 1.1 - the installation of the Addu weather radar system, including tower and other associated infrastructure at Addu International Airport (also known as Gan Airport) - and SP 1.2 - upgrading of the existing radar at the Malé Velana International Airport on Hulhulé island. The scope of the LAR impacts has been identified based on a field visit to the proposed sites allocated for physical implementation of the SP components under Output 1. There are no impacts on private land, structures and livelihoods anticipated, as all physical works are proposed to be undertaken on free and existing government land allocated to the Addu International Airport authority and the Maldives Airports authority (for Velana Airport). Screening for involuntary resettlement and indigenous people impacts confirms that the allocated site in Addu City is under the ownership of the Addu International Airport authority and the site of the radar on Hulhulé island at the Malé Velana International Airport is owned by the Maldives Airports Company Limited, a state-owned company. This will not cause any LAR permanent impact, direct or indirect. Temporary disturbance will be mitigated through the EMP. Physical works may be undertaken for SP 1.3 if instruments are needed for the piloting of agro-climate advisories. Minor equipment installation may be required, envisioned to be undertaken on sites of existing automated weather stations (AWS) on land owned by the government. This would not cause any LAR impact, and this DDR will be updated once locations and program design are finalized.

Consequently, the Output 1 SP intervention falls under Category C for involuntary resettlement and Category C for indigenous peoples as per the Asian Development Bank's (ADB) Safeguard Policy Statement (SPS) (2009). This DDR confirms that the Output 1 of the Project does not trigger ADB's SPS Safeguard Requirements on involuntary resettlement or on Indigenous Peoples.

The Project will establish a simple, acceptable, transparent and effective grievance redress mechanism (GRM) tailored to the Project's needs. The GRM procedure will ensure that any compensation and resettlement programmes have been implemented accurately and fairly and will mediate conflict and avoid lengthy litigation that is inconvenient to affected persons (APs).

For SP1.1 and SP1.3, when final locations are selected during the detail design phase, this DDR will need to be updated. If any LAR becomes necessary at time of actual implementation of any of the SPs, the Project will be responsible to prepare a Resettlement Plan (RP) in line with the guidelines described in the Resettlement Framework (RF) of the Project, prepared in conformity with the ADB's safeguards requirements on involuntary resettlement, and adhering

to Maldives laws and policies. The Project will make sure that all safeguard requirements are followed, and no one is disadvantaged in the process of development. The Project Management Unit (PMU) will strictly monitor the construction activities and report on any unexpected impact that may occur and will incorporate that information in Social Safeguard Monitoring Report.

I. Introduction

A. Project Background

1. Maldives' physical vulnerability and limited adaptive capacity combined with a reliance on climate-sensitive sectors such as tourism, fisheries and subsistence farming put the country at high risk to climate change and severe weather. The country is exposed to several natural hazards which may have devastating impacts such as loss of lives, injury and displacement, houses and infrastructure damage, disruption of livelihoods and services, environmental degradation, reduced economic productivity, particularly in tourism, and a potential increase in poverty and social vulnerability.

2. To overcome these challenges, the Government, with financial assistance from ADB, has prepared the *Enhancing Climate Resilience and Food Security Project* (the Project). The Project aims to support Maldives' climate change adaptation efforts, particularly in enhancing the weather observatory capacity to support informed climate decisions, safeguarding urban infrastructure from flooding and erosion, and improving agriculture and food security.

3. The Project has the following four outputs for building resilience in the island areas of two selected atolls comprising Addu Atoll and Haa Dhaalu Atoll:

- (i) **Output 1: Institutional capacity for weather monitoring, forecasting and early warning strengthened.** The project will enhance the capacity to plan, respond and adapt to climate change, through the (i) installation of a new radar system in Addu; (ii) repair of the existing radar system in Male; (iii) a pilot on agro-climate advisories; and (iv) training program for MMS on weather and hazard forecasting and early warning. Capacity building and behavioral change activities will also be conducted to maximize the effectiveness of the enhance monitoring and early warning systems at both institutional and community levels.
- (ii) **Output 2: Infrastructure and nature-based solutions for flood and coastal protection and mangrove restoration developed.** Promoting integrated flood risk management in Kulhudhuffushi City in Haa Dhaalu atoll, this output will support (i) hydrological modelling and detailed design studies to identify and design critical investments for pluvial flood mitigation, coastal protection and mangrove restoration; (ii) offshore and nearshore structures for the protection of the eastern shoreline; and (iii) improved inland stormwater drainage and filtration systems and nature-based solutions such as bioswales.
- (iii) **Output 3: Resilience and supply capacity of islands urban farming and agribusiness system enhanced.** To capacitate farmers and other value chain stakeholders on innovative climate resilient agriculture, this output will (i) upgrade the Hanimaadhoo Agriculture Center to an advanced research and advisory hub on climate smart agriculture; and (ii) demonstrate water-efficient and resilient urban and climate smart agriculture.
- (iv) **Output 4: Matching grant scheme to support adaptation innovations developed.** To build resilience of farmers and small businesses, this output will provide start-up grants to individuals, farmer groups, women development committees (WDCs), community based organizations, and small to medium enterprises, to support uptake of technologies and other measures for climate resilience.

4. The Republic of Maldives will be the borrower and the Ministry of Finance will be the EA. The Ministry of Climate Change, Environment and Energy (MCCEE) will be the lead IA, while the Ministry of Agriculture and Animal Welfare (MAAW) will also be an IA. Several other Government agencies will be involved in project implementation. For Output 1 the main partner will be the MSS, under MCCEE. For Output 2, Kulhudhuffushi City Council will be engaged,

while for Output 3 and 4, MAAW will be the lead.

5. Output 1 will be implemented in Addu City atoll (Gan), Hulhulé island (Greater Malé/Kaafu), and at national level; Output 2 will be implemented in Haa Dhaalu atoll (Kulhudhuffushi City); Output 3 will initially be implemented in Haa Dhaalu atoll (Hanimaadhoo, Kulhudhuffushi, Nolvivaranfaru) and Addu City atoll (Hulhudhoo, Meedhoo and Hithadhoo) with the potential to be scaled up to national level. Output 4 will be targeted nation-wide.

6. The indicative start date of the investment project is December 2024 and the project is estimated to be completed on 30 June 2030, with the grant and loan closing on 31 December 2030.

7. The Project is financed through a grant and loan of \$23.96 million, with a government contribution of an estimated \$2.02 million.

B. Output 1 Subproject Components

8. Five SPs will be supported under Output 1 of the Project:

- (i) SP 1.1: Addu weather radar system, including radar tower.
- (ii) SP 1.2: Malé radar upgrades.
- (iii) SP 1.3: Pilot agro-climate advisories.
- (iv) SP 1.4: Behavior change communication program.
- (v) SP 1.5: Capacity building program for Maldives Meteorological Service (MMS), including on improved models and software packages.

9. Implementation of the SP components under Output 1 will strengthen the country's institutional capacity for weather monitoring, forecasting and early warning by improving infrastructure, software and capacities in real-time weather monitoring, forecasting and early warning. A Doppler S-band weather radar and ancillary equipment will be installed in Addu City to improve real-time weather monitoring over the south of the country. The existing Male radar will be refurbished to expands its operability and effectiveness. An advanced data processing and analysis system will be put in place to ensure the interoperability of the various instruments and systems. The development and use of agro-climate forecasts and advisories will also be piloted. Lastly, capacity building and behavioral change activities will be conducted to maximize the effectiveness of the enhanced monitoring and early warning systems at both institutional and community levels.

C. Scope of this Due Diligence Report

10. The scope of this DDR is limited to the implementation of the five SP components under Output 1 of the Project. The main objective of the due diligence exercise is to confirm that the SP sites are free of involuntary resettlement impact such as land acquisition, physical displacement, economic displacement, adverse impact on livelihood, community properties or any other impacts.

11. Due diligence activities have been carried out to screen the likely involuntary resettlement impacts for interventions under Output 1. The findings from the impact screening suggest that implementation of the SPs under this output will not involve any involuntary resettlement impact. Any temporary disturbances that arise during project implementation will be mitigated through the EMP. This DDR has been prepared to confirm that the Output 1 of the Project does not trigger ADB's SPS (2009) Safeguard Requirements on involuntary resettlement or on Indigenous Peoples.

12. The DDR describes the findings of the involuntary resettlement impact screening exercise carried out on 5-6 March 2024 and 12 June 2024, verification of records and

government orders, and consultations with the officials of MMS. Photographs of the SP location, copy of government order which proves that the land belongs to Government and allocated to the Addu International Airport authority. Hence the intervention of Output 1 SPs falls under Category C for involuntary resettlement and Category C for indigenous peoples as per ADB SPS (2009).

II. Social Safeguard Due Diligence

A. Scope of Land Acquisition and Resettlement

13. Physical works under Output 1 will be implemented as part of the following SPs, each of which are described below:

- (i) SP 1.1: Addu weather radar system, including tower at the Addu International Airport;
- (ii) SP 1.2: Malé radar upgrades, at the Malé Velana International Airport.
- (iii) SP 1.3: Pilot-agro climate advisories.

1. Output 1 Subproject 1: Addu Weather Radar System, Including Tower Building

14. Addu International Airport (formerly known as Gan Airport) is located on an industrial island in the south of Addu City (Figure 1 and Figure 2). There is one airport terminal located in the north and a runway stretching from east to west. The runway's western part was expanded onto a newly reclaimed land area between 2012 and 2016. In addition, a seaplane runway has been operational in the south-west part of the island since 2021, with plans to expand it into a full terminal. The Maldives National Defence Force utilizes the airport's southern area. Additionally, there are two fuel storage depots located in the north of the island.

15. In terms of accessibility, there is one road circumventing the island, with the road along the western section of the runway used as the main road to reach the south of the island (Figure 2).

16. No permanent inhabitants reside on the airport grounds, as the island is designated for aviation purposes.

Figure 1: Addu International Airport in Addu City – location of subproject 1



Figure 2: Key assets on Addu International Airport



Source: MMS, 2024

Figure 3: Seaplane pier in the south of the Addu International airport



Source: Times of Addu, January 2021. [First Maldivian seaplane with tourists arrive in Gan.](#)

17. There is currently no weather radar at the Addu International Airport in Addu City. There is only one manual meteorological and aeronautical weather observing station installed in 1978 and operated by the MMS, near their current office (see Figure 1 for the location of the current MMS office). The station includes an anemometer, wind vane, thermometer, hygrometer, barometer, and rain gauge (Figure 4).

Figure 4: Current weather station located at the Addu International Airport, Addu City



Source: ICEM-Epoch, 2024

18. A new MMS observatory building is planned, located in the south of the island (Figure 5). The new MMS observatory will not be funded as part of the Project. The site of the new MMS observatory is free of encumbrance and will not have involuntary resettlement impacts.

Figure 5: View over the area where the new MMS observatory building and office is planned



Source: ICEM-Epoch, 2024

19. The Project will install a S band Doppler Weather Radar at the Addu airport in order to detect precipitating systems within a range of 400 km, to evaluate their severity and to predict their movements. This radar will be functioning automatically, with possibilities of remote control from Malé and backup from Gan. A composite picture of precipitating areas will be made every 5 to 15 minutes, including the data from the Addu and Malé radars, covering the southern and central parts of Maldives. The radar antenna, which is a 8 m diameter parabolic dish, will be set inside a radome on top of a concrete tower, whose height will depend on existing or potential future obstructions (Figure 6).

Figure 6: Example of a Doppler weather radar and radar tower



Source: Kurth, E. NOAA/NWS/ER/WFO/Sacramento

20. Depending on the exact height and size of the tower (which will be decided during the design phase), the site for the radar tower will have to be at minimum 300m from the center point of the runway: below the yellow line shown in Figure 7.¹

Figure 7: Map showing potential sites for the radar tower, at a minimum distance of 300m from the runway



Source: ICEM-Epoch, 2024

21. The site allocated for the weather radar has not been confirmed yet, but it will be in proximity to the site of the planned MMS observatory building (Figure 5). Two specific sites are currently being considered by MMS: option 1 at the site of the planned observatory building which is the current preferred option, and option 2 nearby the observatory building but further away from the runway. The current status of the land for option 1 and option 2 is shown in Figure 8 and Figure 9, respectively.

Figure 8: Current status of the land planned for the weather radar system (option 1): view from the north, east, south and west



Source: ICEM-Epoch, 2024

¹ Asian Development Bank, 2024. *Feasibility Study on Improved Real-Time Weather Monitoring, Forecasting and Early Warning: Enhancing Climate Change Adaptation and Resilience Project*. Consultant's Report. Manila.



Source: MMS, 2024

Figure 9: Current status of the land also considered for the weather radar system (option 2): view from the south and west (no.2) and north and east (no. 3)



Source: ICEM-Epoch, 2024



Source: MMS, 2024

22. One historical or cultural site has been identified near the option 1 site: a mosque and graveyard (*gamu hukuru miski* on the map in Figure 8). Based on consultations with MMS and the airport authority, the site is protected but not visited or in use. The site should be left intact and will not be impacted by construction of the radar, and has its own separate access.²

Figure 10: Mosque and burial place located near the main site proposed for the radar tower



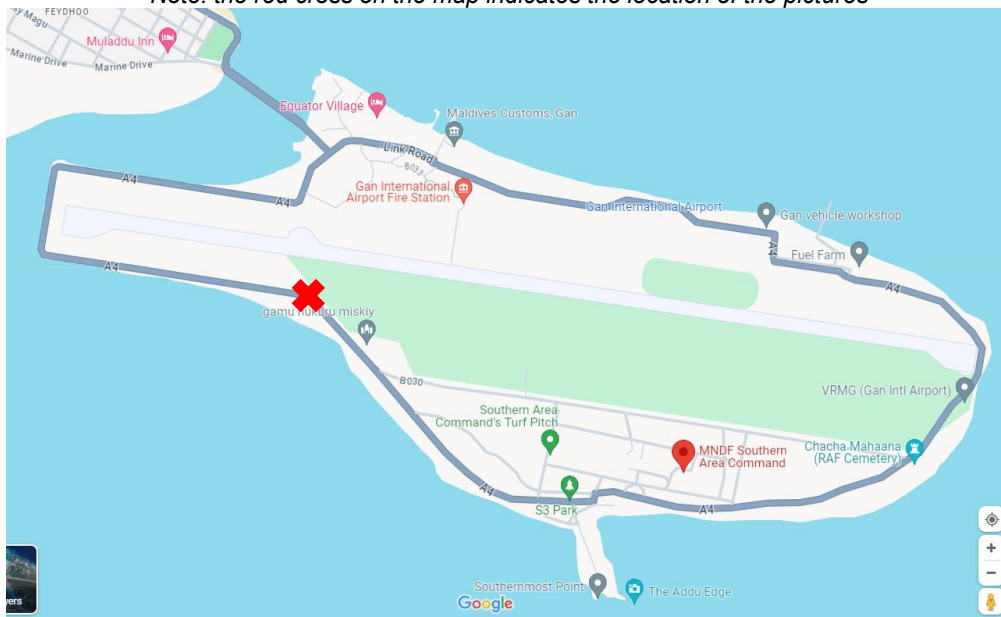
Source: Google Maps, 2024

23. The proposed site will be accessed through the road running along the west of the island, with the current status of the road shown in Figure 11.

² MMS provided answer in environmental and social screening checklist, July 2024. Available upon request. Meeting notes are provided in Annex 5.

