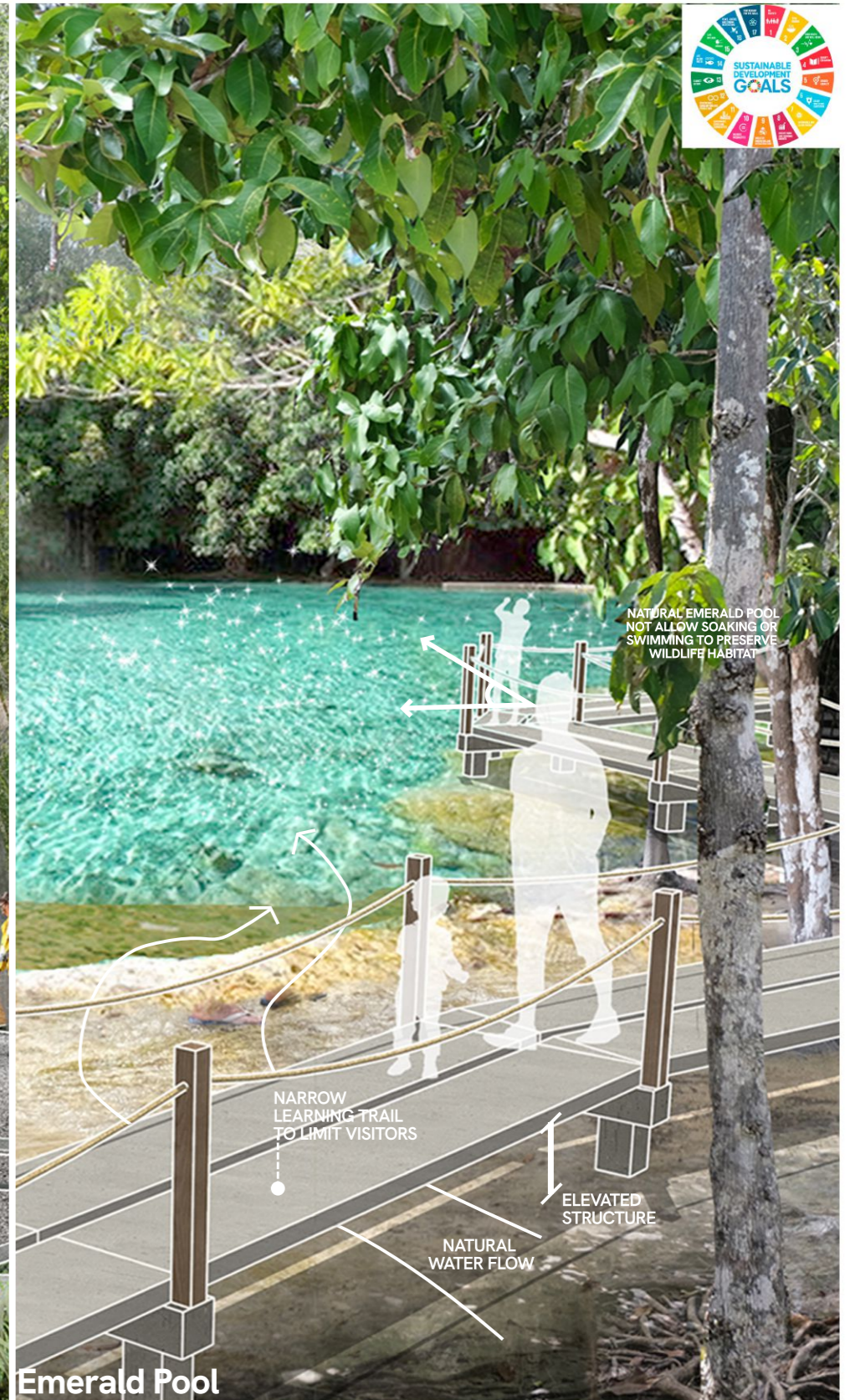




Saline Hot Springs



Hot Waterfall



Emerald Pool

Country / City
University / School
Academic year
Title of the project
Authors

Bangkok, Thailand
Faculty of Architecture, Chulalongkorn university
2019
Balancing Human Tourism and Nature Conservation
Krittaporn Siripoke

TECHNICAL DOSSIER

Title of the project Balancing Human Tourism and Nature Conservation
Authors Krittaporn Siripoke
Title of the course Bachelor of Landscape Architecture
Academic year 2019
Teaching Staff Prof. Chamree Chulakaratana , Dr. Kanokwalee Suteethorn
Department/Section/Program of belonging Department of Landscape Architecture, Faculty of Architecture
University/School Chulalongkorn university



Written statement, short description of the project in English, no more than 250 words

Khlong Thom Hot Spring, a health promotion tourism in Krabi Thailand, has more than 300,000 tourists visiting annually. Saline Hot Spring, Hot Waterfall, and Emerald Pool are distinguished public hot springs in the area with abundant nature where tourism facilities are continuously in the improvement process. However, a poor management and an excess of tourists resulted in huge impacts on natural resources and eventually deteriorated the sites' identities.

The ecological impacts from overloaded tourism development leads to the main design concept - "Balancing Human Tourism and Nature conservation". The overview of the project aims to find the balance through the Degree of Development on a spectrum between human facility development and natural conservation. With the demands on tourism supported facilities on these natural locations, the spectrum demonstrates the level of design and development that allowed in each area. The condition of facilities suitability and also the role of area's owner are the major factors of conservation level.

