



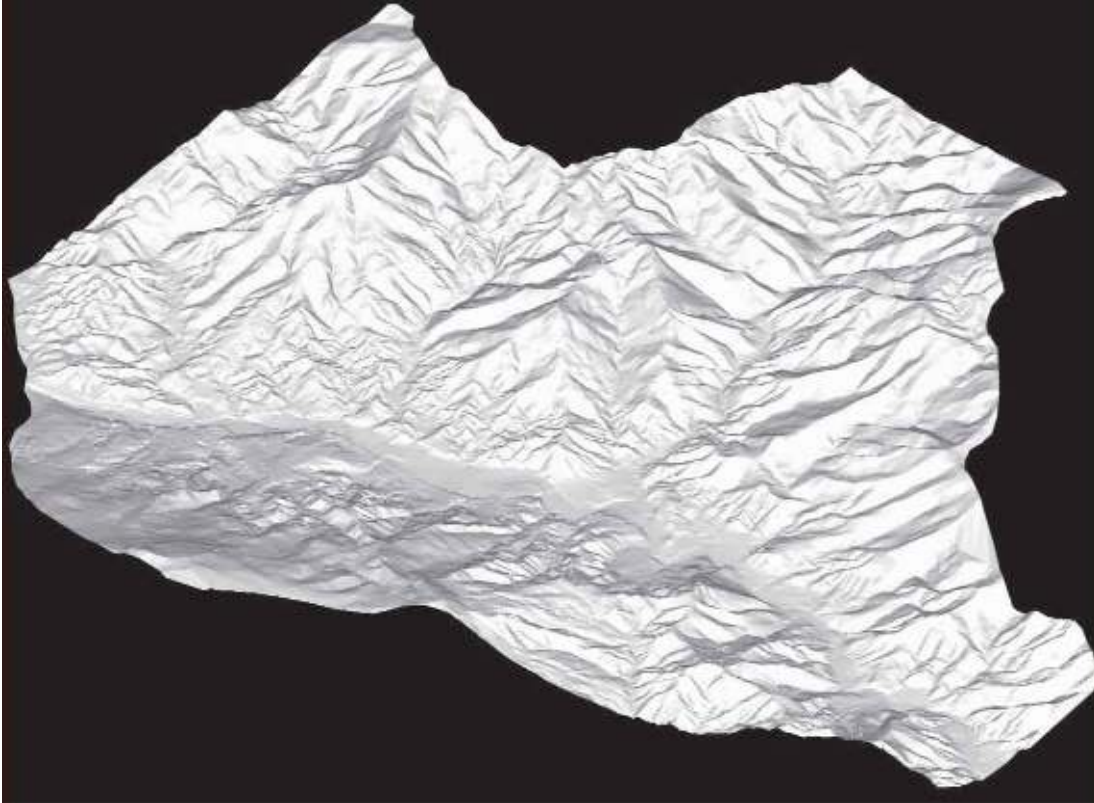
“A Town Built to Do Good”

The Awe Inspiring Tres Brazos Valley



- Birthplace of the Pacora River and the cleanest springwater in Panama.
- 7,000 acres / 3,000 hectares
- Backs up to the 310,000 acre (120,000 hectare) Chagres National Park, part of one of the world's 20 Biological Hot Spots.
- The park stretches all the way to the Caribbean, which can be hiked to in 3-5 days.
- 68 degrees Fahrenheit at night.
- Owned by 32 families since it was settled in the 1950's for cattle ranching.

A Heavily Topographic River Valley



- Topography, altitude changes, and subvalleys lead to a diversity of microclimates.
- Valley soil composition is largely clay, but with many random heavy spots of sand and gravel.
- As the edge mountains of the central cordillera range, springs abound and water drives the shaping of the valley.