Figure 11: Current status of the access road near the main proposed site for the radar tower: map and view from the north, east, south and west

Note: the red cross on the map indicates the location of the pictures



Source: ICEM-Epoch, 2024



Source: MMS, 2024

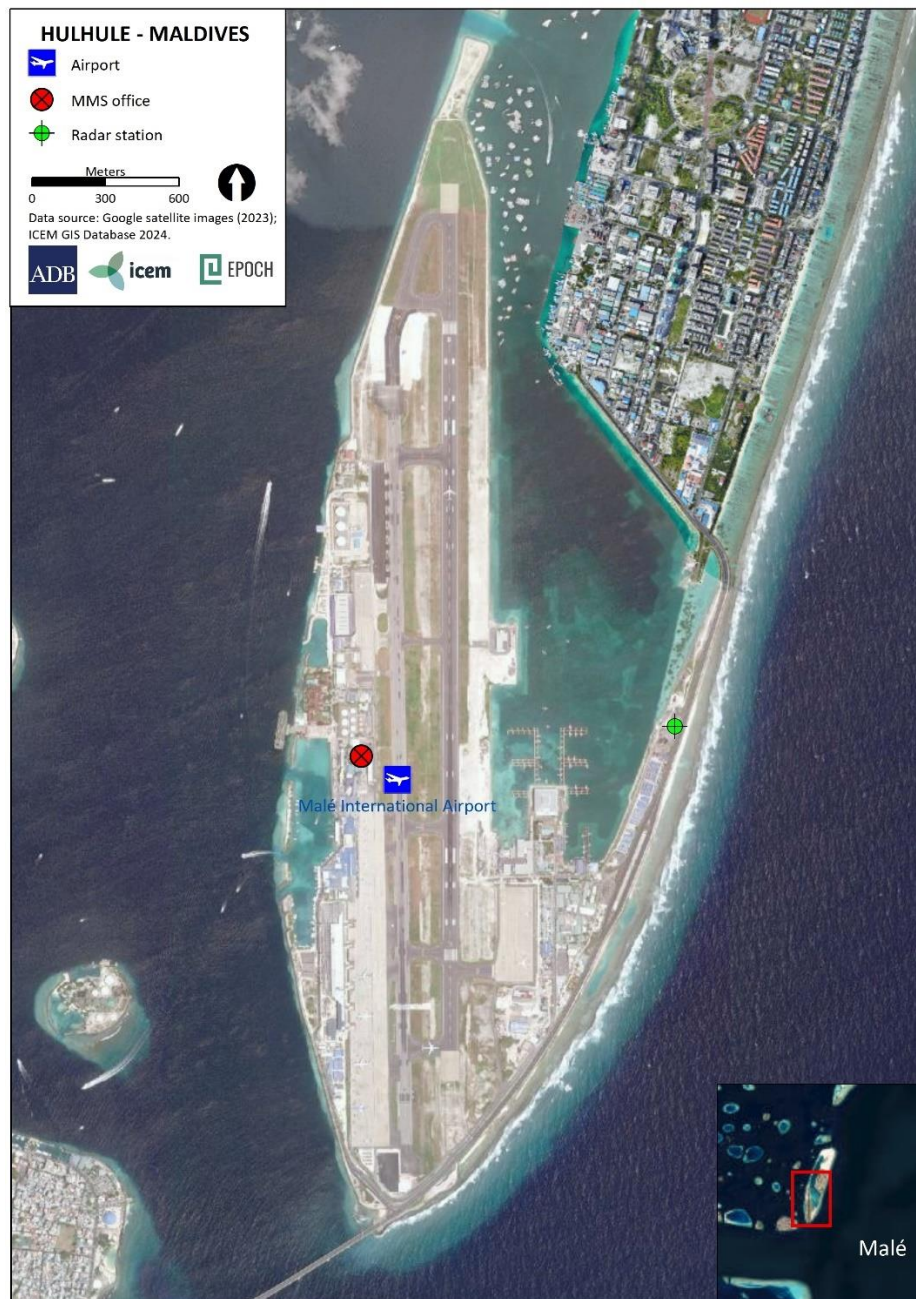
24. The scope of LAR impacts has been identified based on the field visit to the proposed sites allocated for physical implementation of the SP components under SP 1.1, and consultation with MMS. From the field observations and consultations (Annex 5), there are no impacts on private land, structures and livelihoods anticipated, permanent or temporary, direct or indirect, as all physical works will take place on free government land allocated to the Addu

International Airport authority. The land assigned for the weather radar tower (option 1) is currently owned by the Addu International Airport Company authority, as evidenced by the land handover document provided in Annex 2.

2. Output 1 Subproject 2: Male Radar Refurbishment

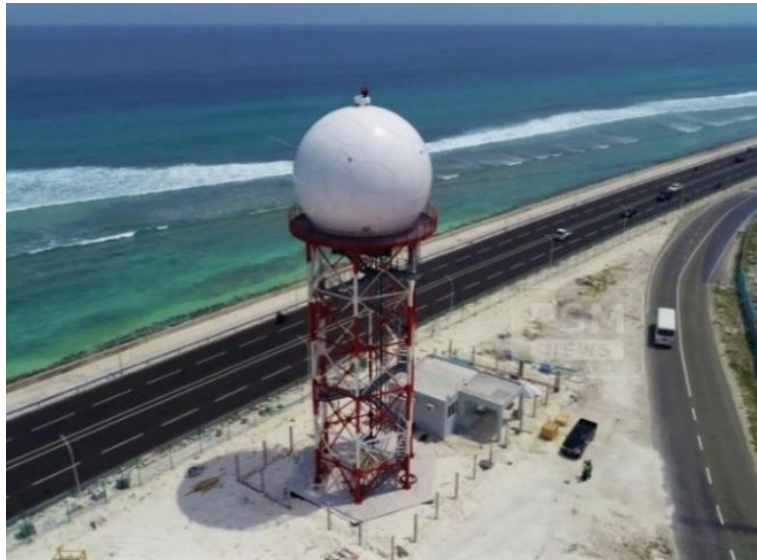
25. The Velana International Airport is located on a reclaimed industrial island name Hulhulé, connected to Malé and Hulhumalé by bridge (Figure 12). No permanent inhabitants reside on the island, as it is designated for aviation and industrial purposes.

Figure 12: Velana International Airport in Hulhule island – location of subproject 1.2



26. The Malé Doppler Radar operates in S band and is installed on a metal tower at Velana airport (Figure 13), with control and display workstations located in the weather forecasting room of the MMS offices located next to the domestic airport (Figure 14). The radar was installed in 2007 by the Enterprise Electronics Company and refurbished in 2015.

Figure 13: Current Doppler radar in Malé



Source: PSM News, 2019

Figure 14: Current MMS offices in Hulhule (Malé)

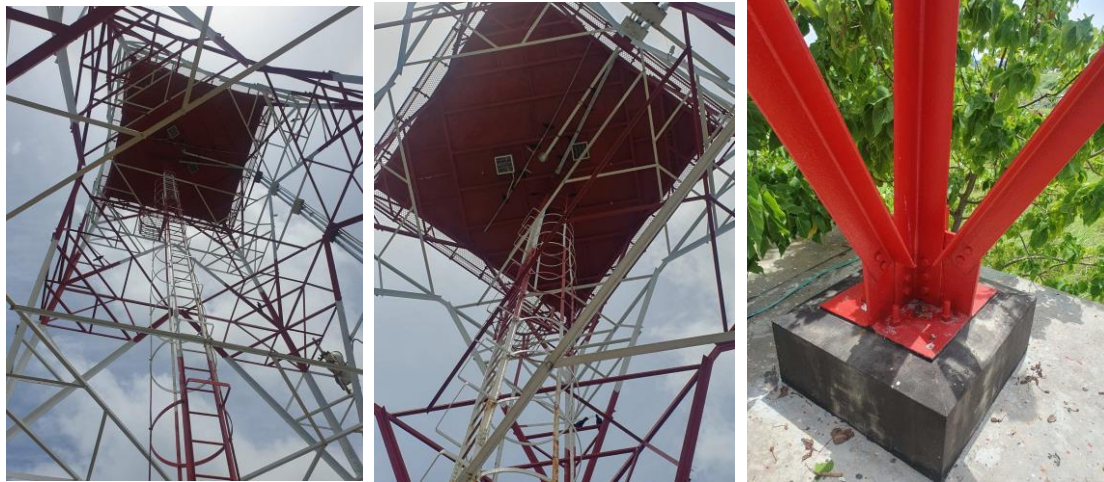


Source: Ali Shahid, 2015, Google Maps (top left) and MMS (other), 2024

27. According to MMS' initial assessment performed in May 2024, a modernization is necessary to ensure its functioning during the next 15-20 years, and to facilitate its maintenance. Following an in-depth assessment to be undertaken during the Project, the upgrades may include repair and painting of the metal radar tower (Figure 15), repair or replacement of power supply elements (Figure 16), of the air conditioning, of the radome, of antenna gear and control (Figure 17), of RF elements such as waveguides and rotary joints,

and provision of spare parts (including a spare magnetron) The server and computer which tailors the radar products may also be modernized (Figure 18).

Figure 15: Current status of the Malé radar tower



Source: MMS, 2024

Figure 16: Current status of the Malé power generator room and power generator



Source: MMS, 2024

Figure 17: Current status of the Malé radar air fiber data link to MMS head office



Source: MMS, 2024

Figure 18: Current status of the Malé radar server rack



Source: MMS, 2024

28. The current radar is located on government-owned free land. All land on Hulhulé is owned by the Maldives Airports Company Limited, a state-owned company. The Government confirmation of this land ownership is attached in Annex 3. No additional land is required for the upgrades to the existing radar.

29. When the upgrades to the tower will take place, temporary work disturbance may be experienced by MMS technicians. The MMS offices are not part of or near the radar tower so staff working in the office will likely not experience major disruption. Technicians working on the radar site may be temporarily affected. If upgrades need to be made to computer systems in the main MMS offices, office workers may experience temporary disruption. Impacts will be mitigated in the EMP, such as through minimizing works during government offices hours (08:00–14:00) and by agreeing on timing of works with due notice and in coordination with MMS. As the radar is currently facing severe limitations in terms of functionality and operation, the upgrades to the radar are foreseen to bring overall benefits to MMS capacity in weather observatory and forecasting.

3. Output 1 Subproject 3: Pilot agro-climate advisories

30. *Weather and climate information services* is a process of providing meteorological and climate information in a way that assists decision-making by individuals and organizations. It involves the use of high-quality data from national and international meteorological monitoring, in the form of databases, maps, risk and vulnerability analyses, assessments, and long-term projections and scenarios.³ *Agro-meteorological advisory products and services* combine this information with non-meteorological data such as crop phenology, yield output models and reference information on agricultural best-practices in production and post-production processes into advisory products useful for crop planning and management. Agrometeorological advisories target farmers, farmer organizations, private sector and Government organizations.

31. There is no experience in Maldives on developing agro-meteorological advisory products and services, however, there is substantial interest to pilot these approaches in the

³ WMO, Global Framework for Climate Services, https://qfcs.wmo.int/what_are_climate_weather_services

country. MAAW and MCCEE have expressed a strong interest in piloting these products and services in the country.⁴ Potential activities in this subproject 4 would aim to improve the following aspects of the agro-meteorological advisories information value chain:

- (i) *Data, data flow and data integration*: in terms of availability and quality of meteorological and non-meteorological data, sourced from agro-meteorological stations, remote sensing, modelling outputs and other sources. For example, recordings received from the meteorological stations network follow a specific process of transfer from the source to a database or archive. The efficiency of this data flow is characterized by: (i) time from recording to availability to the analyst; (ii) spatial representativity of the recordings; (iii) representativity (evolution of the historical time series) of the climatic evolution on the recording sites; and (iv) data quality of the archive (missing data, out-layers and other data base quality parameters). Similar considerations can be made for other data sources, such as satellite images for vegetation monitoring or on-site observations.
- (ii) *Facilities*: in terms of software, hardware requirements and all the necessary organizational arrangements such as equipment, composition of the work team and task assignments, data sharing and other protocols.
- (iii) *Capacity*: of the involved Government staff in: (i) systematically operating the data flow; (ii) generating information by processing the data through analysis and interpretation; and (iii) shaping and disseminating the information in the form of agro-met products to various end-users: for example, institutional users at national and local level, but also extension services at grass roots level and farmers.

32. This pilot will be designed during Project implementation by an Agrometeorologist. It is recommended to mobilize ADB and/or external expertise on agro-meteorological forecasting and advisories to fully design this subproject, with MMS, MAAW and other stakeholders.

33. During the pilot design phase, it will be determined whether equipment is required to upgrade the current weather monitoring network, specifically the 45 automated weather stations (AWS) operated by MMS. This equipment would consist of small-size agricultural monitoring instruments to be installed at the premises of existing MMS-managed AWS. Islands and specific locations will subsequently be selected in consultation with MMS and MAAW. The land on which the AWS are located belongs to the government (Annex 4), and is not used as farming plots.

B. Outcome of the Land Acquisition and Resettlement Screening for Output 1

34. Due diligence exercise has been carried out using a designed checklist to screen any potential involuntary resettlement impacts due to the proposed SP intervention in the allocated land area. The result of this due diligence exercise is summarized in Table 1, while all five of the Involuntary Resettlement Impact Screening Checklist used to screen the Output 1 SPs are provided in Annex 1.

Table 1: Outcome of the LAR Screening for Output 1

Issues	Remarks
Will the Project include any physical construction work?	Yes, implementation of two out of five SPs under Output 1 will include works: SP1.1 and SP1.2. SP1.3 may include installation of instruments. This will be determined at the pilot design phase.

⁴ Asian Development Bank. 2024. Preparation of the Climate Change Adaptation and Resilience Project in Maldives. *Midterm Report*. Consultant's Report. Manila.

Issues	Remarks
	SP1.4 and 1.5 do not include civil works.
Will it require permanent and/or temporary land acquisition?	<p>SP1.1: For neither options land acquisition is required. For the new MMS weather observatory (not part of the project), due diligence indicated that there are likewise no involuntary resettlement impacts, and that the land is owned by the government. The official letter issued on 18 April 2024 by the Managing Director of the Addu International Airport Mr. Mohamed Waheed Hassan confirms that Addu International Airport authority has allocated the land to MMS for the development of the observatory.</p> <p>If the second site option is selected during the detail design, the land is also owned by Addu International Airport, which is government owned. A new letter will need to be issued after the site has been selected.</p> <p>SP1.2: The Malé radar is located on government owned land (Maldives Airports Company Limited, a state-owned company).</p> <p>SP1.3: The piloting of agro-climate forecasts and advisories may require the installation of small agricultural monitoring instruments. The recommended location for this equipment is at the sites of existing MMS-operated AWS premises on government owned land (Annex 4). If other sites are selected during the pilot design phase, this may involve minor land acquisition for installation of instruments in new locations, although this should be avoided. The DDR will be updated after final selection of the locations.</p> <p>SP1.4 and 1.5: The subprojects do not require any civil works and will not require land acquisition. Involuntary resettlement impacts are not expected.</p>
Will there be loss of structure?	<p>SP1.1: The allocated area of the first option of 40,000 square feet is fully free and vacant land with no residential or business structures. If the second site option is selected during the detail design, the land is also free and vacant land with no residential or business structures.</p> <p>SP1.2: The upgrading of the existing radar will not involve any loss of structure.</p> <p>SP1.3: This will be determined upon final selection of locations, which will require updating of this DDR.</p>
Are there any non-titled people who live or earn their livelihood at the site?	No negative impact on livelihoods identified. No persons living in the allocated land areas.
Will there be loss of housing?	No housing existing in the allocated land area.
Will there be loss of agricultural plots?	No agriculture, economic, cultivation and business activities are undertaken at the sites.
Will there be losses of crops, trees, and fixes assets (i.e. fences, pumps, etc.)?	No impact on crops, trees, fences, pumps, etc.
Will there be loss of business or enterprise?	No business or enterprise located at the sites.

Issues	Remarks
Will there be loss of incomes and livelihoods?	No impact on livelihoods.
Will people lose access to facilities, services, or natural resources?	No people will lose access to facilities, services, or natural resources.
Will any social or economic activities be affected by land use-related changes?	No social or economic activities be affected.
Are any of the affected persons from indigenous or ethnic minority groups?	No indigenous or ethnic minority groups living in the allocated land area.

35. The findings from the safeguard due diligence exercise confirms that physical implementation of the SPs under Output 1 of the Project:

- (i) While no permanent LAR impacts are foreseen, SP1.2 may involve possible temporary impacts to regular work when upgrades to the Malé radar are made.
- (ii) No household will be physically displaced from housing, i.e., no relocation issues involving residents or buildings in the identified area within the campus.
- (iii) No agriculture, economic, cultivation and business activities are undertaken at the site.
- (iv) No household will lose any part its land holding.
- (v) No adverse impact on surrounding lands and other properties.
- (vi) No impact on any vulnerable or any indigenous or ethnic minority groups.
- (vii) The total area required for the SPs' intervention is available on free and vacant land and is owned by the Government.
 - SP1.1: For option 1, the official letter, issued on 18 April 2024 by the Managing Director of the Addu International Airport Mr. Mohamed Waheed Hassan confirms that the land is allocated land to MMS for the observatory (see Annex 2). For option 2, the land is allocated to Addu International Airport, a government-owned company. A new letter of allocation will need to be issued if this option is selected. This DDR will require updating after the site has been selected.
 - SP1.2: Government confirmation from Mr Ahmed Rasheed (Director of Meteorology, MMS) that all land on Hulhulé island is owned by the Maldives Airports Company Limited, a state-owned company (see Annex 3).
 - SP1.3: The sites of the current AWS are owned by government island/city councils (Annex 4) allocated to the weather stations. New instruments to be potentially used for the pilot are planned to be located on these sites, at islands to be determined during the pilot design phase. This DDR will require updating after the sites have been selected.

