ST CHARLES LWANGA NURSERY AND EARLY PRIMARY SCHOOL

Bucundura, Uganda

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Architects: Asa Studio - Rwanda
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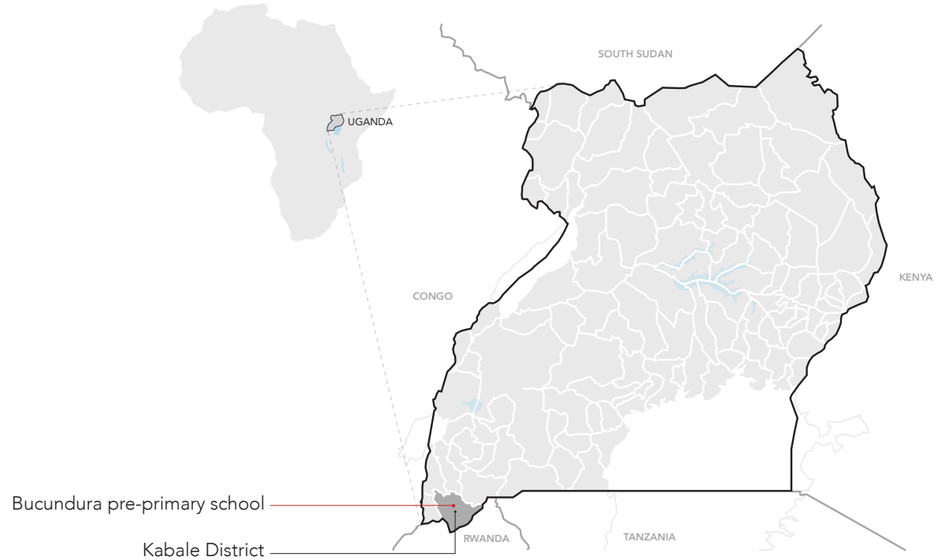
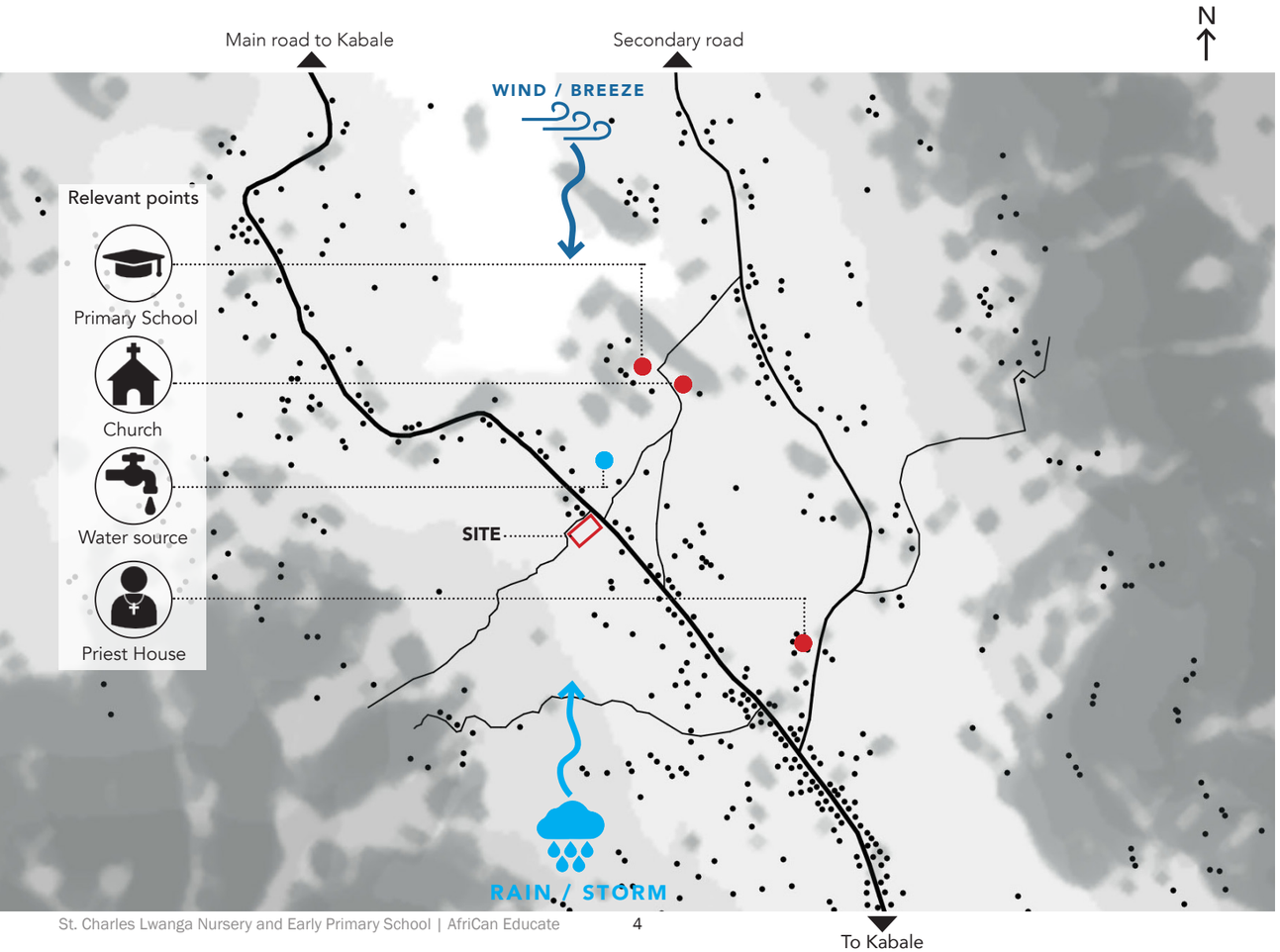
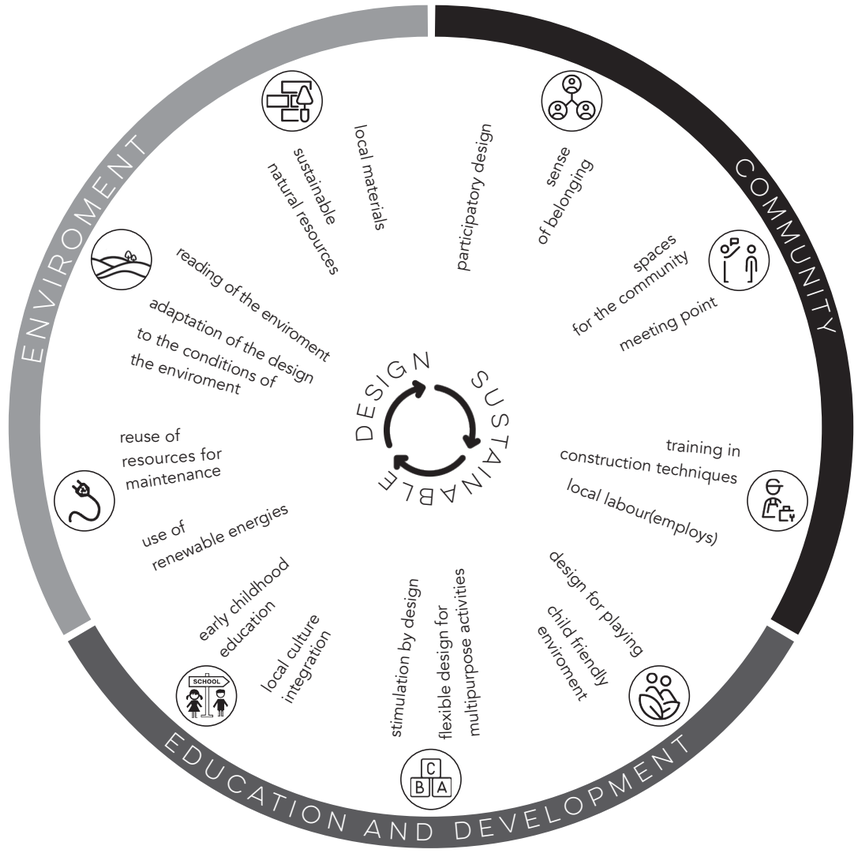






