Environmental and Social Management Plan for the Installation of a C-Band Weather Radar at Mele Lama, Efate, Vanuatu

VANUATU KLAEMET INFOMESEN BLONG REDY, ADAPT MO PROTEKT (VAN-KIRAP) PROJECT

VANAUTU METEOROLOGICAL AND GEOHAZARDS DEPARTMENT

GREEN CLIMATE FUND
SPREP
Vanuatu
DoWR
APCC
CSIRO
Australian Government
Bureau of Meteorology

Abbreviations

- CAAV: Civil Aviation Authority of Vanuatu
- DEPC: Department of Environmental Protection and Conservation
- DLA: Department of Local Authority
- EIA: Environmental Impact Assessment
- ESMP: Environmental and Social Management Plan
- ESMS: Environmental and Social Management System
- GCF: Green Climate Fund
- NEPIP: National Environment Policy and Implementation Plan
- OGCIO: Office of the Government Chief Information Officer
- OMP: Operation and Maintenance Plan
- PWD: Public Works Department
- SPREP: Secretariat of the Pacific Regional Environmental Programme
- TRBR: Telecommunications Radiocommunications and Broadcasting Regulator
- VanKIRAP Project: Vanuatu Klaemet Infomesen blong redy, adapt mo protect Project.
- VMGD: Vanuatu Meteorology and Geohazards Division

Executive Summary:

The Environmental and Social Management Plan (ESMP) has been formulated for a C-Band Weather Radar Installation as part of the Climate Information Services for Resilient Development Pl anning in Vanuatu (CISRDP) or Vanuatu Klaemet Infomesen blong redy, adapt mo protekt (Van KIRAP) Project. This foundational document aims to ensure that the project's potential environmental and social impacts are identified, assessed, and managed effectively.

Project Overview

The VanKIRAP, in close collaboration with the Vanuatu Meteorology and GeohazardsDivision (VMGD), is championing the installation of a state-of-the-art weather radar in the Mele Lama area near Port Vila. This initiative is poised to significantly enhance Vanuatu's meteorological capabilities, thereby bolstering the nation's resilience against climatic uncertainties and facilitating more accurate weather predictions.

Environmental Context

The chosen site for the radar installation is on the hills of Mele Lama on Efate Island, Vanuatu. The proposed site is adjacent to existing telecommunications towers operated by the Vanuatu Government and Vodafone. The area's biological landscape is characterized by non-native vegetation like the mile-a-minute creeper, with few indigenous species. Cattles and dogs, overseen by the landowner, are the primary fauna. The physical environment reveals that the area is yet to be electrified, with a nearby government tower currently utilizing solar energy. Several families reside in proximity, with two families set to be relocated to ensure the project's smooth execution.

Stakeholder Engagements

A robust consultation process was undertaken, involving multiple stakeholders ranging from governmental bodies like the Women Affairs Department and the Civil Aviation Authority of Vanuatu to corporate entities like Vodafone Vanuatu. These consultations were instrumental in gauging the stakeholders' perspectives, securing their buy-in, and addressing any concerns. The feedback obtained has been integral in refining the project's scope and ensuring its alignment with local needs and regulatory requirements.

Environmental and Social Impacts

The ESMP delves deep into the potential environmental and social impacts of the project, offering comprehensive insights into possible adverse effects and prescribing mitigation measures. The document underscores the project's commitment to environmental stewardship, detailing strategies to minimize ecological disruption, promote sustainable resource utilization, and ensure community cohesion.

Institutional Framework

The ESMP elucidates the institutional mechanisms in place to oversee the project's execution. The VMGD, backed by the technical committee, will spearhead the project's monitoring and governance. Key stakeholders, such as the Department of Environment Protection and Conservation (DEPC), Telecommunications Radiocommunications and Broadcasting Regulator (TRBR), and Civil Aviation Authority of Vanuatu (CAAV), have

defined roles within the ESMP, ensuring a multi-faceted and collaborative approach to project management.

In conclusion, the ESMP for the Weather Radar Installation under VanKIRAP serves as a testament to the project's dedication to environmental sustainability and community welfare. It acts as a blueprint, guiding the project's phases, ensuring that the benefits of enhanced meteorological capabilities in Vanuatu are realized while safeguarding the environment and community interests.

Acknowledgement:

The Environmental and Social Management Plan was prepared through the partnership of the followings:

1. Vanuatu Meteorology and Geohazards Department .
2. Van KIRAP Project
3. Secretariat of the Pacific Regional Environment Programme

1. Introduction

1.1. Background

The Republic of Vanuatu, an archipelago located in the South Pacific Ocean, faces significant meteorological challenges due to its geographic location and topographical diversity. Climate variability and extreme weather events, including cyclones, tsunamis, and prolonged droughts, pose severe threats to the islands' infrastructure, ecosystem, and inhabitants. In this backdrop, timely and accurate weather information becomes crucial for disaster preparedness, risk reduction, and ensuring the safety and well-being of the Vanuatu population.

The Climate Information Services for Resilient Development Planning in Vanuatu (CISRDP) or Vanuatu Klaemet Infomesen blong redy, adapt mo protekt (Van KIRAP) Project, is a full-size Green Climate Fund (GCF) project implemented through the Secretariat of the Pacific Regional Environment Programme (SPREP). The Van KIRAP Project is implemented in the Republic of Vanuatu and managed by the Vanuatu Meteorology and Geohazards Department (VMGD) and SPREP Climate Change Resilience Programme (SPREP CCR), the Project Executing Agencies, in partnership with multiple partners in Vanuatu, Australia and South Korea. A cornerstone of this initiative is the installation of the state-of-the-art C-Band Radar, aimed at enhancing Vanuatu's hydro-meteorological and climate services, thereby strengthening the nation's disaster risk management capabilities.

1.2. VanKIRAP Project:

The Climate Information Services for Resilient Development Planning in Vanuatu/ Vanuatu Klaemet Infomesen blong Redy, Adapt mo Protekt (Van KIRAP) project is intended to build the technical capacity in Vanuatu to (i) harness and manage all relevant climate data; (ii) develop and deliver practical climate information services (CIS) tools and resources at all levels of society; (iii) support enhanced coordination and dissemination of tailored climate-related information to a wide range of potentially vulnerable stakeholders; (iv) enhance and modernise Vanuatu's CIS information and technology infrastructure; and (v) support the application of relevant CIS through real-time development processes and case studies in 5 sectors, for more resilient outcomes. The sectors covered are water, agriculture, infrastructure, tourism, and fisheries.

The main components (and outputs) of the project are:

Component 1. Strengthening the Vanuatu Meteorology and Geohazards Department (VMGD) platform to provide quality climate data and information for climate information services (CIS)

- Output 1.1. Strengthened CIS through improved data and interfaces.
- Output 1.2. Research, modelling, and prediction to support CIS tools and uptake.

Component 2. Demonstrating the value of CIS at the sectoral and community levels

- Output 2.1. CIS implemented within target sectors.
- Output 2.2. CIS is incorporated into community practice.
- Output 2.3. A socio-economic benefit analysis for Vanuatu using the customised Pacific CIS cost-benefit framework.

Component 3. Development of CIS tools and engaging with stakeholders through outreach and communications

- Output 3.1. Traditional knowledge is incorporated into CIS in Vanuatu
- Output 3.2. Development of CIS tools and information products
- Output 3.3. Implementing knowledge management, engagement, and outreach across sectors and communities

Component 4. Strengthening the institutional capacity for long-term implementation of CIS in decision-making.

- Output 4.1. Institutional capacity to implement CIS across sectors strengthened.
- Output 4.2. Training of personnel leads to strengthened institutional capacity.

Component 5. Project management and development

The total project cost is US$19,853,897 (GCF Grant: US$18,106,905; Co-Financing US$1,746,992). The project implementation period is from 10 January 2018 to 10 January 2022, although a project extension to December 2025 is requested.

1.3. Project Justification:

The demand for precise and timely meteorological data has never been more pressing, given its significance in disaster preparedness and risk reduction. The weather radar installation within the VanKIRAP project directly addresses this need, ensuring Vanuatu has a robust mechanism for weather forecasting. Beyond mere weather forecasting, the radar installation is a strategic addition to strengthen the country's disaster risk management capabilities. Furthermore, the benefits of accurate weather forecasting extend to key economic sectors in Vanuatu, including agriculture, aviation, maritime activities, and tourism. With early warning capabilities, the system provides critical information during extreme weather events, allowing for better preparedness and potentially reducing the impact on lives and property.

The radar installation is in tune with Vanuatu's national strategic priorities, emphasizing sustainable development and resilience against climate-induced challenges and aligns with the United Nations' Sustainable Development Goals (SDGs).

Regionally, this radar system positions Vanuatu as a leader in meteorological research within the Pacific. Currently, only Fiji, Papua New Guinea and New Caledonia have similarly rated radar infrastructure and by having one, Vanuatu and indeed the region’s early warning system are bolstered to support disaster risk reduction and resilience. It promotes collaboration and knowledge sharing among Pacific nations, fostering regional growth and cooperation.

1.4. The Purpose of the Environmental Social Management Plan

While the broader VanKIRAP project encompasses various components, this Environmental and Social Management Plan (ESMP) has been prepared specifically for the radar installation component in accordance with the requirements of the donor safeguards and SPREP environment and social management system (ESMS)

Upon the project's approval by the donor (GCF), the VanKIRAP project was initially categorized as a "C", indicating minimal environmental and social implications. However, subsequent reviews by GCF identified specific concerns, leading to the project's recategorization to a "B". After rigorous screening and scoping activities related to the weather radar's location and associated tasks, it was determined that the project rightfully

belongs to category “C”, signifying minimal risks and impacts associated with the radar installation.

Furthermore, an access road is required to facilitate access to the Weather Radar installation site and is pivotal to the project's success. Recognizing its significance, the Vanuatu Government has allocated 24.9 million vatu to the Public Works Department (PWD) to widen and enhance the existing track which is used to access the existing Government Telecommunication tower and will be shared with the radar. The

While the VanKIRAP initiative is a national project with a myriad of activities across Vanuatu, this ESMP is precisely designed for the installation, commissioning, and operation of the C-Band Dual Polarization Doppler Weather Radar. The exclusive focus on the radar installation acknowledges the unique environmental and social challenges associated with establishing and operating such an advanced meteorological infrastructure.

The ESMP's primary objective is to ensure the radar installation aligns with both national, donor’s and SPREP’s environmental and social standards. It emphasizes the importance of preserving Vanuatu's biodiversity, respecting its socio-cultural values, and guaranteeing that the project's benefits are realized without environmental compromises or jeopardizing the well-being of its citizens. This framework provides a systematic methodology to identify, evaluate, and manage potential environmental and social risks, emphasizing rigorous risk assessment, and the application of proactive mitigation strategies. It also addresses potential impacts on the environment and the community, ensuring that all stakeholders, including local communities and experts, are actively involved in the decision-making processes.

2. Methodology for the Development of the Vanuatu Weather Radar ESMP

In order to create a comprehensive and holistic Environmental and Social Management Plan (ESMP) for the C-Band Dual Polarization Doppler Weather Radar, a multi-pronged approach was adopted. This approach ensured that the ESMP addresses all potential risks and impacts, benefiting from the insights of a range of stakeholders and adhering to both national and international standards.

- **Review of the Initial VanKIRAP Project ESMP (Refer to Annex 1):** The foundational VanKIRAP ESMP was thoroughly examined to provide an initial understanding and framework. This review served as a guideline for developing an ESMP specifically focused on the weather radar component.
- **Scoping and Screening Exercise using SPREP Guidelines (Documented in Annex 2):** The potential risks and impacts of the C-Band Dual Polarization Doppler Weather Radar installation and operation were rigorously ~~accessed~~ assessed using the screening and scoping process recommended by the SPREP Environmental and Social Management System (ESMS). The ESMS recommends the use of the SPREP EIA screening checklist to categorize and assess projects based on the risk level. This exercise was pivotal in categorizing and identifying potential risks and impacts, ensuring a systematic approach to their management within this ESMP. The screening and scoping was informed by the reviews of existing project documentation and reports, the field visits to the radar site and consultations with relevant stakeholders.

- **Examination of the Environmental Impact Assessment Permit (See Annex 3):** The Environmental Permit, issued by the Vanuatu Department of Environmental Protection and Conservation, formed a cornerstone of this ESMP's development. This permit's stipulations and conditions were taken into account to ensure the radar installation's compliance.
- **Stakeholder Consultation – Community members, Governmental and Private Sector (Details in Annex 4):** Structured consultations were conducted with relevant government agencies, along with a representation from the private sector, Vodafone. These consultations aimed to gather diverse views and concerns related to the radar installation, ensuring that the ESMP is both inclusive and comprehensive.
- **Engagement with the Van KIRAP Technical Working Group:** Following the initial drafting, the ESMP's findings were presented to the VanKIRAP Technical Working Group. This step ensured that the ESMP was in alignment with the broader project objectives and garnered feedback from technical experts.
- **Endorsement Process:** The final ESMP draft was submitted to the VMGD and the Van KIRAP Team. Their endorsement is essential to validate the ESMP, ensuring it meets the stringent requirements and standards set forth for the project.