C. Indigenous People

36. All people in Addu City, the second-largest urban area in Maldives in terms of population, enjoy the same rights and opportunities as the rest of the citizens in the country. The country's Constitution provides these equal rights, benefits and opportunities to all its citizens. None of the population in Addu City belongs to a separate and distinct cultural or social group. They share public facilities such as mosques, cemeteries and community facilities.

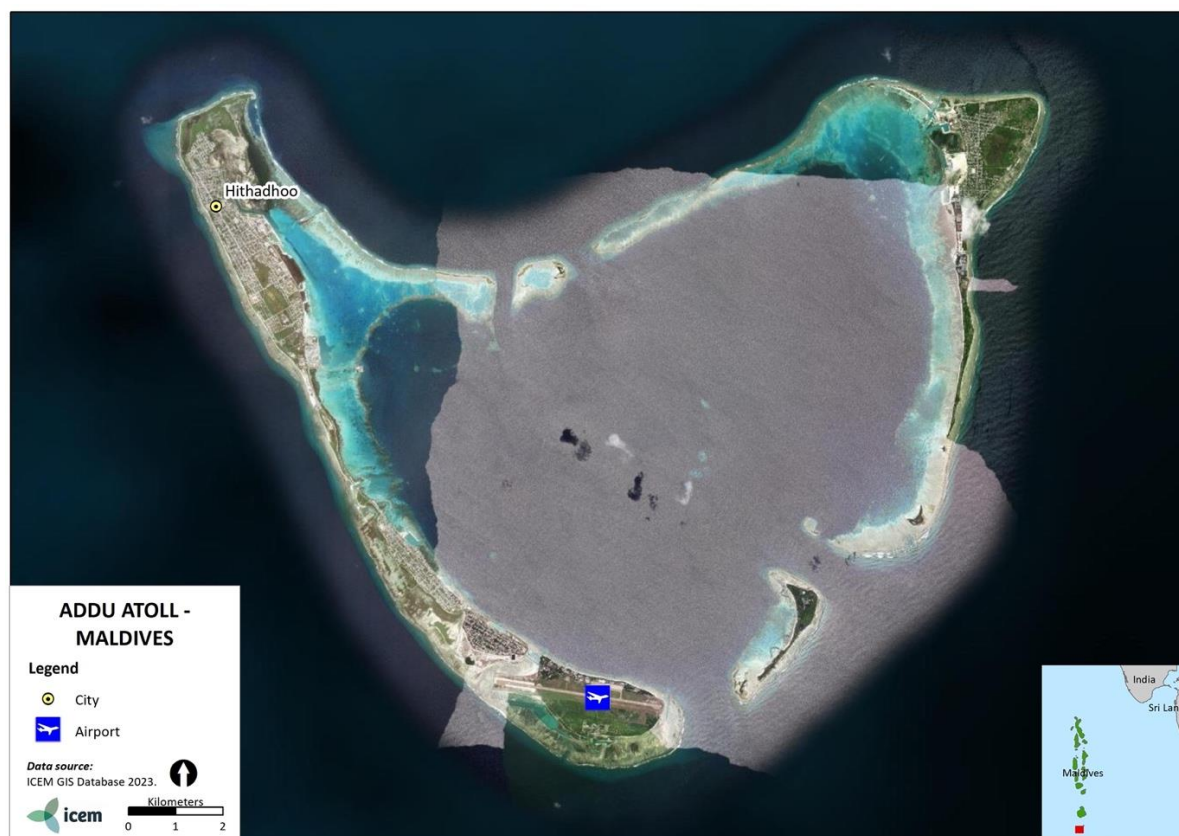
37. The implementation of SPs under Output 1 has no potential to affect indigenous peoples directly or indirectly. Safeguards assessment, field visits and consultations (Annex 5) could not identify the presence of any distinctive and separate indigenous peoples in SP areas of Addu City, as defined in ADB's SPS (2009), and hence, the Project is deemed to be classified as category C for indigenous people's impacts.

III. Socioeconomic Profile of Subprojects Area

A. Addu City

38. Addu City atoll, located 500 km south of Malé, consist of 32 islands of which six are inhabited – Meedhoo, Feydhoo, Hithadhoo, Maradhoo, Maradhoofeydhoo, and Hulhudhoo - together forming Addu City (Figure 19). Addu City covers a land area of 1,083.61 ha, with a land reclamation project of an additional 193 ha which is expected to be completed in 2024-2025.⁵

Figure 19: Addu City atoll



39. Addu City is designated as the regional southern hub, providing key services to the region, such as the Addu Equatorial Hospital, airport and several educational facilities. One of the country's five meteorological offices, Gan Meteorological Office, is located in Addu at Gan Airport and operates 24 hours a day.

40. The atoll forms the second-largest urban area in Maldives with a population of 34,772 people, of which 17,723 male and 17,049 female.⁶ The population grew by 2.1% between 2014 and 2022, above the national average of 1.5%. The key demographic characteristics of the atoll are presented in Table 2, and labor force indicators are presented in Table 3.

Table 2: Demographic Characteristics of Addu City industrial and residential islands

No.	Atoll	Island name	Type	Registered population (2022)	Male	Female
0	Addu City (S.)	Gan	Industrial	n/a	n/a	n/a

⁵ Ministry of National Planning Housing and Infrastructure – Addu Development Project Website. URL: <https://addudevelopment.mv/about-the-project>

⁶ Maldives Bureau of Statistics. 2023. *Statistical Pocketbook 2023*. Table 3.3: Registered Population, 2022. Malé.

No.	Atoll	Island name	Type	Registered population (2022)	Male	Female
1	Addu City (S.)	Meedhoo	Residential	3,056	1,568	1,488
2	Addu City (S.)	Hithadhoo	Residential	16,650	8,461	8,189
3	Addu City (S.)	Maradhoo	Residential	3,796	1,937	1,859
4	Addu City (S.)	Feydhoo	Residential	5,682	2,886	2,796
5	Addu City (S.)	Maradhoofeydhoo	Residential	1,920	963	957
6	Addu City (S.)	Hulhudhoo	Residential	3,668	1,908	1,760

Source: Maldives Bureau of Statistics. 2023. *Statistical Pocketbook 2023*. Table 3.3: Registered Population, 2022. Malé.

Table 3: Labor force indicators for Addu City and the national average

Item	Addu City			National		
	Total	Male	Female	Total	Male	Female
Unemployment rate	6.4	5.0	10.1	3.0	2.2	5.3
NEET rate (15-24 years)	22.6	20.0	25.7	15.5	12.1	20.3
Inactivity rate	36.6	19.8	59.5	24.7	11.4	47.2
Labor force participation rate (%)	63	80	40	75	89	55

NEET = neither in employment nor in education

Source: Maldives Bureau of Statistics. 2023. *Island & Atoll Level Indicator Sheets: Employment: Atoll Level Indicator Sheet*. Malé.

41. Tourism and fisheries are the key economic sectors, followed by agriculture. While the number of farmers registered in 2013 was 290, by 2022 the number declined to 172.⁷ Main crops grown on the islands include coconut, banana, watermelon, mango and pumpkin.⁸ There are two island resorts in Addu City - Shangril'a Vilingili Maldives Resort and Canareef Addu, and the main atoll forms a key base from which to travel to resort islands.

42. A section of 13,000 ha of Addu Atoll became a UNESCO Biosphere Reserve in 2020, after being nominated by former President Solih in 2019.⁹ To support the designation the Government first granted protected area status to sections of the atoll. The biosphere is home to a large variety of ecosystems including reefs, lagoons, seagrass beds, coral islands, mangroves, lakes, wetlands and agricultural land. Its seagrass and mangroves function as carbon sinks and protect the atoll against storms. Over 1,200 fish species including many endemic species are found in the reserve.

43. Addu International Airport serves Addu City and its surrounding islands, located on the industrial island of Gan, connected to Feydhoo by bridge. First built by the British Royal Navy, and transferred to the Royal Air Force as RAF Gan, the Gan International Airport was originally a military airbase built during World War II and commissioned until the 1970s. The United Kingdom transferred ownership to the Government of Maldives, and it was converted for use as a domestic airport, and subsequently upgraded to international standards for international flights.

B. Hulhulé

44. Hulhulé island is an island in North Malé (Kaafu) atoll, and considered a ward of Malé City. It is an industrial island for aviation purposes managed by Maldives Airport Company Limited. The majority of the island is used for the Velana International Airport, the country's main gateway, which first opened in 1960. To accommodate the development of the tourism sector, the airport was expanded in the 1970s.

45. Reclamation of Hulhumalé began in 1997, on the Hulhulé-Farukolhufushi lagoon 1.3

⁷ Maldives Bureau of Statistics. 2023. *Statistical Yearbook 2023 – Fisheries and Agriculture*, Table 9.15.

⁸ Maldives Bureau of Statistics. 2023. *Statistical Yearbook 2023 – Fisheries and Agriculture*, Table 9.20.

⁹ <https://en.unesco.org/biosphere/aspac/addu-atoll>

km (0.81 mi) off the northwest coast of Malé to accommodate further demand.

46. Today Hulhulé is connected to Malé via the Sinamalé Bridge, which opened in 2018, following land reclamation between 2016 and 2017 to create the link road. The only hotel on the island, Hulhulé Island Hotel, is used for passengers transiting to resort islands after landing at Velana International Airport.

47. Alongside the airport, the seaplane terminal and headquarters of the MMS, several companies and state-owned enterprises are also located on the island, including State Electric Company Limited (substation), Trans Maldivian Airway, MNDF Hulhule Post, Maldives Airports Company Limited Carpentry, Airport Police, a fuel farm, Hulhule Ferry, Airport Rescue and Firefighting, and Maldives Airports Company Limited Water Supply and Sewerage.

IV. Legal and Policy Framework and Entitlements

48. The Maldives laws and regulations on land acquisition and ADB's SPS 2009 will form the basic principles for the project, particularly the following elements:

- (i) Involuntary resettlement will be avoided or minimized as much as possible by adopting alternative engineering solutions.
- (ii) Where involuntary resettlement is unavoidable, displaced persons will be assisted to reestablish themselves and to improve upon their pre-project living standards.
- (iii) Gender equality and equity will be ensured and adhered to.
- (iv) In case of displacement, the displaced persons shall be fully involved in the selection of relocation sites, livelihood compensation and development of alternative livelihood options during project preparation. The RP shall also be prepared in full consultation with displaced persons, including disclosure of RP and project related information.
- (v) Replacement land of equal quality shall be an option for compensation in the case of loss of land. In case of non-availability of replacement land, cash-for-land compensation will be paid to the displaced persons at full replacement cost.¹⁰
- (vi) Compensation for loss of land, structures, trees, other assets and for loss of livelihood and income will be based on full replacement cost, include transaction costs, and will be paid before physical displacement.
- (vii) All compensation/assistance payments and related activities will be completed prior to the commencement of civil works.
- (viii) The RP will be prepared and implemented with complete participation of local authorities.
- (ix) In the event of necessary relocation, displaced persons shall be assisted to integrate into host communities with all infrastructural facilities extended to the host communities as well as the displaced people.
- (x) Loss of common property resources will be replaced/compensated and additional community/public services will be provided to displaced persons, according to agreement between the project and displaced persons.
- (xi) Resettlement will be planned as a development activity for displaced persons.
- (xii) All displaced persons are entitled to receive compensation/assistance irrespective of title over land/property.
- (xiii) People moving in the project area after the census cut-off date will not be entitled to any compensation/assistance. In the case of land acquisition, the date of notification for acquisition will be treated as the cut-off date. For non-

¹⁰ Replacement cost means the method of valuing assets to replace the loss at fair market value, or its nearest equivalent, plus any transaction costs such as administrative charges, taxes, registration, and titling costs. Where there are no market conditions, replacement cost is equivalent to delivered cost of all building materials, labour cost for construction, and any transaction or relocation costs.

titleholders such as squatters and encroachers the date of census survey or a similar designated date declared by the executing agency will be considered as cut-off date.

- (xiv) Vulnerable groups (households below the recognized poverty line; disabled, elderly persons or women headed households, Scheduled Tribes/Scheduled Castes) will be identified and assisted to improve their pre-project status or their living standards to better than pre-project levels and must at minimum exceed the national poverty line.

A. Legal and Policy Framework

49. This section summarizes the legal framework for social safeguards related to involuntary resettlement in Maldives. Preparation of an RP will require that the national legal and policy framework of Maldives is reviewed and that this summary is further refined and updated as part of RP preparation.

1. Constitutional Guarantees

50. The Constitution of the Republic of Maldives is the supreme law of the land. The first written Constitution of Maldives was adopted on 22 December 1932. There have been seven Constitutions, created in the years 1932, 1942, 1953, 1954, 1968, 1997 and 2008. The current Constitution came into force on 7th October 2008.

51. Article 268 of the Constitution provides as follows:

- (i) All laws of Maldives must be enacted in accordance with this Constitution. Any law or part of any law inconsistent with this Constitution is, to the extent of its inconsistency, void and of no force and effect. The obligations imposed by this Constitution must be fulfilled. Any conduct contrary to this Constitution shall be invalid.
- (ii) The Constitution of Maldives guarantees fundamental rights and freedom to all persons in the Chapter II of the Constitution.

52. Furthermore, the Constitution of Maldives provides for powers, obligations and duties of the Parliament, the President and the Judiciary. It also provides functions and mandates of the Constitutional Bodies, those facilities to run the State smoothly and uphold the Constitution.

2. Local Councils

53. Under 230 (a) of the Constitution, the administrative division of Maldives shall be decentralised. Schedule II of the Constitution provides for list of the administrative division (known as "Atolls") in Maldives. By virtue of Article 230(b) of the Constitution, the President has the power to create Constituencies, posts, Island Councils, Atoll Councils and City Councils. The Decentralization Act (Law N0.7/2010) provides for three types of local authorities in the Maldives namely: (a) Atoll's Councils (section 6), (b) Island's Council (section 21) and (c) City's Council (section 39).

3. Maldivian Land Act

54. The 2008 Constitution vests all lands under the ownership of the state and bans foreign ownership of land. The government continues to review land-related legislation to bring it into line with the constitution and current development policy. Meanwhile, matters relating to land are governed by the provisions of the Maldivian Land Act (MLA) and Regulations of 2002, as subsequently amended.

55. The MLA Section 4 lists several purposes and uses of lands in the country. They are:

- (i) For the construction of households and buildings for residential purposes.
- (ii) For commercial use.
- (iii) For social use.
- (iv) For environmental protection.
- (v) For government use.

56. As per the MLA, land that belongs to an island council or city council can be used for government purpose, and such lands can be transferred to the relevant Ministry with the permission of Ministry of Housing, Land and Urban Development (MHLUD) and the respective island council or city council.

57. Under the MLA, all Maldivian citizens who do not have a place of residence are entitled to a parcel of land for residential purposes, referred to as a "state dwelling". Such parcels are issued by the respective Atoll office and must not exceed 4,000 ft² (372 m²). The parcel is forfeit if not developed ("settled") within five years. State dwellings are heritable and divisible, down to no smaller than 600 ft² (56 m²).

58. State dwellings can be privatized by purchase from the government. Conversion to non- residential purposes is possible subject to compliance with land use policy and a permit. Sales of private land incur a 15% tax.

59. Buildings, trees and other assets on land belong to the owner of the land or official user of the land, unless third-party ownership can be proven under Shari'ah.

60. Land for agriculture is allocated to residents by island administrations on an annual renewable basis. The land remains government property. No rent is paid, but the plots are generally small and the system provides little security or incentive to invest in and improve the land. When land is required for public projects, it is understood that the legal owner or registered user is compensated on a land-for-land basis, with fixed assets being paid for at fair market price.

61. According to a 2011 President's Office Press Release (Ref. No. 2011-374), the Cabinet established the Maldives Land and Survey Authority to conduct surveys and collect and update information on the most beneficial uses of lands, lagoons and reefs of Maldives and to formulate and implement cadastral survey standards.

4. Land Use Planning and Management and Traditional Rights to Land

62. Land-use planning of inhabited islands is guided by the MHLUD. Land allocations and registrations are finalized by the Maldives Land and Survey Authority under the MHLUD with consultations and necessary approvals from both the MHLUD and sometimes also from other line ministries. There are no traditional governance structures in Maldives for coastal land and resource use. Local island and atoll offices play a major role, however, in the planning stages of land allocation and management on their respective islands. Locally formed and selected Island Development Committees and Atoll Development Committees play a critical advisory role in land management on inhabited islands.