Physical conditions of the natural identities and local uses of each hot spring are taking into consideration for sustainable landscape design. By using the Low impact Design, The main facilities, bathing pools and buildings, are constructed to be elevated to allow the flow of water. Adaptive reuse the existing abandoned buildings by reconstructed and elevated the structures and assign a new functions fitting sustainable tourism.

The development focuses on building a network of health and wellness tourism by the program that preserves outstanding traits of tourisms in each site and ensures benefits not to destroy existing abundant nature.

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CLIMATE CHANGE AGAIN

11th International Biennial Landscape Barcelona

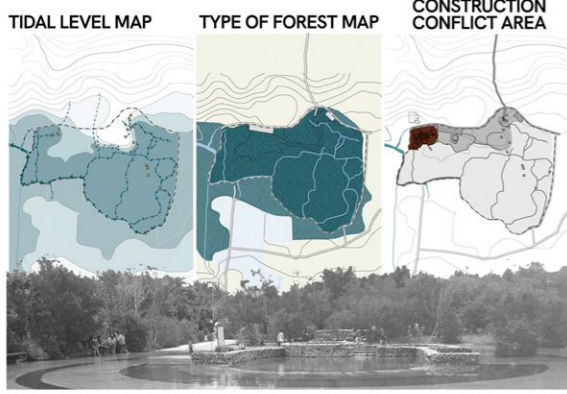
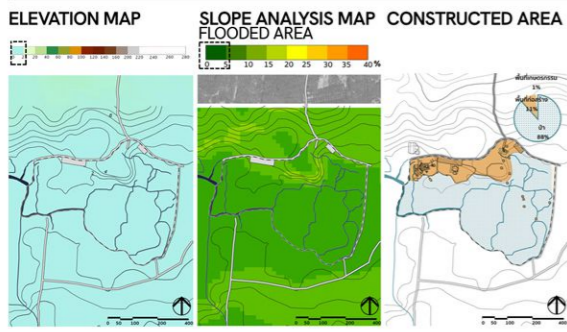
Barcelona September 2020
SCHOOL PRIZE

Site Issue : Conflict between Nature and Facility Development for tourism



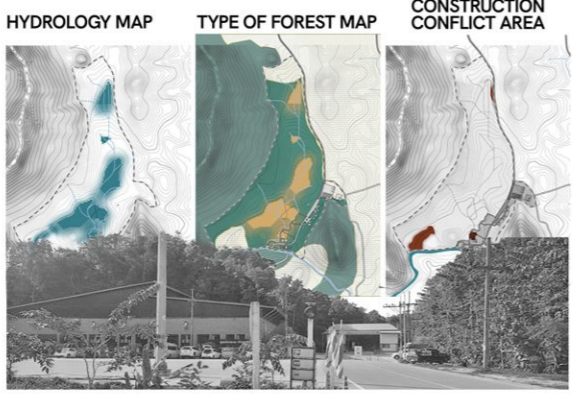
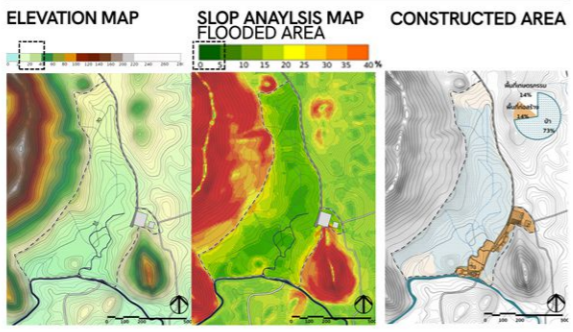
SALINE HOT SPRINGS

PROJECT AREA : 129 RAIS (20.32 HECTRES)
PROJECT OWNER : SUB DISTRICT ORGANIZATION



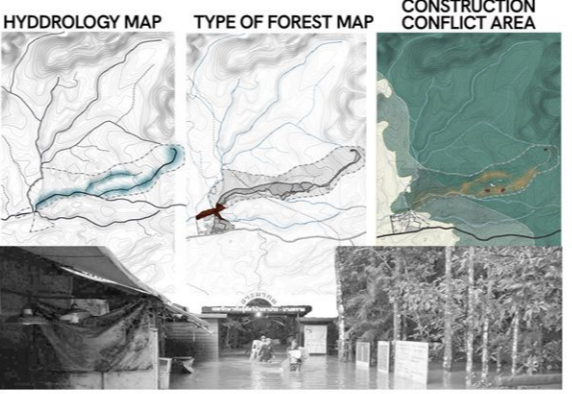
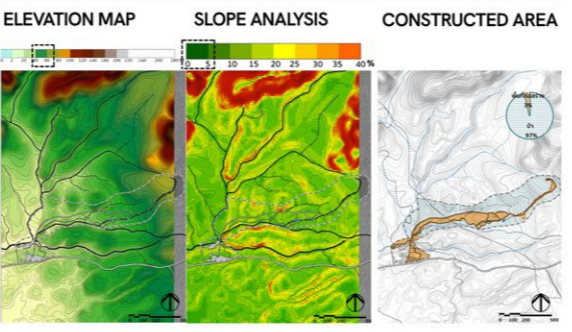
HOT WATERFALL

