LYNDAX GLOBAL | REAL-WORLD DEPLOYMENT BRIEF

TRACK BRIEF 04: MINA YAGUMA — People of the Upper Winds & Sky

Phase 1 Deployment: Woodlark (Murua) Island | Release: 9 August 2026

Complete Track Brief — all 4 challenges

CHALLENGE AT A GLANCE

Objective: Build zero-emission aerial logistics, heavy-lift canopy deployment drones, aerial mesh relays, and hydrogen-electric inter-island air corridors.

Technical Baseline: Zero-fossil-fuel propulsion, hardware-locked flight telemetry, edge-AI canopy analytics, MANET-class aerial mesh extension, geopolymer landing infrastructure, non-lithium charging.

Required Deliverables: Aircraft/UAV CAD schematics, flight control software architecture, sensor telemetry plan, and proof-of-concept evidence in whatever form fits your team's stage.

A note before you read further: everything below is one way to solve this challenge, not the only way. It's meant to show you the shape of the problem clearly enough to work with, not to box you into a single design. Bring your own research, your own expertise, and tell us plainly what extra value your approach adds beyond what's written here — that's genuinely welcome, not a deviation to explain away. This is also a challenge, not the finished deployment: some things that belong to the real, on-the-ground project — like securing consent from customary landowners — aren't yours to demonstrate at this stage, and you won't be asked to. Read the Guidelines for Guardians to Unite alongside this brief for the fuller picture of how deployment actually works, logistics included.

Who can apply: You can apply as a single person, a company, or a team — whatever shape your work actually takes. If more than one submission ends up solving the same piece of this puzzle, we'd rather introduce you to each other than make you compete: this is about uniting the right people around Ava, not picking a lone winner.

1. SYSTEM PLACEMENT & ROLE

Where This Sits: Moves between land and sea to carry payloads, medical supplies, environmental sensors, and personnel.

Core Mission: Establish zero-emission hydrogen-electric/eVTOL flight corridors, deploy heavy-lift drones that carry Mina Valu's Forest Sentinel Totems into position, extend the tactical mesh over terrain dead zones by air, and execute edge-AI forest density LiDAR mapping across Woodlark Island.

Integration Rule: Every drone and aircraft embeds hardware-locked telemetry processors executing edge hashing, streaming flight logs and canopy metrics through Mina Kula's tactical mesh and satellite backhaul to the central dual-node dashboard.

2. WOODLARK ISLAND: WHAT YOU'RE ACTUALLY DESIGNING FOR

A real starting point, not the whole picture — go do your own deeper research from here. Facts below are sourced from public geographic and climate records; anything marked as an estimate is exactly that.

Geography. Woodlark Island is roughly 60km east-west and 30km north-south at its center, in the Solomon Sea, part of Milne Bay Province, centered around 9.13°S, 152.81°E. Highest point is Mount Kabat at 240m. The island's own name is Muyuw, also called Murua.

Population & settlements. No formal census has been taken since 1990; an unofficial estimate puts the island's population around 6,000 today, spread thin. Kulumadau is the largest settlement, Guasopa second — Guasopa also holds the island's health centre, currently 9 health workers covering roughly 6,000 people across Woodlark and the surrounding islands. There is one primary school, in Kulumadau; every child leaves for Alotau to attend secondary school.

Climate. Warm and humid year-round, roughly 21–34°C. Wet season runs January through March, peaking in March. Southeast trade winds dominate the drier stretch, roughly May through November. Cyclone and tropical storm risk concentrates December through March.

Access. The route in runs through Alotau, Milne Bay Province's capital, then by sea to Woodlark — roughly 155–160 nautical miles by straight-line estimate; no verified figure exists for actual sea-route distance or travel time, so treat this as a rough planning estimate, not a fixed number.

3. THE TECHNICAL BASELINE

These fall into two tiers. A small number are hard constraints, marked [HARD CONSTRAINT] below — they protect physical safety or the project's core environmental commitments, not architecture, and admit no exceptions. Everything else here is the reference bar for meeting each field challenge, not the only acceptable answer: if your team has a genuinely better way to solve the same problem, propose it. This challenge is evaluated on what actually works in the field, not on matching this document line for line.

- **Zero-Fossil-Fuel Propulsion** — **[HARD CONSTRAINT]**: All UAVs, eVTOLs, fixed-wing STOL, and amphibious aircraft run strictly on solar, kinetic, or green hydrogen-electric powertrains. No fossil combustion anywhere in the fleet.
- **Hardware-Locked Flight & CORSIA Telemetry**: Aircraft electrical buses and fuel-cell regulators integrate revenue-grade digital meters. Flight path, altitude, payload weight, distance flown, and energy consumption are cryptographically hashed with device MAC addresses and UTC timestamps, streaming to Mina Kula's dashboard in a form that supports ICAO CORSIA-aligned aviation reporting.
- **Edge-AI Canopy Analytics**: Survey drones carrying optical/LiDAR arrays process imagery on localized neural networks, classifying environmental degradation versus seasonal canopy change so only high-value data crosses the satellite link.
- **Aerial Mesh Extension**: Tethered or long-endurance solar aerial relays extend Mina Kula's tactical mesh over terrain the ground network can't reach — Woodlark's mountain ridges create real dead zones ground relays alone can't solve.
- **Geopolymer Landing Infrastructure** — **[HARD CONSTRAINT]**: All airstrips, drone charging pads, and water-landing piers are built jointly with Mina Valu using cement-free geopolymer materials, on land already scarred by logging. No primary forest clearing.
- **Non-Lithium Ground Charging** — **[HARD CONSTRAINT]**: Drone charging hubs and airstrip microgrids run strictly on sodium-ion or VRFB storage, or green hydrogen fuel cells. No lithium thermal-runaway risk anywhere in the ground infrastructure.
- **Airspace Corridor Reservation**: Flight paths integrate with the same GIS corridor-reservation work described in Mina Kula's brief — sea lanes, air corridors, and sacred-zone boundaries reserved now, ahead of the full real-time coordination hub, which is deferred until traffic volume actually justifies building it.
- **Working With Customary Land**: Free, Prior and Informed Consent with the registered customary landowners is led by Lyndax Global and the Samarai-Murua District Development Authority, as a real,

ongoing relationship — it isn't something your submission needs to demonstrate or secure yourself, and you won't be asked to. Flight corridors and landing infrastructure should be designed to route around sacred sites and adapt to what that process determines, not assume unrestricted airspace.