Location and approach

The school will be located in Bucundura, a small village about one hour from Kabale, in southern Uganda. The lack of educational facilities for young children from 0 to 6 makes the school an essential ingredient in the effort to improve early education in rural Uganda. The facility is meant to be used as a school as well as a Community Center supporting village activities and offering classes and programs for adults on weekends.

The site is located on a hill side facing south-west with an open view toward the valley and the village. The land is fairly steep: the school is designed to take advantage of the different levels using gradual rises, promoting circulation and minimizing barriers and big drops. The main access is from the road on the lower side of the land.

Bucundura is a very remote village, far from any significant urban center and is not easy to reach during the rainy seasons due to the condition of the roads. This makes it important to use local construction materials that do not need to be transported, thus the school will be built as much as possible with materials available from the village or the areas nearby.

Environmental consideration is one of the fundamentals of the design, and is the key for a sustainable future and for the construction of a comfortable facility with low maintenance. The local community has been involved in the project since the first design stages and will be involved in the construction. This will provide social benefits for the workers and their families. Once built, the school will serve as a model for education in other areas of Uganda.

1. General view of the valley
2. Main road downside of the boundary
3. Existing fountain / water source

Trees vegetation - timber source

Cultivations on the hill side

Site

Existing residential buildings

Main path to connect the school with the other side of the valley

Existing fountain

River in the valley

Marshland and crops

Path to the other side of the valley and to existing school

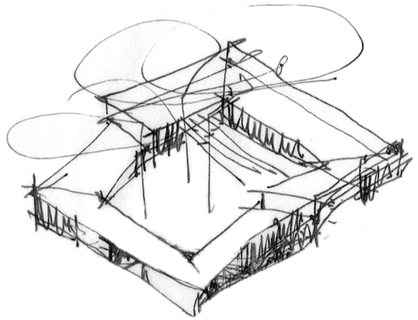
1

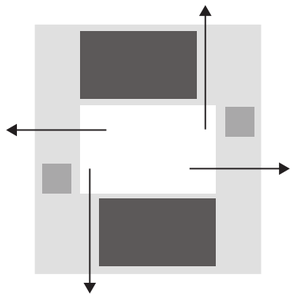
2

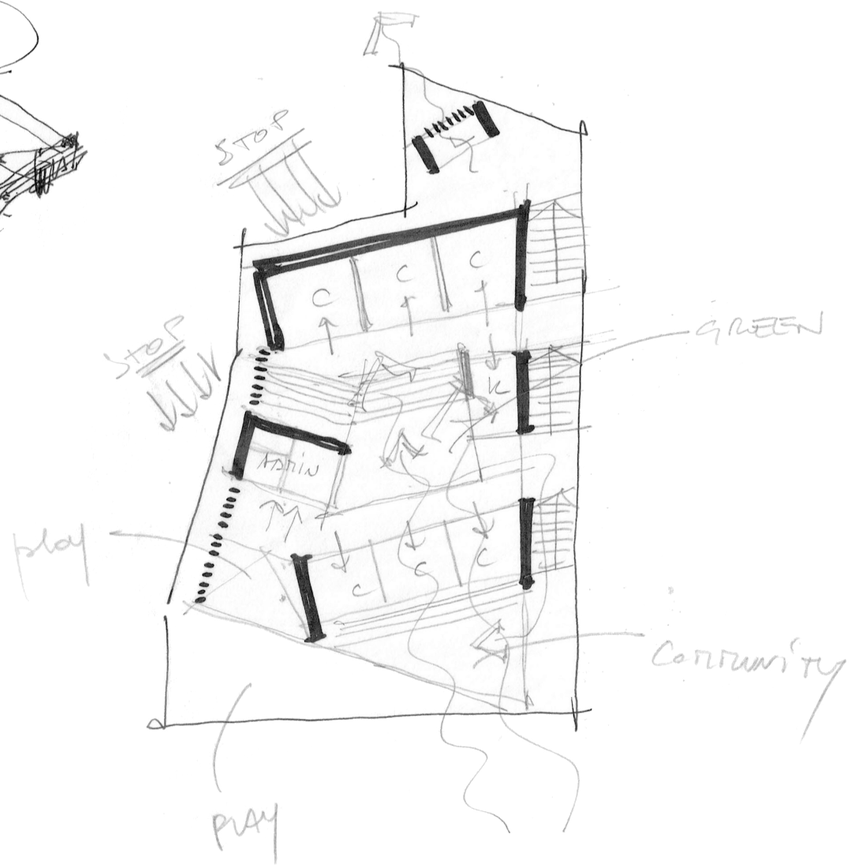
3

Church

Primary school







Program and concept design

The early primary school will have 6 classrooms, a small administration room and a kitchen facility sufficient to provide both a simple breakfast meal and the main mid-day meal for all students and staff. The purpose of the school is to provide two classroom spaces for each of the three levels of students:

- Pre-kindergarten (4 to 5 years old)
- Kindergarten (5 to 7 years old)
- First Grade (7 to 8 years old)

Each classroom will be able to accommodate at least 20 to 25 students. This will allow the accommodation of 40-50 students per grade level or 120 -150 students minimum for the entire school. It is expected that after 3 years the students will attend the Primary School located in the village, and most likely begin with first or second grade.

The program is organized around a courtyard and covered by the same roof. Both the roof and the buildings underneath play with the topography and follow the natural slope of the land. The different functions are located at different levels facing the same courtyard and are connected through tiers and ramps.

The voids in between the buildings are also sheltered by the same structure and become exterior-covered learning spaces and meeting area. These filter-spaces merge with the courtyard and the landscape and become part of it.

The courtyard is used as the main playground for the children and community meeting activities. An additional community space is located in front facing the road and covered by the same roof.

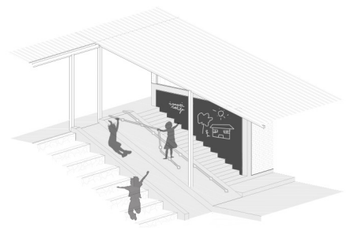
- Public space [25,70 m²]
- Community area [193,65 m²]
- Playground [231,15 m²]
- Kitchen [23,00 m²] + Storage [5,38 m²]
- Dining [30,00 m²]
- Toilet [4,85 m²] + [36,50 m²]
- Classroom 5[57,16 m²] + [64,36 m²]
- Administration [7,30 m²] + [14,70 m²]
- Exterior classroom [37,80 m²] + [26,15 m²]

