optirisk® - MODEL SITE Troutdale WWTP and LLC Property

JENA-GEOS®
QUAAS-STADTPLANER
IMPROMPTU DESIGN - WORKSHOP
15th TO 17 JUNE 2011 - WEIMAR

BAUHAUS-UNIVERSITY WEIMAR - INSTITUTE FOR EUROPEAN URBAN STUDIES - PROFESSUR BAUMANAGEMENT UND BAUWIRTSCHAFT

Bauhaus-University Weimar, Institute for European Urban Studies
Raising awareness about soil and environment in urban design education: Sustainable Land Use Management as a tool for urban development.

Although in today’s architectural and planning education the term of “sustainability” plays a prominent role, the main attention is usually drawn to technical knowledge while the basic issue of land consumption and land use does only play a minor role. As part of the German government’s strategies for sustainable urban development, the REFINA program is targeting to reduce land consumption for new settlement- and transport-related areas from currently 115 to 30 hectares (284 to 74 acres) per day by 2020. Several instruments and tools have been developed and applied as part of this program in recent years to encounter this problem that is prevailing in many urbanized areas worldwide, in areas of high as well as of low density.

Regarding strategies to reduce land-consumption through brownfield revitalization, the Institute for European Urban Studies (IfEU) at the Bauhaus-University’s chair of Construction Management and Building Economy (Professur Baumanagement und Bauwirtschaft) considered the question in how far urbanists can develop systematic and methodological thinking for sustainable design processes in brownfield revitalization. Starting with the term of “soil consciousness” an integrative urban study project titled “Sustainable land use management as a tool for urban development” in the summer semester 2011 offered a theoretical seminar, excursions, and a design studio focusing on developing two brownfield sites. The participants of the IfEU’s master’s program ‘Advanced Urbanism’ included fourteen students from our institute’s partner-institution College for Architecture and Urban Planning (CAUP) of Tongji University Shanghai and three exchange students from Richmond University Virginia.

While in most of our study projects we are concerned about planning as a comprehensive and complex system that tries to primarily analyze conditions like urban texture, social conditions and demographics, connectivity and traffic, this project started to think about planning at a very ‘grounded’ level under the sometimes inflationary use of the term of ‘sustainability’. We started with a text-based theoretical seminar to explore interrelations between scientific approaches of land use and urban development under various aspects. This part of the study project covered the topics of sustainable cities under sociological aspects (Dr. Bernhard Stratmann), strategies of brownfield revitalization and regeneration as a planning issue (Ingo Quaas), and the relation between (urban and technical) design-solutions and land use (Philippe Schmidt). The texts spanned from smart grids to biological remediation (like phytoremediation) and economic issues (like tradable development rights).

To narrow down the complexity of the term of ‘sustainability’ I had presented the history of an 200 year-old unburned adobe brick in the introductory lecture. The brick stemmed from a residential house in our institute’s neighborhood and had been sorted out due its current renovation. With the simplicity of such a local building material that was traditionally excavated from the local construction site, the project’s main goal was set to turn the planner’s complex mind towards a more basic idea of ‘soil awareness’. This term is mostly used in geosciences and pedology in specific, linking topics like soil condition, soil remediation and soil protection to a more broad environmental consciousness as part of our general living environment. For our students, the term of ‘soil awareness’ was introduced to look at a site not only as an opportunity for construction but also as a part of a circular systems of material life-cycles in operating or at last consuming land for construction. In contrast to the designer’s world of immaterialized plans and built products, “soils don’t have a figure, but are a spatial continuum without visible borders” (translated from: Miethlich, Günter: Bodenbewusstsein – ein Schlüssel zur Förderung des Bodenschutzes. In: Alfred Toepfer Akademie für Naturschutz (Ed.): NNY Berichte, 1/2009: 48-53; Schneverdingen; p. 49). Planning though should consider soil as the fundamental ground to build, live, work and commute in a healthy environment.