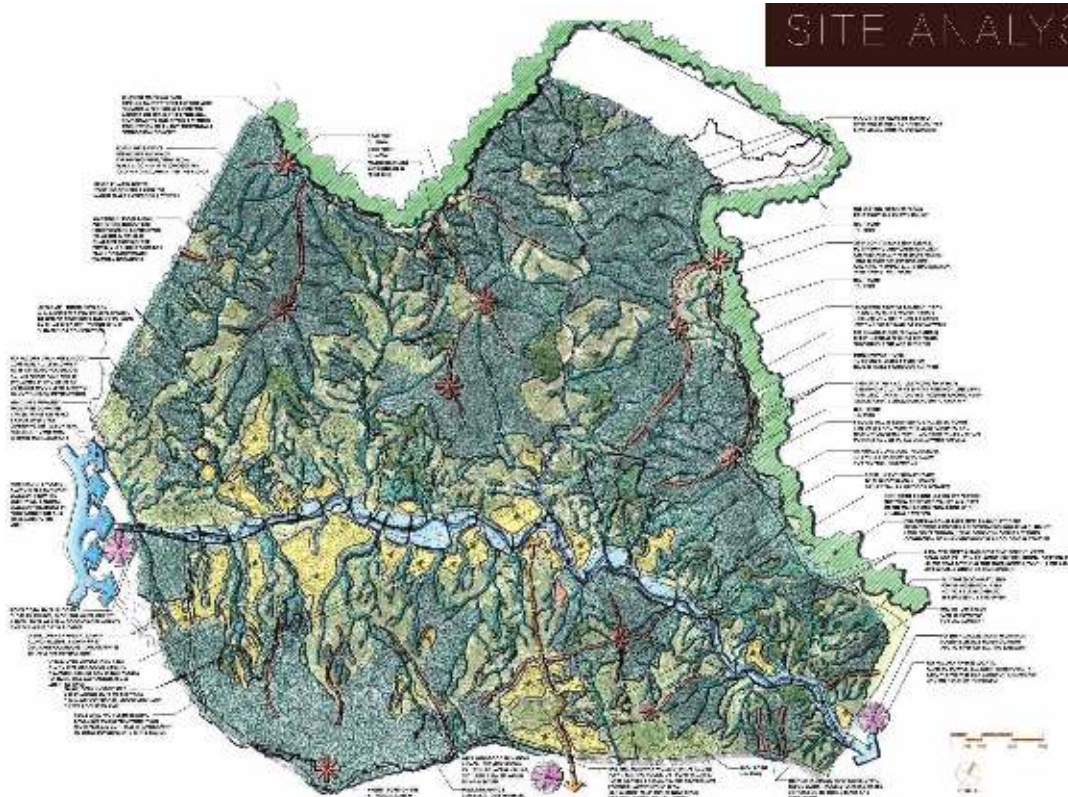
Everything Deforested Except Steep Slopes



- Over 50% of the valley has already been deforested for cattle grazing.
- While many abandoned farms are regrowing secondary forest, others are still burning primary forest to expand cattle operations.
- Green = Primary Forest
- Light Green = Secondary
- Brown = Recent Burns
- Blue = Forested Watershed
- Light Yellow = Cattle Pasture

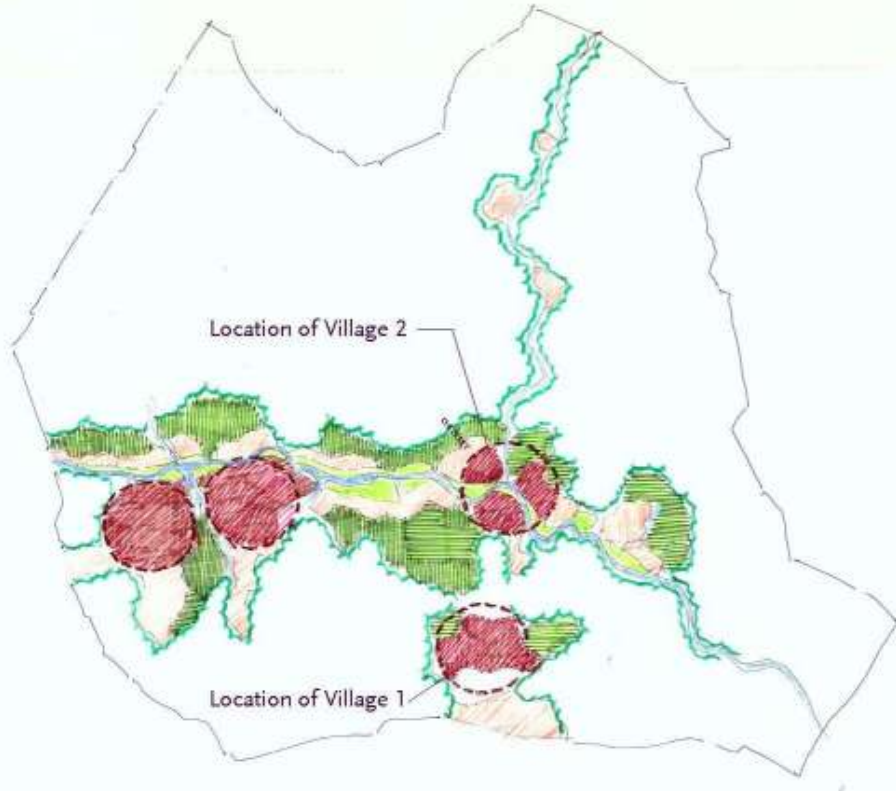
*Image is from Environmental Baseline Report analyzing flora, fauna and watershed concerns, including recommendations.