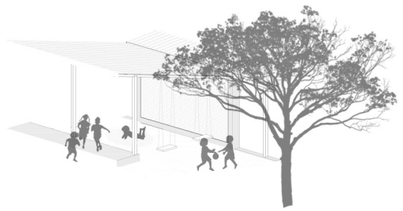
Design strategies | Landscape integration and child friendly approach

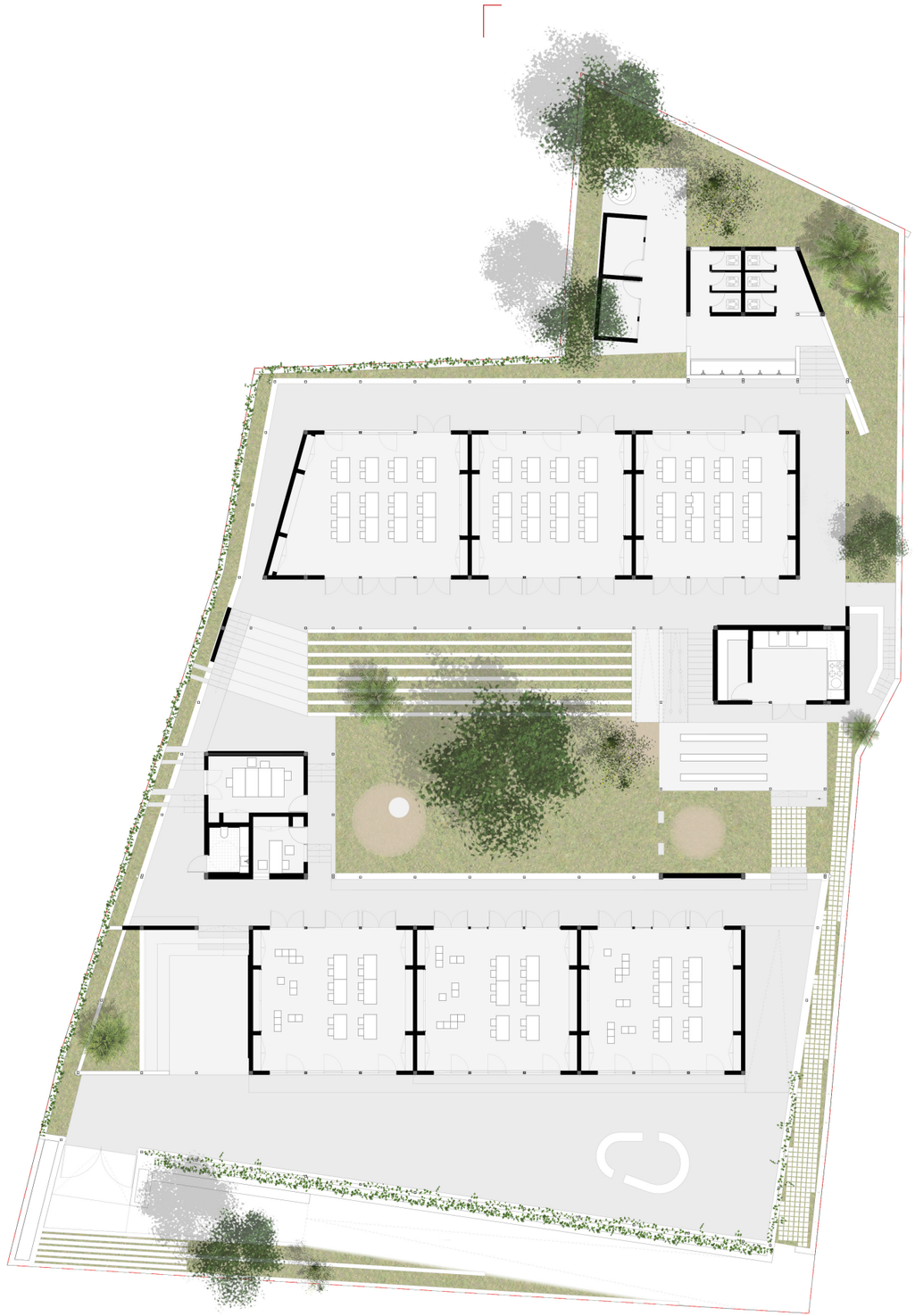
The location of the site and the relation with the natural environment play an important role in the design. Each space has open views towards the valley and the landscape is merged with the architecture. The classrooms have a direct connection to the exterior spaces and the playground areas are designed according to the topography, creating a variety of experience zones not only aimed for playing but also to stimulate the self-learning process of the children.