To become aware of the extremes of such subsoil conditions, the group traveled to the transformed site of a former uranium mine, the ‘Wismut’ in Gera-Ronneburg. Its post-industrial transformation into a landscape-park established as main attraction for Germany’s 2007 Federal horticulture show BUGA (Bundesgartenschau). While trucks today are still continuing to move soil and contaminated washouts, it became clear that the massive removing of soil to refill and recover the open mining area and to reinvant and modulate 124 hectares (340 acres) of landscape is not only a matter of time and a question about the shifted regional identity of former miners. It is a substantial matter of work-force, where every centimeter of soil layer covering a slightly radioactive site, becomes a principal matter of financial calculation. The example showed that the re-introduction of the area to today’s society after digging it out and exploiting it commercially, is linked to an incredible effort to close its life-cycle again and deal with the consequences of the previous uses. The excursion to this spectacular treatment of a contaminated
uranium site had a very special connotation, as it took place just a few days after the nuclear fallout in Fukushima, Japan.

As a next step, the group then explored the former energy plant of the Schöneberg gasometer in Berlin. Today, the area is transformed into the European Energy Forum (EUREF), an ambitious project accommodating different stakeholders in commerce and research specialized on mobility systems. The site was this year’s focus of the ars Berlin summer academy organized by Prof. Robert Demel of Beuth Hochschule targeting on “adaptive interfaces”. Our students attended two excellent symposia about the connection of land use and smart grids and finally contributed to design-focused solutions, raising the question how the surrounding communities could be connected to the area. Together with Tore Dobberstein from Complizen Planungsbüro, an office specialized on urban strategies and interventions, we analyzed the neighborhoods around the gasometer after several post-industrial projects on Berlin’s waterfront had been visited as case-studies, including social and economic aspects of the projects.

Backed by all these different parameters the students were well-prepared to finally work on the impromptu workshop about the Troutdale riverfront. Starting with a half day of lectures, this part was jointly prepared with my colleagues from quassstadtplanner, Weimar, as part of a bi-lateral exchange between the German Federal Department for Education and Research (BMBF) and the United States Environmental Protection Agency US EPA. The city of Troutdale is located 22 kilometers east of the centre of Portland, Oregon, and has a city population of nearly 16,000. The brownfield area, located between Troutdale’s historic main street, an outlet center, Columbia River Highway, rail-tracks and Sandy River is a gate to the region’s rich natural environment and a starting point for many outdoor activities. The area formerly served as a sewage treatment plant and a rendering plant while the new uses, according to the land use plan, could provide space for commercial, mixed office/housing and open space.

The task though was to create an urban design scheme for a contaminated site, based on the optirisk® tool, one of the instruments developed in the REFINA research program. The special chance of the planning approach laid in the cooperation with experts from the co-partner JENA-GEOS®, specialized on research and consulting in geosciences. They provided detailed information about industrial remnants on the 8 hectares (20 acres) site, including built structures and areas of soil contamination of different grades. These factors would be influential on design schemes for prospective uses of the brownfield. Their identification as liability factors were considered and implicated in the design process to reduce cost factors and development risks for an adaptive re-use of the site. Almost no limits were given in favor to design creatively – expect those restrictions that evolved as a valuable learning experience: the consideration of limits that were given by the preconditions found in and on the brownfield site’s soil. Those set an additional factor in the design process, while many questions arising during that process about handling toxic conditions as a planner could be answered through Anika Hohmuth from JENA-GEOS®. Learning, in this project, not only meant to bring forth a variety of so-far unconsidered planning determinants: Understanding that a site, almost cleared from buildings or structures, is not only some developable land for any kind of plans, but that understanding the substance of soil itself becomes an essential part of a plan where every cause and change means a consequence for the living environment.

Questions that could restrict the individual designs were successfully tested through the optirisk® tool in the final presentations. At the end, it became obvious that the pre-conditions of an environmentally contaminated site do not predominantly lead to restrictions for designing, but rather could become a sort of guidance to develop opportunities and gain control about possible development risks. For the future planning professionals, the workshop did not only bring new perspectives to understand brownfield revitalization in the context of sustainable land use, but showed that a lot is not only a lot, and that our urban realm is part of a complex system where dealing with resources already begins underneath the soil.

The demand for cities and planners to deal with polluted areas is growing. And so is the task to raise prospective planner’s awareness for this issue in education, developing their virtues in looking at occurrences underneath the surface in design processes – be it in environmental, social or economic terms. We hope that our international effort in building a bridge between Chinese and American students in Weimar can contribute elsewhere to urban solutions, be it Troutdale, Berlin, Shanghai or wherever our students will work in the future.