3. Legal and Policy Frameworks

3.1. Vanuatu National and Provincial Laws and Policies

The Government of Vanuatu maintains a robust legal and policy framework aimed at ensuring sustainable development and environmental protection which are captured in its National Environmental Policy and Implementation Plan (NEPIP). Annex 2 and Annex 3 of the NEPIP delineate the environmental laws, policies, and multilateral agreements ratified by the Government. These instruments serve as the foundational safeguards for the project, ensuring that all activities, from installation to operation, align with the highest environmental and social standards in Vanuatu.

In addition to the NEPIP, the weather radar project aligns with several other key policies and strategies, ensuring that it is both socially and environmentally sustainable. These include:

- Land Acquisition Act: Provides guidelines and regulations for acquiring land for developmental purposes, ensuring fair compensation and adherence to rights.
- Environmental Protection and Conservation Act [CAP 283]: This is the principal act in Vanuatu that focuses on environmental conservation, protection, and sustainable development. It governs the environmental impact assessment (EIA) process, specifying the requirements and mechanisms for obtaining environmental permits. Additionally, the Act outlines the standards for enforcement, ensuring projects align with Vanuatu's environmental and sustainability objectives.
- Physical Planning (Amendment) Act 2021: Addresses land-use considerations, development controls, and spatial planning.
- Public Health Act[CAP 234]: Instituted to promote public health, sanitation, and well-being.

- Public Land Transport Act 2015: Regulates land transportation, ensuring safety, efficiency, and compliance with standards.
- Public Roads Act 2013: Provides guidelines for the development, maintenance, and usage of public roads.
- Disaster Risk Management Act 2019: Concentrates on disaster preparedness, mitigation, response, and recovery.
- Civil Aviation Act [CAP 258]: Governs aviation activities, ensuring safety, efficiency, and adherence to international standards.
- Water Resources Management (Amendment) Act 2016: Deals with the conservation, allocation, and management of water resources.
- Waste Management Act 2014: Addresses the collection, processing, disposal, and recycling of waste.
- Water Supply (Amendment) Act 2016: Governs the provision, quality, and management of water supply services.
- Telecommunications and Radiocommunications Regulation (Amendment) Act 2021: Regulates telecommunication services while ensuring they meet environmental standards.
- Health and Safety at Work Act 1986: Ensures workplace safety, hygiene, and well-being of workers.
- Protection of Traditional Knowledge and Expressions of Culture Act 2019: Safeguards Vanuatu's cultural heritage, traditions, and intellectual property.
- Meteorology, Geological Hazards and Climate Change Act 2016: Governs meteorological services, geological hazard monitoring, and climate change initiatives.
- Vanuatu Gender Equality Policy: Promotes gender equity and ensures that both men and women have equal opportunities and benefits from developmental activities.
- Decentralisation Implementation Plan 2018-2028: A strategy by the Department of Local Authority that emphasizes decentralized governance and promotes local community involvement.
- Nasara Sector Strategy 2022-2026: A sectoral strategy focusing on specific developmental goals for the period.
- National Sustainable Development Plan 2016 to 2030 - “Vanuatu 2030”
- Vanuatu National Adaptation Programme of Action (NAPA)
- National Biodiversity Strategy and Action Plan 2018 - 2030

3.2. SPREP ESMS Policy

Accredited entity guidance is provided by the Secretariat of the Pacific Regional Environment Programme (SPREP) Environmental and Social Management System (ESMS).

SPREP requires an ESMP to be developed for all categories of project (A, B or C). The level of detail within the ESMP, however, will vary according to environmental and social risk and impact. The expected contents of the ESMP should cover:

- A summary of the overall approach to environmental and social risk and impact management;
- Details of all identified environmental and social risks and impacts;
- Details of mitigation measures which will be applied for each risk;
- Roles and responsibilities for management of risks and impacts;
- Monitoring and evaluation framework;
- Reporting requirements;
- Details of the grievance redress mechanism; and
- Relevant annexes.

Moreover, the SPREP Regional Environmental Impact Assessment Guidelines have been pivotal in shaping the project's approach. Specifically, the screening and scoping checklist of the guidelines informed the inspection of the weather radar location, facilitating the determination of potential impacts and the design of mitigation measures.

4. Description of the Environment

4.1. Physical Environment, Geology and climate

The weather radar is planned for installation in the Mele Lama about 15km from the capital Port Vila. Positioned on a hill, the site is elevated about 207m above sea level, providing a vantage point that ensures optimal radar functionality. Its strategic location (-17.648373057704752, 168.231183708353) adjacent to 2 existing Telecommunication towers operated by the Office of the Government Chief Information Officer (OGCIO) and Vodafone Vanuatu respectively which offers both logistical and infrastructural advantages. The underlying soil, a composite of limestone, rock, and typical soil, is robust and well-suited to support the radar structure. The geotechnical survey further confirms the site's suitability, highlighting the soil's capability to support the radar structure **(Annex 5)**. Port Vila and its surroundings, including Mele Lama, experience a tropical rainforest climate. The region has an average annual temperature of about 25°C. The warmest month is February with an average temperature of 27°C and the coolest is July at 23°C. Mele Lama receives an annual average rainfall of about 2,360 millimetres. Rainfall is relatively consistent throughout the year, with December being the wettest month. Rainwater harvesting is prevalent in the area, with water stored in dedicated tanks. Additionally, a creek in the Mele Lama Province offers an auxiliary water source, which can be tapped for construction-related needs. In addition, VMGD is working with Union Electrique Du Vanuatu Limited (UNELCO) to bring pipe water to the radar site.

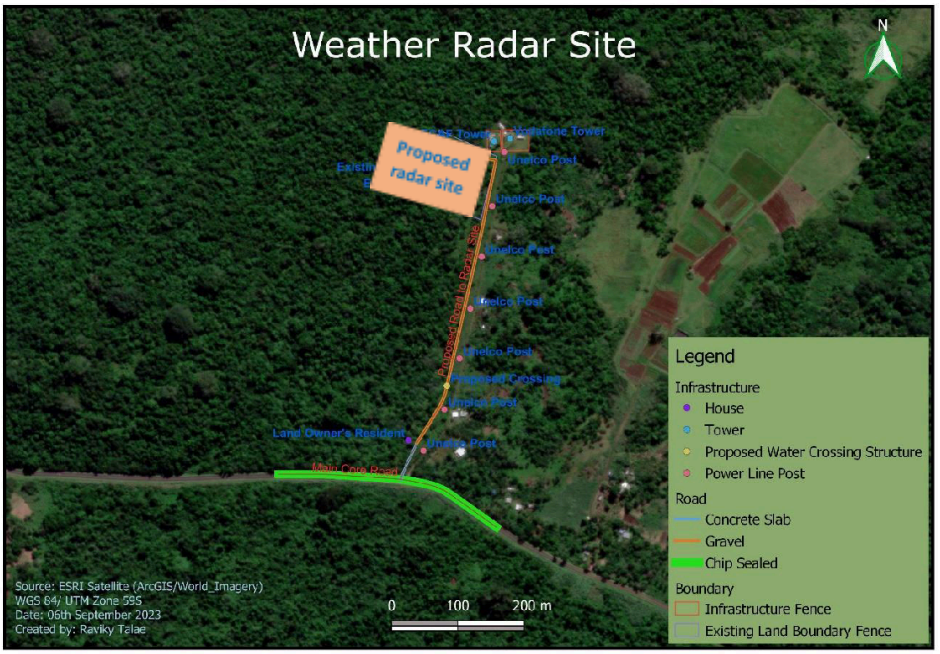


Figure 1: Map of the proposed radar installation site at Mele Lama, including the , access road and nearby existing infrastructure and natural features (Vanuatu Public Works Department)

1.1.1. Biological Environment

- **Flora**

  The site vegetation is characterized by a mix of invasive trees, grass and shrubs such as “mile-a-minute” and other creepers. Although native tree species were notably absent from the project site, fruit trees like Papaya and Palm trees were dispersed throughout the area. The residents also had some plantings of cassava and flower patches (Plate 1).. Other notable plant species include the Sea Hibiscus (*Hibiscus tiliaceus L*) and Turkey Berry (*Solanum torvum*). The survey did not identify any endangered, protected or culturally significant plant species within the project site. The flora present doesn't fall under any national or international conservation lists.

Plate 1: Some of the existing flora around the proposed radar site.

- **Fauna**
  The project site is predominantly characterized by the presence of domesticated animals such as cattle managed by the local landowner and dogs kept by residents in the area. Notably, during the survey, there were no sightings of birds. The absence of large trees, which typically serve as habitats or nesting grounds, might be a contributing factor to their scarcity. Although these species are not endangered or of conservation concern, they do contribute to the local biodiversity.

4.2. Human and Socio-Economic Environment

The surroundings of the proposed radar site are modestly populated, with 8-10 households (60-70 individuals) residing along the existing access road and around the immediate proposed radar installation site. These families are informal settlers, granted land by the landowner. These families engage mainly in subsistence farming, cultivating local crops to sustain their livelihoods. Two families currently dwelling within the radar's proposed installation zone are in the process of relocation (**Plate 2**). Their transition to a new land parcel, arranged by the landowner, is already underway and integrated into the land acquisition process for the radar installation. The landowner also operates a rock quarry in proximity to the radar site, providing a local source for construction materials. The land use pattern in the Mele Lama area predominantly revolves around subsistence farming, interspersed with patches of uncultivated land featuring invasive vegetation.

Plate 2: A-C Photos of family settlement at the proposed radar site. D – designated relocation site for the family.

The proposed site for the weather radar installation is owned by a private landowner (Mr Sam). The site's strategic location, next to existing towers and infrastructure, made it an ideal choice. However, ensuring that all parties' rights and interests were protected was of utmost importance. The land acquisition is presently undergoing a systematic process managed by the Department of Lands in adherence with the regulatory frameworks and guidelines stipulated for such developments in Vanuatu.

As articulated in the "Radar Land Acquisition - Sitrep 5" (**Annex 6**), the process commenced with the identification of the land's rightful owner, followed by preliminary negotiations. The land was then officially requested for the project, resulting in the initiation of valuation by certified land valuators. After the valuation, formal negotiations with the landowner were undertaken to agree upon the compensation amount. The procedure is now at Schedule 5 of a 6-Schedule process, indicating the advancement towards finalizing the compensation agreement. Once an agreement is reached, compensation will be disbursed to the landowner. The Government of Vanuatu has allocated 20 million Vatu to support the land acquisition. This systematic approach ensures that all regulatory requirements are met, land rights are respected, and any potential disputes are addressed proactively.

5. Weather Radar Installation Scope and Description

The VMGD, supported by the VanKIRAP Project, is in the preliminary stages of preparing the site for the construction and installation of the weather radar. However, the specifics of

the radar's design, construction, and installation will be determined once a supplier has been finalized.

5.1. Technical Specifications

While the exact supplier and specific model of the radar system are yet to be finalized, the prospective radar system, as detailed in the shared Expression of Interest (EOI) documentation, is expected to possess advanced features that align with international standards. Some of the anticipated technical characteristics include:

- **Radar Type:** C-Band Dual Polarization Doppler Weather Radar.
- **Coverage:** The radar is expected to have a comprehensive coverage radius of about 200km, ensuring a wide surveillance area for accurate data collection.
- **Resolution:** High-resolution capabilities to detect and track even minor meteorological changes and phenomena.
- **Durability:** The radar system will be designed to withstand the diverse climatic conditions of Vanuatu, including cyclones, ensuring longevity and minimal maintenance requirements.
- **Integration:** The system will be integrated with existing meteorological infrastructure, allowing seamless data sharing and analysis.

