

SITE ANALYSIS

当地状况分析

We performed an inventory and analysis exercise to gain an understanding of the composite patterns and processes of the natural and man-made systems, to assess the opportunities and constraints (challenges) of the site, and to generate planning and design concepts which would aid in transforming the site into an urban place.

Using the available data (satellite imagery, GIS, CADD, images, reports, observations, etc.) the class investigated, analyzed and evaluated the factors of seven analysis topics of the site and the proposed development, including: hydrology, land use, waterfront, villages, street networks, open space, and housing.

Each team generated a list of impacts and possibilities of each topic as it relates to the development; created inventory/analysis maps and diagrams using the base maps provided; developed constraints and opportunities for each particular topic; and generated a list of planning and design principles. Teams also chose case studies which represent successes and innovations or failures to provide model lessons in developing typologies for Gaoming. The following provides an overview of these inventories and analyses.

我们的调查和分析研究是为了寻求获得了解自然与人造系统的复合发展模式，去考量机会和限制(挑战)，并且创造规划和设计的观念来协助当地向城市空间的转变。

工作室使用现有的数据(卫星图像，地理信息系统[GIS]，计算机自动辅助设计[CADD]，图象，报告，调查等)调查、分析和评估了当地的发展，拟定出七个分析项目课题，包括水文学、土地利用、河岸、村庄、街道网络、公共空间和住房。

各个组负责一个课题，列出可能对当地发展造成影响的因素；用所提供的基础地图作出分析图和图表；探讨了各个课题的局限和机遇；并且拟定出各种规划和设计原则。各组也选择了专题案例研究，这些案例代表了成功、创新和失败的例子，为高明的发展方向提供了经验和参考。下列提供了这些调查和分析的概要。

在高明规划



The city of Gaoming 高明市

LAND USE & TRANSPORTATION

土地利用和交通

Our group analyzed the structure of planning in China in order to understand the contexts and dynamics of development practice. During the analysis, we started to understand the overall planning sequence and explored the difference between central and local governments in the process of land use planning. The central government emphasizes more socio-economic and environmental control, whereas the local governments focus more on economic developments. The roadmap for local planning agencies is based on the five year plan by the central government, with which local planning bodies are required to comply.

We also examined the taxation structure of the local governments and concluded that the current taxation system for development (based upon negotiations among different levels of local governments) might invite corruption. However, since we are not fully aware of the planning context in China, our analysis should be only regarded as our own judgment.

The overall site contexts, such as the length of waterfront and the site area, were analyzed in order to have a sense of scale. We looked at how much density would be built given a gross residential designation by the city of Gaoming. We projected population growth based on the changes in density and looked at increases in the number of people per hectare. We also analyzed the current urban infrastructure by investigating the networks of the main existing arterial roads and civic nodes. By overlaying a one kilometer buffer around them, we realized there were some relationships between nodes and transportation routes. We concluded that transportation would be an important aspect of Gaoming's growth, since hospitals, civic centers, markets, and port areas were linked by two major road axes.

我们的小组分析了中国的规划组织制度以便了解当地环境状况和发展实践的机制。在分析中,我们开始了解整个规划的次序,发现中央政府和地方政府之间的土地利用计划的区别。中央政府更多强调社会经济和环境控制,而地方政府更多集中于经济发展。地方规划部门的路线图是基于中央政府的五年计划,地方规划局均遵守此五年计划。

我们研究了地方政府的税收制度并且知道当前的税制在不同级别的地方政府通过协商来分派,可能存在腐败现象。但是,因为我们不完全了解中国的规划体制,我们的分析主要是基于有限的认识和自己的评断。

规划区域,譬如河岸的长度和规划的面积,我们通过分析对规划的空间尺度有了更好的掌握。城市密度决定了高明市的总住宅指标。我们通过密度的转变和每公顷人口数量的增长预计人口增长。我们也通过调查现存主干道和城市节点及网络分析了城市现有基础设施。通过覆盖一公里缓冲区,我们认识到节点和交通线路之间的一些关系。因为医院,市中心,市场和港口都以两个主要公路为轴心,我们认为交通会是高明发展的一个重要方面。

在高明规划

中央:
 社会经济的平衡
 农业土地保护
 环境控制

CENTRAL
 Socioeconomic balance
 Agricultural land protection
 Environmental control

地方:
 经济发展
 城市化
 工业化
 竞争目标

LOCAL
 Economic development
 Urbanization
 Industrialization
 Competing Goals

限制:
 发展速度过快
 污染
 缺乏协调
 缺乏融合

CONSTRAINTS
 Rampant growth
 Pollution
 Lack of coordination
 Lack of Integration



figure 1: Planning Structure
 图 1：规划架构

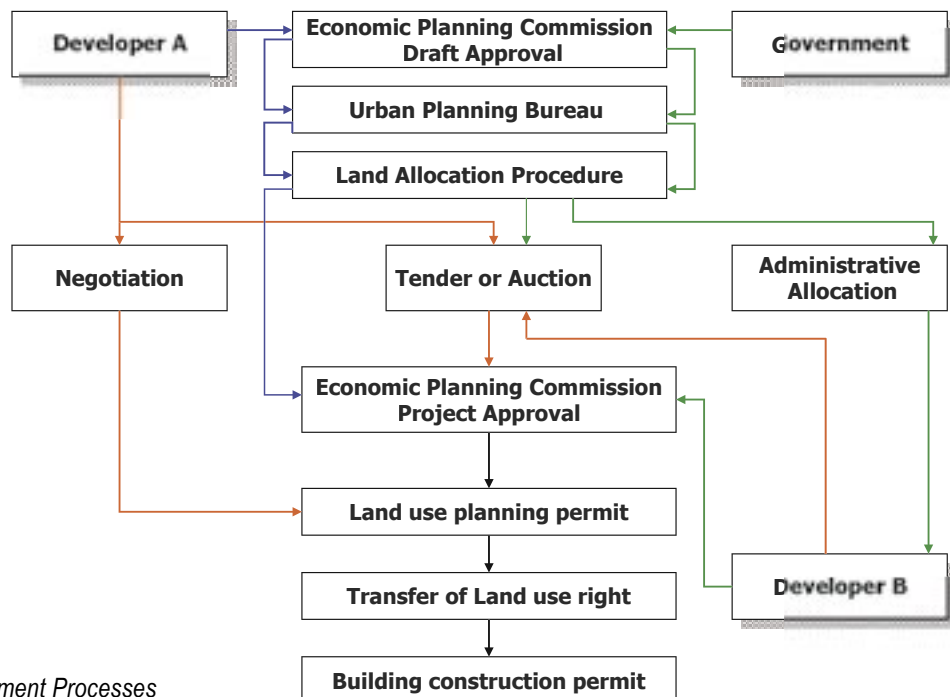


figure 2: Development Processes
 图 2：发展过程

Function	Economic and Social Development Planning	Land Administration and Land Use planning	Urban Planning
	Economic Development	Land & Resource Control	Urban Development
Central	National Planning Commission	Ministry of Land and Resources	Ministry of Construction
Provincial	Economic Planning Commission	Department of Land and Resources	Department of Construction
Prefecture County	Economic Planning Commission	Bureau of Land and Resources	Bureau of Construction Bureau of City Planning
Town Village	Economic Planning Commission	Office of Land and Resources	Construction and Planning Bureaus

figure 3: Planning Function Analysis
图 3：规划机能分析

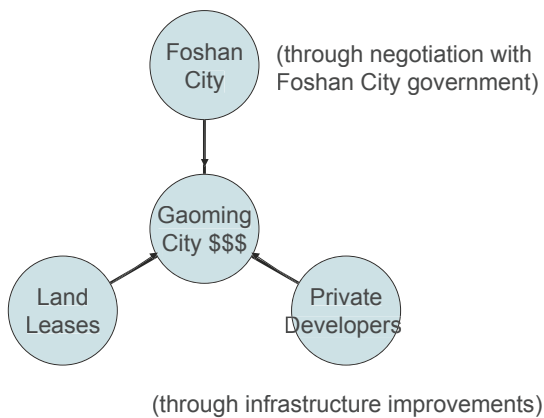


figure 4: Taxation Diagram
图 4：税收示意图

Income and business taxes are negligible, and all development taxes are paid to Foshan Central District.

We think this situation leads to inconsistent revenue generation and many opportunities for corruption.

收入税和商业税可以忽略不计, 并且所有发展税收都被缴纳到佛山市。

我们认为这种情况造成不一致的税收, 并且有可能造成腐败。

在高明规划

SITE CONTEXT & DATA

Total Area: 1200 hectares (12 km²)
 Waterfront: 6,000 linear meters (6 km)
 Other Canals: 11,500 linear meters (11.5 km)
 Population: 250,000
 Economy: Agriculture
 Transportation: bicycle Bus system

Projected population: 500,000 people

规划区域和数据

总面积: 1200 公顷(12平方公里)
 江畔: 河岸线6,000米(6 公里)
 其他次要运河: 河岸线11,500米(11.5 公里)
 人口: 250,000
 经济: 农业
 交通: 自行车和公共汽车系统

规划人口: 500,000人



figure 5: Residential Areas

figure 6: Population Histogram

图 6: 人口柱状图

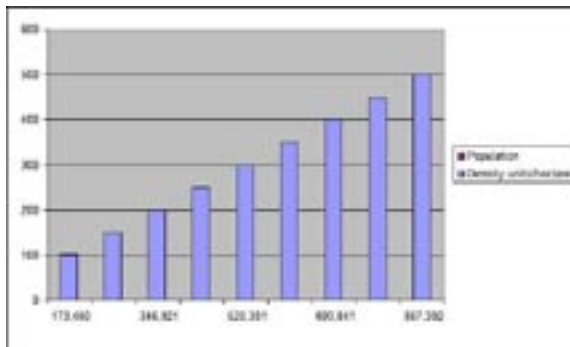


figure 7: Population Projection

图 7: 人口预测

Assumptions		4 people/unit
4336508 uqm		4 people/unit
433 6508 hectares		
Units/hectare	# of units	4 people per unit
100	43 365	173 460
150	65 048	260 190
200	86 730	346 921
250	108 413	433 651
300	130 096	520 381
350	151 778	607 111
400	173 460	693 841
450	195 143	780 571
500	216 825	867 302