Philippe Schmidt is a research associate and lecturer for the chair of Construction Management and Building Economy (Professur Baumanagement und Bauwirtschaft) at Bauhaus-University Weimar, Institute for European Urban Studies.
## 15.6. WORKSHOP DAY 1

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
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<tbody>
<tr>
<td>9:00 Uhr</td>
<td>Welcoming and introduction of workshop team</td>
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<td>general information (REFINA optirisk°)</td>
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<td>Goal of Troutdale-Workshop</td>
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<td>9:30 Uhr</td>
<td>Lecture</td>
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<td>- Portland Region (OR)</td>
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<td>- City of Troutdale (OR)</td>
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<td></td>
<td>- Planning Site incl. environmental situation</td>
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<td>Information about „optirisk°“-methodology</td>
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<td>- Environment / urban design / energy</td>
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<td>11:15 Uhr</td>
<td>Workshop team</td>
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<td>LUNCH BREAK</td>
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<td>13:00 Uhr</td>
<td>Group work</td>
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<td>Brainstorming for Leitbild (guiding principles):</td>
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<td>- function and design</td>
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<td>Intermediary presentation Leitbild (Brainstorming)</td>
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## 16.6. WORKSHOP DAY 2

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<td>Design phase + Consultations</td>
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<td>Design phase + Consultations</td>
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<td>15:30 Uhr</td>
<td>Plenum</td>
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<td>Intermediary presentation of Designs</td>
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## 17.6. WORKSHOP DAY 3

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<td>Finalizing Designs + Consultations</td>
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<td>12:00 Uhr</td>
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<td>13:00 Uhr</td>
<td>Gruppe</td>
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<td>Final presentation Design</td>
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after 17:01 Uhr

**Our Trout-Dears:**

*Der Rost brennt – alles wird Glut!*
The goal of optirisk® is the optimization of site development concepts for polluted, unused properties. The result: "Integrated Site Development Concepts" which optimize investment needs, improving the chances of reactivating polluted properties. For further detailed information you can also have a look at http://www.optirisk.de.

In the frame of the bilateral cooperation between USA and Germany, some of the tools developed for revitalization of brownfields in the context of REFINA shall be tested in the partner countries. optirisk® is one of the projects which was already presented on bilateral workshop with TASK (the Centre of Competence for Soil, Groundwater and Site Revitalisation in Leipzig) and the American environmental protection agency US EPA in Denver and which has attracted a great deal of interest from the American colleagues. Now, the optirisk® team (JENA-GEOS® and quaas-stadtplaner) are testing the method and the tools of optirisk® on the Modelsite: WWTP and LLC Property in Troutdale/Oregon.

The goal of the student workshop at the Institute for European Urban Studies in Weimar was to create ideas and impromtu designs. For this purpose the optirisk® team made an introduction to the project as well as conditions and demands from urban planning’s and environment’s view at the model site on the first workshop day. On this basis and with assistance of the optirisk® team and their university’s advisor the different working groups of students created 8 constructive and ambitious concepts for a possible site development, which take into consideration the specific contamination situation already ahead of planning.

We want to thank all students for their busy work, the excellent work results and the interesting exchange of experience!

Next working steps for the cooperation project will be to present the development drafts in the frame of a workshop in Troutdale/OR in July 2011. There the concepts shall be discussed together with city representatives with the objective of choosing 4 of these drafts, which have to be viewed in detail while further project processing regarding urban planning demands, existing optimization potentials of the contamination situation as well as possible integrations of renewable energies into the site development.

Dr. Kersten Roselt, Anika Homuth - JENA-GEOS® (Jena),
Ingo Quaas, Anja Thor - quaas-stadtplaner (Weimar)
Troutdale:

Troutdale is an outpost. For hikers and adventurers exploring nature, it is both the final element of the human environment they see before venturing into the wilderness and the first sign of civilization when they return. It is the last place to take stock of supplies before heading East into nature, and it is the first place to resupply from an adventure on the river or in the forest. It is a place to stage camping and canoe trips, to rest during a trek on the 40 mile Powell Butte-Barlow Trail, or to relax at the boundary between man and nature.

The City of Troutdale still displays evidence of its frontier heritage. A freight rail line divides the former industrial site under study from the city’s main street and residential areas. The steel girders and beams of two nearby bridges and a water tower recall a time of the country’s westward expansion and exploration. And the commercial strip to the south of the industrial site features two to three story buildings with facades reminiscent of the architectural vernacular of many American frontier towns. The human environment speaks of the exploration of the country and the human relationship with uncharted territories.

