

3) Spatial mapping and creating Designations/Zones

Overview of Steps

First:

- Map the current situation (PART I: SPATIAL MAPPING - WHAT'S THERE)
- If possible, examine change over time (e.g. maps that show how housing and roads have changed)
- Add to the maps by hand (eventually digitized) for key layers – use experts, community input, or field visits to accomplish this.

Second:

- Based on island-wide vision, agree on principles that apply everywhere (PART II)
- Negotiate/prioritize based on the priority areas in GEF6: Agriculture, aquaculture, sustainable tourism, forestry, fisheries, Invasive species/Biosecurity; plus Housing (PART III: SPATIAL MAPPING: WHAT WE WANT and WHERE IT SHOULD GO)
 - Collaborative planning will have unavoidable tradeoffs – everyone needs to walk in willing to compromise
- Adopt [Broad Zones](#)

Third:

- Use the island- and lagoon-wide zones/designations to Identify action areas within those zones at the State Level
- Accept the output – can't assume it only applies to "others"
- Write the associated Action Plans to proactively and reactively use the plans
- Compile into a State Master Plan
- Build capacity to update, understand, and apply the Master Plans, including how to use maps and how to update them as States develop

[Explore further: JCB zones and action areas versus State Master Plan zoning](#)

PART I: SPATIAL MAPPING - WHAT'S THERE

Political

1. State boundaries
2. Ownership (private/public/under contention)
3. Existing leased public areas

Natural features of the landscape

1. Topography (with color-coding for slopes and flat areas (maybe different colors for tops and bottoms of hills)/Slope
2. Water (rivers, streams, aquifers, buffer zones, coasts)
3. Soils
4. Habitats for Endangered species (biodiversity safeguard)/Known Endangered species (trees, Megapode mounds)
5. Forests/Mangroves/Land covers
6. Watershed boundaries (can we map where runoff goes)
7. Climate (can we map that?)
8. Natural regimes (what can we map? Currents, flushing regimes, water recharge areas)

Human designations for Natural Features

1. Water classifications
2. PAN Sites and Protected Areas
3. Buffer zones for water bodies
4. Critical areas for biodiversity
5. Soil suitability [GMM1] (color-coding for suitability by use (e.g. septic/agriculture))

Infrastructure

1. Roads (and type – paved, gravel, dirt)
2. Docks
3. Water intakes/sources and pipes
4. Electricity
5. Communications
6. Sewage
7. Solid waste
8. Other Transportation – walkways, pathways,

Land Use (Some are Marine use)

1. Residential (by type or density – anything on crowding?)
2. Commercial/Businesses
3. Mixed use
4. Recreation (any parks, places people gather, community buildings)
5. Industrial (if any)
6. Food production areas
 - a. Agriculture (by type)
 - i. Upland
 - ii. Taro
 - iii. Agroforest
 - iv. Livestock
 - v. Forestry
 - b. Aquaculture (existing and leased areas)
 - c. Fishing sites / Gleaning areas
7. Paved or Parking areas

Culture/People/Economy

1. Cultural Sites
2. Schools
3. Markets
4. Tourism Sites
5. Other Services – Botanic Garden/Tree nurseries, Hospitals, Fire Station, Community Center

Threats

1. Burned areas
2. Invasive species
3. Damaged ecosystems/habitats
4. Eroding areas
5. Sedimentation – collection points or where sediment travels
6. Hunter Hot Spots
7. Pollution discharge points
8. Climate risks
 - a. Sea level rise projections
 - b. Something on storms – vulnerable areas for storms, fire, drought, inundation, etc.
9. Traffic / Congestion (can it be mapped?)

QUESTION: What is the role of existing map products? Like the MWM and KBUDSAP and maps in existing State Plans. Is MWM still relevant?