Analysis for Responsible Development



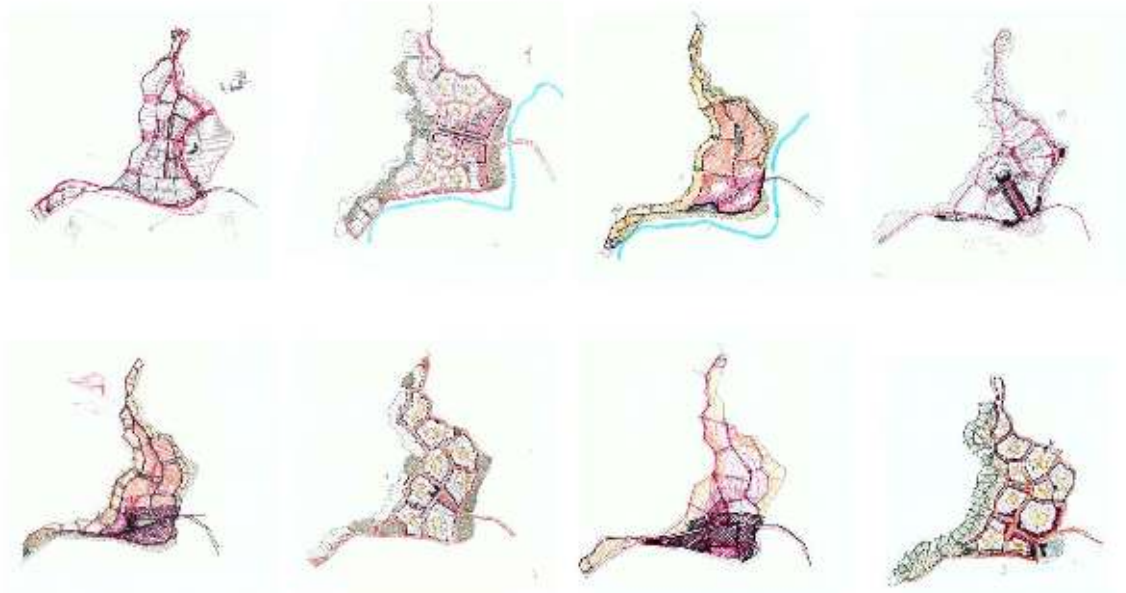
- Yellow areas represent potential sites suitable for development.
- These sites are already accessible by road.
- They do not require deforestation.
- In fact, they can be restored.
- They protect watersheds and avoid flood hazards.
- And they are flat enough to not require heavy grading and earth works.
- **Result: Only 15% of the valley is suitable for development.**

Resulting Town Site Location Analysis



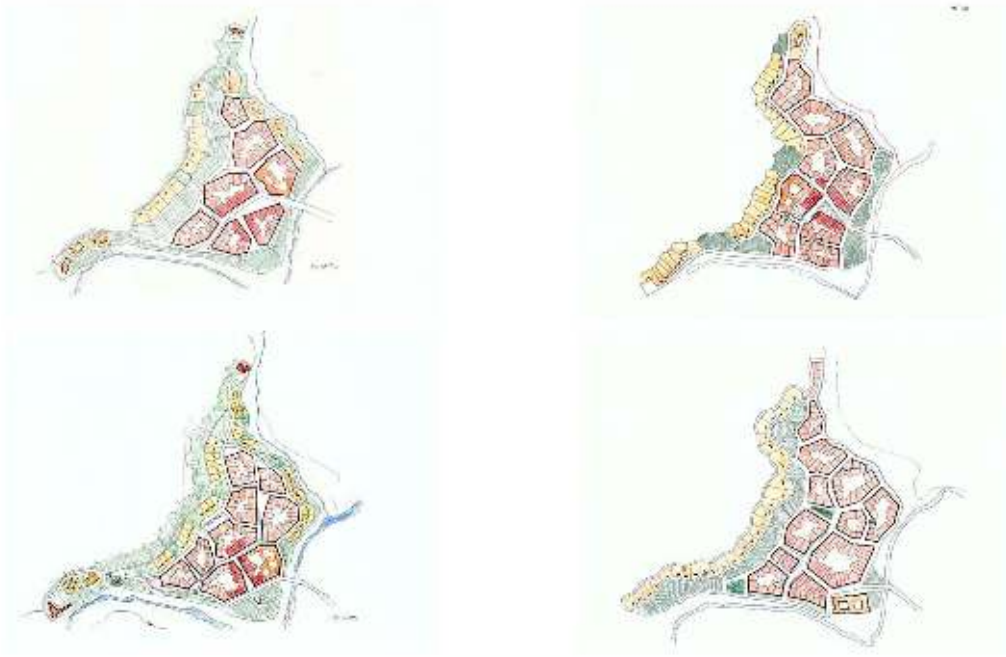
- First, environmentally sensitive areas and other areas unsuitable for development are removed.
- Then, a $\frac{1}{4}$ mile radius is used to identify sites suitable for walkable villages (red circles).
- Light pink areas are located along roadways between and near towns and would be appropriate for larger lots, including farmsteads.
- Green areas could be preserved as manageable food forests.
- White area would best be conserved and/or reforested.