PROJECT AREA : 280 RAIS (44.80 HECTRES)
PROJECT OWNER : SUB DISTRICT ORGANIZATION

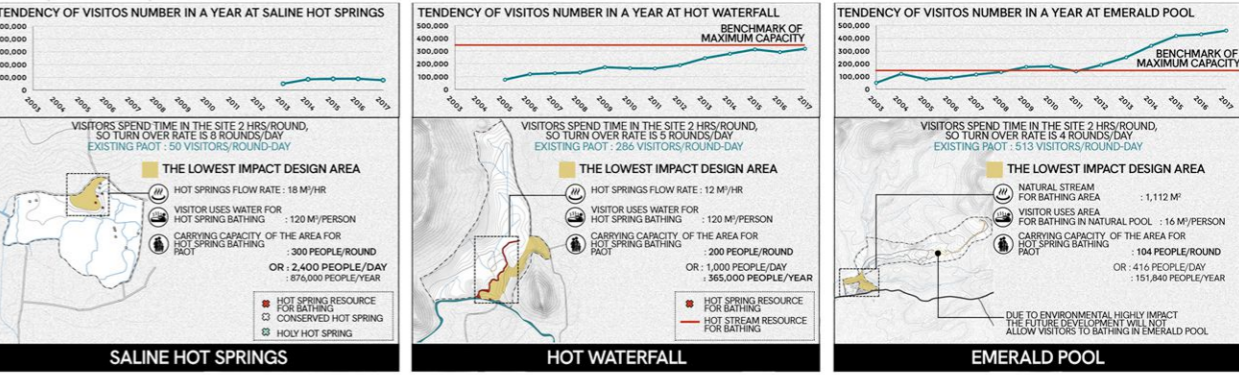


EMERALD POOL

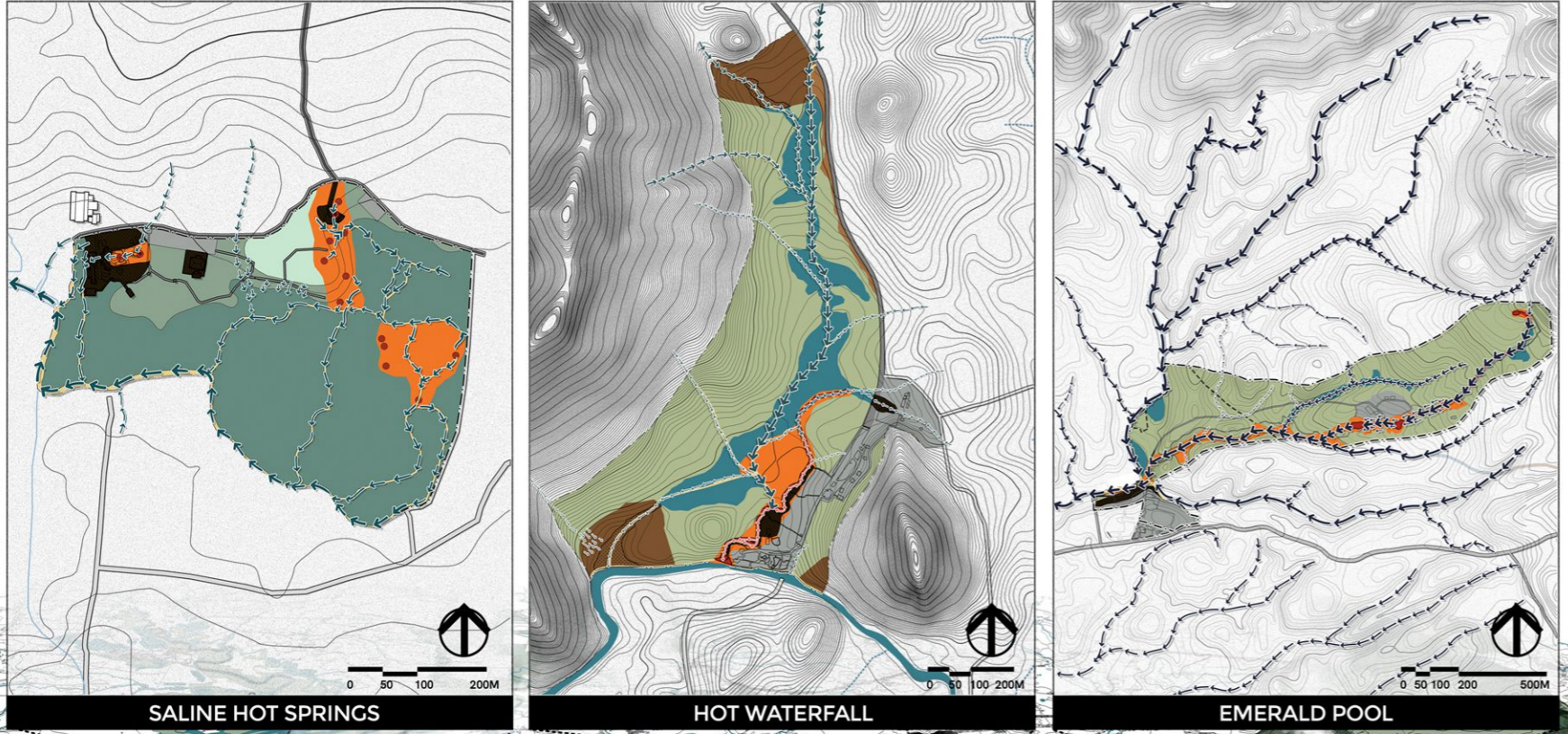
PROJECT AREA : 295 RAIS (47.20 HECTRES)
PROJECT OWNER : DEPARTMENT OF NATIONAL PARKS, WILDLIFE, AND PLANT CONSERVATION.