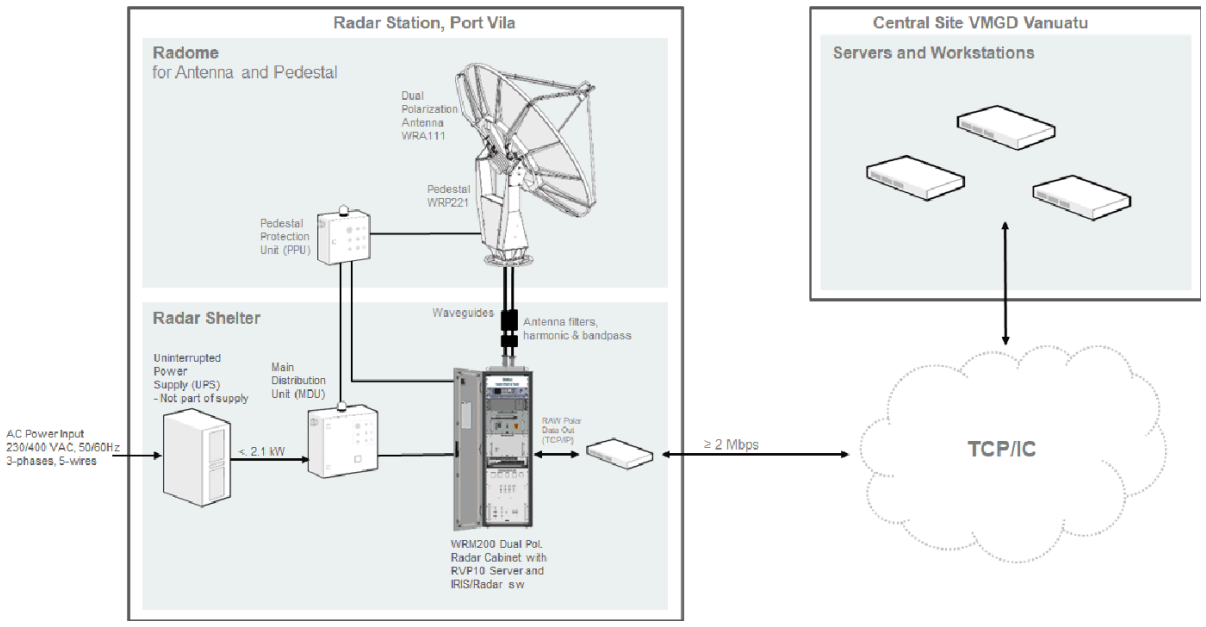


Figure 2: Sample Vaisala WRM200 Weather Radar Block Diagram

As part of the preparatory activities, site evaluations have been conducted to ensure the most suitable location for the radar installation. The radar system will be set up in proximity to existing infrastructure, including the Vodafone Telecommunication Tower and the OGCIO Telecommunication Tower, to facilitate integration and communication. The design is anticipated to resemble the existing towers, as shown in the provided photographs, ensuring

consistency with the current landscape. Preliminary insights suggest the radar tower height to be approximately 21 meters, considerably shorter than the existing 45-meter telecommunications towers.

5.2. Supporting Infrastructure

In addition to the radar system itself, the project will encompass the development of requisite supporting infrastructure. This includes:

- **Equipment Shelter:** A dedicated shelter will house the radar's core equipment, ensuring its protection from external elements and facilitating maintenance activities.
- **Tower Design:** The radar will be mounted on a specially designed tower that ensures optimal elevation and stability. An example design is provided in the Annex 7, which illustrates the tower's anticipated structure and dimensions.
- **Access Road:** The proposed radar site sits about 700m from the main road requiring an access road to facilitate access to the Radar. While there is an existing 'track' used by Government staff to access the OGCIO tower, work is required to upgrade and widen the road to ensure stability and provide access regardless of weather conditions. Recognizing its significance, the Vanuatu Government has allocated 24.9 million vatu to the Public Works Department (PWD) towards the road widening and enhancement. The PWD has prepared an assessment for the road construction and provided a proposed design (**see Annex 8**).

5.3. Construction Phase

5.3.1. Site Preparation

The commencement phase will involve minimal clearing of shrubs and invasive trees. Grading machines will level the site to create a foundation for the radar tower.

5.3.2. Radar Tower Construction

Preliminary designs estimate the radar tower's height to be around 21 meters, a modest stature compared to the 45-meter towers of Vodafone and the Government.

5.3.3. Transportation

All necessary weather radar equipment will need be safely transported to the designated site using the most suitable road transportation methods.

5.3.4. Site Security

To ensure the safety of both the equipment and the local community, a secure fencing perimeter will be established around the radar installation area.

5.3.5. Materials and Utilities

The construction will employ a mix of locally sourced and procured materials, including coarse aggregates, fine aggregates, steel, water, asphalt, reinforcement, and cement. All materials will be selected with an emphasis on environmental sustainability and minimal ecological impact. There is an existing nearby quarry which could provide aggregate and

other raw materials for construction. On-site concrete mixing will be employed for foundational work, with an option for ready-mix concrete based on requirements. Essential utilities, such as water, will be obtained from multiple sources like rainwater catchment tanks, nearby creeks, and potential boreholes. Electricity will be drawn from the existing OGCIO Telecommunication tower, conveniently located about 50m from the radar installation site.

Given the rural location of the project site, the construction machinery and activities will need to be meticulously planned to minimize disruptions and environmental impact. The machinery will comprise:

- Earth-moving equipment
- Transportation vehicles
- Construction vehicles
- Material handling equipment
- General construction equipment

5.4. Operational Phase

5.4.1. Operational Management

Once the installation is complete, the VMGD will assume the mantle of operational management for the weather radar. They will oversee daily data collection, ensuring consistent accuracy and reliability. To support this, an Operation and Maintenance Plan (OMP) has been developed for the project to ensure for the radar's effective and efficient operation, ensuring the longevity and maintenance of the system. It delineates procedures, safety measures, and best practices for the radar's daily operations. Refer to Annex 9 for OMP

5.4.2. Routine Inspections and Monitoring

The radar's structural integrity and performance will be regularly monitored. A rigorous monitoring plan will be instituted, with regular inspections.

5.4.3. Budget and Maintenance

Reinforcing the project's sustainability, the Government of Vanuatu, represented by the Council of Ministers (COM) decision, has pledged a budgetary allocation of 61 million Vatu. This commitment ensures the radar's seamless operation, including maintenance of the access road and any ancillary infrastructure **(refer to Annex 10 for Vanuatu COM decision).**

Figure 1: Photo of the Melelama showing the existing telecommunication towers

Photo **2** **:** A family residence situated along the access road to the Telecommunication tower operated by Vodafone Vanuatu No, the house is on the Vodafone side of the access road

6. Stakeholder Consultations

VMGD and VanKIRAP project team held various stakeholder consultations with stakeholders and community members since between 2020 and 2022. In October 2023, updated and additional supplementary consultations were held with the relevant Government agencies, regulators, community members and the private sector to understand or re-affirm their perspectives, gather feedback, and ensure the project aligns with local and national interests. The following is a summary of these consultations:

6.1. Local community and residents in Mele Lama: The Vanuatu Meteorology and Geohazards Department through the VanKIRAP Project held community consultations with the communities in Magaliliu, Lelepa and surrounding areas. The communities gave their full support for the weather radar. The consultation report is available here

6.2. Women Affairs Department: The Senior Women's Affairs Officer expressed full support for the project, highlighting its alignment with the Gender Policy of the Vanuatu Government. The weather radar data will bolster the Women and Weather initiative in Vanuatu, particularly the Women Weather Watch Initiative which is vital post cyclones. Additionally, it will aid the Gender Protection cluster group in safeguarding vulnerable groups during and post natural disasters.

6.3. Vanuatu Civil Aviation Authority: The Director and Senior Officials of the Civil Aviation Authority confirmed their endorsement, emphasizing the radar's benefits for collecting relevant weather data that is vital for Vanuatu's aviation sector. These include valuable information such as wind speed, cloud density, rainfall, and cyclone tracking. After a site visit to the proposed radar location, they also affirmed the safety of the radar's location and height concerning flight paths. Recommendations were provided regarding the radar's paint and lighting, along with suggestions about bandwidth consultation with Vanuatu Telecommunication.

6.4. Office of Government Chief Information Officer: Being the IT division of the Vanuatu Government and operators of the nearby Government's OGCIO Tower at Mele Lama, they confirmed their support for the radar. They highlighted the benefits of the shared use of the access road to their tower for the radar project.

6.5. Vodafone Vanuatu: Vodafone Vanuatu expressed support for the project. They pointed out that their tower's height, being double that of the proposed weather radar, posed no conflicts. However, they requested for the GPS co-ordinates of the radar to ensure that risks of radio interferences were minimized.

6.6. Department of Local Authority: The department emphasized its support, noting the crucial role of radar data for provincial-level disaster planning and development initiatives. They also addressed the importance of informing the Department and Provincial Office about project developments and appreciated their inclusion in the consultation.

6.7. Telecommunications Radiocommunications and Broadcasting Regulator (TRBR): The TRBR was consulted given their regulatory function on telecommunication infrastructures in the country. They emphasized the need for the radar's operations to not interfere with existing telecommunication frequencies. Recommendations were also made regarding compliance with national and international broadcasting and radiocommunication standards.

6.8. Shefa Provincial Council: The council, being the regional governing body for the Shefa Province where Mele Lama is located, was engaged to ensure alignment with local development plans and objectives. They expressed support for the project, highlighting the benefits it would bring in terms of enhanced disaster preparedness for the province.

6.9. Department of Environmental Protection and Conservation: Engagement to ensure the project aligns with environmental conservation standards and to ensure ESMP meets environmental permit conditions. Detailed list and details of consultations are in **Annex 4**.

Table 1: Summary of Stakeholder Consultations

Stakeholder	Comments	Perceived Benefits of the Radar
Local community	Were aware of the radar project and have agreed to relocate nearby.	Refer to community consultation report -Final Consultation Report Magaliliu Lelepa and surr communities.pdf
Vanuatu Meteorological and Geohazards Department	Need to develop an ESMP to meet GCF requirements and to ensure that radar infrastructure.	Enhance Vanuatu's early warning systems and forecasting capabilities.
Women Affairs Department	- Need for alignment with the Gender Policy.	- Enhanced disaster response and preparedness, especially for vulnerable groups.
Vanuatu Civil Aviation Authority	- Safety concerning flight paths. - Radar's paint and lighting. - Bandwidth and equipment standards.	- Improved aviation data on wind, cloud density, and cyclones.
Office of Government Chief Information Officer	- Shared use of access road.	- Collaborative infrastructure development and enhanced meteorological capabilities.
Vodafone Vanuatu	- Clarification on tower heights and possible interferences with existing towers.	- Supportive of broader infrastructure and technological advancements in the region.
Department of Local Authority	- Importance of informing provincial offices.	- Enhanced provincial disaster planning and development initiatives.
Telecommunications Radiocommunications and Broadcasting Regulator (TRBR)	Interference with telecommunication frequencies.	
Shefa Provincial Council	Alignment with local development plans.	
Department of Environmental	Adherence to environmental requirements.	

Protection and Conservation		

Photo 3: Site Inspection Team from SPREP, VanKIRAP project and the Civil Aviation Authority of Vanuatu (CAAV) standing in front of gate and access road used by the Government to access the that will be used by VMGD for the construction and operation of the Weather Radar.

Photo 4: The gate on the left is the entrance to the access road to the Government Tower and the gate on the right is the private access road owned by Vodafone Vanuatu.

7. Environmental and Social Management and Mitigation

The VanKIRAP Weather Radar Installation project is anticipated to introduce some physical, biological, and socio-economic changes in the project area. Recognizing the potential environmental and social implications of these changes, a focused screening and scoping was conducted to ascertain all the aspects and impacts as well as the potential risk. The Environmental and Social Impact Assessment and Mitigation Measures table encapsulates a comprehensive analysis of potential environmental and social impacts associated with the Weather Radar Installation Project, from its pre-construction and design phase through to the operational phase. Each identified impact is evaluated in terms of its potential risk before and after the application of proposed mitigation measures. Additionally, the table provides recommendations for monitoring these impacts and identifies the responsible entities for overseeing each measure. When properly implemented, the process aims to ensure that the project not only complies with Vanuatu's environmental regulations but also adheres to best practices and standards for environmental management. A few key observations and highlights from the assessment include:

1. **Site Selection:** During the pre-construction phase, site selection emerged as a concern due to the potential relocation of families. However, the integrated land acquisition process, spearheaded by the Department of Lands, ensures that the relocation of 2 families is both ethical and aligns with all local requirements and the conditions of the Environment Permit.
2. **Community and Stakeholder Engagement:** Prior to construction, consultations were comprehensively conducted to ensure that the project aligns with the interests of various stakeholders, including vulnerable groups. These consultations play a pivotal role in ensuring that the project remains sensitive to local needs and expectations.
3. **Electromagnetic Fields:** During the operational phase, the potential health effects of electromagnetic fields (EMFs) emanating from the radar are a significant concern. To

address this, the radar's frequency band will be assigned by TRBR in Vanuatu, ensuring that emissions remain within safe limits for nearby residents.

4. **Energy Consumption and Natural Resources:** The assessment underscores the importance of sustainable energy consumption and resource utilization. Recommendations include the use of energy-efficient systems, partial reliance on renewable energy sources, and sourcing natural materials from proximate locations.
5. **Civil Aviation Operations:** Coordination with the Civil Aviation Authority of Vanuatu is essential to ensure that the radar doesn't interfere with local flight paths. Proposed measures, such as maintaining a permissible radar height and using standard safety paints, mitigate potential risks.
6. **Site Security:** Given the rural location and the distance from main roads, the risk of unauthorized access or vandalism is low. However, to further minimize this risk, the implementation of security measures, such as proper fencing and warning signs, has been proposed.