Blocking Concepts of Village #2 Location Choice



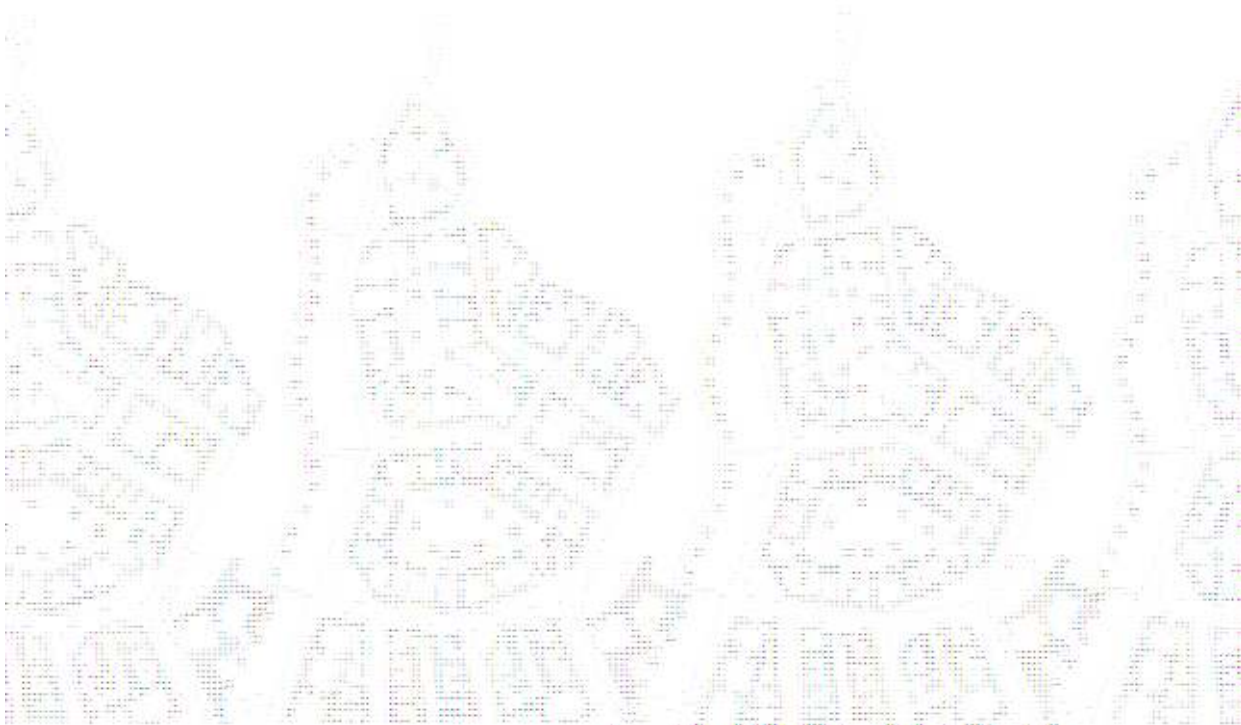
- 12 designers took all the information they had and broke into 4 groups to come up with village concepts.
- They looked at block sizes to address walking, cars & parking, public spaces, and private spaces in each concept.
- Each group presented to the others and then debated the pros and cons of each concept plan.