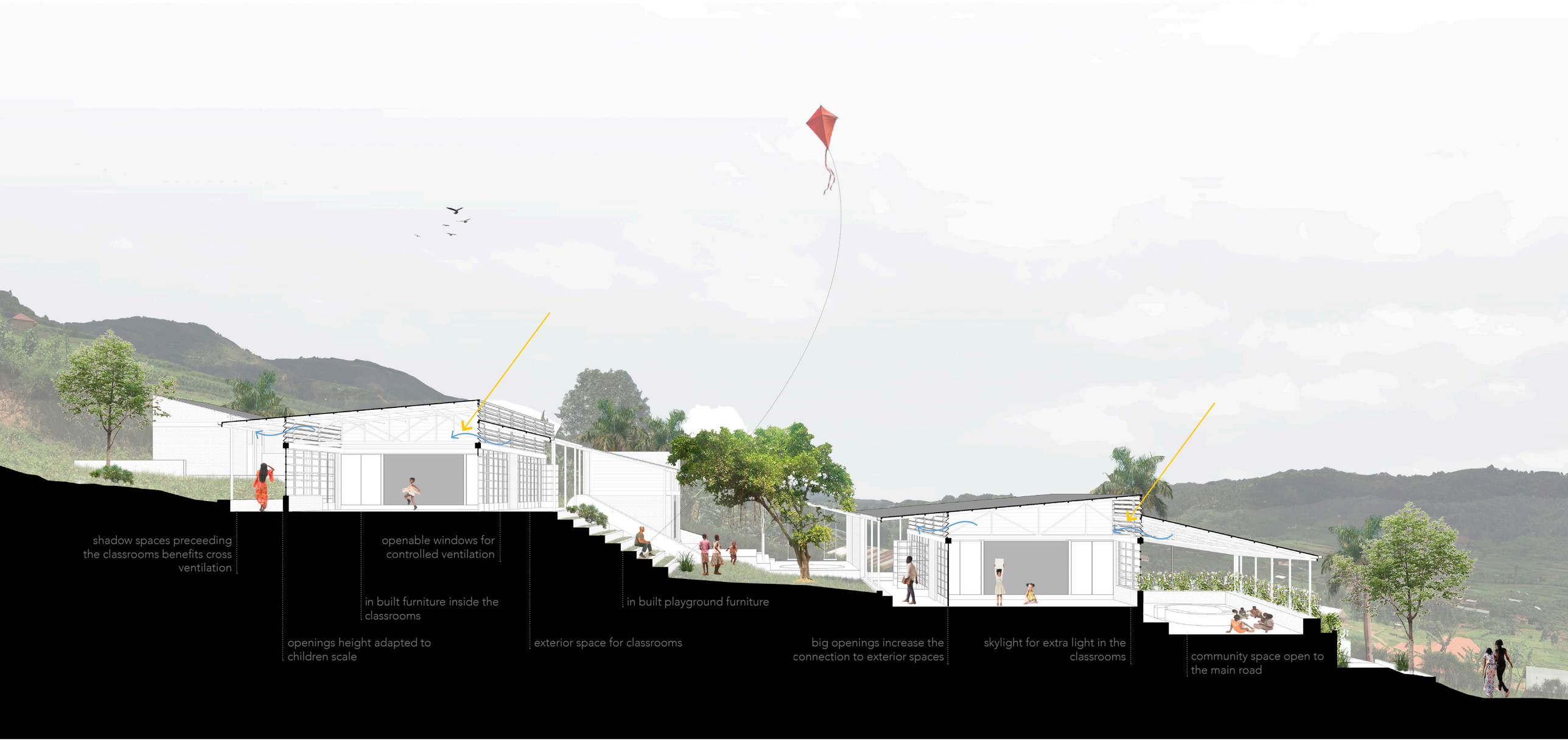
The architecture itself is considered as an added educator that aims to stimulate the children through materiality, light and proportions. Both interior and exterior spaces are not simple surfaces and volumes where activities happen but are meant to provide the most comfortable environment to play, learn and interact with each other. Exterior but covered spaces for flexible use are integrated into the project. Those spaces are meant to be the extension of the classrooms.

The central courtyard is considered the heart of the project, where all the different spaces merge. It can host different activities and be used as a play area, gathering space or meeting open air hall.








shadow spaces preceeding the classrooms benefits cross ventilation
openable windows for controlled ventilation
in built furniture inside the classrooms
openings height adapted to children scale
exterior space for classrooms
in built playground furniture
big openings increase the connection to exterior spaces
skylight for extra light in the classrooms
community space open to the main road