figure 8: Existing Land Use Plan

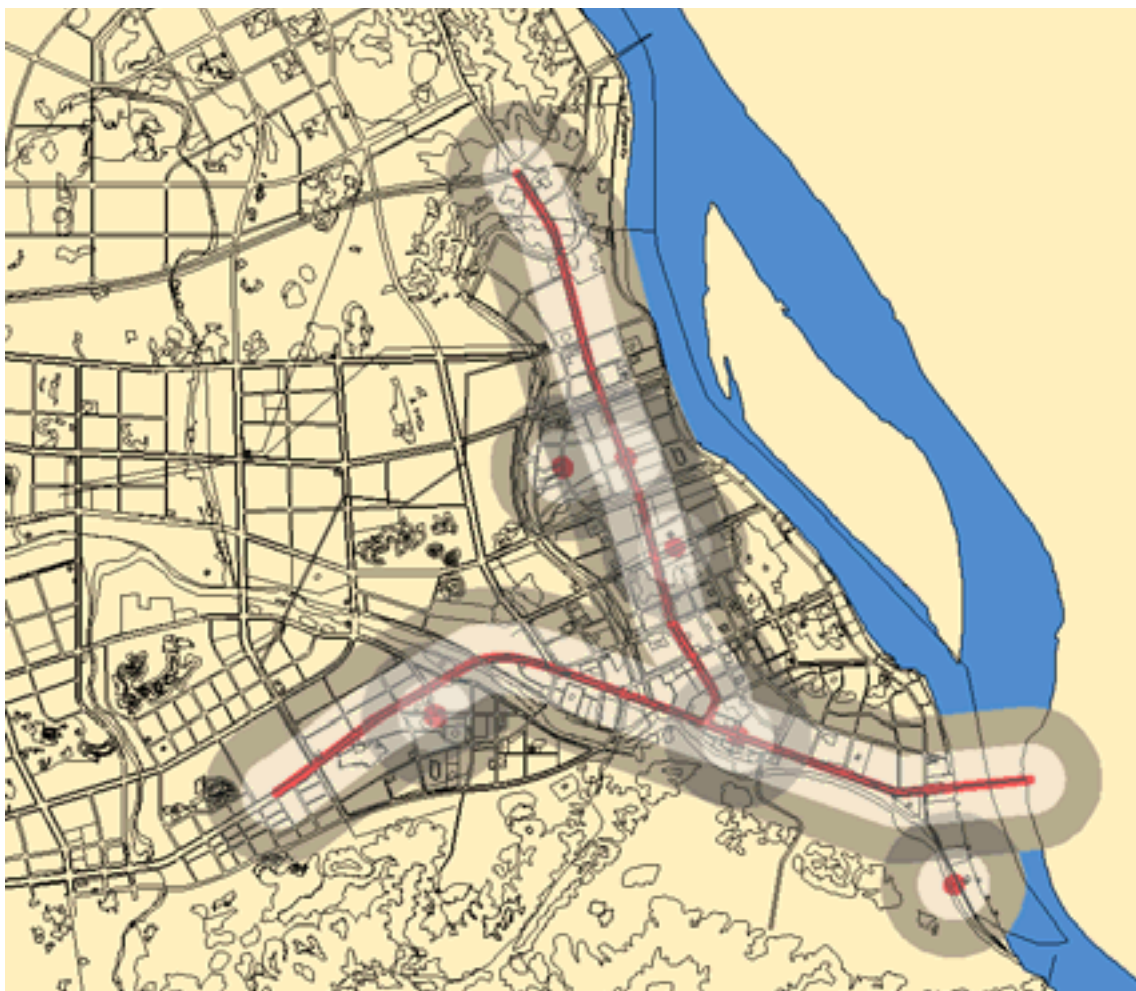
图 8: 现有土地利用



我们发现了多数就业地点、商场和其他非居住区紧挨在主干道路。缓冲区范围大概是在主干线2公里半径区域和城市节点1公里半径内。这有助于我们了解土地利用状况和街区的规模。我们发现一些街区有一公里长，有别于西方的街区结构。通过实地考察，我们发现当前高明的就业和其他活动主要围绕在城市节点附近。

We found most places of employment, shopping, and other non-residential destinations are close to the arterial roads. The buffer shows a 2 km radius around the arterial roads and 1 km radius around the civic nodes. This gives us both a good indication of land uses, as well as a better sense of block sizes. We realized some blocks appear to be 1 km long, quite different from block configurations of the West. Through field trips we found that currently, employment and activities are revolving around the civic nodes.

figure 9: Transportation Analysis 图9：交通分析



在高明规划



HYDROLOGY

水文状况

Water constitutes one of the most important resources for sustainable development in Gaoming. The richness, diversity, and history of water bodies provide enormous opportunities for Gaoming. However, the city's rapid urban development is endangering water quality and separating water from human activities. One of our major tasks is to seek a sustainable way to develop Gaoming, ensuring economic growth while protecting its water resource and promoting water economy.

水是高明可持续发展最重要的资源之一。水资源的丰富多样及其历史为高明提供了极大的机会。但是,城市的迅速发展正危及水质和水资源,将水从人类活动中分离出去。我们的主要任务之一就是为高明寻求一个可持续发展的模式,保证经济增长的同时也保护水源和促进水在发展中的作用。

figure 1: evolution of Gaoming

图 1：不断变化中的高明

Source: Marks, Robert, 1997. *Tigers, rice, silk, and silt: Environment and Economy in Late Imperial South China*. New York: Cambridge University Press.

历史背景

高明今天的江河、水道和鱼塘与过去是有所不同的。实际上一千年前,这个地方整个是在水之下。这里,如同珠江三角洲的大多数地方一样,建立在数个世纪的泥沙堆积之上;筑堤和水稻的种植将出海口变成了今天的珠江三角洲。在公元后的一千年里,当农民不断地将珠江以北的山地森林改造成农场,他们因此增加了河流承载的泥沙。当一些泥沙堆积在海岛附近,季雨冲积的泥沙也开始聚积在整个低部地区。在宋朝,大量的移民来到这里,也将北方的水稻种植带到了这个入海口地带。为了种植水稻而修建的堤堰也改变了这里的地理景观。

河堤体系和泥沙堆积形成了西江和我们今天看到的珠江三角洲。所示的是 996 年的西江河堤,随后

HISTORICAL CONTEXTS

Gaoming's rivers, canals and fish ponds did not always appear as we see them today. In fact, 1000 years ago, this site was entirely under water. The site, like most of the Pearl River Delta, was created after centuries of silt accumulation; diking and rice culture transformed an estuary into today's PRD. In the first millennium b.c.e., as farmers increasingly converted forests into farms in the hills north of the Pearl River, they increased the river's silt load. While some silt accumulated around islands, monsoonal rains washed the silt into rivers which overflowed and distributed it throughout the lowlands. Increasing settlement of the river valleys in the Song Dynasty brought northern rice paddy culture to the estuary. Dikes intended to create rice paddies transformed the landscape.

This system of levies and silt runoff created the West River and PRD as we know them today. Figure 1 shows that the location of the west river levy was established in 996, to be rebuilt a number of times in the centuries since.

More recently, the paddies have evolved into more lucrative fish ponds. Each evolution of land in Gaoming has taken elements from its past. Just as today's fish ponds, roads and development are shaped by the rice paddies that came before them, the next wave of development will be shaped by the canals, ponds, villages and river that we see today. This has made economic and environmental sense for hundreds of years. Now, as we re-design these fish ponds and lands for urban use, we must consider the natural elements which make the most economic and environmental sense for the centuries to follow.

THE DIVERSITY OF WATER FORMS

Gaoming has a diverse water system, including rivers, canals, fish ponds, wetlands, and swamps. These water bodies are distributed throughout Gaoming, have different shapes and sizes, and assume multiple ecological and economic functions.

的几个世纪里，这些河堤被不断地重建。

在不久的过去，许多稻田被改成了更加赚钱的鱼塘。高明的每一寸土地的转变都有着其历史因素。正如以前的农田影响了今天的鱼塘、道路和开发；我们今天所见到的江河，水道，池塘，和村庄将会影响着未来的发展。这些经济和环境因素影响了过去百年的发展。而我们今天在规划这些鱼塘和鱼池和土地利用的时候，我们也必须考虑到对未来的经济和环境的影响。

水形式的多样

高明有一个多样化的水系统，包括江河、运河、鱼塘、湿地和沼泽。这些水体分布在整个高明市中，有不同的形状和大小，并且承担多种生态和经济作用。



figure 2: River 图 2 : 江河



figure 3: Canal 图 3 : 水道



figure 4: Fish Pond 图 4 : 鱼塘



figure 5: Swamp 图 5 : 湿地

West River

The West River provides a huge amount of clean water, bolstering regional sustainable development. Water quality in the West River is the best of all rivers in the region, reaching Grade 2 in National Surface Water Standards. The annual flow of West River ranks second in China and is five times that of the North River and 10 times that of the East River. More than 40 million people rely on East River as a source of water, including the populations of Hongkong, Guangzhou, Shenzhen, and Huizhou. The government plans to transfer water from the West River to meet these areas' increasing need for water. Preserving water quality of the West River is not only important for Gaoming but also essential for the Pearl River Delta.

Rivers and Canals

15 rivers/canals run through Gaoming and connect it to the West River. Current and future urban centers of Gaoming are bounded by rivers - Xiuli River on the North and West, Cangjiang River on the South, and West River on the East.

Fish Ponds

Fish ponds are a unique characteristic of the Pearl River Delta. They feature the traditional sustainable agriculture practices, including a closed ecological cycle, no pollution discharged to the nature, and the minimization of foreign inputs. Fish ponds are declining and farmers are changing their practices due to economic growth and urban expansion.

Waterfront

Gaoming has plenty of waterfront and riverfront areas. And these waterfront and riverfront are diverse in scale, from the West River waterfront (hundreds of meters) to the Xiuli Riverfront (dozens of meters). They're also diverse in usage; waterfronts are part of urban centers, rural areas, and historical districts. Intimate waterfronts would attract more economic, recreational and cultural activities.

WATER TRANSPORTATION

The water network provides Gaoming with water transportation alternatives. Gaoming is connected by the West River to Hongkong, Guangzhou, Macau, and other cities. The inner river network, if connected, could bring tourists and residents to the city center and provide recreation and transportation.

西江

西江提供大量清洁的水源以支持当地的可持续发展。西河的水质在这个区域是最佳的,达到全国水质二级标准。西江水每年的流量在中国排列第二,是北江的五倍和东江的十倍。超过四千万人依赖东江作水源,包括香港、广州、深圳和惠州。这些城市计划从西江引水以应对水需求的增加。保护西江的水质不仅对于高明很重要,而且对整个珠江三角洲也至关重要。



figure 6: West River 图6: 西江

河流

15 条河流流经高明连接到西江。高明现在和未来的市区都被河流环绕,秀丽河在北部和西部,沧江在南部,西江在东部。



figure 7: waterfront 图7: 水滨

鱼塘

鱼塘是珠江三角洲的一个独特特征。它们是一个传统的生态农业模式,对周边的自然环境没有任何污染,外来输入资源需求少。鱼塘正随着经济发展和城市扩张在下降。

河滨

高明有大量的河滨和江滩。这些河滨江滩大小不同的,范围从沿西江边的几百米到沿秀丽河二三十米。这些地区的使用也不同,有城镇中心区、农村和历史街区等。怡人的江滩会吸引更多的经济,娱乐和文化活动。

水路运输

河流网络提供高明以水路运输机会。高明由西江连接到香港,广州、澳门和其它城市。这些内河网络如果连接起来,能够为游人和居民到市中心提供娱乐及交通服务。



figure 8: water transport and industry 图8: 水路运输和工业

CONSTRAINTS

Water Pollution

Rapid urban development exerts great pressures on water systems. Industrial and population growth increase water consumption and pollution discharge. Construction of pollution treatment facilities does not keep up with pollution growth. Increasing impervious areas decreases the ground's natural capacity to mitigate pollution and increases stormwater runoff. Eco-industries and eco-industrial parks have not been incorporated.

Segmentation of Water System

Many rivers/canals are segmented and obstructed by human activities or sedimentation. The floodgates cut the connection of rivers/canals to West River. The Xiuli River is interrupted by fish farm facilities and sedimentation. The segmentation of the water system decreases the ecological capacity (natural remediation and flood control), natural amenities, and recreational opportunities of the water resources.