Table 2: Environmental and Social Management Plan

Pre-construction (Planning and Design) Phase							
Aspect	**Environmental and Social Impacts**	**Risk Assessment (Pre-Mitigation)**	**Proposed Mitigation Measures**	**Risk Assessment (Post-Mitigation)**	**Monitoring**	**Responsibility**	**Permit Condition**
Site Selection	At least 2 families who currently occupy the land near the proposed radar site will be relocated.	Medium	1. The department of land's process for land acquisition has been followed to obtain the site for the proposed radar. 2. The landowner has agreed to relocate families located near the proposed radar site. 3. The families have agreed to be relocated to a land about 100 m from their current settlement.	Low	Regular site assessments during this phase.	VMGD; VanKIRAP project team; DEPC	In compliance with Conditions 29 and 30 of the Environmental permit conditions
Community and Stakeholder Engagement	Ensure that relevant stakeholders have been consulted for the project. Also,	Medium	1. Consultation with relevant stakeholders were conducted were	Low	Regular feedback sessions with communities	VMGD and VanKIRAP project team	Nearby communities must be informed of the daily schedule

	important to ensure that vulnerable and marginalized groups such as women, children and those with disabilities are considered in the project planning.		conducted in 2019 and 2020. 2. Additional consultations have been held with community members, the area administrator, relevant government agencies and departments as well as private sector players in 2023. See **Annex 4** for full list of stakeholder consultations. 3. A GEDSI Action Plan for the project has been developed and will be implemented to ensure all groups are adequately considered during planning. (**Refer to Annex 11 for GEDSI Action Plan**). 4. Comply with Condition 2 of the Environment Permit issued by DEPC.		and stakeholders.		of work from site preparation, construction, and operation.
Construction Phase							

Aspect	Environmental and Social Impacts	Risk Assessment (Pre Mitigation)	Proposed Mitigation Measures	Risk Assessment (Post Mitigation)	Monitoring	Responsibility	Permit Condition
Land Alteration	Soil erosion, runoff and alteration of land topography	Medium	1. Implement erosion and sediment control measures. 2. Minimize land alteration and removal of vegetable to only the immediate project location (radar site and access road). 3. Install proper drainage during construction to ensure safe runoff from construction site. 4. Work should not be conducted in wet or rainy weather. 5. Road constructions should comply with the Public Works Departments specifications and requirements for the road design (see Annex 8)	Low	Monitor the area for clearance and ensure that it is not exceeded	Contractor; VMGD and DEPC	In compliance with condition 8 and 14 of the Environmental permit.

Noise	The construction activities, movement of heavy-duty machinery and equipment to and from the site will increase noise levels around the project site.	High	1. Use construction processes that minimize noise generation and use noise reduction equipment where possible. 2. Ensure that machines and equipment's are adequately and regularly serviced. 3. Comply with condition 5 of environment permit: Control of Nocturnal Noise Act [CAP 40], working onsite is prohibited between 9 pm and 5 am. 4. Comply with condition 25 of environment permit: Nearby communities must be informed of the daily schedule of work from site preparation, construction and operation.	Low	Regular noise level checks.	Contractor, VMGD; DEPC	In compliance with Condition 5 and 25 of Environment Permit
Ambient Air Quality	Dust and particulate emissions from the construction	Medium	1. Use dust suppression methods such as sprinkling water to avoid fugitive dust emissions.	Low	Regular ambient air quality monitoring for	Contractor; VMGD and DEPC	In compliance with condition 3 of the

	activities, heavy machineries operating on site machinery and soil, construction activities affecting air quality		2. Ensure raw materials such as gravel, cement, sand and are well covered during transportation and also during storage onsite to reduce the risk of air suspension. 3. Ensure machinery and equipment's are well serviced and maintained onsite. 4. Avoid unnecessary movement of vehicles. 5. All mixing will be in the enclosed electric motor driven plant mixer, NOT in trucks. 6. No water will be discharged outside the plant boundary.		particulate matter PM2.5/10		Environment Permit
Waste Management	During construction, there is likely to be generation of several solid and liquid waste as a result of activities including construction	Medium	1. The construction contractor will develop and implement a waste management plan. 2. Comply with condition 4, 6, 11, 27 and 28 of environment permit.	Low	Daily visual site checks and inspections	Contractor; VMGD and DEPC	In compliance with conditions 4, 6, 11, 27 and 28 of the Environment Permit

	debris, equipment boxes, bags and discarded equipment parts.		3. The Contractor will consult DEPC on the dumping or discharge of any waste7 materials. 4. All construction works must abide by the relevant waste management regulations and policies in Vanuatu.				
Natural resources	Construction activities will require several natural resources including aggregate, water, fuel.	Medium	1. Source natural materials closer to the project site. (e.g., aggregate can be sourced from a nearby quarry owned by the same landowner) 2. Contractor should be aware and implement of resource conservation practices to avoid wastage of resources. 3. Ensure that water required for construction is obtained in a manner that does not affect water supply to nearby residents	Low	Regular tracking of the volume of natural materials required	Contractor; VMGD and DEPC	Extraction of raw materials will be closely monitored by VMGD and DEPC.

Biodiversity and ecological resources (Flora and Fauna)	The anticipated impacts on the ecology are minimal. The radar site is predominantly grass and shrubland and covered in invasive plant species. There is an existing access road to the OGCIO operated tower which will be shared with the radar site as such vegetative clearance for an access road will be minimal.	Low	1. Implement measures to ensure the clearance is limited to only the project area. 2. Offset any tree clearance by planting 2 native trees for every tree cut within the project area.	Very Low	Monitor the area for clearance.	Contractor; VMGD and DEPC	
Traffic Management	The proposed area is located in a rural area with little traffic. However, the road is steep and narrow in certain areas which could impact traffic flow.	Medium	1. Schedule and manage transportation and vehicular movement both to and around the project site. 2. Ensure safe vehicle operation. 3. Ensure that drivers are licensed and	Low	Weekly traffic disruption checks.	Contractor; VMGD; DEPC and Transportation authority.	In compliance with Condition 2 of the Environment Permit

			experienced to operate the vehicles. 4. Comply with condition 2 of the Environment Permit. 5. Ensure that community members still have access to their houses during construction works.				
Hazardous Materials	Spillage and contamination from oils, fuels, etc.	Medium	1. Proper storage and handling of hazardous materials. 2. Machinery must be serviced and maintained in good condition to avoid leakage and spillage of oil, fuel and other contaminants. 3. No machinery shall operate within the drip zone of any trees identified to remain on the site. 4. The installation of controlled Substances must be prohibited.	Low	Regular checks for spillage.	Contractor; VMGD and DEPC	In compliance with condition 12 of the Environment permit

Natural Disasters	The radar will be subject to adverse weather conditions, climate change and other natural phenomena. Hence, the radar facilities must be built to withstand these adverse conditions	High	1. Radar must be built to the best internationally recognized standards to withstand up to category 5 cyclones, lightning strikes. 2. must conform to the appropriate international safety standards and regulations	Medium	Quarterly checks of instruments and radar frames for any damage.	Contractor; VMGD and DEPC	
Worker Health and Safety	Use of heavy machinery and handling of hazardous waste and chemicals may result in health impacts for workers on the construction site.	Medium	1. Provide proper Personal Protective Equipment. 2. Regular safety training sessions. 3. Only experienced and trained personnel must be allowed to operate any machinery onsite.	Low	Daily safety inspections.	Contractor; VMGD and DEPC	In compliance with Condition 15 and 26 of Environment Permit
Public health and safety	Construction activities and movement of heavy vehicles may impact public safety. Similarly,	Medium	1. Nearby communities must be informed of the daily schedule of work from site preparation, construction, and operation.	Low	Daily safety inspections.	Contractor; VMGD and DEPC	In compliance with condition 21 and 27 of

	emissions and noise from the site may impact the health of residing communities		2. The site must be maintained in a tidy condition, free from litter and waste. 3. Install warning signs in the project site during construction.				permit conditions
Site Security	Potential unauthorized access and vandalism of the radar site. However, this is unlikely to be a concern as the immediate area is rural and sparsely populated. The radar is also located about 700m from the main road.	Low	1. Install warning signs and proper fencing around radar site to limit unauthorized access or vandalism. 2. Co-finance from the Vanuatu government will also support the implementation of security measures. 3. The entrance gate is under lock and key and only accessible to authorized personnel.	Very Low	Monthly security incident logs.	Contractor; VMGD and DEPC	In compliance with Condition 20.
Operational Phase							
Aspect	**Environmental and Social Impacts**	**Risk Assessment (Before Mitigation)**	**Proposed Mitigation Measures**	**Risk Management (After Mitigation)**	**Monitoring**	**Responsibility**	**Permit Condition**

Electromagnetic Fields	Potential health effects due to prolonged exposure	High	1. The Telecommunications Radiocommunications and Broadcasting Regulator (TRBR) in Vanuatu will assign a frequency band for the safe operation of the radar. 2. Ensure radar emissions are within safe limits for nearby residents. 3. Install warning signs and proper fencing around radar site to limit unauthorized access or vandalism. 4. Inform local communities about safe distances. 5. Radar will be installed at a specified height to minimize radiation and interference	Low	Monthly testing of EMF	VMGD; DEPC; TRBR	In compliance with Condition 16 of the Environment Permit.
Noise	While the radar itself will not produce significant noise during operation, the installation and operation of a power generator during power	Low	1. Use noise barriers. 2. Ensure generators are regularly serviced and maintained. 3. Maintenance and other works must abide by the Control of Nocturnal Noise Act [CAP 40];	Very Low	Regular ambient noise level checks.	VMGD; DEPC	In compliance with Condition 5 of the Environmental permit

	failure may create additional noise. Also, vehicles accessing the site for monitoring and other checks may produce noise.		working onsite is prohibited between 9 pm and 5 am.				
Energy Consumption	Increased energy use leading to higher emissions	Medium	1. Use energy-efficient systems wherever possible. 2. Consider partial reliance on renewable sources. 3. Installation of any standby generator must comply with the national standard and all wastes must be deposited at a licensed landfill only. 4. Minimize the use of the backup generator unless during emergencies.	Low	Monthly energy consumption logs.	VMGD	Pay close attention to the power source for the radar and where it will be sourced
Waste Management	Accumulation and disposal of electronic and operational waste as well as discarded parts boxes and plastics	Medium	1. The site must be maintained in a tidy condition, free from litter and waste. 2. Ensure that all waste produced during operation are disposed. 3. All waste must be disposed at the	Low	Weekly waste management logs.	VMGD; DEPC	In compliance with Conditions 4, 6 and 23.

			government designated disposal facilities. 4. If solar batteries are used, a specific site must be allocated for storing used solar batteries ready for disposal once relevant legislation has been gazetted.				
Maintenance of radar facility and site	Potential oil spills and disturbances may occur during maintenance and refuelling of generator.	Low	1. An Operations and Maintenance Plan has been developed and will be implemented for the radar. **(Annex 9)** 2. The government of Vanuatu has also provided a co-financing of 13.5 million Vatu to support the operation and maintenance of the radar. **(Annex 10)**	Very Low	Bi-monthly maintenance log.	VMGD	In compliance with Conditions 12 and 5.
Natural disaster	The radar will be subject to adverse weather conditions, climate change and other natural phenomena.	High	1. Ensure that the radar and associated facilities are adequately protected from adverse weather conditions. 2. The Operations and Maintenance Plan developed for the project outlines the technical	Low	Quarterly inspection of the radar frame for any damage.	VMGD; DEPC	

			requirements that the radar system must meet.				
Site Security	Potential unauthorized access and vandalism of the radar site. However, this is unlikely to be a concern as the immediate area is rural and sparsely populated. The radar is also located about 700m from the main road.	Low	1. Install warning signs and proper fencing around radar site to limit unauthorized access or vandalism. 2. Co-finance from the government will also support the implementation of security measures.	Low	Monthly security incident logs.	VMGD	In compliance with Condition 20.
Civil Aviation Operations	Civil Aviation Authority of Vanuatu was concerned on the radar being in a flight path.	Medium	1. The radar height is within 20m which is lower than the existing Vodafone and OGCIO towers which are 45m and 42m respectively. 2. The radar will be painted in a standard red and white paint with a proper lighting	Very Low		VMGD; CAAV	In compliance with Condition 19 of the Environment Permit.

			installed for night visibility. 3.				
Weather Data Management	Ensuring the accuracy and security of weather data	Medium	4. Use secure and redundant storage solutions. 5. Ensure that data is validated by VMGD before dissemination with stakeholders.	Low	Monthly data accuracy and security checks.	VMGD	

8. Institutional Arrangements

The successful implementation of the ESMP for the VanKIRAP Weather Radar project necessitates a robust institutional arrangement that delineates roles, responsibilities, and mechanisms for coordination among various stakeholders.

8.1. Project Technical Working Group

At the helm of the project's organizational structure is the Project Technical Working Group (TWG). Led by the VMGD, the TWG plays a pivotal role in guiding the project's technical aspects. The group will organize regular meetings during both the construction and operational phases to assess progress, address concerns, and ensure adherence to the ESMP.

8.2. Roles and Responsibilities

1. **Vanuatu Meteorology and Geohazards Division (VMGD)**

   As the primary body overseeing the weather radar project, the VMGD has been entrusted with multifaceted responsibilities. These include:

   - Ensuring that all activities align with the ESMP's mitigation measures and actions by the responsible agencies.
   - Coordinating with relevant sectors and agencies to implement mitigation measures as outlined in the ESMP.
   - Addressing any environmental or social issues that may arise during the project's lifespan.
   - Monitoring the project to guarantee compliance with national laws, regulations, and policies.
   - Regularly update the TWG on the project progress.