63. A large proportion of uninhabited islands are managed under a traditional system called *Varuvaa*. Under the *Varuvaa* system land is leased out to individuals for minor economic activities, such as harvesting of coconuts and other natural products. Lessees undertake annual crop cultivation on islands where cleared agricultural land is available. On inhabited islands, land tenure systems are complex. Homestead plots are given free of charge. Plot sizes depend on the availability of land, with an average size being about 50 by 100 feet. Trees grown on homestead plots belong to the owner and the homestead allotment is inheritable. *Goi* land refers to a particular area of the inhabited island with special vegetative

characteristics. Coconut palms and many tree species grown on *Goi* land belong to the government. *Goi* land is rented to the highest bidder. The lessee rents smaller plots for farming. In general, the lessee gets 12.5% of the income generated by farmers. *Faalabba* is a land area generally located close to residential areas. Islanders grow coconut palms and tree species with the permission of the Island Office. Half of the trees grown belong to the person who planted them and the other half is the property of the state. Most islands have communal land for the cultivation of annual crops. No rent is charged for cultivation on this land and no standard regulation exists for its use. On some islands, plots change hands every year; on other islands farmers can hold the plots as long as they continue cultivation.

B. ADB's Safeguard Policy Statement (2009)

64. The ADB SPS (2009) requires ADB-assisted projects to:

- (i) Avoid involuntary resettlement, where possible;
- (ii) Where avoidance is not possible, minimize by exploring project and design alternatives;
- (iii) Enhance or at least restore the livelihoods of all apts in real terms relative to pre-project levels; and
- (iv) Improve the standards of living of the displaced poor and other vulnerable groups.

65. ADB's SPS 2009 covers both physical displacement (relocation, loss of residential land, or loss of shelter) and economic displacement (loss of land, assets, access to assets, income sources, or means of livelihoods) because of:

- (i) Involuntary acquisition of land; or
- (ii) Involuntary restrictions on land use or on access to legally designated parks and protected areas. It covers displaced persons whether such losses and involuntary restrictions are full or partial, permanent or temporary.

66. The key principles of the ADB safeguard policy on resettlement are as follows:

- (i) Screen early the project's resettlement impacts and risks.
- (ii) Carry out meaningful consultations with and participation of displaced persons (DPs)¹¹, inform all DPs of their entitlements and resettlement options.
- (iii) Pay particular attention to the needs of vulnerable groups. Establish a grievance redress mechanism.
- (iv) Improve, or at least restore, the livelihoods of all DPs through i) land-based resettlement or cash compensation at replacement cost, as relevant, ii) prompt replacement of assets, iii) prompt compensation at full replacement cost, and iv) additional revenues and services through benefit sharing schemes where possible.
- (v) Provide DPs with needed assistance, including: i) if there is relocation, secured tenure to relocation and, better housing; ii) transitional support and development assistance; and iii) civic infrastructure and community services, as required.
- (vi) Improve the standards of living of the displaced poor and other vulnerable groups to at least national minimum standards.
- (vii) Develop procedures in a transparent, consistent, and equitable manner if land acquisition is through negotiated settlement.
- (viii) Ensure that DPs without titles are eligible for resettlement assistance and compensation for loss of non-land assets.

¹¹ AP is increasingly being replaced by the term "Displaced Persons (DPs)" following ADB SPS (2009) – but it is still in common use in the field. The terms of APs and DPs are used interchangeably in this document.

- (ix) Prepare a RP elaborating on DPs' entitlements, income and livelihood restoration strategy and so on.
- (x) Disclose an RP in an accessible place and a form and language(s) understandable to DPs and other stakeholders.
- (xi) Conceive and execute resettlement as part of a development project or program.
- (xii) Provide compensation and other entitlements before physical or economic displacement.
- (xiii) Monitor and assess resettlement outcomes, their impacts on the standards of living of DPs.

C. Comparison between Maldivian Land Act and SPS (2009) of ADB

67. The MLA is the primary legal framework for all land acquisition, compensation determination and relocation of APs in Maldives. The Act, however, has a limited scope in terms of resettlement and rehabilitation of APs. The practical application of the MLA does not meet the principles of the ADB SPS (2009). For example, the legislation does not cover the provision to formulate an RP to address adverse involuntary resettlement impacts, has no clause for special assistance to vulnerable household and has no provisions for income and livelihood support and restoration. Further details on the differences between the government laws, regulations and guidelines and the safeguard policies of ADB is available in the RF of the Project. Project policy on social safeguards will be based on land acquisition law in Maldives and the ADB policy on Involuntary Resettlement as embedded in the SPS (2009).

D. Eligibility of Entitlements

68. All the APs identified in the Project impacted areas at the time of the cut-off date will be entitled to compensation and/or assistance for their affected assets. Those who encroach into the project area and build any new structure after the cut-off date will not be entitled to compensation or any other assistance.

69. The Project does not anticipate involuntary resettlement and land acquisition. In the event that involuntary resettlement is unavoidable, APs are entitled to compensation and other benefits as per policy delineated in the RF of the Project that complies with laws and regulations of Maldives and of ADB's SPS (2009).

V. Consultation and Disclosure

A. Consultation

70. Information sharing on the Project's Output 1 SPs has been carried out by conducting several rounds of discussion and consultation meetings with the key stakeholders in Malé and Addu City between 4 to 6 March 2024, and on 12 June 2024, involving the officials of the airport authority, MMS, and the project preparation consultants' team from the International Centre of Environmental Management (ICEM) and Epoch Associates. In this process of information communication, the specific positive aspect of social safeguard was highlighted by confirming that the SP interventions will not trigger ADB's SPS safeguard requirements on involuntary resettlement or on Indigenous Peoples. Some pictures of the consultation meetings are provided in Figure 20.

Figure 20: Pictures of Consultation Meetings



Meeting with MMS in Male on 4 March 2024



Meeting with Addu International Airport authority and MMS in Addu Atoll on 6 March 2024.



View of the potential radar site, 6 March 2024.



Meeting with the Maldives Red Crescent on 6 March 2024

71. As discussed, the safeguard due diligence exercise confirms that physical implementation of the SPs under Output 1 will not involve any LAR impacts; will not have any negative impact on livelihoods; and the total area required for the SPs' intervention is free and vacant land owned by the Government or the respective airport company. At each of the consultations, a presentation was made providing all the details on the proposed interventions covered under Output 1 as well as under the other outputs. Due diligence screening of involuntary resettlement impacts under the Output 1 SP interventions was confirmed using the Involuntary Resettlement Impact Screening Checklist (Annex 1).

72. A summary of the consultation meetings is given in Table 4, while the minutes of the consultation meetings together with the lists of participants in Annex 5.

Table 4: Summary of Consultation Meetings Output 1

Meeting Date and Venue	Participants	Number of Participants	Main Topics of Discussion
04 March 2024 in MMS offices at Velana Airport, Malé	MMS Officials, Consultants	9	MMS operation, installation of radar in Addu and SP interventions.
05 March 2024 in Addu International Airport in Addu City	MMS officials, Consultants	5	Technical aspects of radar installation and confirmation that the land required for installation of radar with other associated infrastructure will not involve any LAR impact, will not involve any negative impact on livelihood, and total area required for the SP's intervention is free and vacant land and is owned by the Addu airport.
06 March 2024 with MMS in Addu International Airport in Addu City	Airport authority, MMS officials in Addu Airport, Consultants	8	Presentation of main radar characteristics, confirmation by the airport Director that the ownership of the land allocated for the radar is owned by the Addu Airports authority. The land for construction of the radar tower building will be made available to the Project at no cost.
06 March 2024 in a nearby coffee shop in Addu City	MRC officials, Consultants	4	Discussion on planned new radar, current communication procedures, MRC activities regarding disaster management awareness, especially with migrants.
12 June 2024 (virtual meeting)	MMS, Consultants	8	Discussion on implementation aspects of the agreed SPs and on preparation of safeguards reports.

LAR = land acquisition and resettlement, MMS = Maldives Meteorological Society, MRC = Maldives Red Crescent

B. Disclosure

73. This DDR will be made available for reference in the MCCEE in Malé and at the Addu City Council as well as in the site offices of the Project, at MMS in Gan and Hulhule, and at Addu International Airport Company and Maldives Airport Company. Features of this DDR have already been disclosed to the key stakeholders through consultation meetings. After review and approval of the appropriate authority of the MCCEE and ADB, the final DDR will be disclosed on the websites of MCCEE and ADB. No civil works contract for the Output 1 will be awarded or construction will start before the approval of final DDR of the Output 1 by ADB. The IAs are responsible for handing over the project land/site to the contractor free of any encumbrance.

VI. Grievance Redress Mechanism

A. General Principle

74. As soon as the Project commences, the PMU will establish a project specific simple

and acceptable, transparent and effective GRM, stipulating the required level and number of GRCs. The GRM will provide time-bound and transparent mechanism to effectively manage and resolve any social or environmental concerns that may arise during the pre-construction, construction and operation of the Project, such as regarding negotiated/voluntary land donation or involuntary land acquisition, relocation, income restoration, environmental management and other related issues.

75. It is the responsibility of the PMU to provide information on the GRM to project affected communities, i.e. all locations where the project is undertaken. This information should be provided within three months of the project commencement. Multiple means should be utilized to provide this information, including community meetings, public notices, mainstream media and social media.

76. The GRM will ensure that AP's concerns and complaints are promptly addressed, using an understandable and transparent process that is gender responsive, culturally appropriate and readily accessible to all segments of the AP at no costs and without retribution. It will be accessible to members of the community but also workers upon approval of the Project by ADB. The mechanism is not impeding access to the Maldivian judicial or administrative remedies.

77. PMU, Island/City Councils and contractors will inform the AP about the GRM on approval of the project. Through public consultations and distribution of the public information booklet, APs will be informed that they have a right to file complaints to the GRC. For issues pertaining to sexual exploitation and abuse and sexual harassment the grievance form and board should give direction on the appropriate contact numbers of Ministry of Gender, Family and Social Services to contact regarding such cases. Confidentiality of the aggrieved party should be maintained in such cases.

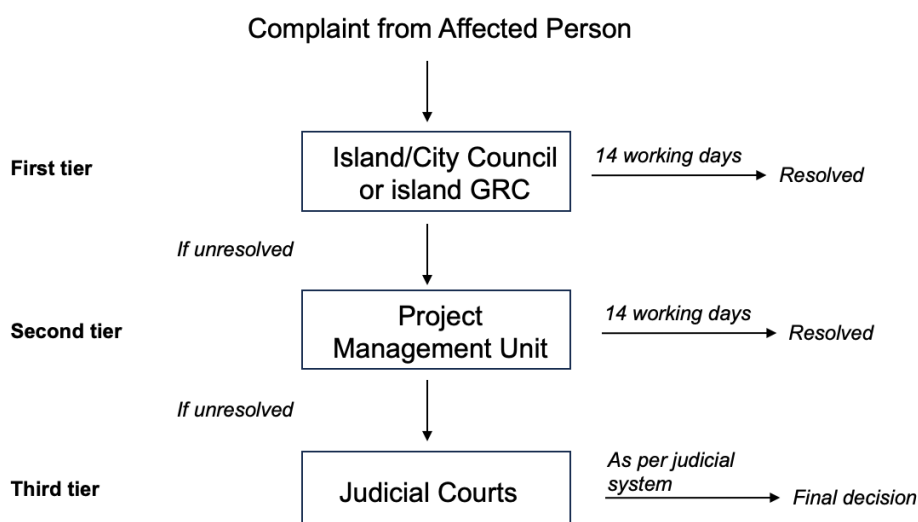
78. The GRC will be free to act independently and ensure equitable treatment of women and men in all decision making. The GRM will take effect immediately after loan/grant effectiveness or award of contract, whichever is earlier. The GRC will mediate conflict and avoid lengthy litigation that is inconvenient to APs.

79. A GRC does not possess any legal mandate or authority to resolve any issue, rather acts as an advisory body or facilitator to try to resolve issues between the affected household/person and the IAs. Any complaints of ownership or other suits, to be resolved by Maldivian legislation, will not be resolved in GRC. The AP always has final recourse through Maldives legal channels. However, every effort will be made to avoid this by applying traditional conflict resolution procedures in negotiating resolutions to complaints.

80. Should the AP want to pursue legal recourse, the Project will ensure that the support is given to the AP to prepare a case. The PMU will provide the contact details of the Attorney General's office, and will assist aggrieved persons(s) in accessing the Attorney General's office. No fees will be charged on the AP for such assistance. Similarly, no financial payments will be required for APs to have their grievances addressed.

B. Mechanism

81. A three-tier mechanism is proposed for grievance redress of environmental and social matters in regards to the installation and operation of various project components using existing island council administrative structures for APs, organizations, community groups, and workers, any of which can be complainants. Should the grievance not be resolved and/or the AP is not satisfied with the outcome, the complaint will be referred to the next tier. The mechanism is visualised in Figure 21, and detailed in Table 5. The grievance recording form is provided in Annex 6.

Figure 21: Flow chart of Grievance Redress Mechanism**Table 5: Grievance Redress Mechanism**

Focal Person for Contact	Contacts, Communication and Other Facilitation by Project	Timeframe to address grievance
First Tier: Island/City Council and Contractor / Island-level GRC		
Designated contact persons should be established within the Council with a designated contact number.	<ul style="list-style-type: none"> In the island/city council office, contractor office and the project site there will be an Information Board providing details of the GRM listing the names, sex and contact telephones/emails. Grievances will be registered informally by contacting the designated island/city council or GRC member. If the grievance cannot be resolved informally, a formal complaint can be registered through phone/email or by submitting the complaint form. The form must be available online (digital form) on the websites of all implementation partners and physical forms should be available from the contractor's office, at the council offices and at PMU, including drop boxes to submit physical forms. A hotline will be established to receive grievances via phone call and mobile message. For those who cannot properly write, a staff will assist in filling the complaint form and get it signed by the aggrieved party. The council or island GRC will screen the grievance to determine if the issues and concerns raised in the complaint falls within the mandate of the project. If it is related to the project, the council will inform the aggrieved party in writing (copied to PMU) how the case will be processed as per this GRM. This should occur within 03 working days of receiving the complaint. If the aggrieved party is unable to read (for whatever reason) the issued letter will be read to the person in presence of a witness and the witness should declare their witness to this event. Alternatively, if it is not related to the project, the council or island GRC will inform the aggrieved party that it is not related to the project in writing (copied to PMU) and will inform how the case will be handled. This communication will occur within 03 working days of receiving the complaint. If the aggrieved party is unable to read (for whatever reason), the issued letter will be read to the person in presence of a witness and the witness should declare their witness to this event. 	14 working days

Focal Person for Contact	Contacts, Communication and Other Facilitation by Project	Timeframe to address grievance
	<ul style="list-style-type: none"> Where the grievance is related to the project, the council or island GRC will come up with a solution either by (i) discussing within the council; (ii) joint problem solving with the aggrieved parties, PMU and the contractor or; (iii) a combination of both options. The council or island GRC will communicate the final decision in writing, in terms of how the grievance was handled to the aggrieved party within 14 working days of receiving the complaint. If the aggrieved party is unable to read (for whatever reason) the issued decision will be read to the person in presence of a witness and the witness should declare their witness to this event. The aggrieved party must acknowledge the receipt of decision and submit their agreement or disagreement with the decision within 10 days. If no acknowledgement is submitted from the aggrieved party, then the decision will be considered as accepted. If the grievance is not resolved to the satisfaction of the aggrieved party within 14 working days of submission of the grievance to tier 1 then the aggrieved party may notify the MCCEE, in writing, of the intention to move to tier 2. The council or GRC will maintain records of all complaints received. 	
Second Tier: Ministry of Climate Change Environment and Energy (Project Management Unit)		
The social and environmental safeguards specialist of the PMU or the designated contacts for the PMU.	<ul style="list-style-type: none"> Where the aggrieved party is not satisfied with the outcome of the decision by the council or GRC or where the aggrieved party is of the view that the council or GRC is not capable of justly solve the issue or where the grievance is not resolved within 14 working days the grievance can be upgraded to tier 2. The Island Council or GRC will forward the grievance to the MCCEE. MCCEE will forward the grievance to the PMU. A formal receipt of the complaint will be provided to the aggrieved party. The PMU will come up with a solution either by (i) discussing in the project steering/technical committee; (ii) joint problem solving with the aggrieved parties, the council and the contractor (iii) undertaking site visits and holding onsite discussions or; (iii) a combination of all these options. The PMU will be responsible to ensure that there is no cost imposed on the aggrieved person, due to the GRM at the third tier. MCCEE will communicate the final decision in writing, in terms how the grievance was handled to the aggrieved party within 14 working days of receiving the complaint. If the aggrieved party is unable to read (for whatever reason) the issued letter should be read to the person in presence of a witness and the witness should declare their witness to this event. The aggrieved party must acknowledge the receipt of decision and submit their agreement or disagreement with the decision within 10 days. If no acknowledgement is submitted from the aggrieved party then the decision will be considered as accepted. 	14 working days
Third Tier: Judiciary Power / Court system		

Focal Person for Contact	Contacts, Communication and Other Facilitation by Project	Timeframe to address grievance
The social and environmental safeguards specialist of the PMU provides assistance in accessing the judicial power	<ul style="list-style-type: none"> The legal system is accessible to all aggrieved persons. Assistance from the PMU is available to all aggrieved persons as per this GRM. In cases where aggrieved persons have no means to access the legal system, the Attorney General's office will provide legal support to the vulnerable person(s). The PMU must provide the contact details of the Attorney General's office. The verdict of the Courts will be final. 	As per established Judicial Procedure

C. Key Parties

82. At the first tier, a GRC is proposed to be set up in Kulhudhuffushi City due to the extent and duration of the proposed Project activities on this island. On the other Project islands, where the measures are smaller in nature and of shorter duration, the island council and contractor will jointly form the first tier, and will solicit views of other stakeholders (WDC, farmers, fishermen, youth, NGOs, etc.) as appropriate and needed.