PART II: OVERARCHING NEEDS/PRINCIPLES THAT APPLY TO RESULTING ZONES

1. Safety (is it safe to have apartments directly across the street from oil and gas storage?)
2. Gender and social equity and access (actions cannot unfairly burden or benefit any one group over another)
3. Biodiversity safeguards (can't drive anything to extinction, can't raise Endangered Species threat levels, can't lose genetic or habitat/ecosystem diversity)
4. Carrying capacity (water, wastewater, tourism sites, traffic)
5. Climate resilience
6. Economic resilience (e.g. diversification)

PART III: SPATIAL MAPPING: WHAT WE WANT and WHERE IT SHOULD GO

Broad Zone	SPATIAL MAP ZONES	ASSOCIATED POLICIES OR DOCUMENTS
Residential	<p>Housing - Priority locations for housing development (single-family, subdivisions, low/medium/high intensity)</p> <ul style="list-style-type: none"> • Ownership: State, no contention • Access (distance to road and type of road needed) • Impact of building new roads in subdivision • Slope/erosion/runoff / Downstream impacts • Water (access) • Impact on endangered species/ Biosecurity / Biodiversity • Impact on water sources • Impact on genders and social groups • Cultural appropriateness • Climate risk • Safety • Size of space (big enough? based on impact) 	<p>Housing Policy</p> <ol style="list-style-type: none"> 1. Zones/Designations 2. Policies (e.g. costs, rules, what's allowed based on affordability) and Practices (construction, stormwater management, waste pickup) 3. Building Codes (Setbacks, Impervious surface limits)
Residential	Guidance on residential development on private land	Building Codes
Commercial/ Livelihoods	<p>Commercial zones</p> <ul style="list-style-type: none"> • Small business (lower impact) • Larger industrial (higher impact) 	

Commercial/ Livelihoods	<p>Sustainable Tourism</p> <ul style="list-style-type: none"> • Sites that can be enhanced as Tourism products • Location of infrastructure to support those sites (roads, sewers, electricity) • Networks of Sites - across States - that go together and make for a good Tourism Product 	<p>“Product Development”:</p> <ul style="list-style-type: none"> • Policies • Marketing plan • Carrying Capacity • Who runs it? Private/Public? Access?
Commercial/ Livelihoods	<p>Agriculture</p> <ul style="list-style-type: none"> • Development zones – new farms • Upland • Agro-forest • Relationship to water, downstream impacts 	<ul style="list-style-type: none"> • What to be produced? • Agricultural policies (Native Species/ Type of tillage / Who has priority hiring) • Water rights • Best Practices to be used
Commercial/ Livelihoods	<p>Fisheries/Gleaning</p> <ul style="list-style-type: none"> • Sites for fishing/crabbing/clams or protection/type of use • Cross-reference against upstream impacts 	<ul style="list-style-type: none"> • MSY????? Or desired harvest – commercial versus subsistence • Access to fishing grounds – how to access? Including offshore • Markets and landing spots
Commercial/ Livelihoods	<p>Aquaculture</p> <ul style="list-style-type: none"> • Development zones • Current and future water classifications 	<ul style="list-style-type: none"> • What species? Policies? • Who, what?

GEF-6: Integrating Biodiversity Safeguards and Conservation into Development in Palau
Environmental Planning Unit, Ministry of Natural Resources, Environment & Tourism, Republic of Palau

Conservation	<p>Forestry</p> <ul style="list-style-type: none"> • Protection zones • Restoration/rehabilitation sites[GMM3] • Burn protection sites (e.g. areas for Fire Breaks) • Carbon sinks • Buffer Zones 	Priority sites/Needed actions
Conservation	Cultural Sites	
Conservation	<ul style="list-style-type: none"> • Conservation / PAN Sites and expanded Protected Areas • Locations of Endangered Species • Locations of critically important areas 	<ul style="list-style-type: none"> • Legislation to protect them • Restoration/PAN plans? • Endangered Species List and regs
Conservation	<p>Threat Reduction – Biosecurity and IAS</p> <ul style="list-style-type: none"> • IAS/Biosecurity Hotspots • Location of sites for IAS removal or Native plants 	<ul style="list-style-type: none"> • Priorities • Biosecurity/Prevention
Infrastructure / Industrial	<ul style="list-style-type: none"> • Roads/Paved or not paved • Water Treatment • Sewage treatment • Electricity • Communications Towers • Garbage and Recycling collection points • Public space/ parks • Docks • Higher Impact Commercial • Gasoline Stations • Businesses that produce or use hazardous products/waste 	CIP Priority List