2. **Department of Environmental Protection and Conservation (DEPC)**

   - Reviewing and endorsing the ESMP to ensure that environmental standards are maintained.
   - Conducting periodic site visits to verify the project's compliance with environmental guidelines.
   - Offering expertise and guidance on environmental best practices.

3. **Telecommunications Radiocommunications and Broadcasting Regulator (TRBR)**

   - Ensuring that the radar's operational frequency doesn't interfere with existing telecommunication systems.
   - Approving the bandwidth and frequencies utilized by the radar.

4. **Vanuatu Civil Aviation Authority (CAAV)**

   - Confirming that the radar's location and height adhere to aviation safety standards.

- Providing guidelines regarding the radar tower's visual markings for aircraft safety.

5. **Project Contractors and Suppliers**

   While the VMGD offers overarching supervision, the on-ground responsibility of adhering to the ESMP lies with the project's contractors and suppliers. They are expected to:

   - Familiarize themselves with the ESMP's guidelines and abide by them.
   - Report any deviations or challenges to the VMGD promptly.
   - Collaborate with the VMGD in resolving any issues that might compromise the ESMP's effectiveness.
   - Provide training and awareness to their staff and workers.

8.3. Coordination Mechanisms

Effective coordination is essential for the ESMP's successful execution. The VMGD, acting as the central coordinating body, will establish mechanisms to:

- Facilitate communication among all stakeholders.
- Address grievances and provide redressal.
- Conduct regular audits and assessments to ensure the project's alignment with the ESMP.

9. Monitoring and Evaluation

The Monitoring and Evaluation (M&E) process forms the backbone of the project's success, ensuring that activities are implemented as planned and that any unforeseen challenges are promptly addressed. It aids in understanding the impacts of interventions and facilitates timely decision-making.

The existing project technical committee stands as the primary entity overseeing the monitoring of project compliance, both during the construction and operational phases.

- **Chairperson:** The Director-General of the Ministry of Climate Change, Meteorology, Geoscience, and Environment heads the committee, providing strategic guidance and leadership.
- **Secretariat:** VMGD functions as the secretariat for the monitoring team, offering logistical and administrative support.

9.2. Roles and Responsibilities

9.2.1 Vanuatu Meteorology and Geohazards Division (VMGD)

- Serve as the secretariat and operational arm of the project technical committee.

- Coordinate on-the-ground monitoring activities, data collection, and evaluation exercises.
- Engage with the sub-contractor during the construction phase to ensure compliance with environmental and social guidelines.

9.2.2 Department of Environment Protection and Conservation

- Dispense its functions as the regulatory body for Environmental Impact Assessment and Environmental and Social Safeguards in Vanuatu to ensure compliance.
- Offer expertise on environmental compliance and best practices.
- Act as a focal point alongside VMGD in the M&E activities.
- Assist in evaluating the environmental impacts and effectiveness of proposed mitigation measures.

9.2.3 Sub-Contractor

- Collaborate with VMGD and the Department of Environment during the construction phase.
- Produce necessary management plans to manage impacts during construction in line with the ESMP.
- Provide necessary data, reports, and updates regarding construction activities and their impacts.
- Address any issues or challenges flagged during the monitoring process.

9.3 Monitoring and Reporting Mechanism

Regular monitoring sessions will be conducted, and findings will be consolidated into comprehensive reports. These reports, highlighting the progress, challenges, and recommendations, will be presented to the project technical committee. Based on the outcomes, the committee will take necessary decisions and actions to ensure the project remains on track and adheres to its objectives.

9.4. Evaluation and Decision-making

The evaluation process will revolve around assessing the efficacy of implemented measures, understanding the project's impacts, and drawing insights for future initiatives. The project technical committee, armed with the evaluation outcomes, will be empowered to make informed decisions, ensuring the project's sustainability and success.

10. Grievance Redress Mechanism (GRM):

A Grievance Redress Mechanism has been developed to provide a transparent, responsive, and effective channel for all stakeholders, including local communities, to voice concerns and grievances related to the Weather Radar project and ensure their timely resolution. Stakeholders can raise grievances through the following avenues:

Direct Approach:

Contact: Director General of the Ministry of Climate Change, Meteorology, and Environment.

Sub-contractor for the Weather Radar:

Serve as a primary point of contact during the construction phase and relay concerns to the project TWG.

Provincial Office of Shefa and the Department of Local Authority:

Act as liaison between local communities and the project management, ensuring concerns are addressed.

9.1.4 VMGD and the Department of Environment:

Address environmental-related grievances and facilitate their resolution.

9.2 Grievance Resolution Process

All grievances will be reviewed by the project technical committee, which will:

1. Record the grievance.
2. Conduct an initial assessment and categorize the grievance.
3. Assign responsibility for grievance resolution.
4. Monitor the grievance resolution process.
5. Communicate the outcome to the aggrieved party.

9.3 Awareness and Publicity

To ensure that stakeholders, neighbouring communities, and the general public are aware of the GRM:

- Information sessions on the VanKIRAP Project will include details on the GRM.
- Clear instructions on how to use the GRM will be provided.
- Channels for raising grievances will be widely publicized through different mediums.

Disclosure:

- The ESMP will be presented to the project technical committee; the project steering committee; and all stakeholders consulted and interviewed during the development of the ESMP.
- Following the comments and guidance of the project steering committee, project technical team and stakeholders which contributed to the finalisation of the ESMP, the report and submitted for endorsement to the Department of Environment Protection and Conservation as required under the Environment Protection and Conservation Act of Vanuatu.

11. Annexures:

Annex 1: VanKIRAP ESMP (Refer to Attachment – VanKIRAP ESMP)

Annex 2: Screening and Scoping Checklist [Adapted from the SPREP EIA Guidelines (2016)]

ESMP SCREENING AND SCOPING CHECKLIST

Climate Information Services for Resilient Development in Vanuatu Project C-band Weather Radar installation

SECTION 1 – PROJECT DETAILS	
Project reference no.	ENV304/OTH/33/2022
Project name	Climate Information Services for Resilient Development in Vanuatu Project - C band Weather Radar installation
Project proponent (developer)	Vanuatu Government - Vanuatu Meteorology and Geohazards Department (VMGD)
Proponent's email address	mmatou@vanuatu.gov.vu
Proponent's phone number	
Project location (including coordinates, if available)	Melelamu
Type and purpose of project (brief description)	Installation of a C-Band Weather Radar at Melelamu in Efate, Vanuatu

SECTION 2 – SIZE AND SCALE OF THE PROPOSED PROJECT			
Questions to be considered	Yes/no/ N.A./ brief description	Is this likely to result in a significant impact – yes/no? Negative or positive? Long-term, short-term or irreversible?	Does the potential impact need to be further investigated? Will it require management?
2.1 What area of land and/or sea will be developed? (indicate size of area, in m^2 or km^2)	Land survey to be completed to confirm land area for radar installation	No	No
2.2 Will a large amount of energy, water or other natural resources be required for project construction and operation?	Yes	No	No
2.3 Will a large workforce be needed? Is a local and/or external workforce to be employed?	No	No	No
2.4 What is the expected timeframe for the project? (including construction, operation, closure and decommissioning – if appropriate)	9-11 months	No	No

SECTION 3 – CHARACTER OF THE PROPOSED PROJECT			
Questions to be considered	Yes/no/ N.A./ brief description	Is this likely to result in a significant impact – yes/no? Negative or positive? Long-term, short-term or irreversible?	Does the potential impact need to be further investigated? Will it require management?
3.1 What type of construction or operational activities will be undertaken by the project?	Paving an access road clearing and leveling of construction site construction of tower and office box monitoring of the road, tower and office box	No	No
3.2 Are the project activities novel (new) or have they been undertaken before within the country, or in the Pacific region?	Yes	Yes, the radar will provide positive benefits	Yes

SECTION 4 – PROJECT LOCATION			
Questions to be considered	Yes/no/ N.A./ brief description	Is this likely to result in a significant impact – yes/no? Negative or positive? Long-term, short-term or irreversible?	Does the potential impact need to be further investigated? Will it require management?
4.1 Is the project to be located within or adjacent to a vulnerable area (e.g. low-lying coastal area, waterways, floodplain, wetland, steep sloping land)?	No	No	No
4.2 Is the project to be located adjacent to a sensitive site or facility (e.g. historical or archaeological site, conservation reserve, school, hospital/ medical facility)?	No	No	No
4.3 Is the project likely to impact on existing land or sea uses/activities?	No	No	No
4.4 Is the proposed site suitable for the project (e.g. appropriate set-back from the coast, streams or rivers; no steep or eroding slopes)?	Yes	Yes, positive as its located away from major population	No

4.5 Is the proposed project site customary land? Are all customary land/ resource owners aware of the project proposal? Have they been consulted/ meaningfully engaged?		Yes Verify with Moira	No	No
4.6 Are there special land zoning considerations that need to be taken into account (e.g. will the project be within a conservation reserve, rural, urban or industrial area)?		Yes Verify with Moira	No	No
SECTION 5 – ENVIRONMENTAL IMPACTS				
Aspect of the environment	Questions to be considered. Is the proposed project likely to result in...	Yes/no/ N.A./ brief description	Is this likely to result in a significant impact – yes/no? Negative or positive? Long-term, short-term or irreversible?	Does the potential impact need to be further investigated? Will it require management?
5.1 Topography, geology and soils	5.1.1 Destruction, covering or modification of any unique geological or landscape feature?	Yes	No. There is some impact but minimal	No
	5.1.2 Soil contamination or disturbance of previously contaminated soils?	No	No	No
	5.1.3 Disturbance of soils that are fragile, or susceptible to erosion or compaction?	No	Yes but minimal	impact does not need furthe investigation and will be managed
	5.1.4 Creation of steep slopes or other unstable land conditions?	No	No	No
	5.1.5 Changes in the channel of a stream, a floodplain, or the bed of the ocean or lagoon?	No	No	No
5.2 Water	5.2.1 Extraction or use of ground, surface or tank water resources, leading to reduction in the volume and quality of water available for the public water supply?	No	No	No
	5.2.2 Pollution of ground, surface, coastal or sea water, via direct or indirect discharges or seepages; or through interception of an aquifer by drilling, cuts or excavations?	No	No	No
	5.2.3 Changes in currents, or the course or direction of marine or fresh water movement?	No	No	No
	5.2.4 Changes in runoff, drainage patterns or absorption rates?	Yes	No	Drainage will be installed to manage runoff
	5.2.5 Coastal, stream or river flooding?	No	No	No
5.3 Air	5.3.1 Release of dust?	Yes	Yes, During transportation of equipment and construction	Yes, dust emissions will need to be managed
	5.3.2 Release of hazardous, toxic or noxious air pollutants/ emissions?	Yes	No, Negative, short term	Yes, this will require a management action
	5.3.3 A significant increase or decrease in local or regional greenhouse gas emissions?	No	No	No
5.4 Noise	5.4.1 A significant increase in existing (baseline) noise levels that will adversely affect people or animals?	Yes	Yes, Negative, Short term	Yes a management plan will be implemented
5.5 Plant life	5.5.1 Damage to or clearing of vegetation communities (e.g. upland forest or mangrove communities)?	Yes	No	No
	5.5.2 Damage to or destruction of important plant communities (e.g. seagrass beds; plants with medicinal, cultural or commercial value; unique, threatened or endangered plant species)?	No	No	No
	5.5.3 A reduction in agricultural crop production?	No	No	No
	5.5.4 The farming or production of an exotic plant species?	No	No	No
	5.5.5 The spread or introduction of an invasive plant species?	No	No	No

Aspect of the environment	Questions to be considered. Is the proposed project likely to result in...	Yes/no/ N.A./ brief description	Is this likely to result in a significant impact – yes/no? Negative or positive? Long-term, short-term or irreversible?	Does the potential impact need to be further investigated? Will it require management?
5.6 Animal life	5.6.1 Damage to or destruction of coral reef areas?	No	No	No
	5.6.2 Reductions in the numbers of unique, rare or endangered animal species?	No	No	No
	5.6.3 Reductions in animal populations harvested regularly for human consumption (e.g. fisheries)?	No	No	No
	5.6.4 Damage to or destruction of habitat for animal communities on land, in rivers or in the ocean?	No	No	No
	5.6.5 Barriers to the migration or movement of animals?	No	No	No
	5.6.6 The farming or production of an exotic animal species?	No	No	No
	5.6.7 The spread or introduction of an invasive animal species?	No	No	No
5.7 Natural resources	5.7.1 The extraction, harvest or consumption of natural resources (e.g. timber, minerals, water)?	Yes	No	No
	5.7.2 A noticeable increase in the rate of use of any natural resource?	No	No	No
	5.7.3 Substantial depletion of non-renewable resources?	No	No	No
5.8 Human communities	5.8.1 Encroachment into existing settlement areas or customary lands?	Yes	No	Yes
	5.8.2 Influx of an external workforce or in-migration to the project area?	No	No	No
	5.8.3 Demand for additional housing to accommodate an external workforce?	No	No	No
	5.8.4 Increased traffic or increased use of roads and the existing transport system; and an increase in associated health risks (dust, noise)?	Yes	No	Yes, Traffic management plan/actions will be prepared
	5.8.5 Increased demand for and disruption to social services and infrastructure (e.g. water and energy supply, communications, sewage and waste disposal, fire protection, police, schools, medical care)?	No	No	No
	5.8.6 A reduction in visual amenity?	Yes	No	No
	5.8.7 Infringement on customs or customary rights?	Yes	No	No, managed through the land acquisition process
	5.8.8 Social change or impacts on traditional governance structures, resulting in community dislocation or loss of community cohesion?	Yes	No	Its being managed by the land owner and affected persons. However, community cohesion is maintained
	5.8.9 Restrictions in access to customary areas or restrictions in resource use in customary areas?	No	No	No
	5.8.10 Changes in access to or the quality of recreational opportunities (e.g. sites used for nature-based tourism)?	No	No	No