Concept Refinement and Synthesis



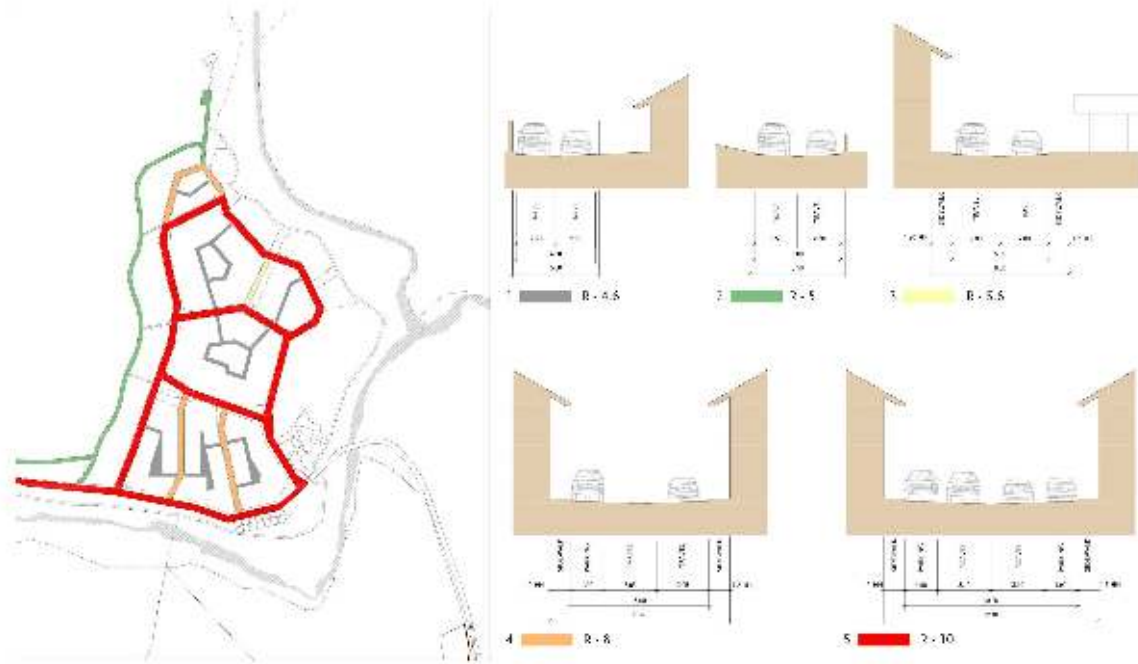
- Taking the pros and cons from the first presentation, the architects broke back into groups and worked to refine one concept per group.
- Those concepts were then presented for critique again.

1st Town Plan for 500+ Person Population



- After the second presentation, the designers formed one group and worked on a final plan.
- The black rectangles each represent buildings.
- All of the cars are parked/hidden in the interior of blocks behind houses to make the streets more pedestrian friendly.
- Hiding cars also makes the streets more beautiful, increasing home values.

How Do We Address Cars?



- Cars take up a lot of space per person, both while driving and when parked doing nothing.
- They also add a lot of convenience for those people.
- Old cities didn't have to deal with cars in their design.
- To make a city walkable, beautiful, and loveable, we end up having to think a lot about cars...

How Do We Build Roads?

The thoroughfare is the primary one expected to have a wide range of structural and material options for both surface and subgrade materials. Typical base and subgrade materials are concrete and asphalt, but other options include gravel and gravel-sand.

Typical Construction

Typical thoroughfare construction is shown in the cross-section diagram. The subgrade is prepared to meet the design requirements for the road. The base and subgrade are constructed to provide the necessary support for the pavement. The pavement is constructed in layers, starting with the subgrade, followed by the base, and finally the surface. The surface is typically composed of asphalt or concrete. The diagram also shows the typical construction of a curb and gutter, and a drainage ditch.

There are 3 types of thoroughfares categorized with their structural systems. For example, a street with a concrete base and a concrete surface is a street. A street with a concrete base and a concrete surface is a street. A street with a concrete base and a concrete surface is a street. The following table shows the typical construction of a street.

Table 1. Typical Construction of a Street

Street	1. Subgrade 45H (1)	2. Base 45H (1)	3. Subgrade 45H (1)	4. Surface 45H (1)	5. Surface 45H (1)	6. Surface 45H (1)
1-10	10	10	10	10	10	10
1-15	10	10	10	10	10	10
1-20	10	10	10	10	10	10
1-25	10	10	10	10	10	10
1-30	10	10	10	10	10	10
1-35	10	10	10	10	10	10

It is important to note that the above table is only a general guide. The actual construction of a street will depend on the specific requirements of the project.