- **Field Durability, Anti-Theft & Ease of Use** — **[HARD CONSTRAINT]**: Anything deployed unattended in the field is built to survive years without regular maintenance, resist tampering or theft, and stay simple enough not to fail from ordinary misuse — this district is genuinely isolated, and a fragile or easily-defeated unit doesn't help anyone. This is about the real outcome (long unattended service life, tamper resistance, hard to get wrong), not a specific named spec like ‘military grade’: propose whatever achieves that outcome.

4. THE FOUR SUB-CHALLENGES — ONE BACKBONE

4.1

Heavy-Lift Sentinel Deployment Drones

THE FIELD CHALLENGE

Dropping Mina Valu's Forest Sentinel Totems into Woodlark's dense interior forest can't be done by foot or road without cutting a path through the exact canopy the sentinels exist to protect.

REFERENCE STANDARDS

- Autonomous heavy-lift cargo drones capable of air-dropping self-powered sensor totems into pinpoint forest locations
- Integrated multispectral LiDAR running edge AI to verify canopy density and confirm a safe drop zone before releasing payload

WHO SHOULD APPLY

Heavy-lift UAV engineers, remote-sensing specialists, flight control software developers.

4.2

Tethered & High-Altitude Aerial Mesh Relays

THE FIELD CHALLENGE

Mountainous interior ridges on Woodlark block ground-based mesh radio signals, isolating interior sentinels from the rest of the network.

REFERENCE STANDARDS

- Tethered or long-endurance solar aerial relays extending Mina Kula's tactical mesh coverage over terrain dead zones
- Rated for continuous operation through tropical storm conditions, not just fair-weather deployment

WHO SHOULD APPLY

RF payload engineers, tethered drone developers, aerospace communications specialists.

4.3

Zero-Emission Inter-Island Air Mobility (STOL / eVTOL)

THE FIELD CHALLENGE

Moving emergency medical patients, eco-rangers, or technical specialists between Woodlark, Misima, and Alotau currently takes days on dangerous open-water boats.

REFERENCE STANDARDS

- Hydrogen-electric short-takeoff-and-landing (STOL) or amphibious aircraft capable of island-hopping ranges, landing on water or short geopolymer strips
- Flight routing logic that prioritizes emergency medical evacuation and eco-ranger patrol routes over standard transit

WHO SHOULD APPLY

Aerospace engineers, hydrogen-electric powertrain specialists, amphibious aircraft designers.

4.4

Autonomous Drone Fleet Coordination & Non-Lithium Charging Hubs

THE FIELD CHALLENGE

A fleet of drones operating in remote island terrain with no automated charging system is grounded after a single mission.

REFERENCE STANDARDS

- Fleet coordination software paired with renewable solar/hydrogen charging stations deployed at Guasopa HQ
- Automated battery-swapping or fast-charging integrated with the non-lithium ground microgrid

WHO SHOULD APPLY

Fleet management software engineers, automated charging infrastructure designers.

5. WHAT TO SUBMIT

Teams applying to Mina Yaguma upload to lyndax.org:

- **Aeronautical & Systems Package** — aircraft/UAV CAD schematics, powertrain energy calculations, and edge-AI computer vision algorithms.
- **Telemetry Handoff Matrix** — direct mapping showing how flight logs, LiDAR outputs, and power metrics interface with Mina Kula's tactical mesh and dashboard.
- **Proof-of-Concept Evidence** — in whatever form best reflects where your team actually is — a working prototype, a bench-tested subsystem, evidence of a prior deployment, or a detailed feasibility case with supporting calculations. A polished video is welcome but not required.
- **Rough Cost Estimate** — an order-of-magnitude budget for the specific challenge(s) you're addressing — not a binding quote. Early-stage teams can give a range; further-along teams can be more precise. This helps us plan against something real instead of guessing.

6. HOW THIS IS EVALUATED

Submissions are scored on three equal pillars:

- **Technical Integrity** — Does it meet the technical baseline — either as written, or with a genuinely better alternative?
- **Integration Readiness** — Does it plug cleanly into the rest of the build?
- **Guardian Spirit** — Was it designed for the clans, not just the spec sheet?

7. INTELLECTUAL PROPERTY

Any technology or intellectual property you bring into this challenge remains yours. What gets built specifically for this project is licensed to Lyndax Global and the Samarai-Murua District Development Authority for use here — not assigned, not sold, not owned by us. If your technology's use ever expands beyond this initial

deployment, those terms will be set out clearly in your individual contract once you're selected — never assumed from this brief.

Questions or more detail before you submit? Reach Mina Yaguma directly at yaguma@lyndax.org.

This is a first-of-its-kind deployment, and this brief is a challenge document, not the final build — specifications are a starting point for direct engagement with applicant teams, not a fixed spec to execute silently. Full disclaimers and engagement terms are set out in the Guidelines for Guardians to Unite and the Eligibility & Disclaimers document. Submissions close 11 September 2026, 6:00pm Singapore time.