Aspect of the environment	Questions to be considered. Is the proposed project likely to result in...	Yes/no/ N.A./ brief description	Is this likely to result in a significant impact – yes/no? Negative or positive? Long-term, short-term or irreversible?	Does the potential impact need to be further investigated? Will it require management?
5.9 Local and national economy	5.9.1 Local economic displacement or loss of livelihoods (including subsistence and informal economic activities)?	No	No	No
	5.9.2 Creation of jobs/livelihood opportunities for locals?	Yes	Yes, Positive impact, short term	No
	5.9.3 Influx of the cash economy in areas where there was previously a subsistence-based economy?	No	No	No
	5.9.4 Training or educational opportunities for locals?	No	No	No
	5.9.5 Increased tax revenue for the national government? Royalties or benefits for sub-national levels of government?	Yes	Yes, positive, long term	No
	5.9.6 Industry development opportunities?	Yes	Yes, Positive, long term	No
	5.9.7 Benefits for directly affected people and communities (which may include direct economic benefits, community development programmes etc.)?	Yes	yes, positive	No
	5.9.8 Benefits for the broader community (e.g. upgrading of social services or infrastructure)?	Yes	Yes, positive, long term	No
SECTION 6 – ENVIRONMENTAL HAZARDS (INCLUDING HAZARDS THAT ARE NATURAL, HUMAN-INDUCED OR TECHNOLOGICAL IN NATURE)				
Questions to be considered. Will the proposed project be subject to, or affected by...		Yes/no/ N.A./ brief description	Is this likely to result in a significant impact on the project – yes/no? Negative or positive? Long-term, short-term or irreversible?	Does the potential impact on the project need to be further investigated? Will it require management?
6.1 Increased risk of an explosion or release of toxic pollution related to the use, handling, storage or production of hazardous substances?		No	No	No
6.2 Increased health and safety hazards or risks for people (e.g. from the use of machinery/equipment or the presence of hazardous substances)?		Yes	No, short term	will require a traffic management and health and safety plan
6.3 Increased vulnerability of people or property to water-related hazards (e.g. flooding, tidal waves)?		No	No	No
6.4 Increased vulnerability of people or property to geological hazards (e.g. landslides, ground failure, earthquakes)?		No	No	No
SECTION 7 – ENVIRONMENTAL CHANGE				
Questions to be considered. Will the proposed project be subject to, or affected by...		Yes/no/ N.A./ brief description	Is this likely to result in a significant impact on the project – yes/no? Negative or positive? Long-term, short-term or irreversible?	Does the potential impact on the project need to be further investigated? Will it require management?
7.1 Loss of land from shoreline change or coastal erosion, especially associated with extreme weather events?		No	No	No
7.2 Sea-level rise?		No	No	No
7.3 Flooding from high tides, large swells, extreme rainfall or storm-related events?		No	No	No
7.4 Other impacts related to climate change or climate variability?		Yes	Yes, long term	Yes will require management

SECTION 8 – UNCERTAINTY SURROUNDING POTENTIAL IMPACTS AND RISKS		
Questions to be considered	Yes/no/N.A./brief description	Is further investigation required?
8.1 Are the potential project impacts and risks easily identified and well-understood?	Yes	No, but they will be managed by the ESMP
8.2 Are cumulative impacts in the project's area of influence well understood and have they been properly analysed?	Yes	No, monitored and managed during implementation and operation
SECTION 9 – BROADER POLICY AND PLANNING CONTEXT		
Questions to be considered	Yes/no/N.A./brief description	Is further investigation required?
9.1 Are there particular goals, targets or obligations under government policies, plans or legislation that are relevant to this project?	Yes	No
9.2 Is the project relevant to any MEA commitments or obligations? (e.g. CBD, CMS, CITES, Ramsar, Stockholm Convention, MARPOL, UNCLOS, UNCCD, UNFCCC)	Yes	No
9.3 Are there any areas within or around the proposed project site that are protected under international, national or local laws?	Yes, existing IGCIO and Vodafone towers are protected under national laws	No

FINDINGS AND RECOMMENDATIONS: **ESMP to be developed and approved for the radar project based on:**

- ☐ 1. Mitigation measures recommended in the environmental assessment and permit conditions; and
- ☐ 2. ESMP screening and scoping checklist findings
- ☐ 3. Interview and consultations with relevant stakeholders

ACTIONS FOR RECOMMENDATION:

The ESMP to be presented to the Technical Working Group for the VanKIRAP and VMGD before submission for approval by DEPC.

Name(s) and job title(s) of screening officer(s): Scoping and screening team: Jope Davetanivalu (SPREP); Ivan Diarra (SPREP); Moirah Matou (VMGD); Sunny Seuseu (VanKIRAP); Jino Moli (VMGD)

Signature(s):

Date: 10/October/2023

Annex 3: Environment Permit issued by Department of Environmental Protection and Conservation

DEPARTMENT OF
ENVIRONMENTAL PROTECTION
AND CONSERVATION

Private Mail Bag 9063
Port Vila
REPUBLIC OF VANUATU

DEPARTMENT OF ENVIRONMENTAL PROTECTION & CONSERVATION

BUREAU DE LA PROTECTION DE
L'ENVIRONNEMENT ET DE LA
CONSERVATION

Sac Postage Privé 9063
Port Vila
REPUBLIQUE DE VANUATU

DIPATMEN BLONG ENVAEROMEN PROTEKSEN MO KONSEVESEN

Tel: (678) 25302 / 33430

DEPC reference: ENV/304/OTH/33/2022

20 June 2022

The Director
Vanuatu Meteorological Geo-Hazards Department
Port Vila
EFATE

Dear Director,

Environmental Permit for installation of a weather radar tower at Klems Hill Area, EFATE

I refer to your application for an Environmental Permit for the installation of a weather radar tower at Klems Hill, Efate; received by the Department of Environmental Protection and Conservation (the Department) on 24 May, 2022.

After reviewing your application and the preliminary environmental assessment undertaken by the Department, I have decided to grant an Environmental Permit for your project. **Enclosed** is a copy of your Environmental Permit.

In making my decision I have considered:

1. Whether your project is likely to cause any environmental, social or custom impact
2. Geotechnical study report done by the Geology and Mines Unit and submitted via email to the Environmental Planning & Impact Assessment Division on 20 June 2022
3. Preliminary Environmental Report carried out by divisional staff
4. The significance of any identified impact
5. Whether your proposed management actions/measures are likely to effectively mitigate, minimise, reduce or eliminate any identified significant impact
6. Whether any residual impacts will remain after your proposed management actions/measures to mitigate, minimize, reduce or eliminate any significant impacts have been implemented
7. Whether your project is controversial

8. The degree to which your project creates a precedent for future action
9. The potential for cumulative impacts
10. The degree to which your project takes unique or unknown risks

As part of carrying out the activities authorised under your Environmental Permit you are responsible for ensuring that your staff and sub-contractors comply with the Environmental Permit. Any non-compliance by staff or sub-contractors will be considered as a breach of your Environmental Permit by you and the Department will take further action as appropriate.

Please note:

1. Departmental officers may visit your site for monitoring activities. Departmental officers are authorised to do so under section 42A of the *Environmental Protection and Conservation Act* [CAP 283] (the EPC Act).

2. You are authorised to carry out the activities listed in the Environmental Permit only. If you wish to change your activities you will need to apply to amend your Environmental Permit.

3. Failure to comply with the terms and conditions of your Environmental Permit is an offence against the EPC Act and carries with it significant penalties.

4. Your Environmental Permit is for the purpose of the EPC Act only. Depending on the nature of your project, you may need other environment-related approvals. As the project proponent, you are responsible for ensuring that any other approvals, permits, licenses, agreements, authorities or permissions required under any other laws of the Republic of Vanuatu are obtained before any activities are carried out. The approvals etc. you need will vary depending on the nature of your project but may include:
    a. The consent of the custom land owner
    b. A land lease of a suitable class
    c. Foreshore development consent from the Minister of Internal Affairs
    d. A building permit and planning permission from the relevant municipal or provincial council
    e. A water works or water use permit from the Department of Water Resources
    f. A quarry permit from the Commissioner of Mines
    g. Customs and quarantine approvals from Biosecurity Vanuatu and the Department of Customs and Inland Revenue

h. An authorisation from the Department under the *Ozone Layer Protection Act No. 27 of 2010* to, for example, import air conditioning or refrigeration equipment containing controlled substances.

5. Your Environmental Permit states the day by which works must substantially commence. If you fail to substantially commence your project within this timeframe your Environmental Permit will be invalid and a new application must be submitted. You may apply to extend this timeframe once only and the maximum extension that can be granted is 12 months. An application to extend the timeframe, including the associated fee, must be received before the date stated on your Environmental Permit.

Should you require any further information, please contact Mrs Naomay Tor, Principal Officer Environmental Impact Assessment, on the above number or via email njtor@vanuatu.gov.vu

Yours sincerely,

Donna Kalfatak
Director
Department of Environmental Protection and Conservation

Encl: Environmental Permit

Environmental Permit

Environmental Protection and Conservation Act
[CAP 283]
Section 14

Permit number	ENV304/OTH/33/2022
Date issued:	20 June 2022
Date by which works must substantially commence:	20 June 2023
Holder:	The Director Vanuatu Meteorological Geo-Hazards Department Port Vila EFATE
Authorised activity:	For the purpose of the *Environmental Protection and Conservation Act* [CAP 283] only, this permit authorises you to: **Install a weather radar tower at Klems Hill area, EFATE**
Definitions:	In this permit, unless the contrary intention appears, the terms used are as defined in *the Environmental Protection and Conservation Act* [CAP 283] or *Environmental Impact Assessment Regulations*.

Controlled substance means any substance specified in the Schedule of the Ozone Layer Protection Act, whether existing alone or in a mixture, including any controlled substance that has been or is in the process of being recovered, recycled or reclaimed. It includes the isomers of any such substance, except as specified in the relevant Annex of the Schedule, but excludes any controlled substance, whether alone or in a mixture, which is in a manufactured product other than a container used for the transportation or storage of that substance.

Manufactured product means any of the following products that contains a controlled substance or that is designed to use a controlled substance:

(a) Dry-cleaning machines

(b) Fire extinguishers

(c) Automobile and truck air conditioning units (whether incorporated in vehicles or not)

(d) Marine and transportation refrigeration

(e) Domestic, commercial and industrial refrigerators, freezers, chillers, dehumidifiers, water coolers, ice machines, display cabinets, cold storage systems,

air conditioning and heat pump units and any other refrigeration and air conditioning/heat pump equipment;

(f) Any other product prescribed by regulations under the Ozone Layer Protection Act.

Conditions

General:

1. Stockpiling of all construction and maintenance materials must be stored away from water prone areas and environmental sensitive area.
2. All traffic to and from site must be managed to ensure no hazards to other road user/residences.
3. Dust must be controlled to avoid nuisance to any neighbouring property, including gardens or habitations.
4. The discharge, dumping etc. of construction materials, oils, fuels, chemicals or wastes, including wash and waste water, to the environment is prohibited.
5. Subject to the *Control of Nocturnal Noise Act* [CAP 40], working onsite is prohibited between 9 pm and 5 am.
6. In the event the authorised activities cease, all wastes and hazardous materials must be removed from the site and disposed of off-site at a licensed or Council approved waste disposal facility.
7. The installation of controlled Substances is prohibited.
8. Allow departmental staffs on site for monitoring purposes.

Staff and subcontractors:

9. Staff and sub-contractors must be made aware of the importance of environmental protection and must receive appropriate trainings.
10. Staff and sub-contractors must be made aware of the conditions of this Environmental Permit and must comply with all relevant conditions.
11. The site must be maintained in a tidy condition, free from litter and waste (whether arising from activities associated with the project or external sources).

Use of machinery:

12. Machinery must be serviced and maintained in good condition to avoid leakage and spillage of oil, fuel and other contaminants.
13. No machinery shall operate within the drip zone of any trees identified to remain on the site.
14. Machinery must not operate in wet or rainy weather.
15. Only experienced and trained personnel must be allowed to operate any machinery onsite.