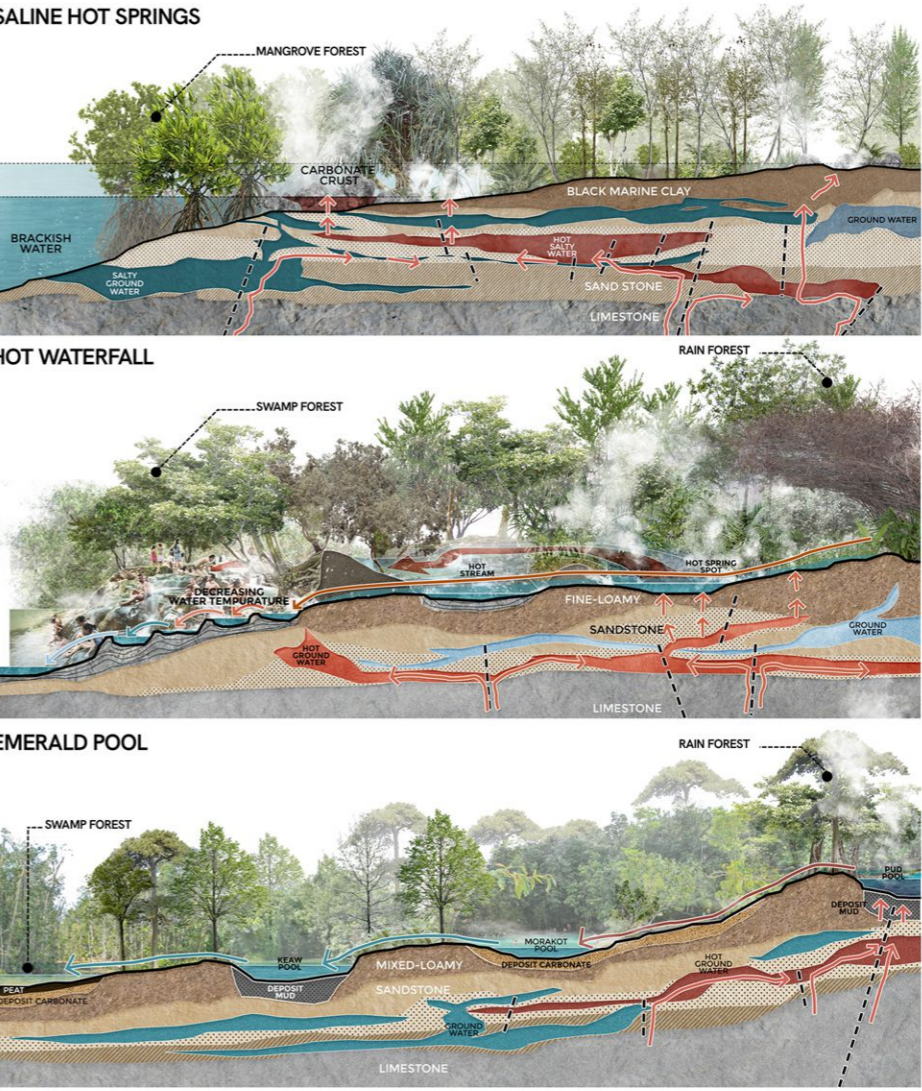
2 Carrying Capacity Issue : Overloaded tourism development cause ecological impacts.



Site Summary



3 Site Character : Comparison for Uniqueness Development



The three hot spring areas can be classified by their ecological characteristics and the occurrences as follows:

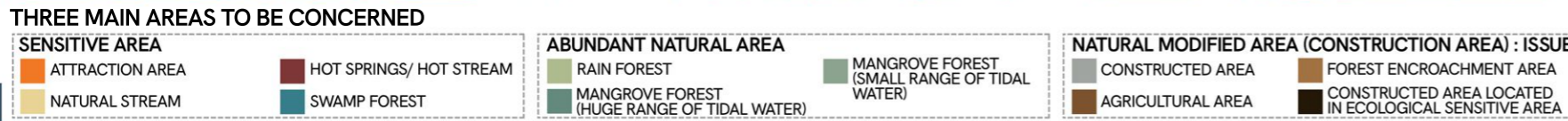
Saline Hot Spring
The Saline Hot Spring covers an area of 20.32 hectares. It is a public mangrove forest with tidal flooding that submerges ten of fourteen hot water spots in the site during high tide. The hot spring is a mixing of brackish water and groundwater which creates hot mineral water that composed of salt 10 mg/L. The high salinity makes the water capable of treating a variety of diseases and suitable for health therapy.

Hot Waterfall
The Hot Waterfall covers an area of 44.8 hectares in a tropical rainforest valley. The site is partially inundated forming a swamp forest characteristic. Carbonate springs occur in the stream bed then flow to the canal in the form of travertine deposits which is prominent in the area.

Emerald Pool
The Emerald Pool is located in Khao Pra-Bang Kram Wildlife Sanctuary. The area is occupied by rainforest and swamp forest which is considered to be the primary forest.