The Sandy River Outpost

The former industrial site under study is bordered by the Sandy River to the east, Interstate 84 to the north, a freight rail line to the south. To the west is an outlet shopping mall and, ultimately, Portland. The vast majority of structures on the site are contaminated by use as a water treatment facility or slaughterhouse.

These uses are no longer active or needed. Most of the land is unused or abandoned. The site has the potential to bridge the residential areas south of the rail line to the Sandy River and the wilderness to the east. It can serve as an outpost and supply station at the frontier of Portland while providing residents with access to essential services.

The most prominent visual feature of the site may be a large water tower, but the Sandy River represents the only natural border of the site, but also the termination of Portland’s built environment. It attracts swimmers, fishermen, and boaters, most of whom must access the river from the opposite side.

The intention of this proposal is threefold:

1. Establish North Troutdale as an outpost for adventurers seeking to explore the wilderness.
2. Create greater access and linkages between the residential areas of Troutdale and the Sandy River.
3. Provide essential services for the residents of Troutdale.

Green Space

The eastern portion of the site is divided from the west by a spring-fed stream that ultimately leads to the river. This eastern half remains largely recreational and green. Highly contaminated land to the south is removed and used to create larger hills for a bicycle test course that may also be used as a BMX course. This bicycle course is adjacent to the large space for a wilderness outfitter, and it may be used as a test track for customers. Contaminated land bordering the river is removed, and it may be used to enhance the hill course. The space will be replaced by a sunken amphitheater that will serve as a place of both relaxation and entertainment. Finally, the contaminated space closest to the river will be the new location for a canoe rental shack and traveler services building. The building will feature restrooms, lockers, and showers for campers and bicycle travelers.

Traffic

In order to allow both customers and suppliers access to the Sandy River Outpost, the outlet mall is divided into two sections, with a road taking the place of a middle portion. The street network divides the built western half into several grids at the same scale as Troutdale’s main street, but the roads are curved to emphasize the return to a more organic form: nature. There is ample parking around the commercial and mixed use districts, and the northern grid is closed to auto traffic.

The entire site is highly aerated by pedestrian paths, including a bridge over the rail line to the south that will allow residents of Troutdale access to the Outpost. The pedestrian trail follows the course of the spring-fed stream and divides the built and unbuilt environments. It leads directly to the amphitheater and the Sandy River, where a new pedestrian bridge provides access to the river’s sand bar/island as well as the wilderness at the other side.

Architectural Language

Troutdale’s main street, the Historic Columbia River Highway, features one to two story buildings with a neotraditional design that recalls American west frontier towns. Similar architecture is visible in other western towns such as Aspen, Colorado.

The Sandy River Outpost will utilize similar facades, scale, and window spacing. Buildings on the west of the site reach the maximum height of 45 feet, while buildings on the east may be smaller. Restaurants, pubs, and hotels recall older saloons, utilizing front porch covers as shade during the summer.

The large retail space on the southwest corner features a sloping curved roof designed to funnel much of Portland’s stored rainwater into a pond adjacent to the spring-fed creek. The creek may act as an overflow for rainfall.
Playground for community life

Scheme

The site, which is located in the north part of Troutdale, used to be a waste water treatment plant. In the past it is isolated from other part of the city. Although the site is surrounded by variety of functions like downtown, shopping center and recreation waterfront, there are barriers like railway, construction and river that make this site a isolated island from the city.

We think the most important is to get this area back into the city as part of the social life. So we have this title of Playground (for community life) in which we have a vision of sustainable social life, environment and also financial situation.

Function

According to the expatilated scheme, a small community will be the core function of this area. And as an interface of city and nature, we want to make this brownfield into an integrated facade. So we design this site as a mixed land use of residential, retail, sport, and park. Also it is an interface of car-driven and walkable area so a pedestrian network which is walkable and bicycle-friendly and also connect the site with surrounding areas.

To make the site to be part of the city, we design multi-links with surrounding areas. There are three walking passages in the west side and two pedestrian bridges, of which one crosses the railway to the downtown and the other crosses the Sandy River to the opposite side of the river.

Feature

Developing model:

We consider a public-private partnership model as the most effective approach to solve the problem of this brownfield site. So we can elevate the land value most while keep some part for public service, open public space and public use. And we are redeveloping this area in a kind of smart growth which means high density and also high value of the land. This is a more sustainable way to redevelopment this brownfield area.