The Decline of Water Diversity

Fish ponds and swamps in urban edges are being filled or covered for infrastructure and real estate development. The river beds and banks are paved and losing natural beauty.

Separation of Water System

Water is separated from human activities. Residents and tourists have limited opportunities to appreciate water, due to the flood control systems (levies and dikes), and lack of public access to waterfronts and trails along rivers.

制约

水污染

迅速发展的城市对水系统带来了巨大的压力。工业和人口的增长使得水消耗量和污水增加。污染治理设施的发展没能与污染增长同步。不可渗透区域的增加降低了自然界对污染的自理能力，并且增加了暴雨时期的峰时排水量。生态工业与生态工业园还没有被进一步规划安排。



figure 9: factories close to Gaoming Bridge in Gaoming



figure 10: Sedimentation and eutrophication

水系统的零碎

许多江河和水道被人类活动或沉积作用所分割和阻碍。水闸削减了江河 / 水道与西河的连接。秀丽河被渔塘设施和沉积作用所分割成碎块。水系统的分割减少了生态容量(自然治理和防洪)，水上风光和娱乐的机会。



figure 11: Lack of walkable environment

水多样化的减少

城市边缘的鱼塘和湿地因为基础设施和房地产开发建设被填埋。河床和河岸失去了往日的自然风光。

水系统的分离

水由人类活动中被分离开来。由于防洪系统的需要(阶梯和堤堰)和缺乏令公众接近江滩的小路，居民和游人欣赏水上自然风光的机会受到了限制



figure 12: Unaccessible waterfront in West River

在高明规划

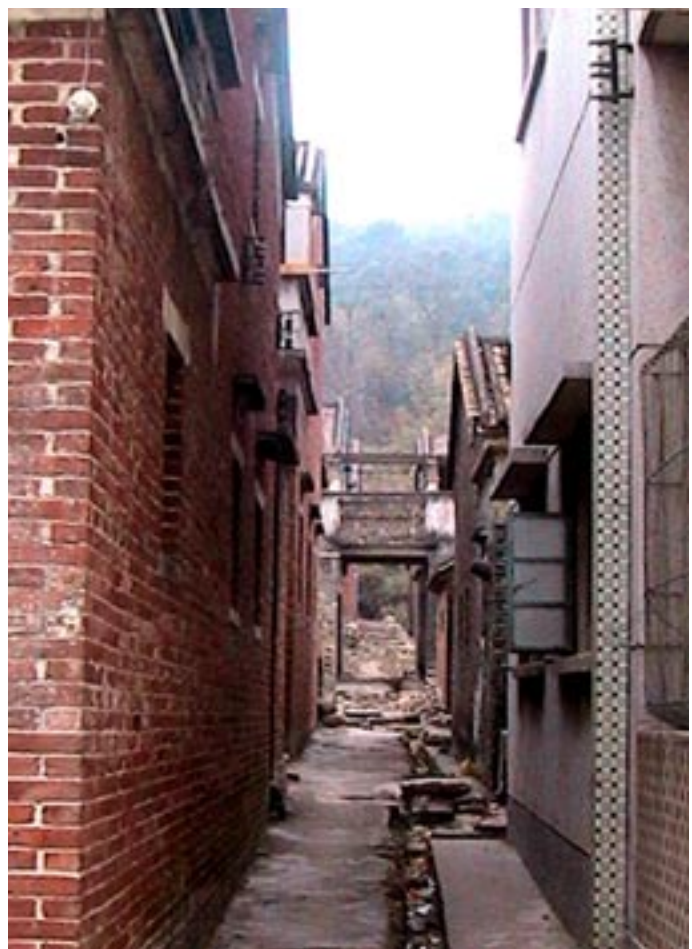


figure 1: Streets of Gaoming

STREETS

街道

STREET NETWORKS AND CONNECTIONS

Streets are the primary urban components of any city. As Jane Jacobs has pointed out, urbanism is the synthesis of the movement through various trades performed by humans. Streets act as the major career of people, and thus shape city forms. There are many theories of how people move through the cities. The controversial Kevin Lynch has argued that this movement and navigation are guided by the visual and cultural landmarks in the city. There is also a common assumption that key activities can be located relatively independently of any spatial pattern. Although layout plays an integral role in defining the edges of the neighborhoods, the urban mediums of accessibility (i.e. streets) are the most important tool in defining the urban form. The various historic examples of streets provide an intriguing model for corridors of future cities. The linear character of the street, with all possible urban punctuations (i.e. squares, plazas, open greens), have been responsible for diagramming the overall form of the City. They are intercepted by further circulation network systems to provide an intricate labyrinth of movement arteries and traffic flows. Though there are various physical aspects of the land, topography, and human intervention that determine the overall city structure, the study of the linear phenomena of streets demands exploration.

道路网络和连接

对于任何城市而言，道路网络都是决定城市的主要因素。Jane Jacobs指出城市化是由人类各种贸易活动往来集结而成的。街道作为人类生存活动的主要舞台，塑造了城市模式。现在有着许多理论研究人们如何在城市内移动。颇有争议的Kevin Lynch理论认为，人们的行动都是依据城市内的视觉和文化的标志物为指导的。也有一种普遍的假设，认为人们的主要活动地点根空间的形态没有太大的关系。尽管城市布局对划分社区边界有着重要的作用，城市交通载体(比如：街道)仍是定义城市形态的最重要工具。很多各具特色的历史街道例子为未来的城市道路模型提供了很生动的参考。街道的线性特征，以及城市的标志(如：广场、街心小广场、绿化带)一起勾勒出整个城市的形态。然而它们却被后来迷宫式的主干道和复杂的交通系统给分割开来。虽然有当地的地形特征和人们对土地的改造决定了城市的整体架构，街道的线性在塑造城市形态过程中的角色仍需要进一步研究。

在高明规划



figure 2: Bologna Italy



figure 3: Ahmedabad



figure 4: Philadelphia



figure 5: Savannah

Streets in traditional Chinese Cities hold a unique importance in the determination of city form. The 21st century has seen the haphazard growth of the cities imposing continuous pressures on the available resources. It is important to study the basic metabolism of the future linear city where one deals with the rapid growth in the transportation networks and their related urban pressures. In the future, city streets need to be designed to cater to a host of contemporary issues, whether they are related to macro level planning problems or micro level landuse patterns.

传统的中国城市街道作为城市的一个特征标志而保持着其独特的重要性。21世纪城市的随意扩张对有限的资源产生了持续的压力。我们需要重视研究未来带状城市的演变，以及研究城市如何可以处理交通网络的快速发展和相关的城市发展压力之间的问题，未来的城市街道设计需要适应现代的各种需要，不管是宏观的规划问题还是微观的土地利用问题。



figure 6: Street character and heirarchy

城市所规划的宏观街道网络应基于许多因素，比如地势、人口、保持邻里间合适的步行距离等。不同的街道的方形布局使得在出行方式路线选择和建筑布局上有一定的变化。它在相当程度上也决定了城市的未来发展格局。

例如，街道的传统辐射状模式在中央形成了独特的节点，并且区域的周边也可以向外扩张。棋盘格结构，如同它被许多美国城市采纳一样，有利于简易的交通路径和高效的基础设施。而地方的地势和其它自然特点在街道设计中也是不可忽视的。高明是那些自然特征较多的城市之一，比如山、河流、池塘，森林等。在街道设计时，这些因素都要考虑到。尽管每个城市的街道特征不同，但我们值得去了解一下与高明类似的城市的各种不同形态。以下的各幅图显示了其他城市街区规划样式，为我们提供了机会去了解城市形态和街道的特色。

Macro level of street networks for the designed cities develop on the basis of many issues like topography, population, and comfortable walking distances within neighborhoods. Different street grids allow variance in the movement patterns and the basic civic structure of the city. To a certain extent, it also decides the future growth patterns of the city.

For example, the radial pattern of the streets creates district nodes at the center, allowing outward increases in the peripheral boundaries. The grid system as it exists in many American cities favors easy traffic movements and efficient infrastructure. Topography and other natural features on the site also play an integral role in the street layout. Gaoming is one of the sites that is defined by a plethora of natural features like mountains, river, canals, water ponds, and forests, which need to be addressed while the street pattern is laid out. Although the street characteristics vary from city to city, it is worth looking at how the various patterns of the known cities relate to the site in focus. Figures 2-5 show the superimposed layers of street patterns from other cities which provide an opportunity to understand the scale of the urban fabric.



figure 7: Natural canals, Section
图 7：自然水道，截面



figure 8: Natural canal integrated with streets, section
图 8：自然水道与街道整合，截面

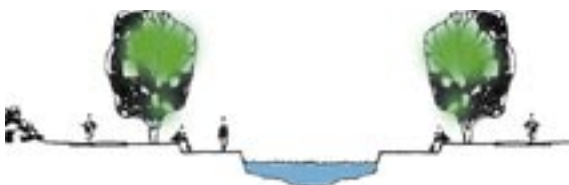


figure 9: Natural canals integrated with streets
图 9：自然水道与街道整合



figure 10: Natural canals and open space, section
图 10：自然水道与开放空间，截面

在高明规划

figure 11: Delhi region with preexisting villages

figure 12: Delhi region with preexisting water channels

figure 13: Delhi - The evolution of seven cities (source: A. Singh)

figure 14: Lutyen's plan with existing villages and ponds

figure 15: Lutyens's plan highlighting view axis

CASE STUDY ONE: DELHI, INDIA

Water is the prime determinant of sustainability for any region. Cities have evolved and died on the basis of water availability. Delhi is yet another city which sprung up along the river Yamuna, and continues to thrive with the population of 13 million.

Initially, several villages marked their footprints along the river, which created a triangular peninsula with a river on the east and Aravalli ridge on the west. The triangular plane had a well-established water network of fresh water canals and *Bawalis* (water ponds) which attracted various settlements to grow along them. Finally, the Lutyens plan in 1947 projected another idea of city planning, which in many ways cared for the existing nature of water drainage and natural topography of the region.

The new layers of streets in the Lutyens's plan incorporated ancient villages and forts which later became the focus of the city's beautiful resources. The new boulevards connected new and old city centers creating interesting junctions and public spaces.