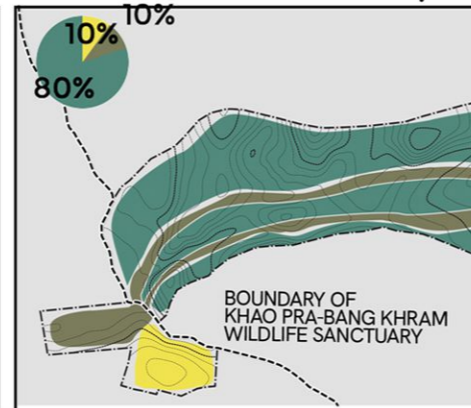
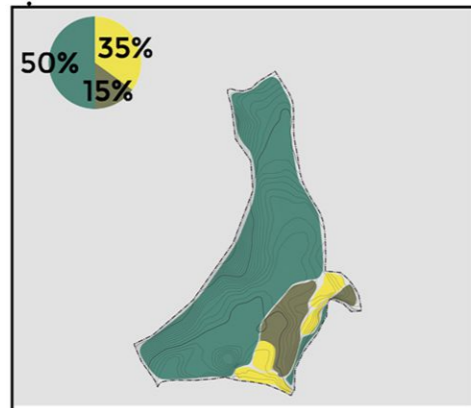
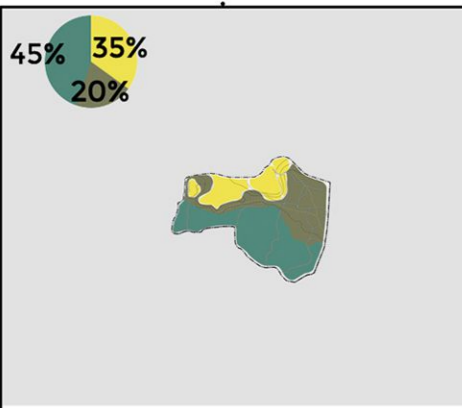
These pristine forests are home to many endangered species. One of the species found in this area is Gurney's Pitta, one of the rarest bird species on earth. Hot spring in this area is flowing in the form of a cold mineral stream that flow into a natural pool.

To conclude, the three hot spring areas have distinguished natural characteristics. These areas are covered with bountiful forests with biodiversity significance, especially in the Emerald Pool area. The common concern of these areas is the improvement of the tourism facilities that lack of uniqueness and usually situated on high ecological sensitivity spots. This unplanned tourism development is the causes which lead to natural degeneration of the areas.



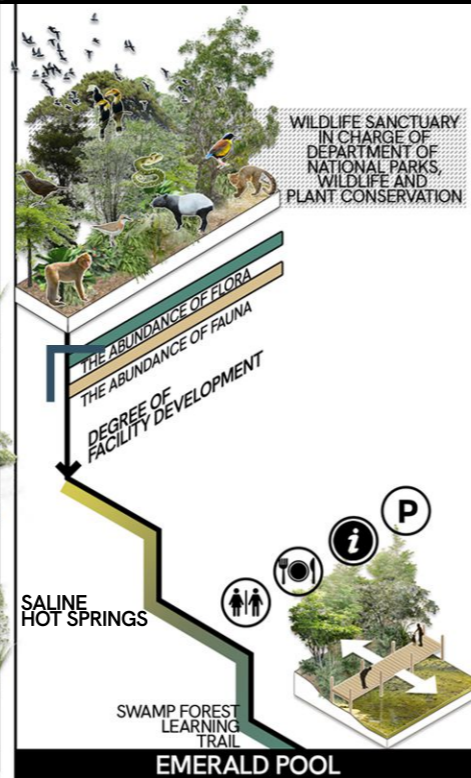
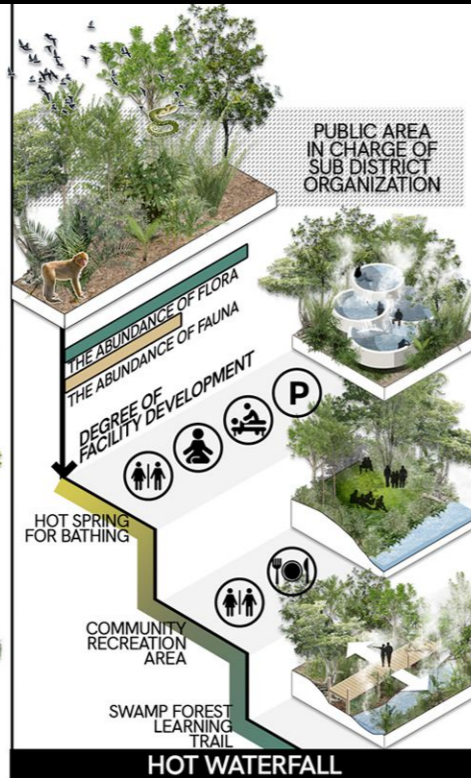
Design Strategies : Balancing Human Tourism and Nature Conservation

1 Balancing from : Spectrum of development



- FACILITY DEVELOPMENT AREA
- CONSERVATION AREA FOR LEARNING NATURE
- CONSERVATION AREA

2 Balancing from : Program for Limit tourism not to EXCEED Carrying Capacity



Saline Hot Spring and Hot Waterfall are located in the public areas under the subdistrict administration organization. These locations have less ecological sensitivity. Therefore, most parts of the sites can be fully developed to provide ample facilities for health promotion tourism. The areas of 45 percent of the Saline Hot Spring and 50 percent of Hot Waterfall are designed for sustainable tourism services. Emerald Pool is located in the wildlife sanctuary. Hence, the degree of development weights more on natural conservation with the design that conserves up to 80 percent of the whole area. The selected area for development is outside the wildlife sanctuary to minimize the ecological disturbance. Only features/elements remained in the wildlife sanctuary area are facilities for environmental study.