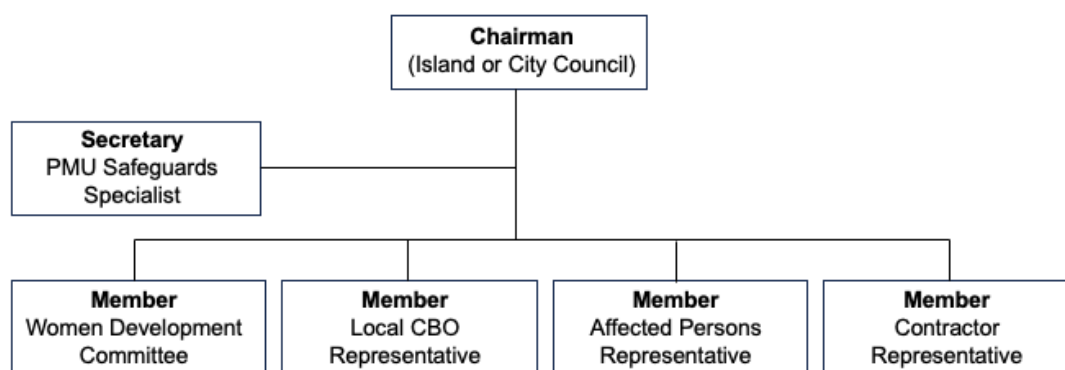
83. Specifically for the measures under SP1.1 at Addu International Airport (Gan) and SP1.2 on Velana Airport (Hulhulé), due to the nature of these islands being industrial managed by the airports authority rather than inhabited and managed by a council, a GRC will not be formed. The relevant airports authority (Addu International Airport and Maldives Airports Company Limited, respectively), MMS and a representative from the construction contractor will jointly form the first tier, and the three-tier system remains in place. Any aggrieved party can lodge grievances, despite not residing on the islands.

84. The GRC at Kulhudhuffushi City is proposed to be composed of a 6-member body, formed at the project area to facilitate the timely resolution of APs' concerns, complaints, and grievances about the project's environmental and social performance.

85. The PMU safeguards team will organize the required training program to brief the GRC members about their responsibilities and the operation of the GRC. The proposed composition of a GRC membership is presented in Table 6 and Figure 22.

Table 6: Composition of Island Grievance Redress Committee

Member	Number	Position
Chairperson	1	Representative from Island/City Council
Member	1	Concerned Women Development Committee
Member	1	Representative from local CBO/NGO
Member	1	Representative from the Construction Contractor
Member	1	Representative of Affected Persons
Secretary	1	Project Safeguards Specialist

Figure 22: Composition of Island Grievance Redress Committee

86. If the aggrieved person is a female, then the GRC must include at least one female member (ideally a representative from the local WDC) to participate in the hearings. In case of the absence of any of the members during the decision-making process, an appropriate candidate will be nominated by the original representative.

87. At the second tier, the MCCEE PMU will be based in Malé and have two designated staff members (the Social Safeguards Specialist and Environmental Safeguards Specialist) to address all potential complaints from the public, workers and other APs for the pre-construction, construction and operation of the Project. They will liaise regularly with the island councils, contractors and site supervisors regarding any grievances received. They will also liaise with national agencies and line departments as required.

88. At the third tier, the AP can access the judicial power through Attorney General's office. The PMU will provide the contact details of the Attorney General's office, and will assist aggrieved persons(s) in accessing the Attorney General's office.

89. The AP at any time can access the national judicial system irrespective of the result of project-level grievance redress mechanism.

90. For issues pertaining to gender-based violence, sexual exploitation and abuse, and sexual harassment all grievances need to be forwarded to the hotline number of Ministry of Social and Family Development (1421). Confidentiality of those who submit such grievances should be ensured. This information should be provided in the grievance information boards.

91. For the workforce at the PMU and other contractors the employment contracts should define the grievance redress mechanism to follow. The Human Resource Committee or department of the organization can look into general grievances and the SEA/SH committee of the Ministry for those pertaining to such cases.

92. The AP have the right to submit their complaint at any time directly to the respective Project Officer at ADB headquarters, writing in any of the official languages of ADB's Developing Member Countries. The PMU Social Safeguard Specialist will support the AP in providing the following contact information of ADB:

Mr. Takeshi Ueda
Officer-in-Charge
Telephone No.: +63 2 8632 6973
E-mail address: taueda@adb.org
Asian Development Bank
Emerging Areas Team, Food, Nature, and Rural Development Sector Office (SG-AFNR).

VII. Conclusion and Next Steps

93. **Conclusion.** This DDR confirms that the physical implementation of the SP components under Output 1 are free of involuntary land acquisition and resettlement (LAR) impacts such as land acquisition, physical displacement, economic displacement, impact on livelihood, community properties or any other impacts based on a review of land registries, consultations and field visits to the proposed locations. All physical works are proposed to be undertaken on vacant and unused land owned by the Government of Maldives, allocated to the Addu International Airport authority and Maldives Airport Company Limited. Temporary disruption to work will be mitigated through the EMP. The interventions under Output 1 SPs falls under Category C for involuntary resettlement and Category C for indigenous peoples as per ADB SPS (2009).

94. **Next steps.** For SP1.1 and SP1.3, when final locations are selected during the detail design phase, this DDR will need to be updated. During implementation of the construction works, if any land acquisition or involuntary resettlement becomes necessary for any of the SPs, the project will be responsible to prepare a RP in line with the guidelines underlined in the RF of the Project that has been prepared in conformity with ADB's safeguards requirements on involuntary resettlement, adhering to Maldives laws and policies. For SP1.1 and 1.2, avoidance of the heritage site and mitigation measures for temporary disruption will be included in the EMP.

95. The Project will make sure that all safeguard requirements are followed, and no one is disadvantaged in the process of development. PMU, assisted by its Social Safeguard Specialist, will strictly monitor the construction activities and report on any unexpected impact that may occur and will incorporate that information in Social Safeguard Monitoring Report.

Annex 1: Involuntary Resettlement Impact Screening Checklist

Annex 1a: Involuntary Resettlement Impact Screening Checklist

Name of Project/Subproject Component: *Enhancing Climate Resilience and Food Security Project* / Addu weather radar system, including radar tower (**SP 1.1**)

Location: (Atoll, Island/City, Community): Addu City Atoll, Gan Island, Addu International Airport

1. Screening Questions for Involuntary Resettlement Impact

Involuntary Resettlement Issues	Yes	No	Not Known	Remarks
i. Will the project include any physical construction work?	X			Construction of a radar tower building.
ii. Will it require permanent and/or temporary land acquisition?		X		No household or community land. Land on the grounds of the Addu International Airport is planned to be used for this SP.
iii. Will there be any physical displacement or relocation of this affected household due to the project improvement process?		X		
iv. Will there be loss of income and livelihoods?		X		
v. Are there any non-titled people who live or earn their livelihood at the site?		X		
vi. Will there be any loss of business or enterprises?		X		
vii. Will there be any loss of housing land/plots?		X		
viii. Will there be any loss of structure (building, boundary wall etc.)?		X		
ix. Will there be any loss of agricultural land/plots?		X		
x. Will there be any loss of crops, trees, fixed assets such as fences, pumps etc?		X		
xi. Will people lose access to facilities, services or natural resources due to the project?		X		Cemetery site near site option 1 will be avoided, and will not lose temporary or permanent access.
xii. Will there be any loss of fixed asset having an impact of 10% of more income of this affected household?		X		
xiii. Is the affected person from physically handicapped, indigenous or ethnic minority group?				Not applicable

2. Involuntary Resettlement Impact

After reviewing the above answers, IA/safeguards team confirms that the proposed subproject:

- [] Has involuntary resettlement (IR) impact, a resettlement plan (RP) is required.
 [X] Has No IR impact, no RP is required. A due diligence report (DDR) for the subproject to be prepared.

Prepared by (name): Marc Gillet

Position: Weather Observatory System Specialist, ICEM-Epoch

Signature:



Date: 12 June 2024

Annex 1b: Involuntary Resettlement Impact Screening Checklist

Name of Project/Subproject Component: *Enhancing Climate Resilience and Food Security Project / Malé radar upgrades (SP 1.2)*

Location: (Atoll, Island/City, Community): North Malé Atoll, Hulhulé Island

1. Screening Questions for Involuntary Resettlement Impact

Involuntary Resettlement Issues	Yes	No	Not Known	Remarks
i. Will the project include any physical construction work?	X			No new construction. Only renovation of existing tower/building.
ii. Will it require permanent and/or temporary land acquisition?		X		
iii. Will there be any physical displacement or relocation of this affected household due to the project improvement process?		X		
iv. Will there be loss of income and livelihoods?		X		
v. Are there any non-titled people who live or earn their livelihood at the site?		X		
vi. Will there be any loss of business or enterprises?		X		
vii. Will there be any loss of housing land/plots?		X		
viii. Will there be any loss of structure (building, boundary wall etc.)?		X		
ix. Will there be any loss of agricultural land/plots?		X		
x. Will there be any loss of crops, trees, fixed assets such as fences, pumps etc?		X		
xi. Will people lose access to facilities, services or natural resources due to the project?		X		MMS staff currently using the tower/building may be unable to temporarily access the radar during the renovation works, and some staff may temporarily not be able to use their computers if they require upgrading. Work interruptions will be limited and mitigated through the EMP.
xii. Will there be any loss of fixed asset having an impact of 10% of more income of this affected household?		X		
xiv. Is the affected person from physically handicapped, indigenous or ethnic minority group?				Not applicable

2. Involuntary Resettlement Impact

After reviewing the above answers, IA/safeguards team confirms that the proposed subproject:

[] Has involuntary resettlement (IR) impact, a resettlement plan (RP) is required.

[X] Has No IR impact, no RP is required. A due diligence report (DDR) for the subproject has to be prepared.

Prepared by (name): Marc Gillet

Position: Weather Observatory System Specialist, ICEM-Epoch

Signature:



Date: 12 June, 2024

Annex 1c: Involuntary Resettlement Impact Screening Checklist

Name of Project/Subproject Component: *Enhancing Climate Resilience and Food Security Project / Pilot agro-climate advisories (SP 1.3)*

Location: (Atoll, Island/City, Community): *To be decided during detail design*

1. Screening Questions for Involuntary Resettlement Impact

Involuntary Resettlement Issues	Yes	No	Not Known	Remarks
i. Will the project include any physical construction work?			X	Very minor to negligible works. Small-size agricultural monitoring instruments will be installed at the premises of existing MMS-managed automated weather stations. If in new locations, there will be no major construction involved. If any minor/temporary impacts are foreseen, they will be included in the EMP.
ii. Will it require permanent and/or temporary land acquisition?			X	Depends on the final selection of locations. Minor land acquisition may be required if the instruments are installed in new locations, however, public (/council) land should be prioritized for these potential new sites. DDR will be prepared to assess and confirm impacts.
iii. Will there be any physical displacement or relocation of this affected household due to the project improvement process?		X		
iv. Will there be loss of income and livelihoods?		X		
v. Are there any non-titled people who live or earn their livelihood at the site?		X		
vi. Will there be any loss of business or enterprises?		X		
vii. Will there be any loss of housing land/plots?		X		
viii. Will there be any loss of structure (building, boundary wall etc.)?		X		
ix. Will there be any loss of agricultural land/plots?			X	
x. Will there be any loss of crops, trees, fixed assets such as fences, pumps etc?			X	Not foreseen as it is recommended the instruments are placed on current weather station sites. DDR will be updated after pilot is designed to confirm these impacts, if any.
xi. Will people lose access to facilities, services or natural resources due to the project?		X		
xii. Will there be any loss of fixed asset having an impact of 10% of more income of this affected household?		X		
xiv. Is the affected person from physically handicapped, indigenous or ethnic minority group?				Not applicable

2. Involuntary Resettlement Impact

After reviewing the above answers, IA/safeguards team confirms that the proposed subproject:

[] Has involuntary resettlement (IR) impact, a resettlement plan (RP) is required.

[X] Has No IR impact, no RP is required. A due diligence report (DDR) for the subproject has to be prepared.

Prepared by (name): Marc Gillet

Position: Weather Observatory System Specialist, ICEM-Epoch

Date: 12 June 2024



Annex 1d: Involuntary Resettlement Impact Screening Checklist

Name of Project/Subproject Component: *Enhancing Climate Resilience and Food Security Project / Behavioral Change Communication Program (SP 1.4)*

Location: (Atoll, Island/City, Community): *To be decided (no physical works)*

1. Screening Questions for Involuntary Resettlement Impact

Involuntary Resettlement Issues	Yes	No	Not Known	Remarks
i. Will the project include any physical construction work?		X		
ii. Will it require permanent and/or temporary land acquisition?		X		
iii. Will there be any physical displacement or relocation of this affected household due to the project improvement process?		X		
iv. Will there be loss of income and livelihoods?		X		
v. Are there any non-titled people who live or earn their livelihood at the site?		X		
vi. Will there be any loss of business or enterprises?		X		
vii. Will there be any loss of housing land/plots?		X		
viii. Will there be any loss of structure (building, boundary wall etc.)?		X		
ix. Will there be any loss of agricultural land/plots?		X		
x. Will there be any loss of crops, trees, fixed assets such as fences, pumps etc?		X		
xi. Will people lose access to facilities, services or natural resources due to the project?		X		
xii. Will there be any loss of fixed asset having an impact of 10% of more income of this affected household?		X		
xiv. Is the affected person from physically handicapped, indigenous or ethnic minority group?				Not applicable

2. Involuntary Resettlement Impact

After reviewing the above answers, IA/safeguards team confirms that the proposed subproject:

[] Has involuntary resettlement (IR) impact, a resettlement plan (RP) is required.
 [X] Has No IR impact, no RP is required. A due diligence report (DDR) for the subproject has to be prepared.

Prepared by (name): Marc Gillet

Position: Weather Observatory System Specialist, ICEM-Epoch

Signature:



Date: 12 June, 2024

Annex 1e: Involuntary Resettlement Impact Screening Checklist

Name of Project/Subproject Component: *Enhancing Climate Resilience and Food Security Project* / Capacity building program for MMS, including on improved models and software packages (**SP1.5**)

Location: (Atoll, Island/City, Community): North Malé Atoll, Hulhulé Island, MMS offices

1. Screening Questions for Involuntary Resettlement Impact

Involuntary Resettlement Issues	Yes	No	Not Known	Remarks
i. Will the project include any physical construction work?		X		
ii. Will it require permanent and/or temporary land acquisition?		X		
iii. Will there be any physical displacement or relocation of this affected household due to the project improvement process?		X		
iv. Will there be loss of income and livelihoods?		X		
v. Are there any non-titled people who live or earn their livelihood at the site?		X		
vi. Will there be any loss of business or enterprises?		X		
vii. Will there be any loss of housing land/plots?		X		
viii. Will there be any loss of structure (building, boundary wall etc.)?		X		
ix. Will there be any loss of agricultural land/plots?		X		
x. Will there be any loss of crops, trees, fixed assets such as fences, pumps etc?		X		
xi. Will people lose access to facilities, services or natural resources due to the project?		X		
xii. Will there be any loss of fixed asset having an impact of 10% of more income of this affected household?		X		
xiv. Is the affected person from physically handicapped, indigenous or ethnic minority group?				Not applicable

2. Involuntary Resettlement Impact

After reviewing the above answers, IA/safeguards team confirms that the proposed subproject:

- [] Has involuntary resettlement (IR) impact, a resettlement plan (RP) is required.
 [X] Has No IR impact, no RP is required. A due diligence report (DDR) for the subproject has to be prepared.