专题研究之一：印度德里

水是任何一个区域持续发展的决定因素。城市发展和消亡往往取决于水资源的供应。印度的德里是沿 Yamuna 河而发展的一个城市，它持续繁荣发展，现有人口 1300 万。

最初，在位于被东部河流冲积而成的三角形半岛和 Aravalli 以西，有几个小村庄。清澈的河网和 Bawalis 湖吸引着人们在这个三角形地带定居。1947 年的 Lutyens 计划提出了另一种城市规划思想，强调注意现存的自然排水体系和当地地形的重要性。

在 Lutyens 所设计的新型街道规划合并了的古老村庄和城堡，成来为了城市美丽风景的焦点所在。新的大道连接了新城跟旧市中心区，创造了有趣的连接点和公共空间。



figure 16: Lutyens's grid with water channels, Source-Source: The New Delhi Plan, Danny Cherian

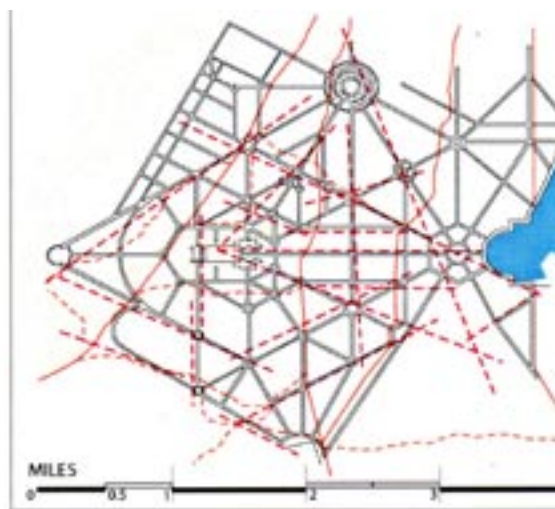


figure 17: Lutyens's plan, Source-The New Delhi Plan, Danny Cherian



figure 21: Character Streets, Hong Kong Mid levels

CASE STUDY 2 : CHARACTER STREETS

There are numerous examples of cities in China where we see how the street networking system is well knit with the pre-existing water features and canals. ZhouZhuang is one of the Chinese cities which shows a remarkable example of how water can become the theme for the entire city in generating the character streets. The macro level of street pattern superimposed with the natural waterways and ponds exhibits how planning can guide and shape the new landuse pattern. Pollution becomes the major concern in these cities where water conflicts with the modern infrastructural commodities. Therefore, water needs to be separately treated although it might become a common theme for design.



figure 19: Character Streets, ZhouZhuang



figure 20: Character Streets, ZhouZhuang



figure 22: Street Section, ZhouZhuang

figure 23: Street Section, ZhouZhuang

专题研究之二：特色街道

在很多我们所看到的中国城市例子里，街道系统和现存的河流水系常常连接在一起的。周庄是中国城市中的一个经典例子：水是如何成为整个城市的主题，并帮助塑造有特色的街道。宏观的城市街道布局融合在自然水路和池塘之中，显示了一个有效的规划是如何可以引导新的土地利用形式。然而水污染往往成为水系统和现代设施发展间的主要摩擦。所以，尽管水可能只是设计的一个共同主题，它仍需要进行单独研究。

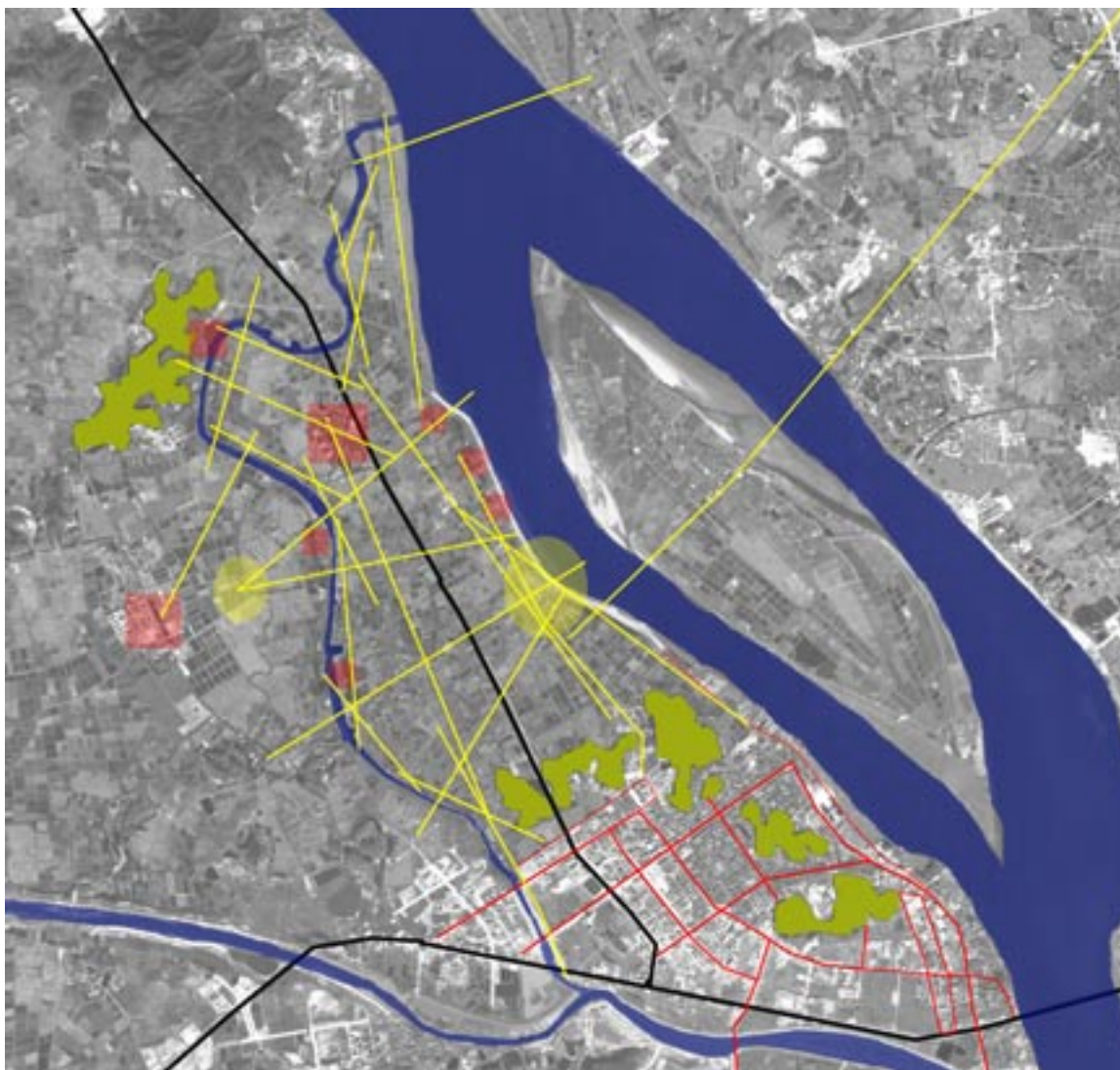


figure 24: Gaoming and Anticipated street patterns

The case studies teach us how we can integrate the natural feature of the site in the designing of street pattern. Gaoming is a city of water, mountains, and green forests. The new city needs to deal with the existing natural features (i.e. fish ponds, mountains, river edge, forests) so the new pattern of the streets can allow for efficient natural drainage and highlight the natural hidden beauties of the delta.

The newly designed streets and boulevards identify possible zones for city landmarks and integrate the existing villages, which have the potential for meaningful preservation.

专题研究告诉我们如何将自然特点与街道设计结合在一起。高明是一个具有山有水的绿色森林城市。这个新兴城市在设计新的道路网络的时候需要考虑到现有的自然特点(例如: 鱼池、山、河岸、森林)街道, 使新的道路系统可以高效自然排水及突出在三角洲暗藏的秀丽景色。

新近设计的街道和林荫大道可帮助确定城市标志区域的界限, 以及帮助融合有保存价值的村庄。

在高明规划



figure 1: Housing in Gaoming
图 1：在高明的住宅

HOUSING

住房

With Gaoming growing at an unprecedented pace, housing construction will constitute a majority of new urban development. The focus of this analysis is to understand the roots of current regional housing trends, as well as look for culturally driven design innovations. Issues related to climate, economics, as well as cultural predispositions all shape the image and typology of local Gaoming housing. The investigation of smaller scaled elements, such as apartment layouts, shows how individual environmental decisions shape macro-scaled urban forms. By crossing various levels of scale, planners and designers can better understand the consequences of living units. Another perspective we investigated was the impact of densities on the region. With 250,000 people moving into the area, we studied various forms and interpretations of housing densities. Currently, the new developments are following two notable patterns: the contextual high-density apartment buildings and mid-density detached gated communities. These models are leaving a significant impact on urban form. By looking at other strategies and projecting multiple densities, we hope to create more diversity in form and public space.

HOUSING TYPOLOGIES

Urban housing built in the middle to late twentieth-century is rooted in Soviet-influenced socialist influences (Rowe, p283). The forms are characterized by repetitive linear housing blocks, divided by nondescript streets. The housing blocks were roughly five to six stories high with a series of floor-through apartments. The residential streets below were appropriated by for various activities, including laundry and parking. These housing patterns, coupled with long-standing Chinese traditions and superstitions, continue to develop in the more market-driven housing projects. Through a series of culturally- and economically-based decisions, one can trace the development of this typology.

随着高明快速的发展,住宅建设将成为新城市发展的主脉。本报告的分析集中于了解当前地方住房趋势和寻找文化驾驭下的设计创新。气候、经济和文化因素都影响了高明当地的房屋外表和类型。一些对住宅细部的研究,譬如公寓的布局,帮助解释个人环境决策如何可以影响到大型的城市形态。通过融合不同的大小尺度,规划师和设计师能更好了解居住空间。另外一点我们研究的是区域人口密度的影响。因为将有近250,000人迁入这个区域,我们研究不同的模式和各种住房密度形态。有两种新的发展模式值得注意,高密度公寓楼和独立的封闭性中密度社区。这些模式将会对城市形态带来重大的影响。通过看到其他多样化密度的方案,我们希望该区有更多化的城市形态和公共空间。

住房形态

修建于二十世纪中晚期的城市屋型源于苏联社会主义的影响(Rowe, p283)。此模式具有重复的狭长街区特征,并由单一的街道划分。街区房型是五到六层的公寓楼房。走道由居民占用,作日常生活或堆放东西用。这些住房样式结合着长期的中国传统和迷信,朝着市场主导的住房形态发展。受着一系列文化和经济因素的影响,住房形态在不断转变。

在高明规划

A dominant housing typology in Gaoming is the “modular block” building, characterized by a repeating apartment module to create a “housing block” (see figure 4). The physical requirements for cross-ventilation translate through the urban-scale development of the Chinese housing and remain a central idea in the form of the city. The floor-through apartments allow breezes to ventilate and cool the apartment during the hot and humid sub-tropical months. A single access stair tower, accessible by two apartments per floor, is a typical plan configuration. This planning organization has a significant presence in the skyline of Gaoming.

The limited access from individual stair towers in these linear projects hampers the efficiency of an elevator. In an ideal situation, an elevator would be required at every common lobby and accessed by each apartment. However, a project with multiple stair towers with limited access would need several elevators for complete accessibility. As a result, many projects are built without mechanized vertical circulation. At the same time the maximum number of stories for a building without an elevator is limited to seven floors. This leads to a single, consistent building height which creates a uniform image of the city.

One typological variation is the “point block” access tower. These towers are often radial in plan and provide at least two exposures for sunlight and ventilation. The projects often incorporate an elevator and are taller than the linear buildings. During our field research, we observed many of the projects applying a combination of the linear and single point access buildings to compose the overall housing development. The projects often provide a variety of open space for their residents with gardens and other manicured recreation spaces.

In addition to ventilation requirements, solar orientation plays an integral role in the layout of the urban fabric. Defined in traditional Chinese planning by Fung-Sui geomancers, the cardinal orientation allows for passive solar heating in the winter and shading in the summer. By locating many of the stairs and vertical core elements on the North side of building, the main living spaces can be South-facing side. Combined with the repetitive slab buildings, Gaoming maintains a rigorous rectilinear urban pattern.