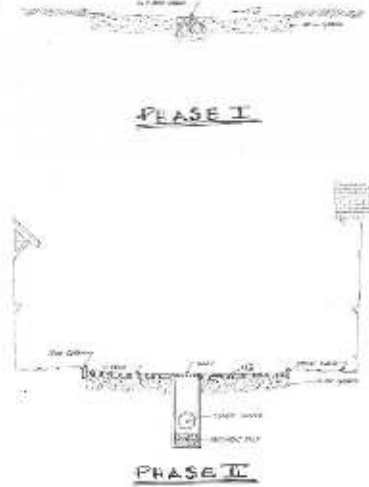
1922

The materials used should be suitable for the type of traffic. Cobblestones for heavy traffic, and gravel for light traffic. The materials should be suitable for the type of traffic.

The main purpose of the road is to provide a smooth and safe surface for the traffic. The materials used should be suitable for the type of traffic. The materials should be suitable for the type of traffic.

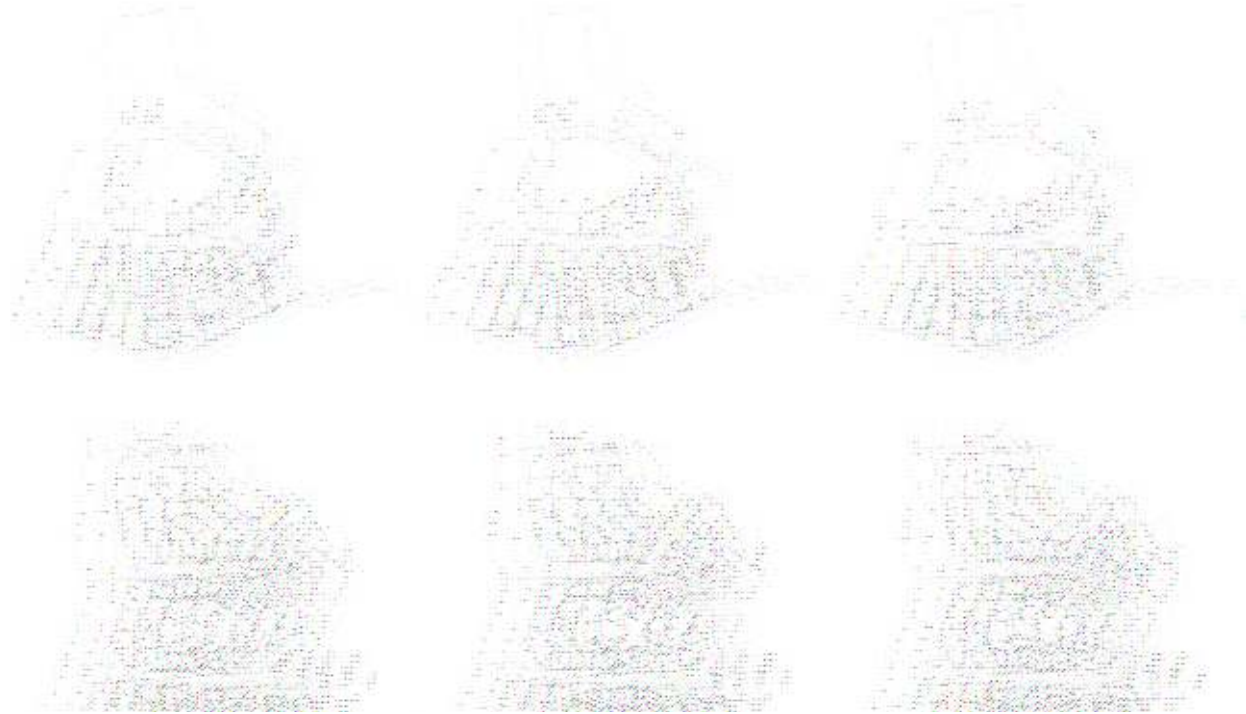
Paving

Because the road is to be used for heavy traffic, it is important that the road is paved with a material that is suitable for the type of traffic. The materials used should be suitable for the type of traffic.



- Blacktop roads are a major cause of urban heat islands.
- Building expensive roads before there are even cars or houses makes houses more expensive.
- Roads also play a major role in stormwater management.
- The roads of great villages and towns started as dirt roads.