green tiers following the natural topography

the playground, main space of the school

in built blackboard

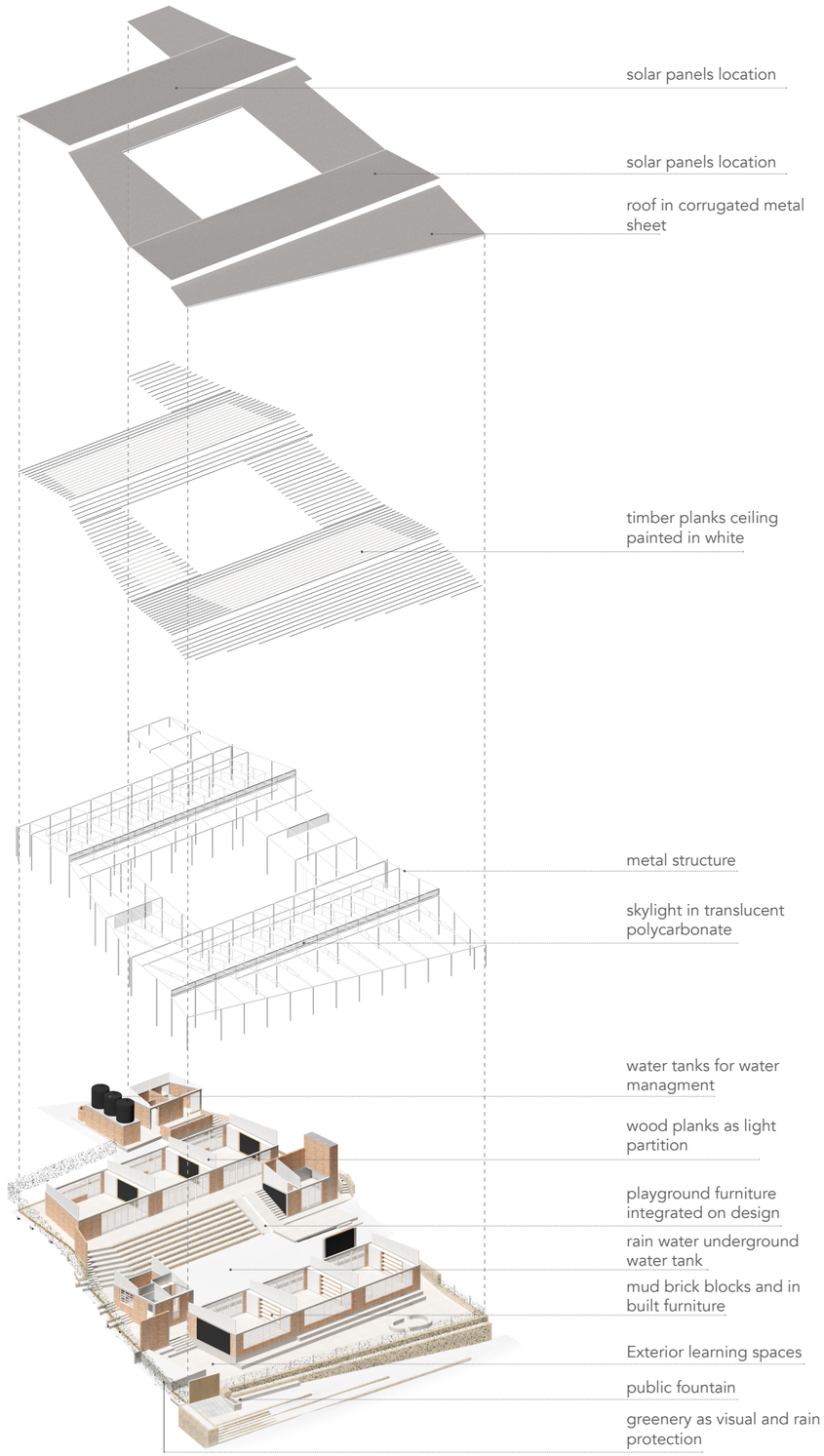
natural light from skylight

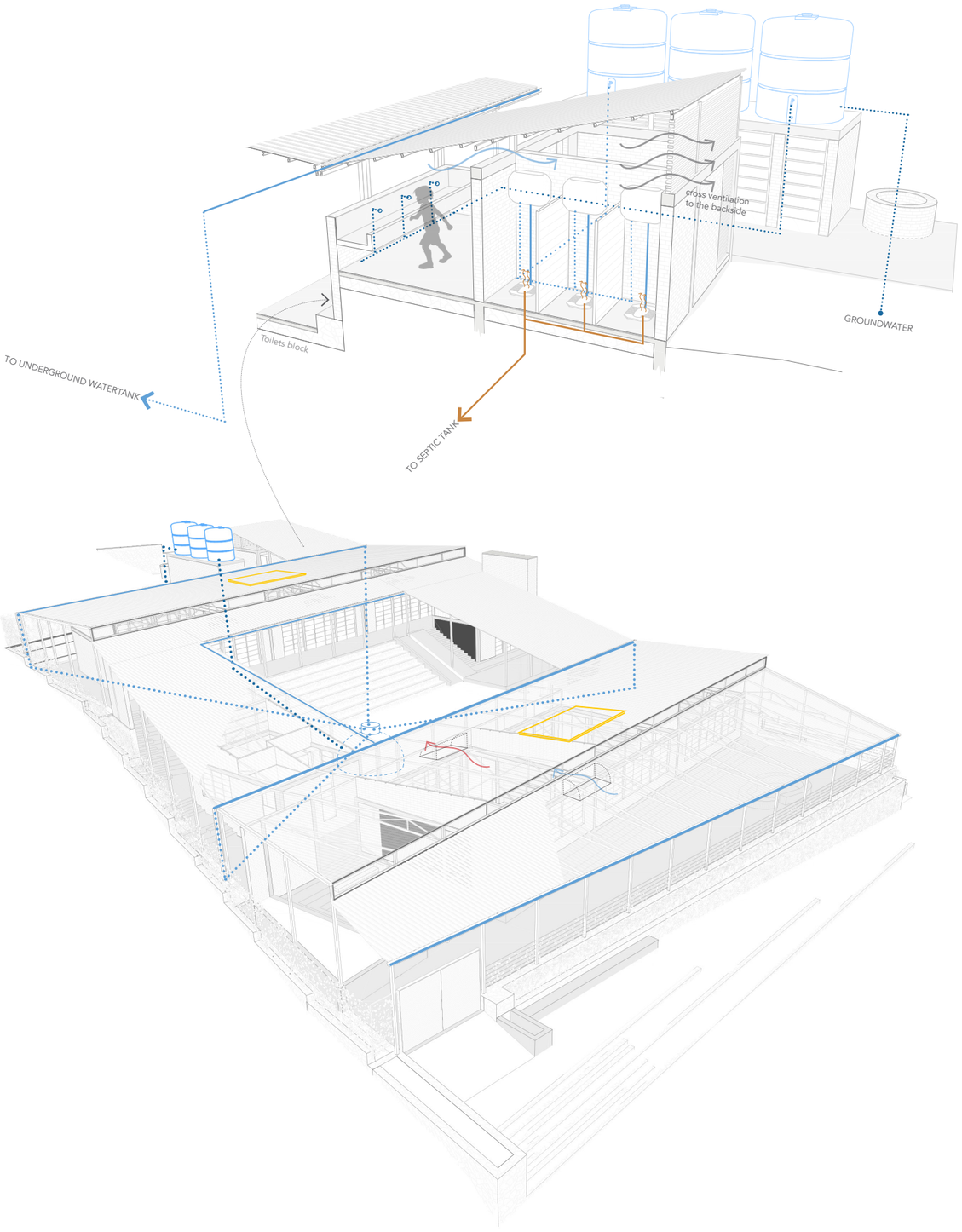
Materiality and construction

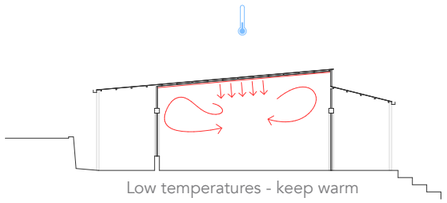
The construction is based on the use of locally available and locally produced materials that involve the community in the production process. The main partitions will be made of local fired bricks. Light partitions, ceiling and finishes will be made of timber, sourced from the forests in proximity to the site. Local stone, also sourced locally, will be used for all retaining walls, curbs, and under foundations.

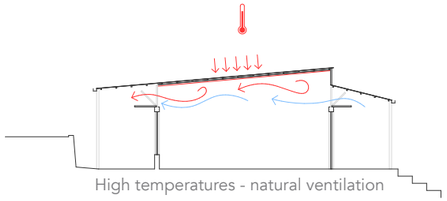
The roof structure is done in metal profiles and the roof will be done with a composite panel made of iron sheet, insulation and timber planks. Foundation and columns will be made of reinforced concrete. The vegetation