Prepared by (name): Marc Gillet

Position: Weather Observatory System Specialist, ICEM-Epoch

Signature:



Date: 12 June, 2024

Annex 2: Land Handover Letter MMS Gan and Addu International Airport



بسم الله الرحمن الرحيم

Addu International Airport Pvt Ltd

Registration number · C-0165i2011

Annex 2

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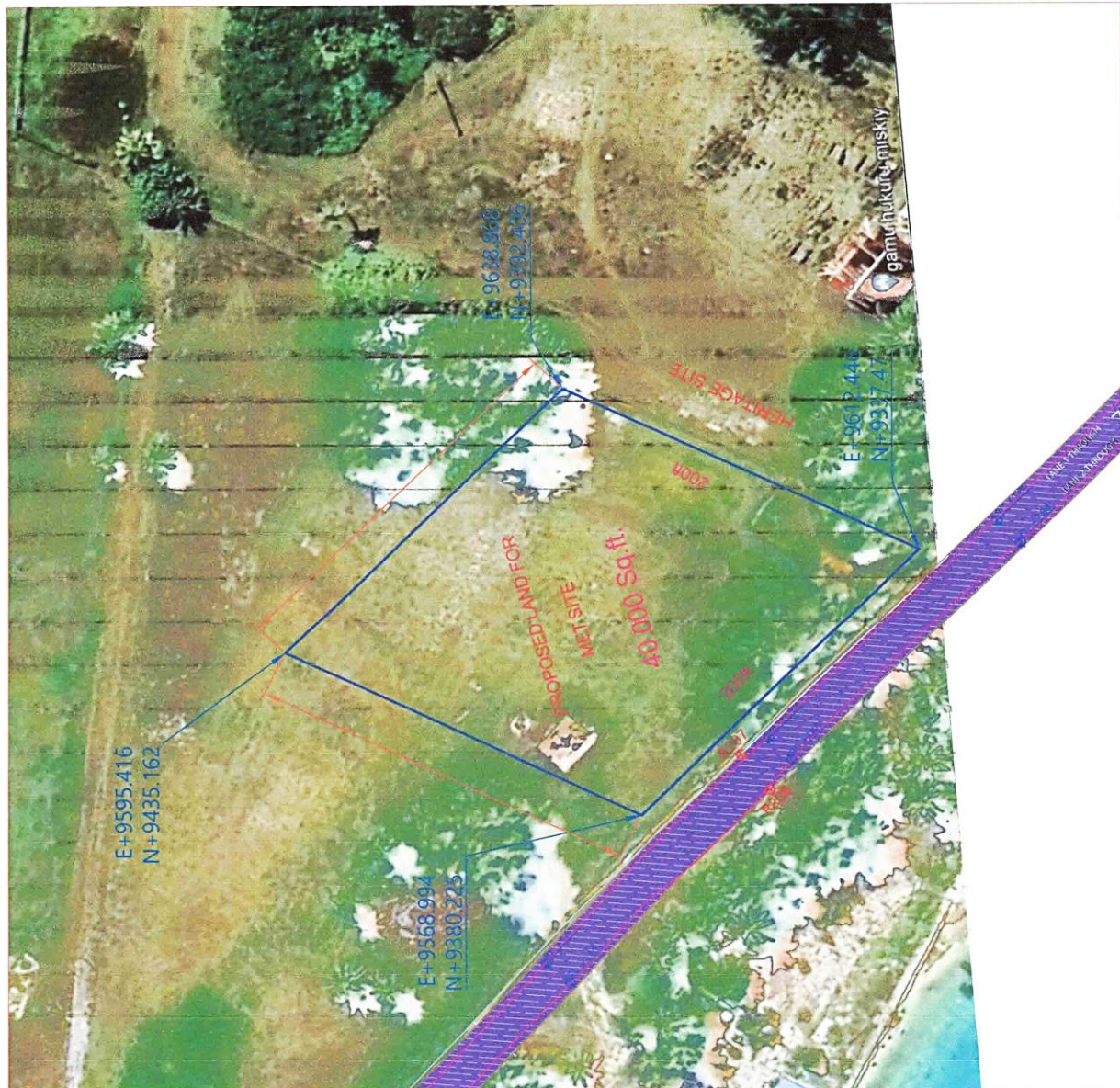
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Building no. 100, Gan, Addu City, 19070, Republic of Maldives
Tel: (960) 6898010 / 6898515,
E-mail: info@ganairport.aero, website: www.ganairport.com







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Addu International Airport Pvt Ltd

Registration number C-0165/2011

English translation of the Land Handover Letter as in Annex 2

[unofficial translation]

Land handover Document for GAN Meteorological Office

This document facilitates the handover of land to Maldives Meteorological Service for the construction of Gan Meteorological Office.

- Location: Land South of the Gan Airport Runway (Attached herewith this document).
- Size of the allocated land: 40,000 square feet.
- Date of Land Handover: 18 April 2024.

Land Handed on behalf of Gan Addu International Airport by:

Name: Mohamed Waheed Hassan

Designation: Managing Director

(signed)

Date: 18 April 2024

Land Received on behalf of Maldives Meteorological Services by:

Name: Ahmed Muslim

Designation: Meteorologist

(signed)

Date: 18th April 2024



Annex 3: Confirmation of Government Ownership of Land Hulhule

Thursday, June 27, 2024 at 11:20:57 Indochina Time

Subject: Re: Cost estimate for AWS and parts
Date: Thursday, 23 May 2024 at 20:30:12 Indochina Time
From: Ahmed Rasheed
To: Femke Gubbels, Ibrahim Humaid
CC: 'Miguel Coulier', 'Vuong Thu Huong', Aishath Reesha Suhail, ahmed.waheed, Abdulla Wahid
Attachments: image001.png, image002.jpg, Outlook-c0rmkbsx.png, AWS LandOwnership.pdf, Addu Met Office Land Handover.pdf

Dear Femke

Following up on your email below:

1. Land ownership certificate of the site of the Male' radar - *All the land in Hulhule is under the ownership Maldives Airports Company Limited (Government State Owned Company), hence no separate certificate is issued for the RADAR site in Hulhule.*
2. Land ownership certificate of the proposed site of the Addu radar and observatory - *Attached with this email (available in Dhivehi).*
3. Land ownership certificate of the sites of all automatic weather stations (this can be one combined document if easier, listing the all the stations and which councils or agencies own the land) - *Attached with this email.*

Best regards

Ahmed.

Ahmed Rasheed (Mr.)
Director Meteorology, Public Weather Service
Ph Office : +960-3340975 , Mobile : +960-7768565
Maldives Meteorological Service, www.meteorology.gov.mv
Official [Facebook](#) , [Twitter](#) and [Viber\(CVG\)](#)



Annex 4: Government Ownership of Land of Automated Weather Stations in Maldives

AWS station Land Ownership

#	AWS Island (North to South)	AWS Land Ownership
1	Ha. Hoarafushi	Ha. Hoarafushi Council
2	Ha. Kelaa	Ha. Kelaa Council
3	HDh. Hanimaadhoo	Regional Airports Company
4	HDh. Kulhudhuffushi	HDh. Kulhudhuffushi Council
5	HDh. Makunudhoo	HDh. Makunudhoo Council
6	Sh. Funadhoo	Sh. Funadhoo Council
7	Sh. Kanditheemu	Sh. Kanditheemu Council
8	Sh. Komandoo	Sh. Komandoo Council
9	N. Maafaru	N. Maafaru Council
10	R. Alifushi[S8766]	R. Alifushi Council
11	R. Maduvvari	R. Maduvvari Council
12	R. Dhuvaafaru	R. Dhuvaafaru Council
13	R. Ifuru	Island Aviation Service
14	B. Thulhaadhoo	B. Thulhaadhoo Council
15	B. Goidhoo	B. Goidhoo Council
16	B. Dharavandhoo	B. Dharavandhoo Council
17	Lh. Olhuvelifushi	Lh. Olhuvelifushi Council
18	K. Dhiffushi	K. Dhiffushi Council
19	K. Gaafaru	K. Gaafaru Council
20	K. Guraidhoo	K. Guraidhoo Council
21	K. Kaashidhoo	K. Kaashidhoo Council
22	Velana International Airport	Maldives Airports Company
23	AA. Thoddoo	AA. Thoddoo Council
24	AA. Himandhoo	AA. Himandhoo Council
25	Adh Maamigili	Villa Air
26	ADh. Mahibadhoo	ADh. Mahibadhoo Council
27	V. Rakeedhoo	V. Rakeedhoo Council
28	M. Muli	M. Muli Council
29	F. Bilehdhoo[S8381]	F. Bilehdhoo Council
30	F. Nilandhoo	F. Nilandhoo Council
31	Dh. Kudahuvadhoo	Dh. Kudahuvadhoo Council
32	Th. Buruni	Th. Buruni Council
33	Th. Thimarafushi	Th. Thimarafushi Council
34	L. Maavah	L. Maavah Council
35	L. Kadhdhoo	Kadhdhoo Airport Company Limited
36	Ga. Gemanafushi	Ga. Gemanafushi Council
37	Ga. Kolamaafushi	Ga. Kolamaafushi Council
38	Ga. Koodoo Airport	Island Aviation Service
39	Gdh. Faresmaathodaa	Gdh. Faresmaathodaa Council
40	Gdh. Kaadehdhoo	Kaadehdhoo Airport Company Ltd
41	Gdh. Thinadhoo	Gdh. Thinadhoo Council
42	Gn. Fuvahmulah	Gn. Fuvahmulah Council
43	S. Hithadhoo	Addu City Council
44	S. Hulhumedhoo	Addu City Council
45	S. Gan	Addu International Airports Pvt Ltd



Annex 5: Minutes of Consultation Meetings**COMMUNITY CONSULTATION MEETING**










Meeting with Maldives Meteorological Service in Velana Airport

Date: Monday, 4 March 2024

Meeting Start Time: 09h00

Meeting Finish Time: 12h00

Venue: MMS premises at Velana Airport**Participants:**

SL	Name	Position and Organization	E-mail	Telephone	Signature
1.	Ahmed Rasheed (M)	Director Meteorology, Maldives Meteorological Service	ahmed.rasheed@met.gov.mv	7768565	
2.	Ibrahim Humaid (M)	Seismologist, Maldives Meteorological Service	ibrahim.humaid@met.gov.mv	7975954	
3.	Abdul Muhsin Ramiz (M)	Director Meteorology, Maldives Meteorological Service	abdul.muhsim@met.gov.mv	7783243	
4.	Abdulla Wahid (M)	Director General, Maldives Meteorological Service	abdulla.wahid@met.gov.mv	7771643	
5.	Ibrahim Wahid (M)	Technician, Maldives Meteorological Service	-	-	
6.	Sofwan (M)	Technician, Maldives Meteorological Service	-	-	
7.	Thameen (M)	Technician, Maldives Meteorological Service	-	-	
8.	Juan Fernandez Sainz (M)	Early Warning Systems Specialist, ICEM	juan.fernandez.sainz@gmail.com	+34 670 762 042	
9.	Marc Gillet (M)	Weather Observatory Specialist, ICEM	mpgillet@gmail.com	+33620239574	

M = Male

Name & Position of the person presided over the meeting: Mr. Ahmed Rasheed, Director Meteorology, Maldives Meteorological Service

Record of Discussion

Mr Rasheed presented the organization of MMS. It operates:

- 5 classical synoptic weather observing stations operated by personnel and transmitting their data hourly to WMO. It is planned that they will be modernized by the UNEP SOFF project.

- 43 AWS, of which 26 are operational, sending hourly data to Malé. Failures are most often attributed to problems with batteries. These stations are 2 to 3 years old, of Japanese and Italian origin.
- 1 radio-sounding station in Gan, not operating for a few months because of the failure of the hydrogen generator.
- one S-band Doppler weather radar in Malé Velana Airport, installed in 2007 by EEC and refurbished ten years after. It is not operating at present because of a power supply failure.
- MMS has a staff of 105 persons, including 5 maintenance technicians in Malé and 2 in Addu.

M. Gillet and J. Fernandez presented the objectives of their mission, following the longlist of requirements, and presented the main questions to be addressed before starting the work on the feasibility reports.

It was confirmed that the mission will focus on the SPs 1, 2, 3 and 6.¹²

Radar issues

The choice of a S-band radar in Addu was confirmed by MMS. Although an installation of the radar in the Northern part of the atoll would present some additional advantages for wind shear and gust fronts detection over the airport, MMS requested that the radar be installed at the airport for several practical reasons:

- security of the equipment, and proximity to the Observatory, with all necessary commodities (power supply, telecom) easily available,
- terrain should be available from the airport authorities close to the new observatory.

MMS requested that the radar tower be made of concrete, because corrosion problems are observed on the Malé radar tower, which is metallic.

Questions were raised on the maintenance costs, not only for repair or preventive maintenance, but also for radar calibration which at present requires the displacement of a technician from the manufacturing company. It is now possible to perform most calibration operations automatically with modern radars, and provisions will be taken for it, as well for including sufficient test and repair equipment in the radar contract.

MMS also requested that the Radar ToR include sufficient training for the MMS personnel, including for electronic maintenance, software applications and data interpretation. It is possible to include such requirements in the radar ToRs, with on-the-job training, at the radar manufacturer's factory and also possibly with organizations such as met offices or research centers contracting with the manufacturer.

The questions of the compositing of data from different radars and of the nowcasting applications were also raised. A new telecommunication and data processing system called MESSIR NEO, produced by Campbell Scientific/Corobor, will be installed shortly at MMS under a grant from USAID. MESSIR NEO should have the capacity to ingest the radar data, to make radar composites of images coming from different radars, to predict the movements of radar echoes and to make tailored products and warnings. It would be preferable that all this processing be made by MESSIR NEO rather than adding additional computing equipment acting separately. The question should be asked to the manufacturer (Campbell-Corobor) by MMS and this could be taken into account in the radar ToR, depending on the answers obtained.

¹² At the time of the meeting, six subprojects were under consideration. One was not prioritized for further consideration, with five subprojects remaining.

Early Warning Systems issues

MMS recently submitted a concept note with UNEP to GCF in the context of EW4ALL.

The hourly centralization of the automatic weather station data in Malé is working. According to MMS, much of the automatic stations' breakdowns are due to power issues such as battery failure. There are only 5 technicians in Malé and 2 in Addu, and distant stations cannot be visited systematically twice a year.

MMS has received an HPC from the USAID, which could do weather modeling but is not unpacked yet.

GTS data are received by a Corobor MESSIR Com system and can be displayed with a MESSIR Vision. Ensemble forecasts are received, i.a. from ECMWF, and are visually analyzed. These two systems which are not recent will be shortly replaced by a MESSIR NEO system, provided by USAID. There is also a Fengyun Cast satellite receiving station, which can display half hourly images from the Chinese geostationary meteorological satellites. RIMES is developing a DSS based on impact-based forecasting for floods.

Training and maintenance issues

Option 1: Radar

MMS is especially concerned with maintenance capacity and costs. As seen with the present interruption of the radar operation in Malé due to power failures and of the hydrogen generator in Gan, there is a lack of spare parts and of maintenance personnel. It is expected that these issues will be considered in the Observatory specifications.

To avoid calling too frequently on the manufacturer for calibration and tuning issues, automatic maintenance will be requested as much as possible, and a minimum test equipment and spare parts should be included in the procurement, such as signal generator, MW power meter, oscilloscope, small electronic hardware, specific tools,

Training of three different types is needed:

1. radar electronic maintenance, including transmission-reception, digital processing, antenna control, data transmission,
2. radar software understanding and utilization,
3. data interpretation and nowcasting.

If the radar provider is not in capacity of providing some of this training, it may be requested that it subcontracts it to other providers (such as other Met offices, universities, companies or experts). The CVs of all instructors shall be provided.

In order to better evaluate the training needs and to help MMS to anticipate on the personnel to be trained, some additional information will be requested, and suggestions made, as seen in the last section "Some additional points still to be investigated".