Source:

Junhua, Lu, Peter G. Rowe, Zhang Jie ed. *Modern Urban Housing in China 1840-2000*. New York: Prestel, 2001.
Chen, Ke. *Housing in the Special Economic Zones: A Preliminary Study of Housing Provision and Conditions in Shenzhen*. Hong Kong: Department of Architecture, The Chinese University of Hong Kong, 1997.



figure 2: Older Housing in Gaoming
图 2：相对旧些的住宅

figure 3: Plan of new development in Gaoming
图 3：在高明新型住宅的平面图

figure 4: New development in Gaoming
图 4：在高明的新住宅开发



figure 5: Residential tower in Gaoming



figure 6: Gaoming skyline



figure 7: Street-level retail at the base of development

高明的主要房型是有标准街区的建筑,具有重复的房型街区特征。中国城市房屋的发展标准保留着通风需求这一中心要素。在炎热潮湿的月份,楼道可以通风使公寓较为凉爽。一门两户的楼房是这种典型的结构。这种结构是高明的典型住宅模式。

这种直线型设计方案阻碍了电梯的有效利用。在最理想情况下,电梯应在大厅中心服务于每层楼的多个用户。但是,直线型设计方案需要多部电梯才可以服务所有住户,结果许多楼房没有配置电梯。楼层因为没有电梯而最高层限制在七层;一致的楼层高度造成了城市单一的形象。

一种有别于直线型设计的房型是“塔式”楼房。这种楼型楼梯在中间,成放射性对着住户,每一住户至少有两边受阳光照射和通风。这样的项目可共同使用一个电梯并且比直线型楼房的楼层高。经过我们实地研究,我们观察到许多项目都是合并了直线型和塔式楼房的形式来完善整个小区的发展。这些项目经常提供花园和其他娱乐场所给当地户。

除通风要求之外,阳光朝向在城市设计中也是一个缺一不可的理念。由于中国传统的风水观念,朝向主要考虑到房屋在冬天受到阳光照射,在夏天能避荫。通过将楼梯和一些电梯定位于楼层的北部,主要的生活区域在房屋南部。这些重复性的混凝土建筑物组合使高明保持着严谨的直线型都市样式。

在高明规划

CHINESE HOUSING TYPOLOGY

Source: Housing in the Special Economic Zones:
A Preliminary Study of Housing Provision and Conditions in Shenzhen,
Department of Architecture: The Chinese University of Hong Kong, 1997

TYPICAL UNIT

SITE PLAN

Nangshui Estate: 518 p/ha
View of Typical Module

Yuanling Estate: 650 p/ha
View of Typical Module

UNIT TO BLOCK MORPHOLOGY

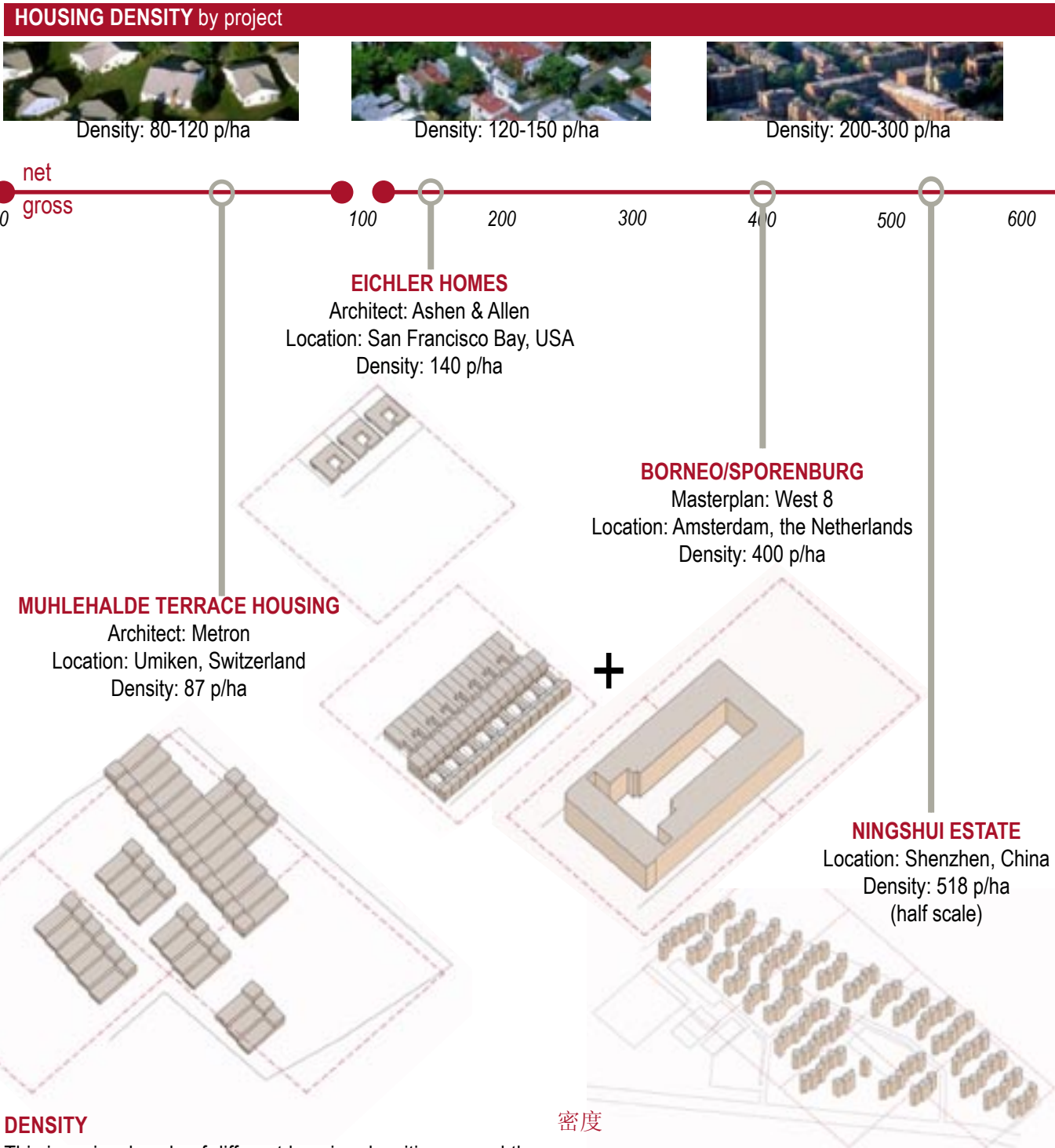
ENVIRONMENTAL

VENTILATION

SOLAR ORIENTATION

VENTILATION

SOLAR ORIENTATION

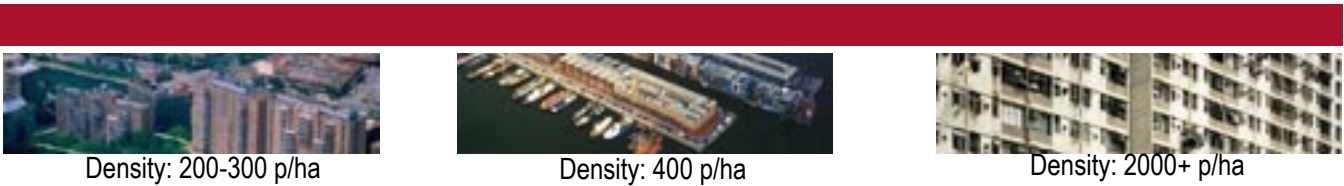


DENSITY

This is a visual scale of different housing densities around the world. The projects were selected not only to demonstrate the range of the density, but to address specific issues of ventilation, solar orientation, communal open space, and vertical circulation. The numbers included in this table are based on the number of people per hectare by the project boundary. The anticipated growth of Gaoming would require a net density of 861 people per hectare.

密度

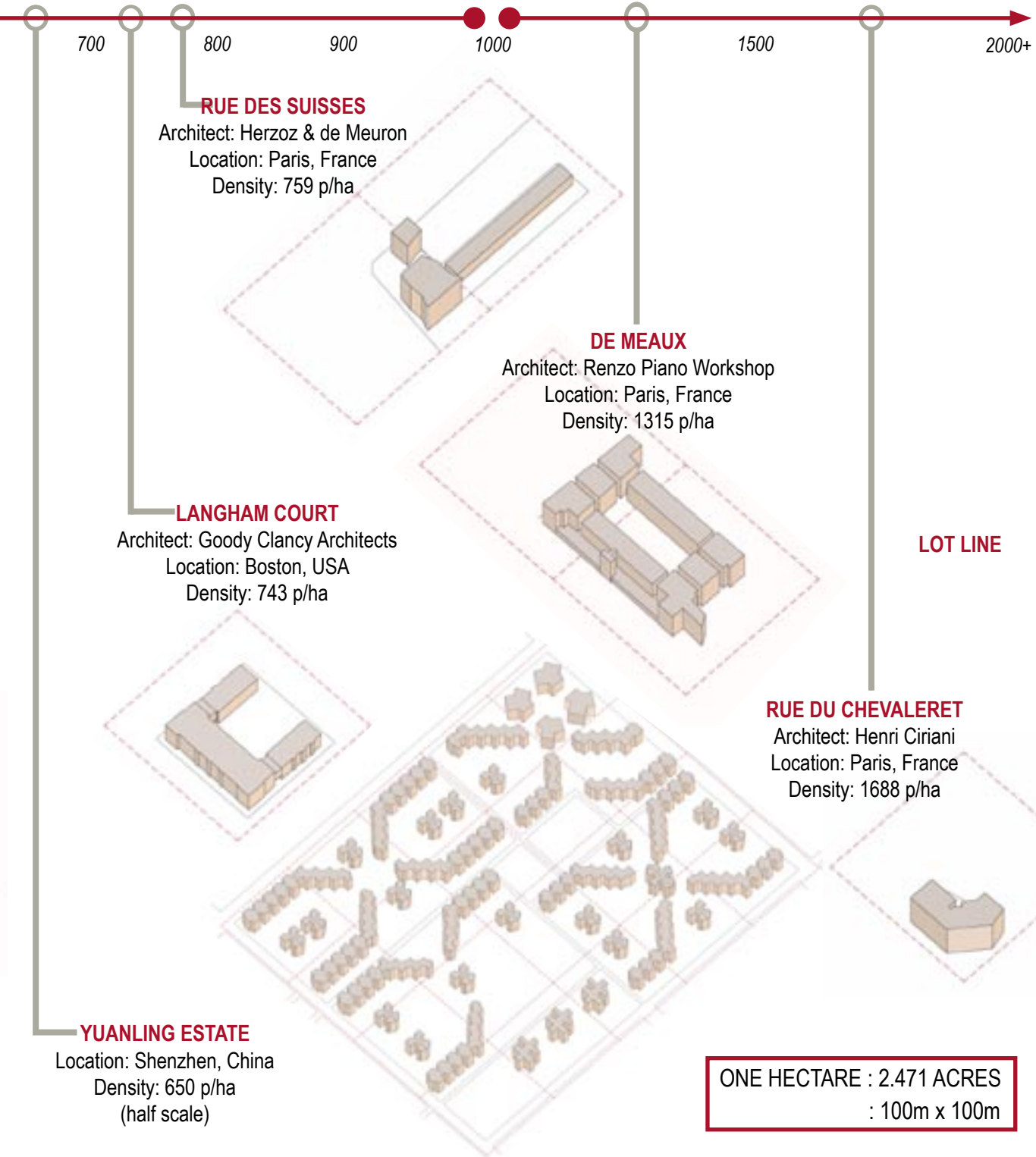
此图所示的世界不同地方的房屋密度比较。这是一个全世界不同密度的形象比例。所选取的例子不单单是着重于它们的密度，也因为它们对通风、房屋朝向、公共开放空间和垂直运输等问题的解决方案。这个表里的数字基于每公顷的人口数。高明的人口预测将会达到每公顷861人的密度。



Density: 200-300 p/ha

Density: 400 p/ha

Density: 2000+ p/ha



在高明规划

HOUSING CASE STUDIES

FREE PARCELS: BORNEO 7 AMSTERDAM, THE NETHERLANDS

44 DWELLINGS: BORNEO 8 AMSTERDAM, THE NETHERLANDS

LANGHAM COURT BOSTON, USA

EICHLER HOMES CALIFORNIA, USA

The 23-hectare Borneo/Sporenburg urban development on the outskirts of Amsterdam maintains a density of 400 people/hectare. The typical low-rise, high density units are 16m deep, 9.5m high along the street. They are organized around an internal light-well, which provides both light and air in the compact planning. The development also maintains a variety of project-based densities, ranging from less dense “townhomes” to the more typical apartment buildings.

