

Case Study: Developing an Environmental and Social Management Plan for the C-Band Weather Radar, Vanuatu

Prepared by the Environment Monitoring & Governance Programme (EMG, now the Environment & Governance Programme — EG) in support of VMGD, SPREP's Climate Services and Infrastructure (CSI) Programme, and the VanKIRAP project.

Project	Vanuatu Klaemet Infomesen blong Redy, Adapt mo Protekt (VanKIRAP)
Sub-project	Installation of a C-Band Dual Polarisation Doppler Weather Radar
Site	Mele Lama hills, Efate Island — 17°38'54" S, 168°13'52" E · 207 m ASL · 1.548 ha
Funding	US\$19.85 million total (GCF grant US\$18.11 M; Government of Vanuatu co-financing US\$1.75 M, including ~44.9 M vatu for land acquisition and access-road upgrade)
Partners	VMGD, SPREP CSI Programme, DEPC, CAAV, TRBR, OGCIO, Department of Women's Affairs, Shefa Province, Vodafone Vanuatu, and the Mele Lama community
ESMP lead	SPREP Environment Monitoring & Governance Programme (EMG / now EG), engaged by SPREP under the CSI Programme at the request of the Government of Vanuatu
Safeguard category	Screened C → B → C during due diligence, applying SPREP's ESMS and GCF safeguard requirements

Why an ESMP was needed

The C-band radar is a national priority. From Mele Lama, a 200 km coverage radius gives VMGD the reach to track the cyclones, convective storms and heavy-rain systems that repeatedly cost Vanuatu lives and infrastructure. DEPC had already run a preliminary environmental assessment and issued a permit, and in an earlier era that would have been the end of the paperwork. It wasn't. As the design moved from concept toward construction, the Green Climate Fund (GCF) came back with further environmental and social safeguard concerns: the national permit did not, on its own, meet donor safeguard expectations, and the project-level ESMP framework was too general to manage a site that had families living on it.

The Government of Vanuatu asked SPREP for technical support, and SPREP's Climate Services and Infrastructure (CSI) Programme brought in our team — the Environment Monitoring & Governance Programme (EMG, now EG) — to prepare a focused, site-specific ESMP for the radar and to conduct the environmental and social assessments that would sit behind it.

How we developed the ESMP

We structured the work around SPREP's Environmental and Social Management System (ESMS) and the Pacific Regional EIA Guidelines, and ran it in four connected steps rather than as a desktop exercise:

- **Documentation review** — the project-level ESMP, DEPC's environmental permit, the cost–benefit analysis, the geotechnical report and the GEDSI Action Plan.
- **Screening and scoping** against SPREP ESMS safeguards and Vanuatu law (EPC Act CAP 283, Land Acquisition Act, DRM Act 2019, Health and Safety at Work Act 1986).
- **Site assessment** at Mele Lama — drone survey, walk-over of the proposed access road, and inspection of the existing OGCIO and Vodafone towers next door.
- **Structured interviews** with the DG for Climate Change, VMGD, CAAV, TRBR, DEPC, the Department of Women's Affairs, OGCIO, Shefa Province and Vodafone Vanuatu — and, most importantly, with the households living on the hill.



Figure 1. Our team at Mele Lama, next to the existing Vodafone and OGCIO telecommunications towers, during the site assessment.

What we found on the ground

The site sits on a private landholding in shrubland dominated by the invasive "mile-a-minute" creeper, with cattle and dogs the only fauna of note. It has no grid electricity, but it sits right next to solar-powered government and commercial towers — which made it a technically sound choice: existing access, existing line-of-sight, minimal fresh clearance.

The social picture was less tidy. Eight to ten households (60–70 people) live along the access road, and **two of those families were living on the exact footprint of the proposed radar** and would need to be relocated. Government moved to formally acquire 1.548 hectares under the 5-schedule process of the Land Acquisition Act, and negotiated relocation and compensation with the landowner and the two families directly. This was the single most consequential finding of our assessment — and the one most likely to have slipped through if the ESMP had stopped at the project-level framework.

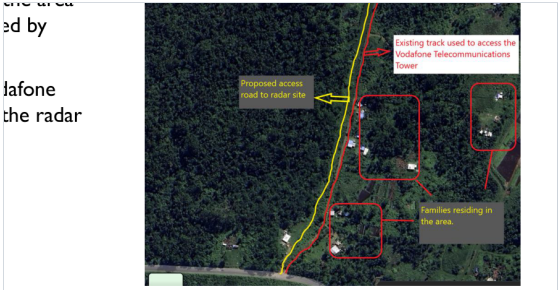


Figure 2. Site layout — proposed radar footprint, access-road alignment and households in the influence area.

families reside at the proposed radar site and will be in process)



Figure 3. The two families' dwellings on the proposed radar footprint (panels A–D) — the anchor point of the Safeguard 7 (Involuntary Resettlement) response.