Option 2 - Stations

The issues with the deployed stations were specially noted, as discussed above. The main idea within this option would be to rehabilitate all the not-working stations.

Option 3 - Modelling and Software

Considering the information outlined above and the activities on other projects and proposals, MMS noted that their main idea within option 2 would be to develop assimilation procedures within their local WRF model, as well as implement a more refined version of the model in the HPC. Also, the proper implementation of Messir-NEO considering new data sources and models was discussed.

Option 6

Training regarding data, software and modeling was also discussed. This is related to mainly option 3, but also considering other activities. The following training was discussed:

- Assimilation
- HPC management
- MESSIR-NEO
- Ensemble forecasting
- Seasonal forecasting
- Flood hazard and mapping assessment
- Seasonal forecasting



MMS weather observatory and forecasting rooms in Malé (Hulhule)



Meeting at MMS in Malé (Hulhule) on 4 March 2024

Signature of the Chair:

COMMUNITY CONSULTATION MEETING

Meeting with Maldives Meteorological Service in Gan (Addu Atoll)

Date: Tuesday, 5 March 2024

Meeting Start Time: 10h00

Meeting Finish Time: 12h00

Venue: MMS in Gan Airport (Addu Atoll)

Participants:

SL	Name	Position and Organization	E-mail	Telephone	Signature
1.	Ahmed Muslim (M)	Head of Gan Observatory, Maldives Meteorological Service	ahmed.muslim@met.gov.mv	7773407	
2.	Ahmed Naree (M)	Staff, Gan, Maldives Meteorological Service	ahmed.naree@met.gov.mv	9886726	
3.	Adam Madeeh (M)	Engineer, Epoch	madeeh@epoch.associates	7979338	
4.	Juan Fernandez Sainz (M)	Early Warning Systems Specialist, ICEM	juan.fernandez.sainz@gmail.com	+34 670 762 042	
5.	Marc Gillet (M)	Weather Observatory Specialist, ICEM	mpgillet@gmail.com	+33620239574	

Name & Position of the person presided over the meeting: Mr. Ahmed Muslim, Head of Gan Observatory, Maldives Meteorological Society

Record of Discussion

The Head of Addu Observatory and the personnel which were met during the visit appeared most interested in having a weather radar. A scientific experiment was conducted in 2014 during a few months by teams from the USA, in which weather radar systems, including a S band Doppler radar, were installed in the atoll. A remote radar display was installed at the Observatory during that period, and the personnel acquired some knowledge of its interest in weather prediction.

Addu is the second most populated atoll after Malé and floods happen every year. Storm surges may reach a height of 2 m, and the atoll is also exposed to strong winds and to lightning. Warnings over Addu are issued by the Malé office. Presently the Malé office makes 2 weather forecasts per day and disseminates predictions and warnings 24 hours ahead. It uses Viber and SMS to inform specific stakeholders, along agreed procedures.

The staff of the Gan observatory is 19 persons, including 15 observers, 2 maintenance personnel and the management. The observations in Gan are presently made in the conventional way, by the observers which are also in charge of the upper air measurements. The surface synoptic and aeronautical observations are punctually transmitted every hour to Malé, which then includes these into the WMO Global telecommunication system (GTS). The altitude observations, which should be performed on a daily basis, have been interrupted for

a few months because of the breakdown of the hydrogen generator which is necessary to inflate the weather balloons. This generator is outdated and should be replaced to resume the altitude observations. The cost of replacing equipment, with installation, training and maintenance parts for a few years, is estimated at 150,000 US\$.

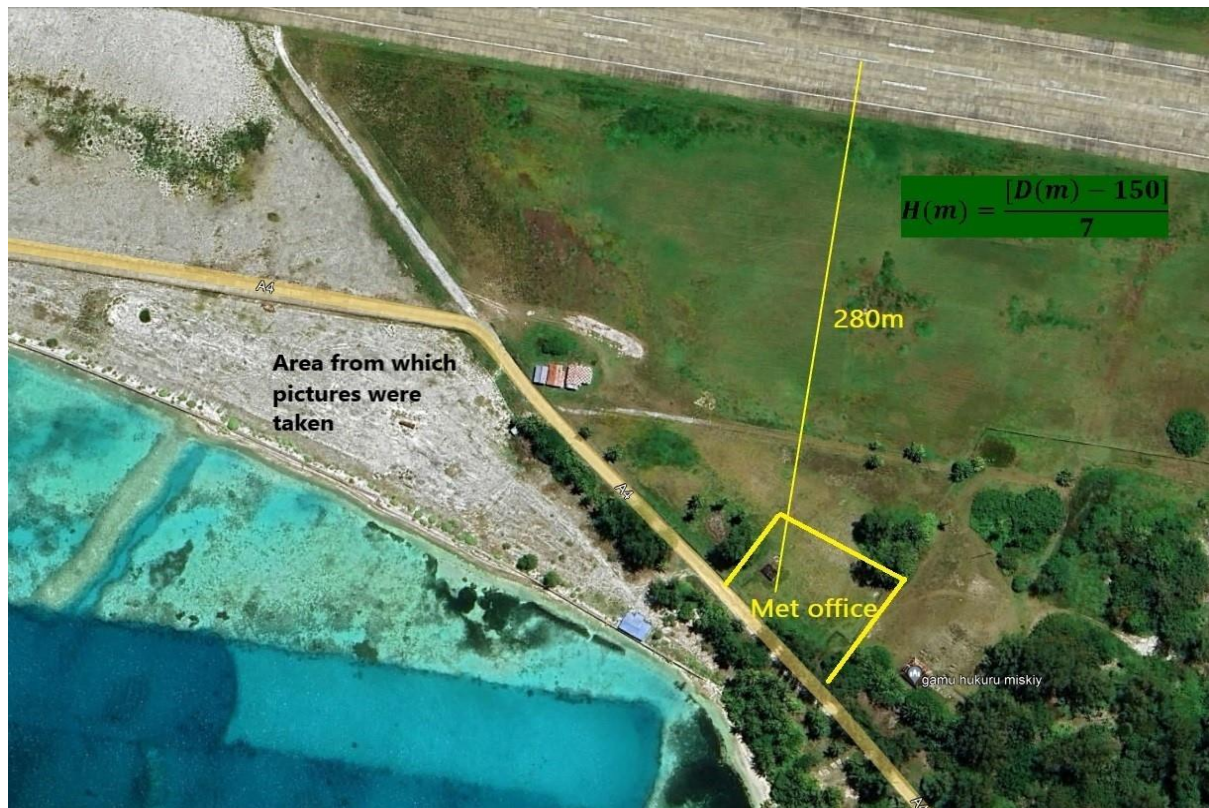
The team from ICEM and Epoch could visit the location which is anticipated for the radar tower installation, located in between the extremity of the runway and the shoreline, close to the future observatory building. The terrain is perfectly flat and there are no obstacles, with the exception of some trees which reach around 15 m height (including palm trees and other vegetation). The future Addu Observatory which will be built nearby should be only two stories high, or approximately 6-7 meters.

The land plot is currently unused by Addu International Airport itself, and there are no households living, farming or generating income on this land (as the land belongs to the airport grounds). There are no existing structures on the land. MMS confirms that they do not see any land acquisition or resettlement requirements from the radar construction.

More accurate evaluations will be necessary by MMS to define the maximum altitude of the top of the radome with regard to the airport regulations. However, a very high tower would probably lead to more ground and sea clutter when the radar is scanning at slow elevation angles, so a tower of 15 m height, topped by a random of 9 m diameter (to be confirmed) could be a workable solution keeping most of the present trees.



Views from the potential radar location (Source: ICEM, 2024)



Area from where pictures were taken and planned new Met Office site

Signature of the Chair:

[Signature]

COMMUNITY CONSULTATION MEETING

Meeting with Addu International Airport authority and MMS in Gan (Addu atoll)



Date: Wednesday, 6 March 2024

Meeting Start Time: 10h00

Meeting Finish Time: 12h00

Venue: MMS in Gan Airport (Addu Atoll)

Participants:

No.	Name	Position and Organization	E-mail	Telephone	Signature
1.	Moorad Waheed (M)	Managing Director, Addu International Airport Company	md@ganairport.aero	7775968	
2.	Hussain Rasheed (M)	General Manager, Operations, Addu International Airport Company	gmops@ganairport.aero	7788993	
3.	Misbah Nazeer (M)	Business Development Manager, Addu International Airport Company	misbah@ganairport.aero	7782253	
4.	Khadeeja Shahridha (F)	Administrator, Addu International Airport Company	shahridha@ganairport.aero	7722220	
5.	Ahmed Muslim (M)	Head of Gan Observatory, Maldives Meteorological Service	ahmed.muslim@met.gov.mv	7773407	
6.	Ahmed Naree (M)	Staff, Gan, Maldives Meteorological Service	ahmed.nareen@met.gov.mv	9886726	
7.	Juan Fernandez Sainz (M)	Early Warning Systems Specialist, ICEM	juan.fernandez.sainz@gmail.com	+34 670 762 042	
8.	Marc Gillet (M)	Weather Observatory Specialist, ICEM	mpgillet@gmail.com	+3362023 9574	

F = female, M = male

Name & Position of the person presided over the meeting: Mr. Marc Gillet, Weather Observatory Specialist, ICEM

Record of Discussion

The main radar projected characteristics were presented to the airport staff, including:

- wavelength,

- transmitted peak and average power,
- broad anticipated construction dimensions with a 15 m high tower (due to the nearby presence of trees), supporting on its top a radome of 8-9 m diameter and a lightning rod.

Electric power supply and fast Internet would be obtained independently from the corresponding companies. A 30 kVA power generator and an UPS would also need to be installed close to the antenna tower.

It is anticipated that the radar transmitter and receiver HF and IF hardware would be in the tower at the antenna base. The remaining of the processing equipment would be housed in the new MMS Observatory building, provided that there would be enough space. The transmission between the tower and the building of I, Q composite video signals, antenna position, antenna control, transmitter receiver control, and other ancillary data could be done through a cable. If there is not enough room in the new MMS building, it will be necessary to add a small building close to the antenna tower for data handling and transmission.

The landscape around the radar location is very flat and there are no potentially interfering constructions in the vicinity, except for the next Observatory building. The main obstacle is an ensemble of trees, estimated at 15 m height at the maximum (see Figure 1). It is desirable to avoid signal attenuation that the base of the antenna be higher than these trees, which would require a 15 m high tower. If these trees would not be present, the tower could be lower, down to 8 m, to remain above the height of the Observatory building roof. Lowering the antenna would also reduce sea and ground clutter at lower antenna elevations.

In terms of the ownership of the land allocated for the radar, the airport Director confirmed that the land is owned by the Addu International Airports authority. The land will be made available, at no cost, to the project to construct the radar tower building.

In the case of the potential location presented in the area shown in Figure 1, the main issue regarding interactions with airport operations would be the height of the radar tower, in relation to the distance to the runway. The place from where the pictures were taken (Figure 2) is only 200 m from the axis of the runway, which precludes constructions higher than 7m. An installation closer to the Observatory could allow a construction height of up to 20m, which would be plenty enough. There is a plan for a Seaplane base at Addu International Airport, which will connect to the neighboring atolls and deliver tourists straight to their destination resorts, but no more details were given on this. It may also be necessary to check if this project would interfere with the radar location.

The airport Director requested some more specific information on the building dimensions, and examples of existing radars.

When the project will be considered as acceptable to the airport authority, it will be necessary that MMS presents a frequency allocation to the national frequency allocation authority.



Meeting with Addu International Airport authority and MMS in Gan on 6 March 2024

Signature of the Chair:

A handwritten signature in black ink, appearing to be 'M. F. Ali', written on a white background.

COMMUNITY CONSULTATION MEETING

Meeting with Maldives Red Crescent (MRC), Addu City Office





Date: Wednesday, 6 March 2024

Meeting Start Time: 14h00

Meeting Finish Time: 16h00

Venue: Coffee shop, Addu City

Participants:

SL	Name	Position and Organization	E-mail	Telephone	Signature
1.	Shafna Ahmed Didi	Manager, Addu City Office, Maldives Red Crescent	shafna.ahmed@redcrescent.org.md	+9607781320	
2.	Aminath Zumrath Ali	Staff, Addu City Office, Maldives Red Crescent	aminath.zumrath@redcrescent.org.md	+9609974220	
3.	Juan Fernandez Sainz (M)	Early Warning Systems Specialist, ICEM	juan.fernandez.sainz@gmail.com	+34670762042	
4.	Marc Gillet (M)	Weather Observatory Specialist, ICEM	mpgillet@gmail.com	+33620239574	

Name & Position of the person presided over the meeting: Mr Juan Fernandez Sainz, Early Warning Systems Specialist, ICEM

Record of Discussion

The main points discussed were:

- Disaster Risk Management Plan for Addu being developed by MRC in collaboration with the council. This was the first plan to be implemented in Maldives at a council level. Within this plan, there are procedures and plans for communication and response during disasters, as well as the establishment of the Emergency Coordination Group. However, none the group, neither the procedures are followed during emergency situations.
- Addu Flood Hazard Map: implemented recently within the framework of a UNDP project. Nonetheless, due to recent reclamation and road construction, the flood map will be outdated.
- Awareness: MRC undertakes several activities regarding disaster management awareness, especially with migrants.
- Response: MRC provides coordination and support during response to disaster.
- In terms of the current communication procedures, MRC described a similar system to the one described by NDMA, and agreed that if this were to malfunction, no back-up system is available.
- After hearing all the details regarding the planned new radar, MRC confirmed that they do not see any social safeguards or resettlement issues, as all the land is part of the airport and not used by the local people.



Meeting with Maldives Red Crescent Addu City Office on 6 March 2024

Signature of the Chair:

A handwritten signature in black ink, consisting of a stylized, cursive letter 'A' followed by a long, sweeping horizontal line.

COMMUNITY CONSULTATION MEETING

Meeting with Maldives Meteorological Service (virtual)




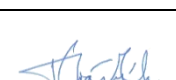
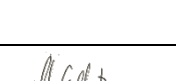
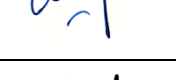
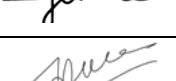
Date: Wednesday 12 June 2024

Meeting Start Time: 12h00

Meeting Finish Time: 13h00

Venue: Virtual via Zoom

Participants:

SL	Name	Position and Organization	E-mail	Telephone	Signature
1.	Abdulla Wahid (M)	Director General, Maldives Meteorological Service	abdulla.wahid@met.gov.mv	7771643	
2.	Ahmed Rasheed (M)	Director Meteorology, Maldives Meteorological Service	ahmed.rasheed@met.gov.mv	7768565	
3.	Ahmed Muslim (M)	Head of Gan Observatory, Maldives Meteorological Service	ahmed.muslim@met.gov.mv	7773407	
4.	Miguel Coulier (M)	Team Leader and Climate Change Specialist, ICEM-EPOCH	miguel.coulier@icem.com.au	+84867476583	
5.	Marc Gillet (M)	Weather Observatory Specialist, ICEM-EPOCH	mpgillet@gmail.com	+33620239574	
6.	James Ramsay (M)	Environmental Safeguards Specialist, ICEM-EPOCH	jramsay@horizon.bc.ca	+447504815937a	
7.	Monzurul Hoq (M)	Social Safeguards Specialist, ICEM-EPOCH	mhoq@ymail.com	+880 1712-783966	
8.	Femke Gubbels (F)	Project Manager, ICEM	femke.gubbels@icem.com.au	+84389761930	
9.	Vuong Thu Huong (F)	Project Coordinator, ICEM	huong.vuongthu@icem.com.au	+84904308758	

F = female, M = male

Name & Position of the person presided over the meeting: Ahmed Rasheed, Director Meteorology, Maldives Meteorological Service

Record of Discussion

Miguel: After the FF from ADB, the following list of SPs were agreed between ADB and the Government. For Output 1 there are five agreed SPs:

1. Addu weather radar system, including tower
2. Male radar upgrades
3. Pilot agro-climate advisories
4. Behavioral Change Communication program

5. Capacity building program for MMS, including on improved models and software packages

Subproject 1.1 – Addu weather radar system, including tower

Marc: In March we visited Addu and discussed with MMS Gan and AIA regarding where the S band Doppler could be installed. They proposed a location close to the planned Addu Observatory. This puts some constraints on the radar height if we want to see above some of the present obstacles, such as trees. We understood trees are allowed up to 18 m. We also understood that the MMS Observatory is planned to be 12.05 m.