Growth Sequence Planning



- Looking at the history of town development and contemporary building practices, a theoretical phasing plan was created for the order in which to develop the town.

50 Acre Town. 50%+ Trees. 325 Acres Conserved.



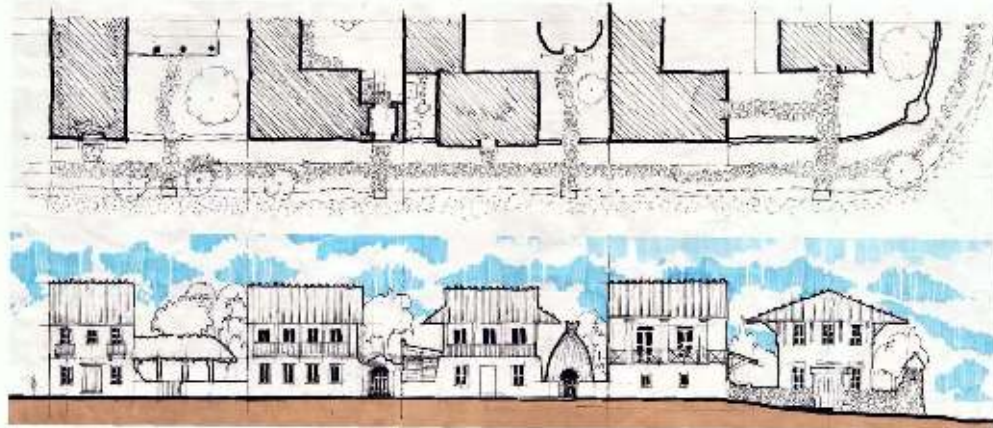
- In 2016, after living on and studying the site for 5 years, architects worked with a 10 student team to update the plan to reflect what had been learned and what the community wanted.
- The Kalu Yala Institute's campus was added on Main Street.
- The first house began construction on an alley on the opposite side of the village.
- Value created by developing real estate can afford to pay to put the rest of the land in conservation.

Searching for House Types



- Looking at the blocks and streets of the plan, the architects took sketches they had used in similar climates and densities and placed them next to each other to begin to envision streets.
- These are not actual houses at Kalu Yala, but a search for what types of houses look and function correctly for Kalu Yala's mission.

Density for Walking. Sideyards for Outdoor Living.



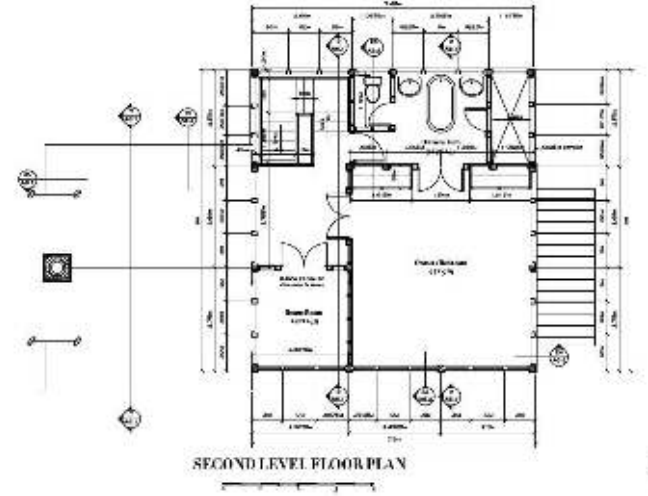
- The conclusion that sideyards and courtyards are the best answer to achieving green space within a walkable neighborhood in the tropics was laid out in street and plan view.
- These lots were then tested with the blocking of the master plan to see which house types worked best.

A Kalu Yala Lat Am Inspired Street (i.e. no trees)



- A street rendering based on conclusions was sketched to test the result visually.
- Our actual streets will be lined in trees for food, shade and sustainability.
- Our architecture will likely be less uniform.
- We will largely use structural masonry and timber.
- We will use side yards and courtyards to bring private outdoor sanctuaries into our walkable setting.