Function transposition:

We want to have three passages from the shopping mall which is on the west side. As a transposition, there will be another retail building on the north of the site as extend of the shopping mall. Also, on the south there is another building for restaurant, which will be the food corner of the site.

Contaminated areas:

Basically we design the contaminated areas into hard ground as an extreme sport site and also parking or square so that the influence on people can be reduced.

Heritage construction:

Some of the industrial constructions will be demolished and some will be preserved as part of the community landscape. The water tower will be the landmark of this area. Another structure will be reconstructed as an arbor in the community open space.
Masterplan
THE JOINT
The starting point of the whole design is to make the specific site to be a new joint between the urban fabric in the south-west and the natural landscape in the north-east side by the several design approach below:

1. LANDMARK–VIEW JOINT
   To make the historical water tower as the new landmark of the whole area and restore the structure to make the tower accessible as a new view point of the town.

2. CENTER POINT–SPACE JOINT
   To make all the design elements such as the spring landscape, the pedestrian route, and the recreational park ends up at the joint point of the water tower.

3. BRIDGE–TRANSPORTATION JOINT
   To build a new tower at the small island and bridge the both sides by the ferry stations nearby.

URBAN–NATURE
"HIKING FOREST"– A PLACE TO GET TO THE NATURE
CAMPING RESORT–LIVING WITH NATURE
COMMERCIAL AND OFFICE–ORGANIC FORM
ECO-FRIENDLY
NATURAL LANDSCAPE–BLOCK THE POLLUTED AREA
RECYCLING PARK–MAKE USE OF THE SLOPES TO CLEAN UP THE WATER
FERRY SYSTEM–CHEAP WAY TO ATTACH THE NATURE
AQUA DELTA

ORIENTATION
The site was located along the Sandy river with a triangle shape. Based on above background of the site, we do a simple SWOT analysis to find out which is the best way for further development.

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<tr>
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<th>located along the Sandy river</th>
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<tr>
<td>W</td>
<td>two barrier highway and railway, bad linkage with surrounding, risky contamination</td>
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<tr>
<td>O</td>
<td>It near Columbia river and Outlets, which could bring revitalization to tourists to here. Great potential for water related activities</td>
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FUNCTION
Based on above analysis, the function of the site include tourist service, water-activities, local participation.

DESIGN CONCEPT
Water brings people to here, so we use aqua element to revitalize the site and link the surrounding areas. The specific concepts as followed:

- Aqua activity
- Industrial heritage rememory
- Delta linkage
- Environmental strategy

SPACE STRUCTURE
We use some attractive view point to make a delta connection in site, which could combine function zones properly.

TRAFFIC ANALYSIS
The traffic system are in two vertical level. On the groundfloor, the site is a pedestrian zone where the car just parking on the north. Two main entrance link the surrounding area with the site and a bicycle trail along the riverside. On the secondfloor, we use the tubes to build a walking systems with some stairs linked to the groundfloor.

AQUA FACILITY

- **Aqua pub & café.** We get the waste water out of the pool and put sand into it, then it will be a sand beach.
- **Aqua leisure platform** is built by the memorial tube structure. There will be a fish pool on the ground and a fish restaurant on the platform. **Aqua sport club** The building itself is a viewing platform to enjoy the view or do sports in the river. **Aqua towers** One is the old water tower, the other is the new trout tower planned to be built on the island. **Aqua parking harbor** is located at the contaminated point. The plan is to remove the contaminated soil and build a harbor.
SHOPPING BANK

Influential Factors:

1. Water:
   1) River: In the far north of our site is the Columbia River, and in the east is the Sandy River.
   2) Water Treatment Pond: Because this site used to be a brownfield, there were several water treatment ponds in this site. In the southwest of the whole site is a large sludge lagoon of nearly 6,000 sq, and in the north is a small one of nearly 300 sq compared to the other one.
   3) Water tower: There is a water tower in the middle of the site with a good panorama view which makes it the landmark all over the whole site.
   4) Spring: A spring in the south can provide fresh water for this site.

2. Transportation:
   1) Highway: To the north of this site is Historic Columbia River Highway.
   2) Railway: To the south of it is a railroad.
   3) Main road: To the west of it is 257 Avenue.