Key impacts and how we managed them

We identified four material risks, plus a fifth operational one. All ended up rated Low or Very Low residual risk after mitigation — but each of them needed active coordination between agencies that don't routinely sit at the same table.

Impact	Safeguard	Mitigation	Residual	Lead
Land acquisition and relocation of two families	SG 7 — Involuntary Resettlement	5-schedule process under the Land Acquisition Act; landowner agreement; negotiated compensation and alternative housing; grievance channel opened before works begin.	Low	Gov. of Vanuatu / VMGD
Prolonged exposure to electromagnetic fields (EMF)	SG 6 — Community Health & Safety	TRBR assigns a dedicated frequency band; radar mounted at 21 m to lift the main beam clear of dwellings; warning signage and fenced exclusion zone; community briefing on safe distances.	Low	TRBR / VMGD
Accumulation and disposal of electronic and operational waste	SG 5 — Pollution Prevention & Resource Efficiency	Weekly waste logs; separation of e-waste; return-to-supplier arrangements for end-of-life electronics; monthly energy logs to reduce diesel-generator reliance.	Low	VMGD / Contractor
Soil erosion, runoff and land alteration from access-road upgrade and pad works	SG 1 — Assessment & Management	Erosion controls on the 700 m road widening; dust suppression by water-spraying; no night works (21:00–05:00); two native trees planted for every one cleared; quarterly frame inspections.	Very Low	Contractor / DEPC
Weather-data quality and aviation interference	SG 6 / operational	Redundant storage; CAAV vetting of flight paths and tower marking (red-and-white); Vodafone tests for radio interference before commissioning; VMGD validation before public dissemination.	Very Low	CAAV / VMGD

Consultation and grievance redress

The consultations were not a formality — different concerns surfaced in different rooms. The Department of Women's Affairs pushed us to work through the GEDSI Action Plan and the Gender Protection cluster. Vodafone raised co-channel interference on the C-band. CAAV wanted the tower vetted against approach paths into Bauerfield. The households wanted a straight answer about where they would live next. Every one of those concerns was tracked into a specific mitigation measure in the ESMP.

We wrote a Grievance Redress Mechanism into the plan before construction started, with three entry points — the DG of the Ministry of Climate Change, the sub-contractor and the Shefa Provincial Office — all feeding a single technical committee that records, categorises and resolves grievances. VMGD sits as monitoring secretariat.



Figure 4. Consultations with VMGD, CAAV, TRBR, OGCI, DEPC, DoWA, Vodafone, Shefa Province and the Mele Lama community.

What worked, what was hard

What worked. Going site-specific was the single biggest lift — it surfaced the two-family relocation, which the project-level framework had never picked up. Widening the room beyond the Met sector let us line up TRBR's frequency assignment, CAAV's aviation clearance and DEPC's permit conditions in one process instead of three. And we used the GEDSI Action Plan as an active input, not a compliance annex.

What was hard. Safeguards were raised late — after the site was chosen and the national permit was in hand — and that is the regional pattern, and the main driver of cost and delay across projects like this. The two most technical risks, EMF and aviation, needed capacity that VMGD did not hold in-house, so we had to bring it in through the regulators and through us. And relocation, however carefully handled, is not a conversation any project should be opening after design freeze.

What this means for the region — back to PMC-8 Agenda 22.2

VanKIRAP sits alongside Weather Ready Pacific, ClimSA and One Pacific for CIEWS — all Pacific programmes deploying physical infrastructure that lands on real land, next to real communities and ecosystems. What we saw at Mele Lama backs the three asks before PMC-8:

- **Treat ESS as investment protection, not compliance** — the site-specific ESMP is what let a US\$18 M donor-funded asset move forward without a household-level dispute holding it up.
- **Bring safeguards in at planning stage, not after procurement** — every avoidable cost we saw on VanKIRAP traced back to ESS being raised late.
- **Endorse a regional ESS capacity-building programme for NMHSs, delivered through SPREP's CSI Programme with EG technical support** — so that Met services across the region can screen, scope and manage safeguards themselves, rather than commissioning a bespoke plan every time a new radar, AWS or upper-air station is proposed.