The process of assigning activity and main programs in each area is related to the developing facilities in each area regarding the degree of development.

Saline Hot Spring and Hot Waterfall are composed of hot spring areas, relaxation areas, and environmental study areas within the conserved boundaries.

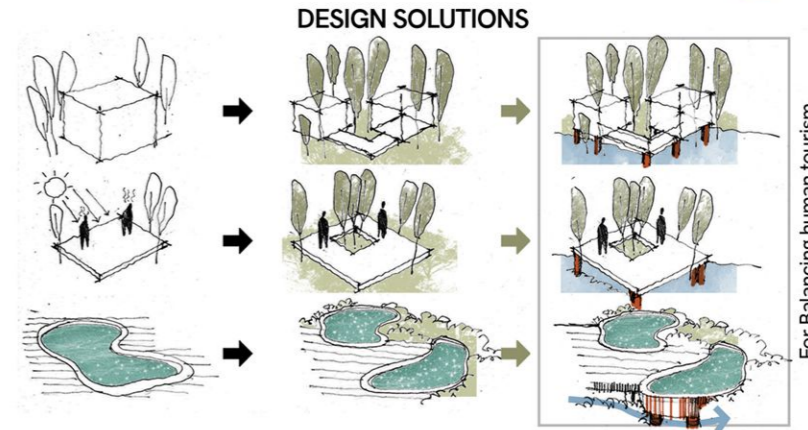
Emerald Pool is only consisting of the environmental research track.

Design Solutions for facility development in Saline Hot Springs and Hot Waterfall

The concept of Low Impact Design is applied in the planning and design process. The facilities in three sites is designed to lessen the environmental impacts on natural areas as much as possible.

EXISTING PROBLEMS IN EXISTING MINERAL POOLS

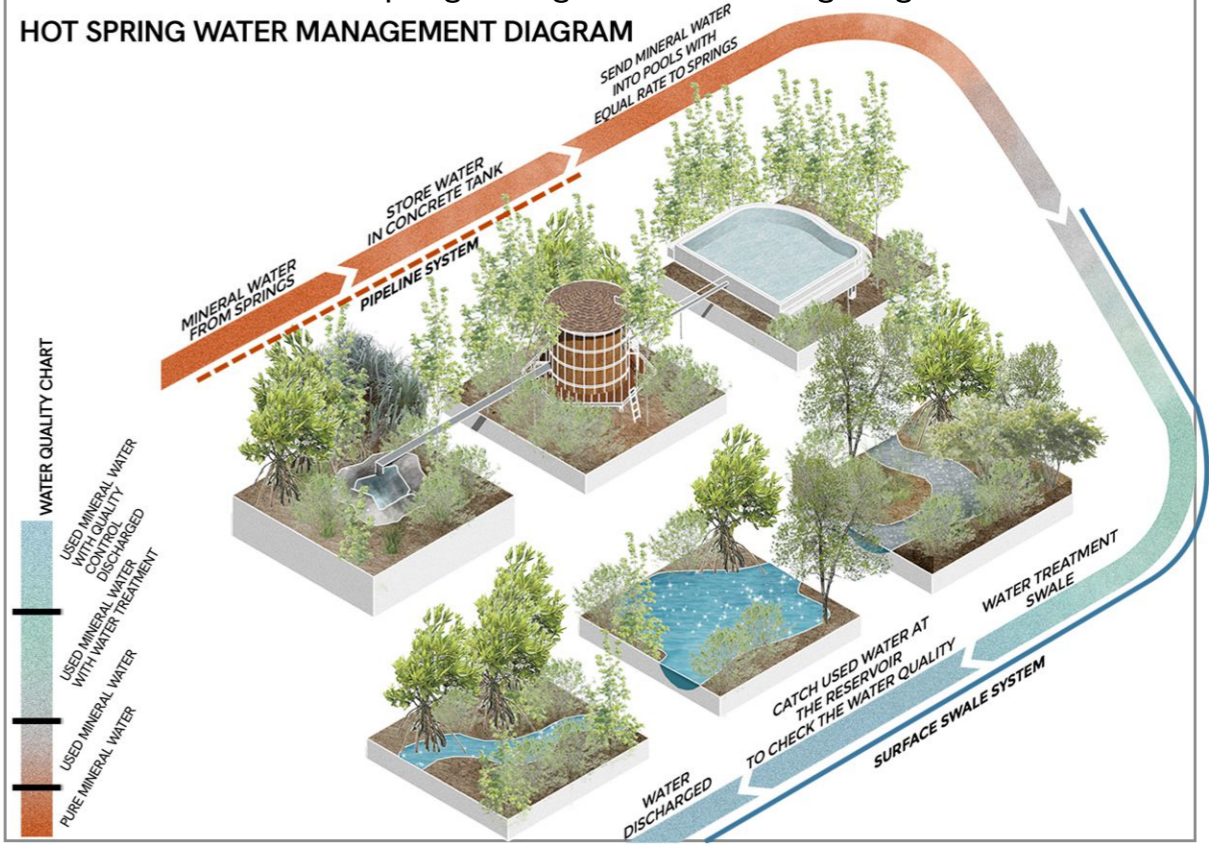
1. TOO LARGE FOOTPRINT OF BUILDINGS
2. LARGE DECK NO SHADE AREA DUE TO HOT AND HUMID WEATHER
3. BATHING AREA LACK OF NATURAL ATMOSPHERE