Site Specific:

16. Radio frequency fields which the public can and will be possibly exposed to must be kept to lowest level as possible.
17. Radar installation site must be on area as specified by the basic site plan submitted with the Environmental Permit application.
18. Installation of radar tower must be in compliant with the design submitted with the application.
19. The height of the tower must be relatively less than the distance from the base of the tower to the nearest residence building or properties to ensure safety during any unexpected falling event.
20. Proper fencing must be installed to ensure the weather tower area is enclosed from external interactions and those who use the adjacent areas are secure and safe.
21. Warning signs must be placed on the project site during construction.
22. Tower must be able to withstand strong winds/cyclone, earthquakes and lightning of the tower.
23. A specific site must be allocated for storing used solar batteries ready for disposal once relevant legislation has been gazetted.
24. Installation of any standby generator must comply with the national standard and all wastes must be deposited at a licensed landfill only;
25. Nearby communities must be informed of the daily schedule of work from site preparation, construction and operation.
26. Workers must wear appropriate Personal Protective Equipment (PPE) when constructing the tower.
27. The site must be maintained in a tidy condition, free from litter and waste (whether arising from activities associated with the project or external sources).
28. Disposal of any kind of waste (solid or liquid) into any water bodies or into the surrounding environment is not allowed.
29. Consents must be obtained from appropriate owner(s) prior to removing any garden crops.
30. Consents must be obtained from affected party (ies) prior to any relocation of buildings and/or residential dwellings.
31. As the developer, you are responsible for any future unforeseen environmental impact(s) resulted as part of your project.
32. Departmental officers must be allowed on site for monitoring purposes.

Donna Kalfatak
Director
Department of Environmental Protection and Conservation

Annex 4: List of stakeholders consulted during ESMP development.

	Date	Name	Gender	Designation	Organization/Agency	Email address
1	10/10/2023	Ms Esline Garaebiti	F	Director General	MoCCA	gesline@vanuatu.gov.vu
2	10/10/2023	Mr Fred Jockley	M	Acting Deputy Director	VMGD	fjockley@gmail.com
3	10/10/2023	Ms Moirah Matou	M	Project Manager	VMGD/Van-KIRAP	mmatou@vanuatu.gov.vu
4	10/10/2023	Mr Jino Moli	M	Senior Engineer Officer	VMGD	jino.moli@gmail.com
5	10/10/2023	Mr Sunny Kamuta Seuseu	M	Acting Manager/Climate Technical Officer	SPREP, Vanuatu Office	sunnys@sprep.org
6	10/10/2023	Mrs Seman Saraken	F	Senior Leadership Programs Officer	Department of Women's Affairs	sndalesa@vanuatu.gov.vu
7	10/10/2023	Grace Naparau	F	Director	CAAV	gnaparau@caav.vu
8	10/10/2023	Kevin Dick Abel	M	GHANS	AVL	ghans@airports.vu
9	10/10/2023	Pelensly Lulu	M	AANS	CAAV	plulu@caav.vu
10	10/10/2023	Mr Pascale Alick	M	AGA	CAAV	palick@caav.vu

11	10/10/2023	Mr Andre Tagar	M	Senior Officer	OGCIO	atagar@ogcio.gov.vu
12	12/10/2023	Mr Kleton Ezekiel	M	Senior Engineering Officer	OGCIO	kezekiel@ogcio.gov.vu
13	11/10/23	Ms Devo Wari	F	Decentralization Officer	Department of Local Authority	dwari@vanuatu.gov.vu
14		Mr Sam	M	Landowner	Mele Lama, West Efate	
15	12/10/2023	Mr Robert Abbil	M	Technical and Universal Access Policy	TRBR	robertabbil@trbr.vu
16	12/10/2023	Mr Luke Boas	M	Senior Engineering Officer	TRBR	jeanlukeboas@trbr.vu
17	12/10/2023	Mr Kristofferson Mala	M	Engineering Officer	TRBR	kristoffersonmala@trbr.vu
18	12/10/2023	Ms Leah John Kaltoi	F	Acting Secretary General,	SHEFA provincial council	ljkaltoi@vanuatu.gov.vu
19	12/10/2023	Ms Donna Kalfatak	F	Former Director	DEPC Vanuatu	dkalfatakmoli22@gmail.com
20	12/10/2023	Mr Trinison Tari	M	Senior Environmental Officer	DEPC Vanuatu	ttari@vanuatu.gov.vu

Figure 4: Meeting with the Office of the Government Chief Information Officer

Figure 5: Consultations with Vodafone Vanuatu

Figure 6: Consultation with Department of Local Authority

Figure 7: Mele Lama Local families and community members

Figure 8: Meeting with the Department of Women's Affairs

Figure 9: Meeting with Civil Aviation Authority of Vanuatu and the Airport Authority.

Figure 10: Consultation with the Telecommunications Radiocommunications and Broadcasting Regulator in Vanuatu

Annex 5: Geotechnical Survey (Refer to attachment)

Annex 6: Radar Land Acquisition - Sitrep 5 (Refer to Attachment)_

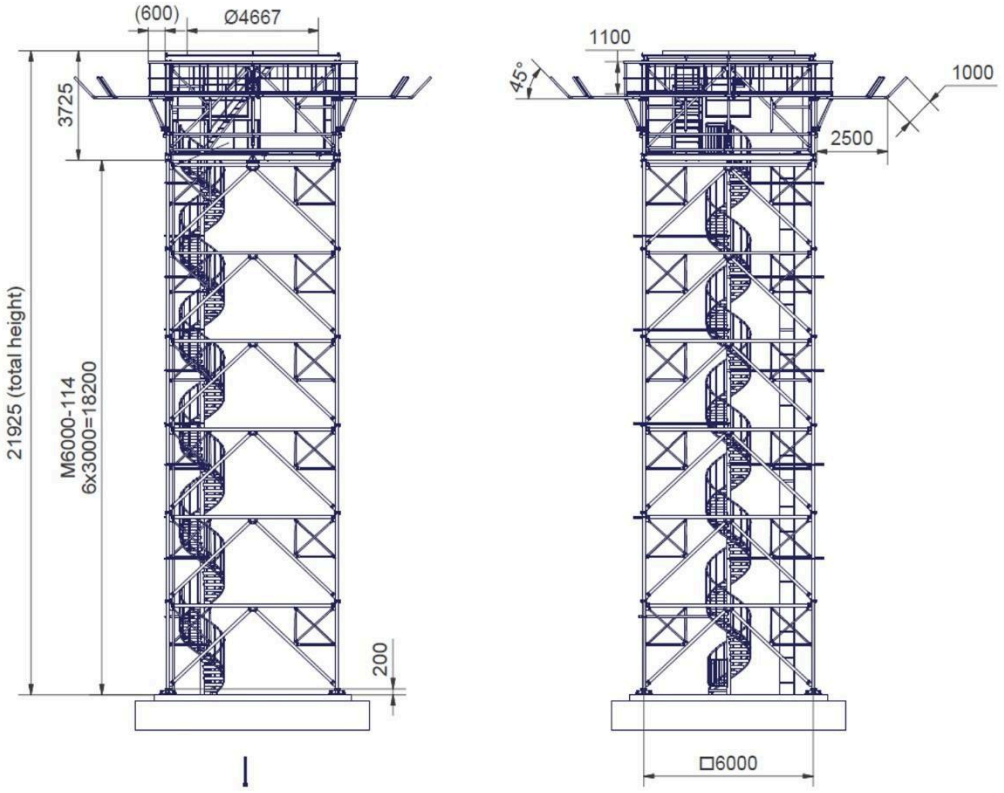
Annex 7: Proposed Radar Tower Design

Vanuatu Radar Proposed Tower Design

Example of lattice steel tower design with integrated shelter.

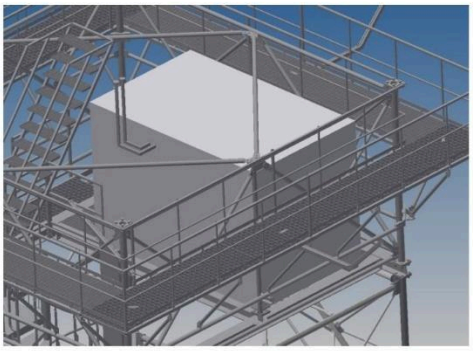
1 Steel Tower

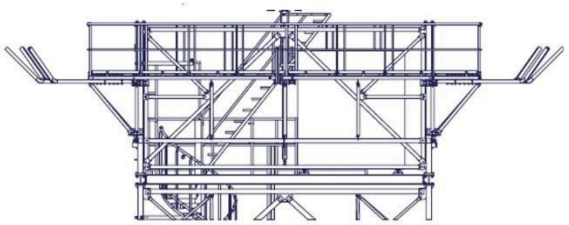
Steel Tower, ~21m

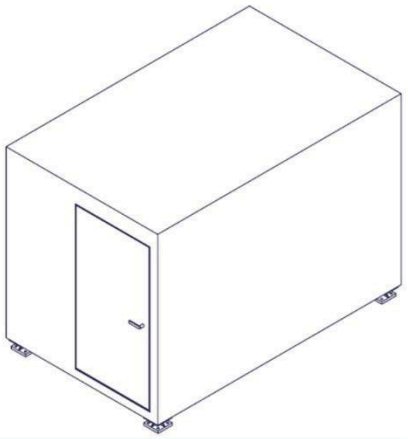


2 Radar Cabinet Shelter

Integrated cabinet shelter on top of tower







Annex 8: Proposed Road Design for Radar Site (Refer to attachment)

ANNEX 9: Operations & Maintenance Plan (Refer to Attachment)

ANNEX 10: Vanuatu Govt Co-finance (Refer to Attachment)

Climate Information for Resilient Development in Vanuatu Project

(Project ID: FP035)

Gender Equality, Disability, and Social Inclusion Action Plan

A Roadmap to Promoting Gender Equality, Disability and Social Inclusion in Climate Information Services in Vanuatu

This gender equality, disability, and social inclusion (GEDSI) action plan has been developed for the 'Climate Information Services for Resilient Development in Vanuatu' project. It has been produced in addition to a GEDSI analysis for the project.

Following the GCF Gender Policy and the Van-KIRAP project workplan, this GEDSI Action plan aligns its activities and outputs to each of the projects four components:

- Component 1: Strengthen the VMGD platform to provide quality climate data and information for CIS;
- Component 2: Demonstrating the value of CIS at the sectoral and community levels;
- Component 3: Development of CIS tools and engaging with stakeholders through outreach and communications;
- Component 4: Strengthening the institutional capacity for long-term implementation of CIS in decision-making.

In addition to the Van-KIRAP project outcomes, the main project outcomes of the GEDSI action plan are:

- Increased understanding of climate change impacts upon diverse groups (including women, disabled people, youth, and LGBTQI+ individuals) across the five sectors

- GEDSI responsive sectors
- Strengthened leadership capacity of women, disabled people, youth, and LGBTQI+ individuals.
- Strengthened gender, disability, and youth inclusion networks.
- Increased meaningful participation of women, disabled people, youth, LBGTQI+ individuals and Indigenous peoples in Van-KIRAP project activities.
- Widened access to economic opportunities for women, the disabled, youth, and LGBTQI+ individuals through project engagement and experience.
- Engaged Indigenous women's groups, LGBTQI+ groups, disability groups and youth groups in the process of developing and implementing VanKIRAP project activities.
- Strengthened monitoring and reporting on disabled people and youth in leadership positions within the project and in the delivery of climate information services.
- Strengthened monitoring and reporting on women and LGBTQI+ individuals in leadership positions within the project and in the delivery of climate information services.
- Increased access to and control of technology for women, the disabled, youth, and the poor.
- Strengthened understanding and vertical integration of national, regional, and international gender, disability, youth**,** and Indigenous rights related mandates, including the GCF Gender Policy into Van-KIRAP project work.
- Strengthened support for GEDSI across the project management unit.