So considering the rules of the airport and civil aviation rules, the radar should be at some distance from the centre of the runway, according to the formula $7 \cdot H + 150$ m where H is the height of the obstacles. Taking into account these constraints it will not be possible to put the radar in the place initially proposed. The tower should be 29 m high, to account for the maximum height of the trees (18 m) plus the height of the radome which is 11 m including the lightning rod. The radar should be south of the yellow line – which is either in the water, or west of the mosque building somewhere along the road. We had a discussion with the airport authority in March, and they would explore a reduction in constraints on the distance to the runway.



We also understand there are plans for a seaplane runway to be installed south of the island with the same rule regarding the distance to the radar tower.

There is also a requirement to have a frequency allocation for the S band radar, which has to be requested by MMS before commencing the project.

Another option I see is that we may have a 12 m tower (23 m incl the radome) west of the mosque, at the condition that the trees are limited to a height of 12 meters. But this requires special approval from the aviation authority. Otherwise, we have to look at a location east of the mosque, but we need to check which other buildings are around.

Miguel: I would like to ask MMS now to comment on the location of the radar tower, as that has implications for the safeguards.

MMS: It will be challenging to request the AIA for a special permission, as it is a safety issue, so we prefer to consider other options. Let's leave option1 out.

Regarding the tree height, the 18 m of existing trees, there is no tree cutting on the island to limit the heights. It manages the height by itself. Are you suggesting to cut the trees for the project?

Marc: What I understood is that the tree height is limited by the airport authority up to 18 m. Is this applied or not? 18 m seems quite high. If we can get confirmation on the maximum tree height, that would help.

MMS: I did not see any of that height on the island when I visited. Also, if we place the radar close to the coastline, we may have an issue of salt spray and corrosion again.

Marc: If we could get confirmation on the maximum tree height, that would help. There should be a discussion between MMS and the AIA on the optimal location. If we know what the maximum tree height around the radar is, we can decide the tower height and then we can decide on the location. If the local MMS office can visit area number 2 and discuss this with AIA, that would be helpful.

James: I have a few questions based on the satellite images from the island. Where is the current observatory?

MMS: We are going to have new observatory, and are waiting for formal approval of the location, but it is planned for the area between area 1 and 2 marked on the map. It has been designed and is ready for construction.

Miguel: Based on Marc's assessment, this area may be too close to the runway. The tower needs to be 310 m from the runway.

James: There are a lot of trees and other vegetation in the area south of the runway. Is there any information on it, is it used as habitat by wildlife?

MMS: There is not much going on. There is an area used by Maldives National Defense Force further west, who conduct some trainings activities, but there is no other residence or activity going on.

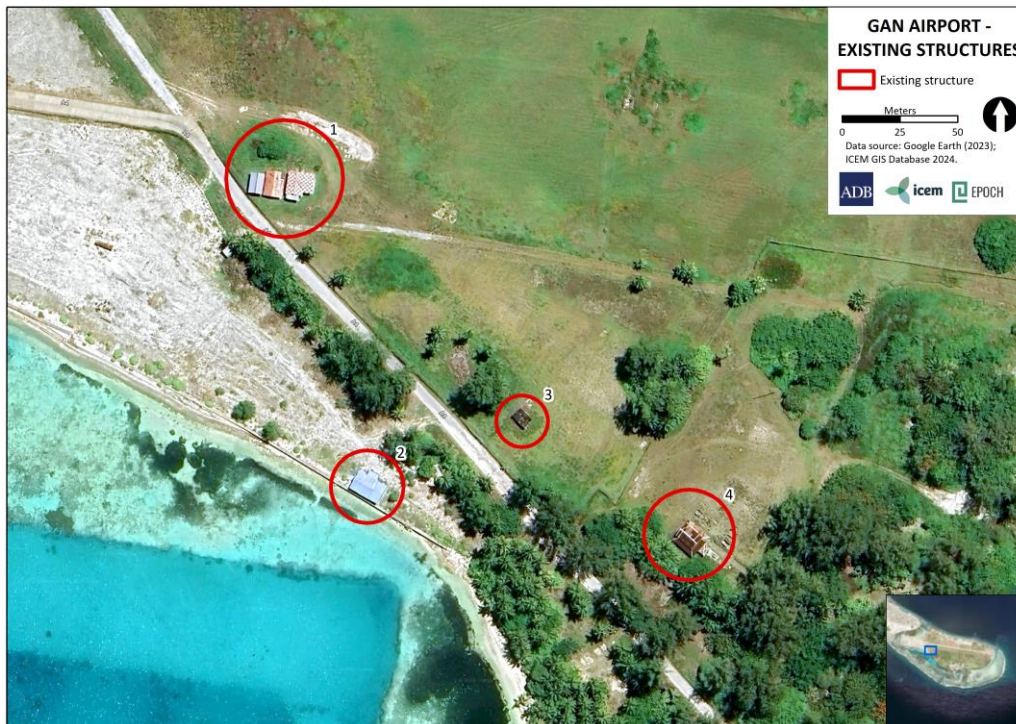
James: Is there any ecological value to this area?

MMS: There is a cemetery with burial places from the Second World War, which should be respected and kept intact.

James: Since you mention WW2, do you know of any unexploded ordnance?

MMS: No, there is nothing there. There is no use of firearms on that island.

James: On this image there are four structures. Could you explain their purpose?



MMS:

1. The building houses an electric transformer from the airport, and is still in use.
2. This structure was temporarily built on reclaimed area 5 or 6 years ago for the planned seaplane terminal but not it is not in use now. It has no historical significance.
3. This is an old building that is not in use anymore. There is no historical significance. This is inside the proposed new Met Office area.
4. This is an abandoned mosque and graveyard. This area is better avoided as it has some historical significance.

James: Is there any information on the reef flat?



MMS Gan: We don't have any information on that. There are no known activities there.

James: How/where will these access and utilities reach the buildings? (temp/permanent road access, electricity/power, fibre optics, water)

MMS: Usually the utility company will provide these services, but not all (remote) areas are serviced by the provider. There is no other building nearby where there is need for electricity. Same for sanitation, communication line – this needs to be costed, as those components are often overlooked. Gan Airport has a dedicated transformer.

James: So you have connection but you want independent back up?

MMS: The grid connection is only to the landing area, on the other side of the island. We have to extend from the grid network.

James: What is the current situation of sanitation and what are the plans? How will foul water be disposed of?

MMS: Similarly, we will have to extend it, as there is no waterline nearby. Only on the other side of the island. This will be a substantial cost. If the Met Office observatory building is constructed earlier, than we can connect it to that. We are awaiting the final approvals for the building.

James: Will the new facility require security lighting at night?

MMS: We have will have some navigation lights as part of the airport requirements.

James: How is waste disposal arranged on Gan? Where will construction waste go? Does the airport authority have a policy or plan in place for day-to-day waste disposal?

MMS: A public company covers these services. They collect it from various premises from the island. They also do so for our current office. This is per the local norms.

Miguel: The MNDF is using the southern section of the airport. Have they been consulted about the radar construction plans?

MMS Gan: There is no need to consult them as the area belongs to the airport. They use the east part of the island. There is no conflict between the allocated area and the area MNDF uses.

It was confirmed by MMS that the implementation of the SP will not trigger any land acquisition and resettlement impact, and no negative impact on livelihoods is identified. The total area for the SP intervention is free and vacant land, and is owned by the Government of Maldives. The certificate of land allocation from the airport was also received.

Subproject 1.2 – Male radar upgrades

Miguel: Thank you very much for sharing the initial assessment of the radar. We hope you will be able to share detailed high-resolution photos of the radar.

MMS: We will do that.

James: Have there been any issues with birds nesting on the tower?

MMS: No.

James: How is hazardous waste handled?

MMS: We replaced the UPS battery every 3-5 years. We handover that to the waste management company.

Miguel: You shared with us a list of your staff. Marc listed in the FS what staff would be required to ensure O&M of the radar. Are these people in place or do they need to be hired?

Marc: This is what I proposed:

1. One engineer with a good knowledge of signal theory, and of radar hardware, electronics, and software.
2. Two electronic technicians with experience in high voltage and microwave systems, electronics, computer use and telecommunication, as well as general site maintenance.
3. One mechanics technician for general maintenance of antenna control and other appliances such as power generators, AC, etc.
4. One radar meteorologist to supervise operations and development.
5. In addition, several forecasting staff should be trained in meteorological radar applications and research, including on the interpretation and utilization of Doppler weather radar products, to optimize the radar use and integrate it in the forecasting system.

The two high level people, engineer and radar meteorologist, should likely be trained abroad, and hired by MMS as new staff.

MMS: Those are very good. We also need of people in our service to manage this equipment. I don't know if we can have all those people through our regular budget. Please include this in the budget to train the staff. We can spare the meteorologist for this, but we lack some engineering technicians at the moment.

Miguel: We were not involved in all the detailed discussions during the FFM in terms of what the project will support in terms of recruitment. There will be a Early Warning Systems Specialist, and Weather Observatory Specialist recruited to support the implementation of the investment project part-time.

MMS: For maintenance, we don't have individual staff trained to do so. Up to now, we have asked the manufacturer to do the maintenance. Previously we trained 1-2 staff but it is hard to retain them as they access other opportunities. Getting a trained radar engineer is not that easy, even if they receive training from the manufacturer, they often lack the skills to do the maintenance independently. They usually get a system overview, but a lot of system experience and hands on training is required. For example, when the manufacturer comes, they receive a lot of remote support from other colleagues to do the maintenance. Sometimes they have to wait to get feedback from their head office for diagnosing the issues. One engineer may not suffice to do all the maintenance, there will still be support required from the radar.

We would like you to advise the MMS and GoM to make available staff for this training and project. We can then recruit them from MMS budget. Item 3, 4 and 5 we can manage with additional training. For item 1 and 2 we need additional staff, to be trained at that level. It will be responsibility of GoM to facilitate recruitment of additional staff, but we the project to train them for this purpose.

Miguel: In summary, the project makes the recommendations on what is required, MMS does the recruitment incl. salary provision, while the project will then support a comprehensive training program to ensure the capacity for maintenance.

MMS: Yes. Your recommendations will help us with the facilitation of the Government request.

Marc: When we do a training, we need to have somebody to organise it well.

Miguel: Our team will draft the Terms of Reference for the multi-year capacity building program, that will be subcontracted to a firm to design and facilitate this program. We hope to send it to you by the end of the week, to ensure we have everything included.

MMS: Next week is a one-week public holiday. Please send it before the weekend and we will review at the soonest.

Miguel: For the safeguards analysis, please provide photos of the MMS office rooms where the computers are set up where you do the forecasting and observations. We would also like to ask for technical specifications of the the computers and systems you are using.

MMS: We will provide the specifications of the new system we will be using soon.

Femke: Please help to collect signatures of meeting participants for meeting attendance during the March site visit, as well as today's meeting. This is an ADB requirement as part of the safeguards process. We will share the notes via email.

MMS: On the Male radar, we need to bring it back to the operation as soon as we can. We know it takes a while to get ADB approval, but anything that can be done to expedite the process is much appreciated.

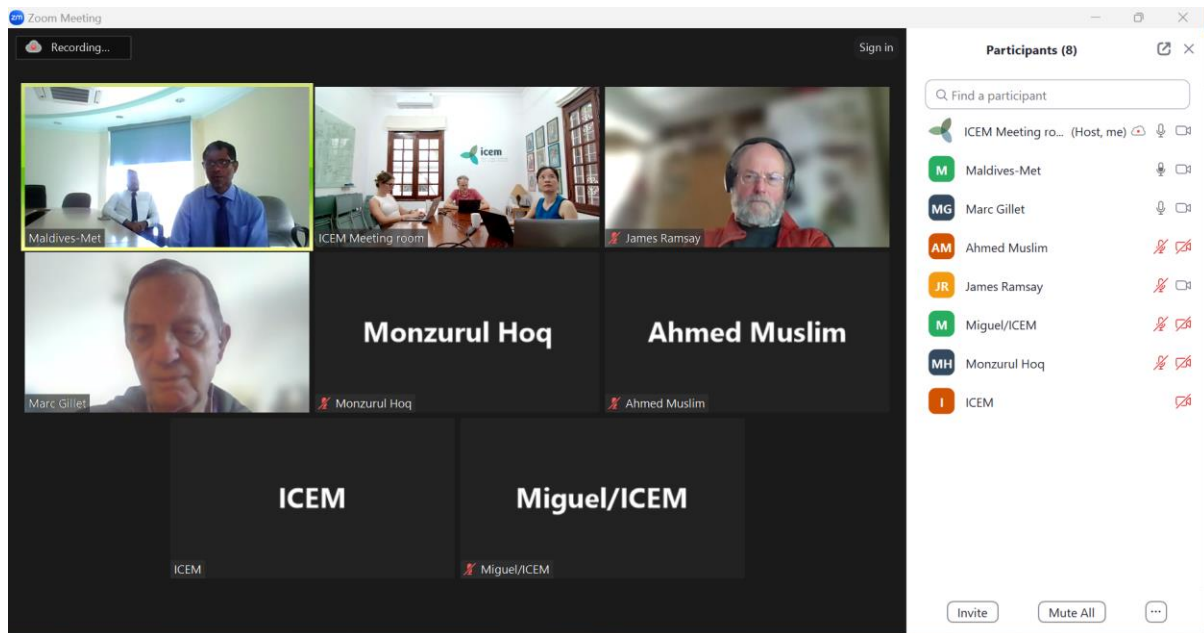
Miguel: That is an important point, we understand the urgency and we understand that ADB wants to start procurement soon, before the project starts. Our team will be requested to prepare bidding documents for the Male radar refurbishment. I am not sure if they can start anything else before project approval. The assessment by the supplier could perhaps be started. We will email them after this meeting.

Marc: In terms of the MESSIR NEO installation, it is important if we want to make a radar composite. Is there any news on the installation of the system?

MMS: It is scheduled to be delivered on 17 June. Then it will take a few months to ask Corobor to push the upgraded versions.

MMS Gan: I will visit the reef structures and take the exact height of the trees.

Miguel: We still need to confirm the exact location, we can give a brief checklist to make sure all the items are ticked.



Picture of virtual meeting with MMS on 12 June 2024

SP1.1 – Addu weather radar system, including

- In this case, because of the trees, the radar tower should be 18 m high, and 29 m including the radome. It can then only be installed more than 353 m away from the runway, south of the yellow line in the picture, and East of the seaplane runway
- Even if the tree height is kept below the MES observatory height of 12.05 m, the tower must still be 12 m high, and therefore more than 311 m away from the runway. The situation is not much better.

Two options remain:

1. A 12 m tower (21 with radome) installed close to where the pictures were taken, with a control on the closer trees height. But this would need a special decision from the Civil aviation authority to go above the maximum height, and to keep some control on the trees height.
2. Look for another place East of the mosque, along the B030 road.

Click to join audio

Join Audio Start Video

Participants Chat Share Screen Summary AI Companion Record Show Captions Reactions Apps Whiteboards Notes

Leave

Picture of virtual meeting with MMS on 12 June 2024

Signature of the Chair:

Annex 6: Grievance Recording Form*(to be made available in Dhivehi)*

The Enhancing Climate Resilience and Food Security Project welcomes suggestions, complaints, queries and comments regarding the project. We encourage persons with grievance to provide their name and contact information to enable us to get in touch for clarification and feedback.

Should you opt to include your personal details but want that information to remain confidential, please inform us by writing 'CONFIDENTIAL' above your name.

No.	GRIEVANCE RECORDING FORM		
1	Date of Grievance Reporting		
2	Location of Grievance Reporting		
CONTACT INFORMATION AND GRIEVANCE			
3	Name		
4	Gender	Male	Female
5	Age		
6	Home address		
7	Atoll, Island, Community		
8	Phone		
9	Email		
10	Complaint, comment or question – please provide details (who, what, where, how)		
11	How do you want to be reached for updates?		
12	Signature		
FOR OFFICIAL USE			
11	Registered by: (Name, position, phone number of the official registering the grievance)		
12	Mode in which grievance is received:	<input type="radio"/> Note/Letter <input type="radio"/> E-mail <input type="radio"/> Verbal/telephone	
14	Signature and date of the official recording grievance:		
15	Has AP/Complainant been handed over a copy of the grievance form?	Yes	No
16	Reviewed by: (Name, position, phone number of the official reviewing the grievance)		
17	Action taken:		
18	Whether action taken disclosed:	Yes	No
19	Means of disclosure:		

Grievances Record and Action Taken

Record Number	Date	Name and Contact Number of Complainant	Type of Complaint	Place	Status of Redress	Remarks