Also located in Borneo/Sporenburg, this project utilizes a variety of apartment layouts to promote mixed family units. Again organized around a light well, the apartments let in light and breezes throughout the day. The street facade maintains a repetitious, but intimately scaled rhythm. These units utilize adjacent street parking.

Langham Court is a mixed-income, 84-unit housing complex adjacent to Downtown Boston. Its relationship to the existing street edges blends into the surrounding historic district. Historic elements are incorporated into the design to build upon the existing neighborhood character.

The interior courtyard allows sunlight into the interior units and hosts a variety of community driven events. Underground parking is accessed through ramps at one end of the courtyard.

The Eichler Homes became popular in the 1950s and 1960s in California for taking advantage of the mild climate of the region. The houses would feature a central outdoor atrium which is both an entrance garden and an organizer of the interior space (most rooms face the courtyard). The garage was typically pulled into the house structure, so to be less prominent from the street view. The backyard was extensively landscaped to optimize its use.

在高明规划

HOUSING CASE STUDIES

MÜHLEHALDE TERRACE HOUSING UMIKEN, SWITZERLAND

RUE DU CHEVALERET PARIS, FRANCE

DE MEAUX PARIS, FRANCE

RUE DES SUISSSES PARIS, FRANCE

The parallel rows of 3 bedroom, L-shaped patio houses are organized on each side of a central stair. A funicular tram connects a public entrance and parking at the bottom of the hill with the dwellings at the top of the hill. The inclined elevator stops at every 3rd level where there is a lobby in a two level structure. This housing typology falls outside existing models for public or social housing; this is expensive in situ concrete construction suitable for middle income residents.

The main characteristic of this 9-story building that completes the chamfered block of a block is the vertical circulation. The elevators stop every two floors and serve a row of flat units and a row of duplexes that feature a double height ceiling space at the living room. The ground floor is used for retail stores along the corner. The project also counts with two floors of underground garage.

This courtyard group of 220 apartments is an infill project responsive to the existing context. The height and alignment of the neighboring buildings are respected and the new project is divided into discreet elements that refer the original parcelization of the block. The creation of an inner landscaped garden court is derived from the typical block typology-solid along the street and open space on the interior of the block.

The project focuses on rebuilding the typical perimeter blocks of Paris with the strategy to put the smaller flats in the infill buildings and organize the family dwellings together in the garden area. The infill buildings are built to the neighborhood height of 7 floors, while the interior slab is only 3 floors in height. The long narrow block is designed as a free-standing element in a long narrow garden and is protected with curving rolling wooden blinds that are in sharp contrast to the folding metal blinds that cover the facades of the street buildings.

在高明规划



figure 1: a village in the Gaoming building area
图 1：在高明地区的一个村庄

VILLAGES

村庄

Given their location near the west river, many of the villages in Gaoming represent a tradition of agriculture and water culture which is quickly disappearing with the industrialization and densification of the region. Rather than develop over the older architecture in the city in the name of modernization, it may be possible to use the village structures as a way of accentuating and adding value to the city by adding a tasteful historical element to new developments.

While the agricultural underpinnings of many of the existing villages may not be financially sustainable with rising land prices and the opportunity cost of new development, the structures and more personal scale of the villages can be incorporated into the design of open space, retail areas, parks, or even residential areas. There exist many cases where small urban villages have been successful in otherwise modern high density environments around the world, some of which will be highlighted in this section.

But while historical value is good for development, this study makes a preliminary recommendation to preserve only buildings which show potential value for future developments. By no means should preservation be the goal; instead, preservation should be pursued if it is in line with the goals of development.

位于西江河畔的许多高明村庄都拥有传统的农业和水乡文化。但是许多这些文化伴随着工业化与高密度的发展而快速消失。与其以现代化之名推掉旧建筑重建，可以考虑通过对村庄的适当保护，并在新的发展中增加有意义的历史元素来建立特有的城市品位。

随着不断增长的土地价格和机会成本，现在有不少村庄都不可以以农业作为经济支撑。村内和个人的建筑物可以融合到村庄的再发展设计中。例如跟开放空间系统、商业、公园、甚至住宅联系在一起。在世界各地都有在新发展的高密度地区被保留下来的村庄。本章将会介绍其中的几个例子。

虽然村庄的历史价值对发展有利，本章的初步建议只是提出保留对将来发展有潜在价值的村庄建筑。单纯的保护并不是最终的目标；所推行的应该是跟发展目标一致的村庄保护。



figure 2: Satellite Photo with potential village redevelopment sites marked in red
图 2：高明地区卫星图（红色部分为有潜力成为受保护村庄地区）

SITE ANALYSIS

The majority of village sites in Gaoming are dependent on water as a source of livelihood. There are two main types of villages here on the site. The first kind of village is surrounded by agriculture or open space. The second kind of village serves as a buffer between the city and agricultural land. Continued urban expansion threatens the existence of villages on the fringe, which currently occupy prime development sites; but, loss of fishponds, small streams, or access to the river will threaten the existence of all the villages. The satellite image above indicates the current placement of the villages in regards to the city.

区域分析

大多数的高明村庄都以水为生。这里的村庄主要有两种类型：第一类村庄被农田或开放空间环绕；第二类村庄位于城市和农田之间，起到缓冲作用。持续的都市膨胀对周边村庄的生存带来了威胁。很多村庄都成为目前的主要开发对象。而鱼塘、河道和河流出口的进一步减少也会威胁所有其他村庄的生存。以上的卫星图象表明城市和当前村庄的相对位置。

FUTURE PLANNED CONTEXT

As indicated by the future plan for the city, many of the villages will be replaced by urban areas while others will be integrated with green open space, or surrounded by the urban development but not yet redeveloped. The villages will provide a stark and historical contrast to the new industrialization of the area and, where feasible, can provide a physical amenity to the city if managed properly. The purpose of this report is to assess the potential ways to reprogram select villages in order to maximize their value for the future design of Gaoming.

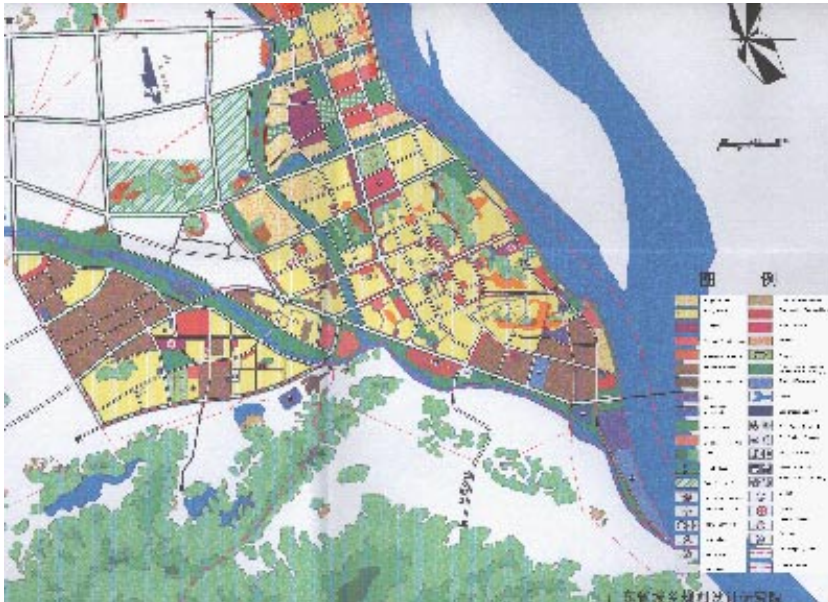


figure 3: Map of potential future redevelopment plan and village context
图 3：未来在发展规划和村庄背景

LIMITATIONS OF REPROGRAMMING

One of the key problems facing village preservation is the small size and density of villages. Because of their low density and the high cost of land in the city, they would be too expensive to function as housing. Similarly, Gaoming, as an industrial city, has very little outside tourism, and the villages have limited marketability as historic sites. Without tourism and housing options, there are limited roles villages can serve for Gaoming. Given these current constraints, the following case studies try to highlight adaptive reuse options available for village preservation in the region. These are:

- Themed Retail
- Local Cultural Attraction
- Educational

未来规划背景

依照城市的未来规划，许多村庄将由市区取代。而其他地区也将由融合到绿色开放空间中，或围绕在城市周围而不再开发。如果管理适当，这些村庄可以提供宜人的自然环境，为新的工业带提供一个直接的历史对比。这个报告的目的是评估部分村庄再发展的潜力以达到他们的最大价值。

重新规划的局限

村庄保存所面对的一个关键问题的是村庄的小面积和密度。由于它们在城市中的低密度和土地的高价值，它们作为住宅区将会太昂贵。高明是一个工业比重较重而外来旅游相对小城市，这些村庄作为历史古迹的市场价值有限，很难吸引外来游客。因为没有旅游业的支持也转化为现代城市住宅也困难，所以这些村庄对高明的价值也有限。考虑到这些当前的局限，以下案例研究设法突出这个区域可以借鉴的村庄保护的措施，包括：主题零售业，地方文化吸引和教育使用。

CASE STUDY 1: KAMPONG AYER, BENGAR SERI BEGAWAN, BRUNEI DARUSSALAM

Kampong Ayer, which means water village in Malay, is a village located in the middle of the river on stilts, next to the capital of Brunei, Bandar Seri Begawan. Brunei has a water culture similar to Guangdong province, and the Kampong Ayer has existed in more or less its current form since 500 AD. Preservation of the villages on the river have made them immune to development pressures on land, while also retaining their traditional appeal for visitors from the city and abroad. The government over the years has provided electricity, services, and schools on stilts for the villagers in order to preserve the communities. They remain one of the largest tourist attractions for the country today.

While this option may not be feasible for the much deeper and faster flowing West River, there exist individual groups of buildings within the city bounds which are similarly positioned above fish ponds and other water bodies which demonstrate potential applications for Gaoming.