3. Existing buildings:
   1) Shopping mall-Outlet: A big outlet shopping mall with a single building stands next to our site.
   2) A historical street: Across the railroad is Troutdale downtown with a historic commercial street.

Requirements:

1. Commercial space:
   "The Area, is zoned for commercial use, encompassing lands in Troutdale’s general commercial district and mixed office/housing district." (City of Troutdale, 2006)

Measures:

1. Make the water treatment lagoon into a pond with water plants in it, and people can stand on the second floor platform to watch the pond.
2. Use the spring the source of the whole water street.
3. Make the water tower the land mark of this site.

Idea:

The bank refers to the river bank obviously. According to our analysis, we would like to make Water the key element to the site. And we’d also like make Water the most attractive factor from the design. Although there is a shopping mall to the west of our site, and a historic street for commerce, there are no connections between both. So we want make our site also for shopping to link with the two others. And each one will possess its own business direction. Therefore, our idea “Shopping Bank” make Water element and the main function-Shopping together trying to build a good shopping atmosphere for the whole city.
NEW ROOF, NEW FACE

FUNCTION: Sports centre

We have three slogans in our design.
1. Have more fun.
2. A new face.
3. Bridge.

NEW FACE: Big roof & water tower

1 – It is always rainy in this area, so we want to provide not only outdoor courts but also indoor courts. We design a big roof with tensioned membrane structure and buildings with different functions under the roof, such as coffee shop, restaurant, gym, Rock climbing.
2 – we also use the big roof to collect rain water, to get a water stream in the site, combined with landscape.
3 – people can see the big roof from the highway and train, so it is also a new landmark of the town.
4 – we restore the water tower, it is higher than the big roof, and can be a landmark and historical marker of the site.

BRIDGE:

We design a 4-meters high pedestrian way throughout the sports park to connect the sports park and the town center, to connect the shopping mall and the big roof. On the second floor is a pedestrian system.
The ground traffic system includes a pedestrian road and a bike road, along the rain water system, including the pedestrian road outdoor and under the roof.
1. Play ground
2. Office building
3. Senior houses
4. Youth family houses
5. Plank Roads
6. Decking
7. Sky Walk
8. Existing spring
9. Water tower square
10. Center of Service for the Elderly
11. Agriculture service
12. Agriculture market
13. Hostel
14. Water square
15. Extreme sports site
16. Cinema
17. Restaurant
18. Tourist Information
19. Camping service
BLUE GATE

BLUE

refers to the site identity which has a strong relationship with water, for example: the Sandy river on the west side brings a nature into the site. The water tower is a memorial structure as well as a water treatment facility and an industrial legacy. We try to illustrate the NEW BLUE concept by introduce activities which closely related to water and also the revitalization of the water front area. For instance, the original Sludge lagoon will be turned into a water performance platform for public activities. The water treatment facilities will be a show case of ecological remediation. And the other side of sandy river which is a place of favor by locals will be connected directly with the entrance of the site.

GATE

concept can be interpreted by four phases: First of all, on Marco point of view, the site is a gate or a fringe place of urban to the nature, we will emphasis on the image of urban space on the north highway side to create an urban sense. And we also will emphasis on the water tower as a GATE of the site by breaking a brand new axis from the original shopping center directly into the site. Thirdly, because functionally the place has a strong demand on the tourist services especially sport service. So we planned a service center for it by renovating the old industrial building and connected the service center with the historical street on the other side of the railway to the south of the site. This gesture also indicate the "historical & community GATE"

TRAFFIC ORGANIZATION

The major target of the transportation system will be connecting the east side of the shopping mall and the west side of the beach, also connecting the south community center and the historical street. The system will consist of four layers, the main car road, the pedestrian path and the recreation walking path, the elevated pedestrian way. Landscape structure

Function

Five function area are included in the plan: commercial place, a mixed use area include office buildings and hostel; sport-activity center and a service center for tourist and sports; a performance center. In the middle of the site will be a connecting point of four functions which will be planned as a public green space integrated with eco-education areas such as eco-car and e-bike renting and water treatment show case.

LANDSCAPE STRUCTURE

The landscape design will emphasis the dominant position of the water tower as a major attracting point of the whole site, it also will be a mixing point of two major axis as well as the major structure on the south main entrance of the site. Also the green space in the middle of the site will be considered as a major landscape point. The secondary landscape point will be located on the four function site.