Gender Equality, Disability, and Social Inclusion (GEDSI) Action Plan

Component 1: Strengthen the VMGD platform to provide quality climate data and information for CIS		
Project Outcome	**GEDSI Responsive Output/ Activity**	**Timeline**
1.1. Strengthening climate information services through data and interfaces	1.1.1. Ensure the staff responsible for undertaking climate data digitising and homogenising training includes women. Encourage women's future involvement and employment in these processes (paying particular attention to equitable access to workshops and training). 1.1.2. Encourage and ensure there are opportunities in place for at least one woman in the project team responsible for climate data digitising and homogenization. 1.1.3. Encourage and ensure there are opportunities in place for at least one woman in the project team responsible for ICT upgrade and maintenance processes. 1.1.4. Ensure the engagement of women, disabled people, youth, and LGBTQI+ individuals where possible, as end users across the five priority sectors to test the Vanuatu Climate Futures portal. 1.1.5. Publicise GEDSI CIS data training success stories in communications outreach material, i.e., newspaper articles, newsletters, and project reports. 1.1.6. Climate Futures Portal to disaggregate data and future forecasting analysis/ impacts by sex, age, disability, and ethnicity where this information is collected and where relevant. 1.1.7. Manage and maintain project data disaggregated by sex, age, disability, and ethnicity.	S2 2021 S1 2022 S2 2022 S1 2022 S1 2022 Ongoing
1.2. Research, modelling and prediction to support CIS tools and uptake	1.2.1. At least one woman in the team responsible for the monitoring and analysis of observational data, where possible. 1.2.2. Ensure that climate forecast models can be utilised to extract information on the climate impacts on small-scale and subsistence livelihoods, i.e., on the livelihoods, subsistence, and wellbeing of women, disabled people, and youth across all sectors. 1.2.3. Engage women, people living with disabilities, and youth in the stakeholder feedback group in the development of CIS modelling products. 1.2.4. Provide training for suitably qualified women, disabled people, youth, and LGBTQI+ in raising awareness and understanding of the application of hazard mapping to better	Ongoing Ongoing Ongoing S2 2021

		understand the impacts of climate change on their location (paying particular attention to equitable access to workshops and training)	
	1.2.5.	Provide training for suitably qualified women, disabled people, youth and LGBTQI+ individuals in raising awareness and understanding of the application of the vulnerability mapping to their location to better understand the impacts of climate change on their location (pay particular attention to equitable access to workshops and training)	S2 2021 S1 2022 S1 2022
	1.2.6.	Integrate women's traditional knowledge with climate science evidence to provide necessary CIS to inform decision making at the community level, across all sectors.	S1 2022
	1.2.7.	Women and small-scale farmers are included in agriculture sector baseline assessment	S2 2021
	1.2.8.	The Crop-climate Diary mobile app is available, accessible, and relevant for end users that include women, disabled people, youth and LGBTQI+ individuals.	S2 2022/ Ongoing
Component 2: Demonstrating the value of CIS at the sectoral and community levels			
2.1. CIS implemented within target sectors	2.1.1	Develop a Van-KIRAP project GEDSI Community Engagement and Information Dissemination protocol to be utilised for all community consultations, workshops, training, climate centre outreach, climate centre site assessments, and to be included as part of the project's broader community engagement strategy. The protocol should include points 2.1.2-2.1.8. below.	
	2.1.2	Community consultations across all project sectors to include diverse groups, including women, PLWD, youth and LGBTQI+ individuals.	
	2.1.3	Separate meetings for diverse groups, including women, disabled people, youth, and LGBTQI+ during consultations, workshops, and training.	
	2.1.4	Community consultations, workshops, meetings, and trainings to be held at a location that is accessible to diverse groups including women, disabled people, and youth.	
	2.1.5	Inform community groups, particularly women, disabled people, and youth, of participatory events days ahead of the event to ensure they can organise and plan their time accordingly to enable meaningful participation.	
	2.1.6	Promote and mobilize travel/ transport funds as a means of supporting the equal participation of women, disabled people, youth and LGBTQI+ in community consultations, workshops, training etc., where required.	

	2.1.7	Develop an information dissemination strategy to ensure CIS information reaches diverse groups including women, disabled people and youth in a form that is accessible to them.	
	2.1.8	Seek feedback from diverse groups including women, disabled people, and youth, on the impact of the Van-KIRAP project and the use of Climate Information Services.	
	2.1.9	Agriculture: In all project reports, workplans, case studies and communications materials, recognise household and market gardens as agricultural practices that can be strengthened using climate information services to improve production.	
	2.1.10	Fisheries: Include women's traditional knowledge and practices in Marine Protected Areas (MPA) management plans.	
	2.1.11	Water: Women are consulted in water management decision making and are active and meaningful members of water management governance in the Sarakata catchment.	
	2.1.12	Water: Women are meaningfully and included and represented on Integrated Water Management Committee.	
	2.1.13	Water: Engage women, disabled people, youth, and LGBTQI+ individuals in flood Early Warning Systems (EWS) plans and processes.	
	2.1.14	Infrastructure: All project infrastructure is accessible to women, disabled people, and youth where relevant and appropriate.	
	2.1.15	Infrastructure: Ensure the development of community infrastructure projects do not impact negatively on women's and other groups livelihoods and access to services.	
	2.1.16	Infrastructure: Provide training for women in construction management in climate design standards.	
	2.1.17	Tourism: A GEDSI approach is taken in developing tourism Standard Operating Procedures	
	2.1.18	Tourism: Publicise women-led tourist operators as a priority for private and public investment opportunities.	
	2.1.19	Tourism: Publicise in communications materials evidence of female tourist operators, disabled tourist operators and youth-led tourist operators utilising CIS tools such as EWS.	
	2.1.20	Train, utilise and promote women as climate information services citizen scientists for project data collection, monitoring, and evaluation.	
	2.1.21	At the community level, disseminate climate information for Indigenous women, the disabled, youth, and LGBTQI+ across all five sectors in Bislama by word of mouth and with visual aids, e.g., posters at community consultations.	

	2.1.22	In the case of an emergency/ disaster, ensure that information is also distributed house to house.	
2.2. CIS is incorporated into community practices	2.2.1.	The six climate centres are a site and space that are open, accessible, and engaging for diverse groups in the community, including women, disabled people, youth, LGBTQI+ individuals.	
	2.2.2.	Design, develop and implement a GEDSI Climate Change Centre implementation plan that includes the points 2.2.3. to 2.2.11. below.	
	2.2.3.	Climate information and outreach from climate centres to be provided in diverse forms including posters, word of mouth, and radio, and accessible to diverse groups, including women, youth, and people living with disability.	
	2.2.4.	Identify and include in climate centre outreach community consultations existing local government agencies, NGOs, community-based organisations, and women's associations or groups whose work focuses on gender, disability, youth and/or LGBTQI+ inclusion.	
	2.2.5.	Allocate funding to strengthen existing gender, disability, and youth inclusion networks to incorporate climate information services, e.g., Save the Children and Red Cross. Link climate centres with existing women's, disability, and youth networks.	
	2.2.6.	Existing GEDSI networks are utilised to engage women, disability, youth, and LGBTQI+ representatives as 'GEDSI climate champions' (focal point) in each of the six centres, responsible for strengthening GEDSI CIS networks in the community. Representatives should be paid from project funds for the time they contribute to community outreach and networking tasks.	
	2.2.7.	Host a networking event to bring GEDSI climate champion representatives/ focal points from the six climate centres together in a peer-to-peer exchange on GEDSI experience and needs as well as the CIS information needs, experiences, and ideas, including linking to existing GEDSI networks, for example the Women's Weather Watch.	
	2.2.8.	Monitor and evaluate how and why climate tools are taken up by women, disabled people, youth and LGBTQI+ individuals.	
	2.2.9.	Publicise community level GEDSI success stories through case studies that recognise and amplify the benefit of climate centres to women, disabled people, youth, and the LGBTQI+ community.	
	2.2.10.	Promote initiatives for capacity-building in leadership roles in climate information services for women, disabled people and LGBTQI+.	

	2.2.11. Provide free wi-fi access for all community members at climate centres	
2.3. Socio-economic benefit analysis for Vanuatu utilising the customised Pacific CIS cost-benefit framework is produced	2.3.1. The socioeconomic benefit analysis is disaggregated by sex/gender, age, disability, and ethnicity, and includes a GEDSI analysis.	
Component 3: Development of CIS tools and engaging with stakeholders through outreach and communication		
3.1. Traditional knowledge is incorporated into climate information services in Vanuatu	3.1.1. Provide TK data collection and cultural sensitivity capacity building training across all project sectors, ensuring the inclusion of women in this training. 3.1.2. The collection of women's traditional knowledge is carried out by women who are adequately trained in the ethics and cultural sensitivities of collecting women's traditional knowledge. 3.1.3. Include the integration of women's traditional knowledge into CIS tools and information where permission has been given to do so. 3.1.4. In each climate centre site, host a workshop to promote GEDSI-responsive technological solutions to address climate change, including strengthening, protecting, and preserving local, Indigenous, and traditional knowledge and practices in different sectors	
3.2. Developing CIS tools and information products for target end-users	3.2.1. Develop specific CIS tools for diverse groups, including women, youth, the disabled and the LGBTQI+ community. 3.2.2. Design and develop factsheets specific to each sector that include the dimensions and examples of the gendered, disability, youth differentiated impacts of climate change, the impacts of climate change on Indigenous populations, the role of women and youth as agents of change, and the role CIS play in this. 3.2.3. Promote and provide training specifically targeted to women, disabled people, youth, and LGBTQI+ individuals in the use of social media, web resources and innovative communications tools and sector specific apps that effectively communicate the work and implementation of the Van-KIRAP project and sector specific climate information services.	
3.3. Implementing knowledge management, engagement and outreach across sectors and communities	3.3.1. Develop and utilise a GEDSI responsive communications strategy/protocol that includes point 3.3.2. to 3.3.14. below and is integrated into the broader Van-KIRAP communications strategy.	

	3.3.2. Include gender, disability, and social inclusion in the context, analysis, formulation of objectives, and identification of target audiences in all Van-KIRAP project activities. 3.3.3. Ensure CIS tools are appropriate and tailored for diverse audiences, including women, disabled people, youth, and the LGBTQI+ community. 3.3.4. Include the perspectives of women, men, youth (girls and boys), disabled people and LGBTQI+ individuals in Van-KIRAP communications materials and reports. 3.3.5. Include sex disaggregated data in Van-KIRAP communications material and reports where available. 3.3.6. In Van-KIRAP communications materials and reports, challenge gender stereotypes and avoid depicting men and women in exclusively stereotypical, disempowering, or traditional ways (both text and images) – i.e., ensure that both women and men are represented and visible in climate information services. 3.3.7. Be sensitive to diversity in gender identification and sexual orientation. 3.3.8. Ensure that gender and disability are considered when designing messages and choosing channels of communication. 3.3.9. Van-KIRAP communications materials, outreach, and reports provided in Bislama and made accessible to diverse groups in the community, including women, disabled people, youth, and LGBTQI+ individuals. 3.3.10. Van-KIRAP GEDSI CIS climate champions, women groups, disability groups, and youth groups are central to the development and dissemination of communications and outreach materials. 3.3.11. Monitor and report on the gender composition in leadership positions/ tasks within the Van-KIRAP project. 3.3.12. Monitor and report on the implementation of GEDSI-responsive climate information services activities. 3.3.13. Monitor and report on disability and youth composition in leadership 3.3.14. Provide case studies of gender, disability, and youth composition in leadership in project activities and the implementation of GEDSI-responsive climate information services activities.	
Component 4: Strengthening the institutional capacity for long-term implementation of CIS in decision-making		
4.1. Institutional capacity to implement CIS across sectors strengthened	4.1.1. Implementation of GEDSI responsive climate information services capacity development training for Van-KIRAP sector staff (across five sectors), including the Van-KIRAP PMU in developing GEDSI responsive climate information services (CIS).	

	This training should focus on: 1. Integrating/ mainstreaming GEDSI - formulating, monitoring, implementing, reviewing, reporting on, and budgeting for, as appropriate, GEDSI outputs and outcomes, and 2. ensuring that members of the Van-KIRAP project team across all five sectors and the PMU are introduced to gender, disability youth and Indigenous peoples-related mandates and to the relevance of gender, disability, youth and Indigenous inclusion in the context of their work in a consistent and systematic manner. 4.1.2. Integrate/ Mainstream GEDSI-responsive decision making into Van-KIRAP project work across all sectors, ensuring GEDSI responsive budgeting, monitoring, evaluation, and reporting with sex-disaggregated data in project management and information system. 4.1.3. Workshop to clarify the role of a Van-KIRAP project Climate Information Services (CIS) GEDSI focal point to be appointed within the PMU, including the provision of capacity-building, tools, and resources, sharing experience and best practice, workshops, knowledge exchange, peer-to-peer learning, mentoring, and coaching 4.1.4. Employ a woman as the dedicated CIS GEDSI focal point within the PMU to ensure women, disabled people, and youth are central to the delivery of CIS in communities, included at all stages and levels of decision making, and that special training days and resource development focus particularly on women and are inclusive of youth, disabled people and LGBTQI+ individuals. 4.1.5. Provision of capacity-building opportunities, tools, and resources in climate information services (CIS) across all five sectors that specifically target women, disabled people, and youth. 4.1.6. Integrate/ Mainstream GEDSI in the Van-KIRAP community engagement strategy. 4.1.7. Integrate/ Mainstream GEDSI in the Van-KIRAP communications strategy. 4.1.8. Dialogue with Van-KIRAP project staff to promote coherence reflecting on multidimensional GEDSI considerations between the work of VMDG, the five sectors and SPREP PMU.	
4.2. Training of personnel leads to strengthening of institutional capacity	4.2.1. Design, develop, distribute, and promote of tools, guidelines, and training to enhance the capacity of project sectors PMU to collect, analyse and apply sex, disability, and age-disaggregated data and GEDSI analysis in the context of climate information services, where applicable.	

	4.2.2. Establish a ‘Women in Climate Information Services’ programme to strengthen the capacity, knowledge and employability of women in climate information services across all five sectors.	