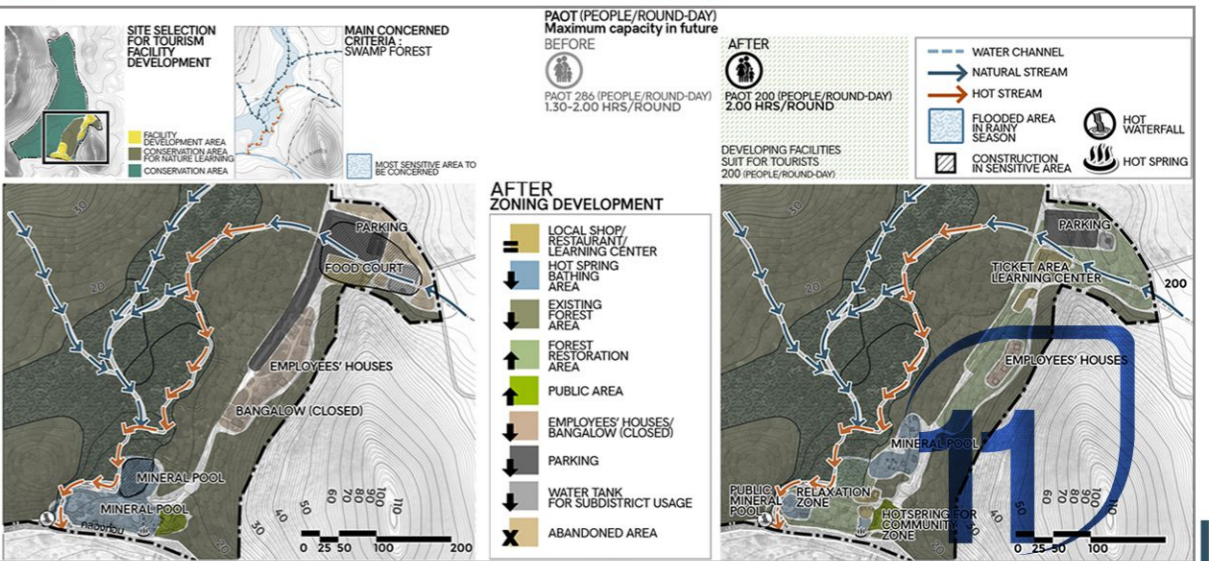
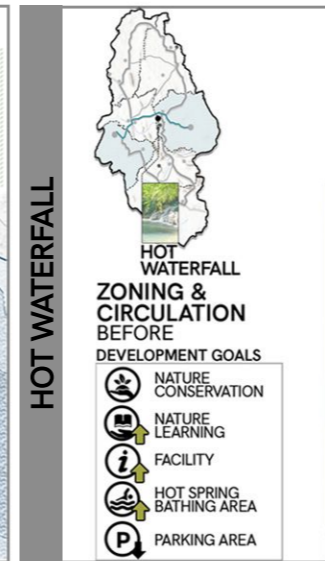
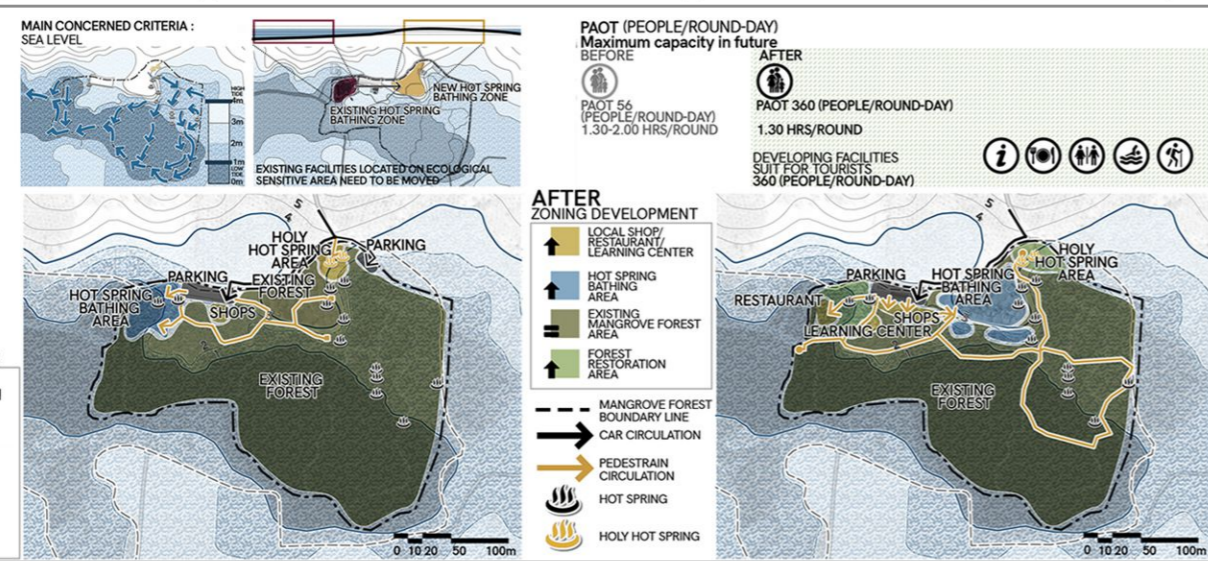
For Balancing human tourism and Nature conservation

Mineral water from hot spring management for bathing usage.