CASE STUDY 2: XINTIANDI, SHANGHAI, CHINA

Xintiandi is a retail and entertainment haven in downtown Shanghai which incorporates the original Shikumen architecture of Shanghai at the beginning of the 20th century. Not all of the original Shikumen housing was preserved; rather, the developers of Xintiandi chose a small area of retail to develop at a lower density than the surrounding built down town, and incorporated the older architecture and scale into the new design. The area encompasses 2 blocks of housing. While this is a small fraction of the original housing stock, it is enough to create a strong signature for the area.

The preservation and redevelopment of the old housing, at \$58 million USD, is very expensive, but the potential returns on investment are also high, with on site revenue of \$8.7 million USD per year, not including economic gains to the surrounding retail area.

figure 4: Brunei Kampong Ayer besides the capital city Bengar Seri Begawan supplies 10% of the nation's housingstock

图4：首府Bengar Seri Begawan旁 Brunei Kampong Ayer为马来西亚提供了十分之一的住宅。

figure 5: Xintiandi and surrounding density

图5：新天地和周边的密度



figure 6: commercial preservation of village typology in Gaoming
图 6：村庄建筑类型在高明被商业建筑保存下来



figure 7: Xintiandi Shikumen house converted into a Starbucks, adjacent to newer development
图 7：新天地的石库门被改作星巴克，而后面的楼房为更新的发展。



figure 8: Traditional low end architecture converted into high end modern establishments
图 8：传统的低档建筑被转变被再发展成为高档现代建筑

专题研究之一：KAMPONG AYER

Kampong Ayer在马来亚语里指的是水村，位于在婆罗州的首府Brunei, Bendar Seri Begawan。村庄的建筑是以支架支撑建在河上，。婆罗州的水文化与广东省相似，并且Kampong Ayer,从公元500年开始就在相当程度发展为我们今天所见到的形态。对Kampong Ayer的保存使它免受来自于土地发展的压力，同时也吸引了其他城市和国外访客来观光。政府多年来为保存这个在支架上的社区此村庄，提供了电、教育和其他应有的服务。Kampong Ayer已经成为当地最多人观光的景点。

虽然这个发展选择可能不适应又深流水又快的西江,但在高明地区有一些建筑也像Kampong Ayer的建筑一样，只是不过是被支撑在鱼塘之上，因而可以考虑相仿的保护措施。

**CASE STUDY 3:
SINGAPORE CHINA TOWN HISTORIC DISTRICT**

In 1997, Singapore declared the China Town area a historic district. Like Xintiandi, many traditional buildings and shop areas were oriented for retail, thus creating a small, low density pedestrian-oriented market in the middle of a high density downtown. The government took a more hands-on approach in the redevelopment of this historic area by augmenting the existing features with a more tourist-friendly approach. The city installed ornamental lamps and light posts to demarcate areas of the historic themed zones, as well as aesthetically inappropriate amusements such as an 'historical' roller coaster and an over abundance of souvenir shops.

Unlike Xintiandi, the redevelopment of Singapore was both a social and economic disappointment, one to which the government eventually admitted failure. The lesson learned here was that historic preservation and redevelopment, when done in a way which is not sensitive to the market preferences, may be worse than no active preservation effort.



figure 9: Traditional Straights Chinese housing in Singapore China Town after redevelopment



figure 11: Themed light fixtures and lamps
图 1 1：主题灯具和灯笼

**案例研究三：
新加坡中国城的历史街区**

1997年，新加坡宣布中国城是一个历史街区。同新天地一样，很多传统的建筑和店铺是作为商业用途的，因而形成了在高密度的市中心的一个低密度的适合步行的市场。政府过多地参与了旧城改造：从旅游的考虑增加了已有的特色；在历史主题区安装了装饰灯和柱子；并且不合时宜的安装了一些不符合美观效果的娱乐设施：比如“历史性的”过山车，同时纪念品商店也过多

与新天地不同，新加坡的旧城改造在经济和社会效益上都是令人失望的。政府最后也不得不宣布是失败的。这里的教训是历史街区的保护和重建，当所采取的方式对市场的偏好不敏感时，可能还不如不采取任何行动。



figure 10: Straights Architecture before redevelopment
图 1 0：在再发展前的建筑

WATERFRONT 水滨

- Public Education On Pollution Source Control
污染源控制的公共教育
- Guidelines
指导原则
- Forms Of Development
发展模式
- Possibilities For Gaoming
高明的机遇

在精明规划

OPEN SPACE GUIDELINES

- Provide public access and open space to and along the waterfront
- Protect natural ecology, vegetation, and aquatic habitat
- Provide shoreline treatment to prevent erosion, protect water quality and enhance public access appropriate to community and environmental needs.

RECREATIONAL PROGRAMMING GUIDELINES

- Facilitate water-based recreation - such as fishing, sailing, kayaking, canoeing and boating, swimming, and nature appreciation - that is consistent with local culture, site conditions and the protection and enhancement of natural resources.

figure 1: Battle Creek Michigan: Social Space at the water's edge.

图1: 美国密歇根州Battle溪: 水岸的社交空间

figure 2: Battle Creek Michigan: Social Space at the water's edge.

图2: 美国密歇根州Battle河溪: 水岸的社交空间

figure 3: Queens, NY. Social Space at the water's edge.

图3: 纽约皇后区, 水岸的公共空间

figure 4: Queens, NY. Social Space at the water's edge.

图4: 纽约皇后区, 水岸的公共空间

开放空间指导原则

- 提供通向水岸和水岸两侧的公共道路和开放空间
- 保护自然生态，植被和水环境
- 采取河岸治理以防止侵蚀，保护水质，增加河岸对公众的开放以适应社区和环境的需要

娱乐休闲规划指导原则

发展水上休闲：垂钓、帆船、皮筏艇、独木舟、游艇、游泳以及自然风光欣赏，与当地的文化、自然条件以及保护和发展自然资源相结合。

figure 5: Water production activities in China.

图5：水上生产（捕鱼）

figure 7: Chinese Public Event: Dragon Boat Race

图7：中国传统活动：赛龙舟

figure 6: Water transportation in China.

图6：水上交通

figure 8: Suzhou Water Culture Fest

图8：苏州水文化节

在高明规划

ARCHITECTURE/URBAN DESIGN GUIDELINES

- Promote consistency and continuity of new development with adjoining and/or surrounding neighborhoods, keeping with the area's height, scale, and density.
- Protect views to, from, and along waterfronts.
- Link waterfront areas with parks, nature preserves, historic and cultural sites, commercial main streets and adjoining communities.

figure 9: Oswego, NY: Waterfront regeneration.
图9: 纽约州奥斯威戈: 水滨重建

COMMERCIAL PROGRAMMING GUIDELINES

- Relocate non water-dependent land uses, such as industrial facilities, bulk storage, public works and parking, away from the water's edge.
- Promote a mix of uses to help revitalize existing communities and foster active, diversified and sustainable waterfront development.
- Preserve, upgrade, expand, and adapt for re-use an appropriate stock of existing residential commercial buildings.

POLLUTION CONTROL GUIDELINES

- Prevent non-point source pollution, particularly storm water runoff.
- Use strategies to intercept water contamination

figure 10: Toronto, Canada: Music Education Waterfront Park.

图10: 加拿大多伦多: 水滨公园中的音乐教育

figure 11: Richmond, VA: Canal Walk Project.
图11: 弗吉尼亚里士满: 河道散步径项目

建筑/城市设计指导原则

- 保持新发展项目和周围环境在建筑高度、规模、密度上的整体一致性和连贯性。
- 保护沿河的视觉走廊。
- 将水滨地带和公园、自然保护区、历史文化景点、商业街以及比邻社区连接。

商业区规划指导原则

- 将沿岸非水滨用途的场所搬迁，例如：工厂、仓库、办公楼、停车场。
- 鼓励多功能用地混合，以重建现有社区和发展生动、多样和可持续发展的社区。
- 保护、升级、扩大和修缮现有商住楼。

控制污染指导原则

- 预防非点源污染，尤其是城市径流
- 采取措施拦截水污染物
- 对公众进行污染源控制的教育

figure 12: Richmond, VA: Canal Walk Project.
图11: 弗吉尼亚里士满: 河道散步径项目

figure 13: Narragansett Landing: Preservation and Reinvention at the waterfront.
图13: 美国纳拉甘塞特: 水岸保护和重建

figure 14: Narragansett Landing: Preservation and Reinvention at the waterfront

图13: 美国纳拉甘塞特: 水岸保护和重建

在高明规划

FORMS OF WATERFRONT DEVELOPMENT

The formal design of development along the water's edge can take on various shapes. A linear shape includes coast, lake front, or river. A network shape includes links and nodes. Nodes include ports and marinas as well as Network extensions.

figure 16: Cano de San Antonio: Nodal development form.

图16: 圣安东尼奥: 节点发展模式

figure 15: Gulangju Coastal Region, Xiamen, China : Linear development form.

图15: 厦门沿海鼓浪屿: 海岸发展模式

figure 17: Proposed Woodbridge Development in Houston, Texas Metro: Network development form.

图17: 休斯顿Woodbridge地区发展规划: 网状发展模式

figure 18: Paseo del Alamo water garden.
图18: 沿河花园

滨水地区发展模式

沿岸发展设计可以采取不同的模式：线形，包括海岸、湖岸和河岸；网状，包括连接线和节点，其中节点包括港口、码、以及网的延伸。

figure 19: Paseo del Alamo water garden.
图19: 沿河花园

figure 20: Paseo del Alamo water garden: Network Extension.
图20: 沿河花园：网状扩张

在高明规划



figure 21: Villages at Gaoming Waterfront.

图21：高明水边村庄

POSSIBILITIES FOR GAOMING

The nature of different elements along the water's edge provides a unique opportunity for a multitude of programs. The location of villages at the waterfront can allow for preservation strategies and commercial enterprise. The linear form of the waterfront can encompass various recreational activities that are culturally specific to China. In addition, the various fishponds can provide opportunities for environmental education on the practical uses for water in Gaoming.

高明的未来

沿岸不同的自然环境为各种各样的项目创造了独特的条件。依山傍水的保护区和商业企业。线性的水岸可以承担各种娱乐休闲活动的需要，尤其是有中国文化特色的活动。此外还有许许多多的鱼塘可以为高明实际水利用情况提供不可多得的环保教育素材。



figure 22: Zonal Programming at Gaoming waterfront.

图22：高明水滨带状规划,商业/休闲/自然



figure 23: Fishponds at Gaoming Waterfront.

图23：高明水滨的鱼塘



OPEN SPACE

开放空间

As a city of forests, mountains, and rivers, Gaoming possesses tremendous natural resources: hectares of woods, countless fish ponds, the West and Xiuli Rivers, a network of canals, and more. As the city grows and develops, Gaoming must make careful decisions to ensure that these natural resources and landscapes are protected and preserved for future generations.

This section presents an inventory of Gaoming's existing natural assets, an assessment of the challenges the city will face in the next decade as many new residents arrive, and a series of planning recommendations for parks, open space, and water bodies to help keep Gaoming a beautiful, natural city for decades to come.