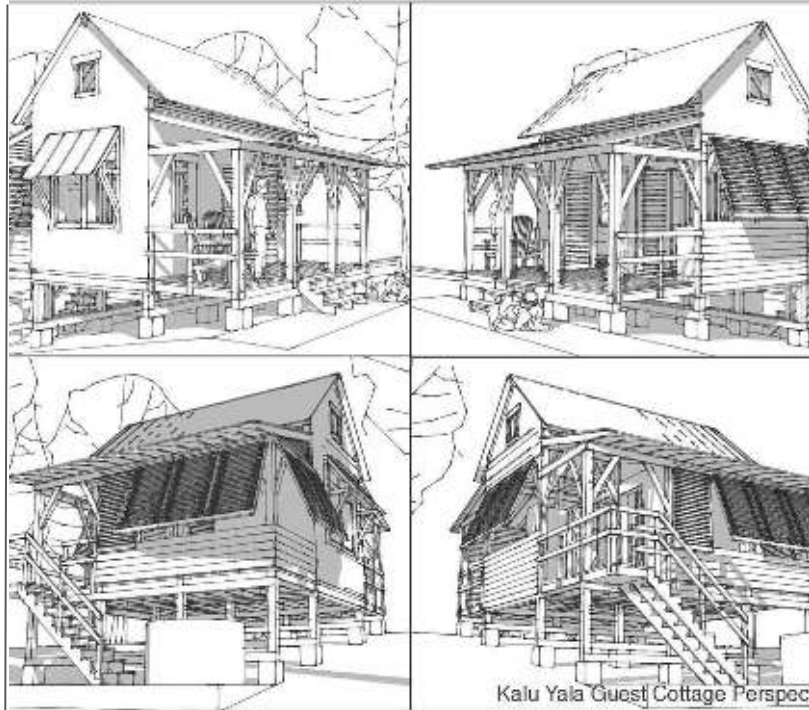
Real Houses Are Now Being Designed...



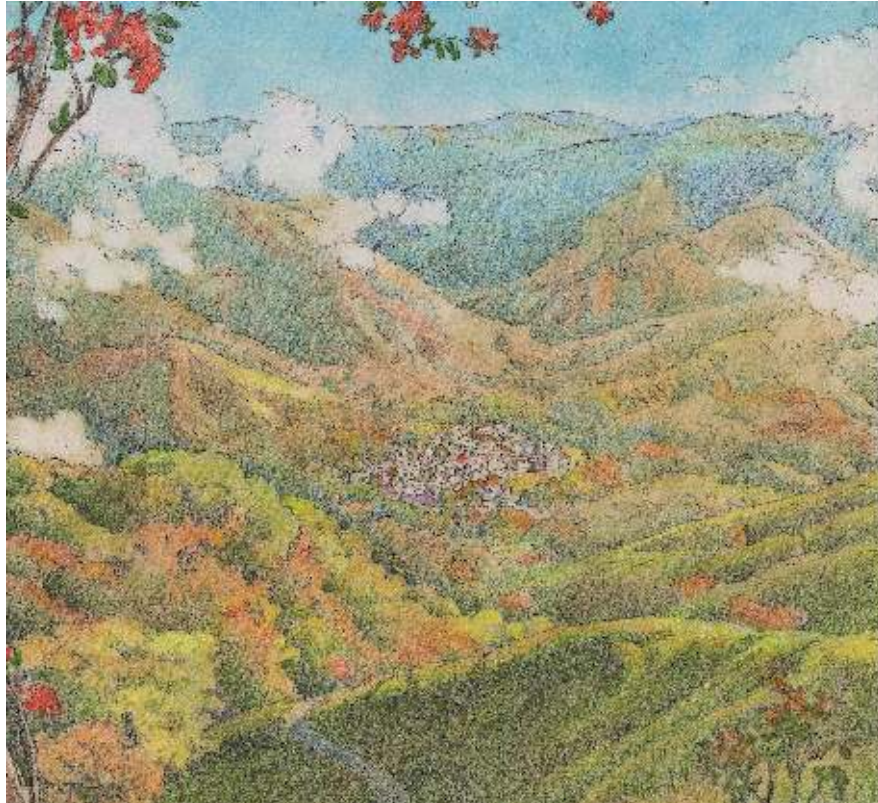
...Same House with Construction Details



And We Just Have to Build Them...



...to Make Kalu Yala a Town.



Design Credits

Land Analysis:

- Ed Stone & Associates

Urban Planning:

- Moule & Polyzoides
- Ricardo Arosemena

Architecture:

- George Moreno & Partners
- Mouzon Design
- Studio Sky
- Wes Stiner
- David Rodriguez

Environmental Engineering:

- Bill Wilson
- Sherwood Design Engineers
- Ingemar Environmental Engineers

Traffic Engineering:

- Peter Swift & Associates

Civil Engineering:

- Luis Campana & Cotrans Engineering
- Jensen Design & Survey