is used as a rain barrier and for privacy. Trees planted in the courtyards will also provide shadow to the playground areas. Vines planted along the fence will naturally grow to create a screen protection to the interior of the school.

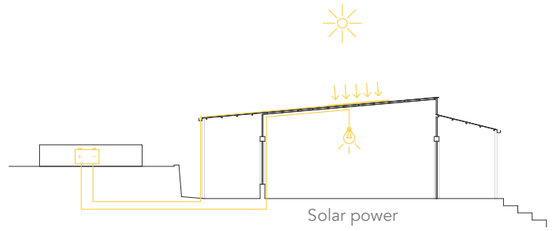
The school will be built with the participation of the local community. This will build a sense of ownership and acceptance of the new building in the village while offering jobs and providing new skills to the workers starting a virtuous cycle of creating more job opportunities for the local communities.

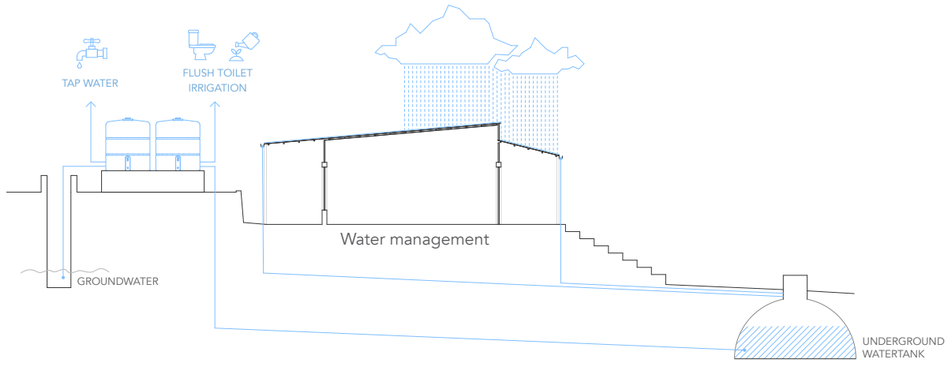












Sustainable design

Bucundura Village is currently not connected to the electrical national grid. The school design considers the possibility of integrating photovoltaic panels and storage batteries. The electricity will be used to pump water to serve the school, to support teaching activities and lighting when necessary.