作为有山有水的城市，高明有着丰富自然资源：大量的树林、不计其数的鱼塘、西江和秀丽河，河网体系等等。随着城市的发展，高明必须做出慎重的决定去保护这些自然资源和风景，确保造福子孙后代。

这个章节概括了高明现有的自然资源，评估了高明在下个世纪由于大量人口迁入所面临的各种挑战，以及一系列的关于公园、公共空间、水体设计的规划建议以保持高明在下个世纪依旧是一个风景优美的城市。

在高明规划

现有模式和情况

今天的高明有着大量的绿色开放空间环绕在城市西边的小山附近。虽然在居住区修有公园，而且现在的市中心有一定数量景观广场，但是这些开放空间很少有连接在一起。当前绿色空间和娱乐中心的规划都没有解决这个问题。因为地点和道路的问题，居民们也不容易去到沿河区和现有公园。

挑战

新高明的规划将要求考虑到城市现有的自然资源，城市的布局和政府有限资源的局限和挑战。

河流

虽然河流可以作为城市的一种财富，它们也影响着水如何流过这个区域。规划必须体现将来的策略：随着城市的扩张考虑人们如何跨越河流。

洪涝区

任何一个新的发展必须考虑如何处理现今和未来城市河道和鱼塘的洪涝。

快速增长

预计的人口增长速度将加重自然和市政资源的负担，给城市带来更大的发展压力不去保护开放空间，而去开发这些开放空间。

制度容量

规划必须考虑到现有的政府基础设施的局限性。例如建立一个大型的城市公园体制会需要创造一个新的市政实体来管理这个公园。

缺乏连接

今天高明的工业走廊和其它大型单一的土地利用分隔了城市的河流、鱼塘、公园和森林。建立这些空间之间的连接可能需要调迁一些工厂或其他的土地利用。

EXISTING PATTERNS AND CONDITIONS

Today, Gaoming has extensive green, open space clustered around the hills to the west of the city. Although the city is currently building parks in residential areas and the existing city center has a number of hardscaped plazas, few of the open spaces are connected. The current plan for new green spaces and recreational centers does not solve this problem. Residents also have poor access to the riverfront and to some of Gaoming's existing parks

CHALLENGES

Planning for the new Gaoming will require taking into consideration the limitations and challenges of the city's existing natural resources, layout, and governmental capacity.

Canals

While the canals can be an asset to the city, they also affect how and where water flows through the region, and planning must accommodate future locks and strategies to move people across the canals as development expands.

Floodplains

Any new development must consider the existing and future floodplains of the city's rivers and fish ponds.

Rapid growth

The speed of the projected population growth will strain Gaoming's natural and municipal resources and put increased pressure on the city to develop, rather than preserve, some buildable open spaces.

Institutional capacity

Planning must take into consideration the limitations of the existing governmental infrastructure. Establishing a large city park system, for instance, would require creating a new municipal body to manage the parks.

Lack of connections

Today, Gaoming's industrial corridors and other large, single-use land parcels divide the city's rivers, fish ponds, parks, and forests. Creating connections between these spaces may require relocating some industries or land uses.

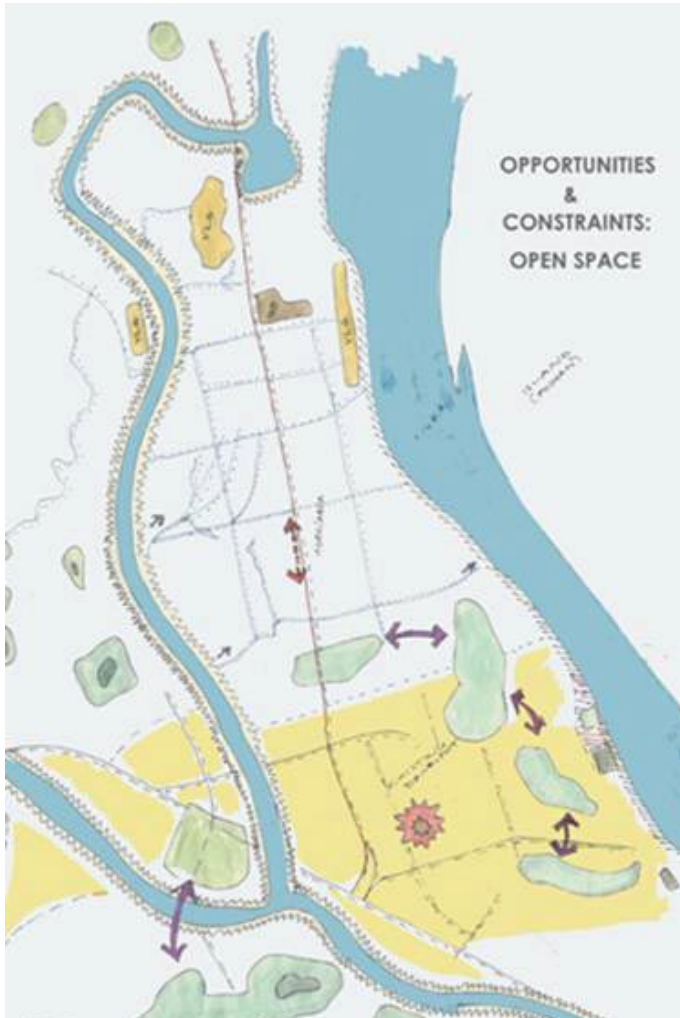


figure 2: Opportunities for and constraints on open space development in Gaoming

OPPORTUNITIES

Gaoming's assets and existing conditions can also help support the creation of a more comprehensive network of parks, water bodies, and open spaces. Current de facto preservation of the city's hills, for instance, can lay the groundwork for a system of large regional parks. As agricultural land is converted to new uses, Gaoming can preserve some stretches of land to create connections between parks and rivers. Finally, the development of the West and Xiuli River waterfronts presents a key opportunity to establish public access to these rivers and to develop linear waterfront parks or recreational paths for city residents.



figure 1: Existing open space conditions

figure 3:

机遇

高明的资源和现有的情况也能帮助支持一个集公园、河流和开放空间为一体的更加全面的网络体系。例如这个城市山的保存能作为大型地区公园的基础。当农田开发作为别的用途时，高明可以保存一些土地来连接公园和河流。最后，西江和秀丽河河滨的发展将会为城市居民提供可接近的江边带状公园或休闲道路。

在高明规划

figure 4: Boaters

figure 5: The San Antonio, Texas Riverwalk

RECOMMENDATIONS

- Emphasize ecological sustainability where possible through the use of native plant species and green corridors.
- Utilize sustainable energy such as solar and wind power where possible.
- Cluster development to ensure that open space parcels are as large as possible; capitalize on travel patterns by connecting these spaces to trail networks and emphasizing circularity.
- Plan for the long term: designate land for open space now.
- Focus on the lived experience when designing connections between the built environment and open space.
- Collaborate with local schools and include them in environmental education and preservation initiatives.
- Educate local community members through formal and informal measures: establish programs at city museums or educational institutions, for instance, or install educational signs and exhibits along the rivers.
- Program public spaces to reflect local culture and identity.

建议

- 在那些有可能使用本地植物种类和建立绿色走廊的地方尽可能强调生态平衡。
- 尽可能运用可持续的能源譬如太阳能和风力。
- 成片开发确保开放空间尽可能的大；通过连接这些空间形成网状或环状出行路线
- 长远规划：现在就要划定开放空间。
- 在设计建筑物和开放空间的连接时，要考虑未来居住者将要经历的体验。
- 与地方学校合作使他们参与生态环境教育和保护计划。
- 通过正式或非正式的形式来教育居民：在城市的博物馆或教育机构开展一些活动，例如安装教育标志并且沿河展示。
- 规划体现地方文化和标志性的公共空间。



figure 6: Trail Map indicating recreation types and services

figure 7: Tai Lam Chung

专题研究之一：香港公园体系

香港的公园体系平衡了当地的布局：自然禁建区成为连接在一起的公园，从而构成了公园体系。在2004年，有1200万人游览了这个公园。

香港面积1092平方公里，大约四分之三在乡间，有着美丽的沙滩，岩石海滩和高山。

为了保护和在适当时候开放乡村给人们游览，1976年颁布的乡村公园法令为划定、开发和管理乡村公园和特定的区域提供了一个法律的框架。香港然后成立了一个乡村和海洋公园委员会给予政府关于乡村公园和特定区域的各方面建议。

给予高明的经验

开放空间的创新使用可以：保存和把不同功能的绿色空间连接在一起的。

保护当地的自然资源：这些资源可以有不同的生态功能，比如作为野生动物走廊和分洪区。

长远规划应为将来的使用划定绿色空间，甚至是在这些资源可开发以前就应该这样做。

CASE STUDY ONE: HONG KONG PARK SYSTEM

Hong Kong's park system leverages the region's topology: natural no-build zones became interlinked parks to create a park system visited by 12 million people in 2004.

Hong Kong covers 1,092 square kilometers; about three-quarters is considered countryside, dramatically landscaped with sandy beaches, rocky foreshores, and high mountains.

To conserve and, where appropriate, open up the countryside for the people, the Country Parks Ordinance was enacted in 1976 to provide a legal framework for the designation, development and management of Country Parks and Special Areas. Hong Kong then established a Country and Marine Parks Board to advise the government on all matters concerning the Country Parks and Special Areas.

LESSONS FOR GAOMING

Innovative use of open space, preserved, and linked green spaces with variety of uses.

Enable preservation of district's natural assets, which also serve ecological functions as buffers to wildlife corridors and flood plains.

Long-term plan designated land for future use as green space, even before resources were available to develop it.

CASE STUDY TWO: CHENGDU RIVER PARK

The Living Water Park in Chengdu, Sichuan, China cleans the water and provides for education and recreation. The riverfront park is part of a larger six-acre Living Water Park that uses biology to cleans the water and has become a model for many cities in China and internationally. The park was designed by landscape architect Margie Ruddick, environmental artist Betsy Damon, and the City's landscape architects, scientists, ngineers, architects, and other visiting designers.

LESSONS FOR GAOMING

- Links town to river
- Creates recreational opportunities
- Emphasis on clean technology and constructed wetlands
- Attracts visitors

专题研究二: 成都流水公园

中国四川成都的流水公园既清洁了水质又提供教育和休闲场所。这个临江园区是大的六英亩的流水公园的一部分。使用生物净化的流水公园成为了中国和国际许多城市的一个模范。公园由景观师Margie Ruddick, 环境艺术家Betsy Damon, 和这个城市的景观师, 科学家, 工程师, 建筑师, 还有其它访问设计师共同设计。

对高明的经验

- 连接城镇与河流
- 创造休闲机会
- 突出无污染的清洁技术和建造的湿地
- 吸引游客

CASE STUDY THREE: EMERALD NECKLACE

1887年由景观师Frederick Law Olmsted设计，波士顿的鲜绿色项链式设计构想为在整个城市连接公园和绿色空间的一条连续的公园线。它通过作为湿地吸收暴雨水提供了重要的休闲环境功能。

Designed in 1887 by landscape architect Frederick Law Olmsted, Boston's Emerald Necklace was envisioned as a continuous line of parkland that links parks and green spaces throughout the city. It provides important recreation as well as environmental benefits by acting as a wetland for storm water absorption.

对高明的经验

- 提供在暴雨排水中的重要作用
- 提供多种类型公园和休闲活动
- 连接的各空间的网络
- 长远规划的结果和预留土地将来使用的重要性

LESSONS FOR GAOMING

- Plays vital role in storm water management
- Offers many types of parks and recreational activities
- Network of linked spaces
- Result of long-range planning and the importance of setting aside land as it becomes available for use at a later date

在高明规划