HOT SPRING WATER MANAGEMENT DIAGRAM



SITE FACILITY DEVELOPMENT



SALINE HOT SPRINGS

Saline Hot Springs The main facilities, saline hot spring pools, are constructed to be elevated pools at a four-meter elevation above sea level to allow the flow of natural tides. Adaptive reuse the existing buildings by reconstructed and elevated the structures to be above the highest sea level and assign a new functions as retail shops and restaurants.

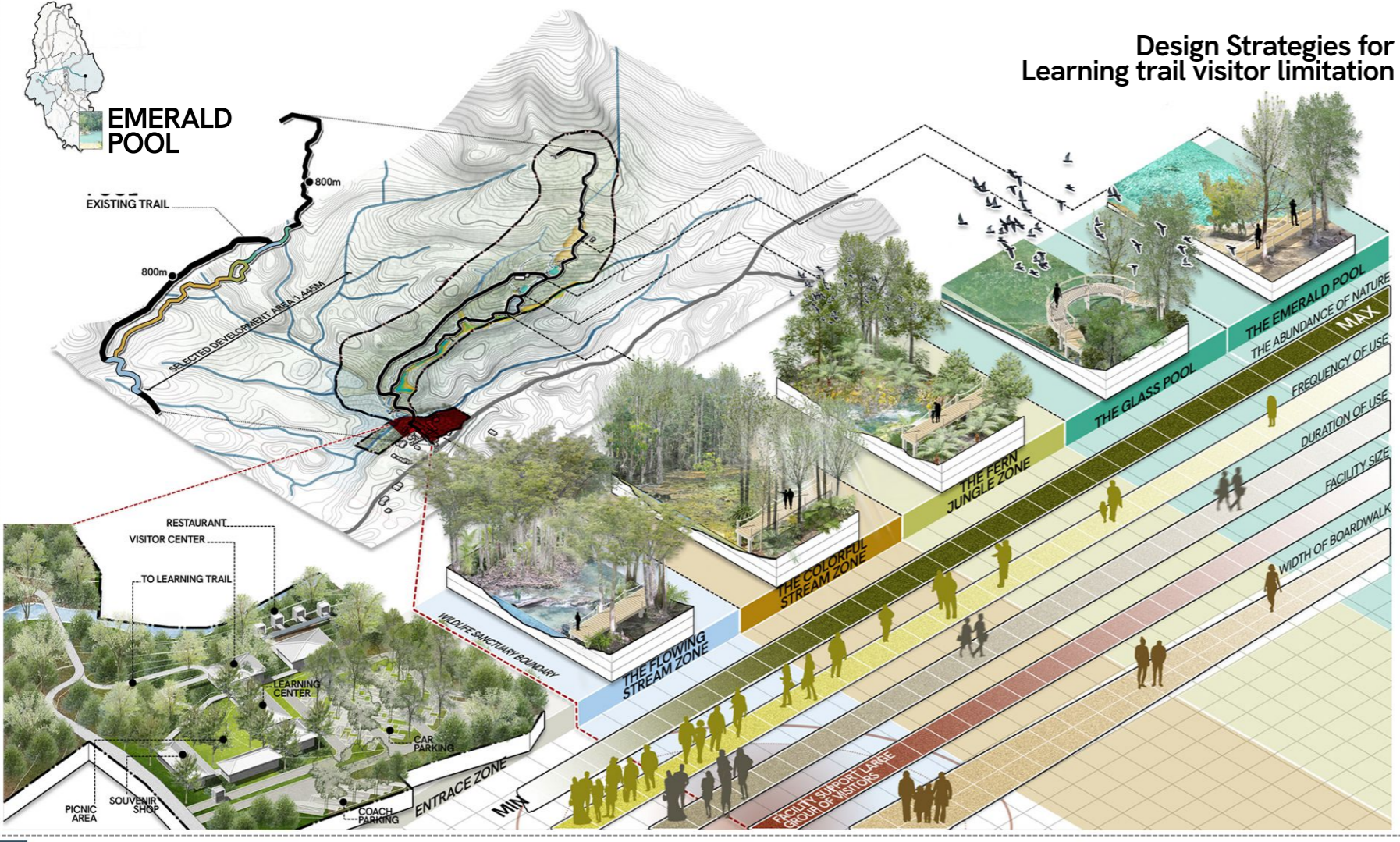


HOT WATERFALL

Hot Waterfall The planning and circulation design are adapted from the existing plan with low impact design concept. All nodes of activity area are downsized and relocated along the main circulation to reduce ecological impact and create natural atmospheres. The nodes of activity are hot spring bathing areas, a hot spring park for the community, and a welcome area.



Design Strategies for Learning trail visitor limitation



Due to a conservation restriction in the area (soaking into natural pools is not allowed), the area is divided into two zones; a wildlife sanctuary and outer areas. Facilities for visitors and learning centers are placed in the outer areas while a 1,445-kilometers learning trail is placed in the wildlife sanctuary zone. The trails are divided into five sections; the Flowing Stream, the Colorful Stream, the Fern Jungle, the Glass Pool, and the Emerald Pool.

The construction materials for the learning trail are precast structure, using local, moisture-resistant, and nature-compatibility materials.