An underground water tank located in the playground will collect the rainwater that will be used for flushing toilets and irrigation. A well located at the top of the compound will supply water for ordinary use.

The design considers natural cross ventilation as a natural strategy for cooling the interior spaces. In the classrooms, hinged windows manually operated allow controlled ventilation according to the exterior temperatures.
The toilets block is located in the furthest corner of the site and orientated according to the wind direction to facilitate natural ventilation and avoid smell in the classroom areas.

Child-friendly design, the use of solar power, the integration of daylight systems, the use of locally available and produced materials, and the integration of natural ventilation are concepts that will work in parallel with the waste management, water collection and reuse strategies.

A good integrated design has the potential to reduce the management costs and at the same time to involve the local community, the users and their families in the construction and maintenance of the School, to ensure the application of environmental measures and to raise awareness of environmentally responsible behavior.

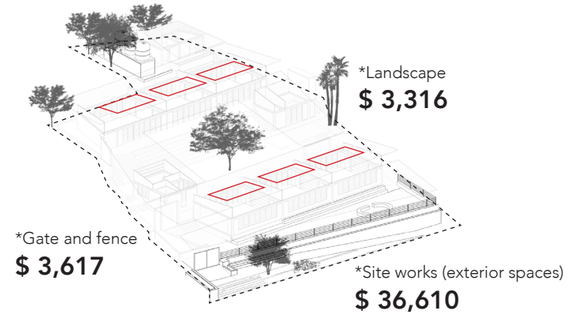
Costing

	ITEM	AMOUNT USD
A	Preliminary works and site preparation	8,197.19
B	Fence, gate, site works and landscaping	48,939.47
C	Underground water tank 35.000 L (briks masonry dome)	4,546.43
D	General MEP works	15,098.23
E	Lower clssroom block	64,213.36
F	Administration block	8,811.93
G	Kitchen block	9,070.58
H	Metal structure + ceiling + roof for administration and kitchen	10,040.95
I	Upper classroom block	51,624.82
J	Toilets block	11,500.31
K	Other MEP and solar panels	12,569.03
	TOTAL BUCUNDURA SCHOOL CONSTRUCTION	244,612.28

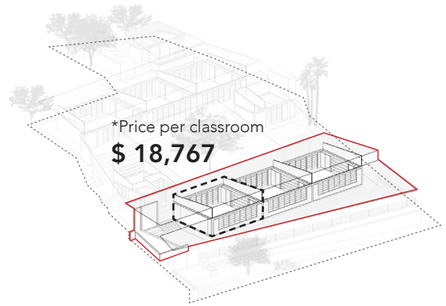
MEP and Landscape works
$ 76,781

*Underground watertank
$ 4,546

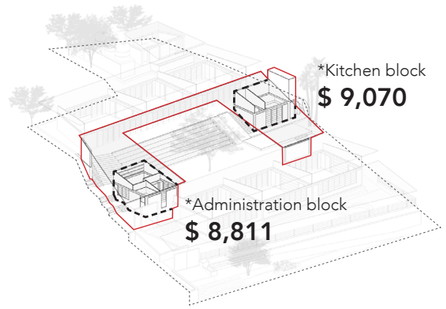
Other MEP and solar panels
$ 12,569



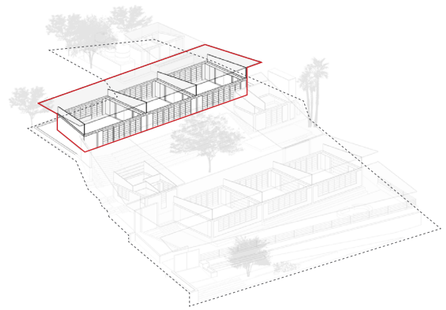
Lower classroom block
$ 64,213



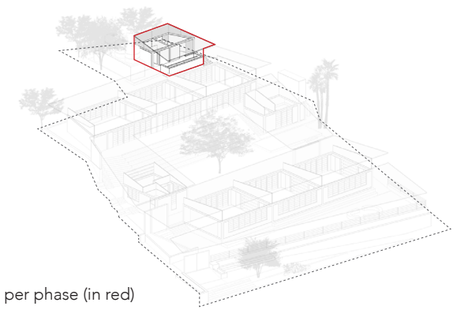
Kitchen and admin. block
$ 27,923



Upper classroom block
$ 51,624



Toilet block
$ 11,500



*cost breakdown of individual programs; prices already included in the total cost per phase (in red)

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