introduction

Qibao, like the rest of Shanghai and the rest of China, is at a turning point. Changing demographics and lifestyle are leading to massive shifts with both local and global consequences. While initially these changes may seem to be beneficial, they both come with high social, environmental and economic costs. If ignored, these costs can easily become crises that lead to a rapid downward spiral of excessive consumption and environmental degradation. These are non-trivial consequences. Pollution, diminishing resources, traffic congestion, and high energy costs have a negative impact on everyone. However, given the nature of the urban setting of Site 53 within the Qibao neighborhood, many of these obstacles can be overcome.

While there may be some short term economic gains that could be met by fueling this fire, ultimately they will be unsustainable. We have made the mistake in the west to follow this path, but it is not a prerequisite to development. Not only is it possible to avoid these problems, but it is possible to jump past them and come out ahead of the west and ahead of the competition. Sustainability can be economically profitable with lower risk.

Any developer must analyze market trends to stay ahead of the market and to try to predict future desires. This report takes traditional market research one step further to analyze future demands and needs, not just wants. It is possible to just ignore this report until the future scenarios we predict become a crisis. But why wait? The smart business sees developing trends and uses them to its advantage. By the time everyone else sees a market advantage, it is too late to lead.

A developer like Vanke needs to push beyond business as usual. A developer like Vanke needs to use its position in the real estate market to lead China into a prosperous 21st century. The design recommendations that follow provide a toolkit for leadership. Vanke need not follow them. But Vanke need not hold its place as the top real estate developer in China either. Some risk is always involved but resting on past successes is often riskier than doing something new. As we say in America: “you either lead, follow, or get out of the way.” Which will it be?

chapter overview

This project deviates from the norm in that it begins with an in-depth analysis of present shifts in Chinese society and their effects on the future. Guidelines for the public and private sectors to partner to respond to these shifts are formulated from this analysis. The goals outlined in the guidelines form the backbone and the theory while the design, programming and policy recommendations provide specific, tangible examples of how these goals might be implemented. The designs bring the goals to life, but they should be viewed as examples of how to meet these goals, not as ends in and of themselves. The guidelines are intended as a template for future development in sites similar to Qibao. The purpose here is to develop principles for sustainable growth, not to develop designs per se.

There are several issues that have been addressed in this report. First, some of these ideas cannot be easily met by the developer alone. Integration of the public and the private sectors will be necessary in some instances. However, this should not be viewed as an obstacle so much as an opportunity. If Vanke tests out some new ideas and
then the Qibao government regulates that they be replicated in future developments, this gives Vanke the market advantage while also serving the public interest. Second, different goals are best met at different scales. This analysis goes from the macro to the micro level. Given our time constraints, not all levels have been analyzed in equal depth, but hopefully weaknesses in the Qibao site can be compensated with strengths in the Baima report and vice-versa. Finally, it would be ambitious to assume that all suggestions could be accomplished at once. This report assumes a phased approach that is spelled out clearly and feasible.

All attempts have been made to analyze and design with the particularities of the Shanghai context in mind. However, there are bound to be cultural misperceptions, imperfect data and incomplete understandings. It is assumed that allowances and reformulations will be made for any such oversight. This analysis has tried to avoid imposing western values and assumes that there is a Chinese way of doing things that must be taken into account. This final “translation” of the report is inevitable but is left to the interpretation of the developer and the Qibao government. Some examples of exceptional design from the local context have been included to demonstrate that foreign models are not necessarily required to meet the guidelines and recommendations of this report.

Vanke has the ability to catalyze and capitalize on the rapidly developing market for “green” building in China. In America, more than 1,400 projects were built between 2000-2004 alone, representing 1.65 million square meters of construction. A similar market is beginning to be developed in China. Vanke has an opportunity to lead China into a prosperous and sustainable future. Qibao has the ability to serve as a model for the future. Harnessing these ideas first will lead to a major advantage.

The understanding of what Site 53 could become begins with its context within the surrounding region. The Qibao planning department has established a vision for the larger region, as displayed by these figures, with Site 53 lying at the center of the entire Qibao district. This obviously creates opportunities for the site, but it also creates opportunities for Site 53 to push this neighborhood plans in even more positive directions. Suggestions for how this can be accomplished are made later in the chapter, and are based on the following analyses.

The interaction between different land uses can lead to design solutions for both Site 53 and its surrounding context, given its proximity to open space and water networks, amenities, and transit.
open space diagram

The open space diagram shows the distribution of open space in the Qibao region.

green space

There is no public green space in the immediate vicinity of Site 53. The private green space is primarily composed of the space between buildings required for minimum daylighting standards within each individual development. The large private green space on the east is loosely linked to the historic old town and requires a token fee upon entry.

plaza / hardscape

The large plaza located kitty corner from Site 53 is a part of a new government center. The cluster of plazas to the southeast of the site are distributed throughout the old town, and filled with people taking a break from the hustle and bustle.

recreational open space

The recreational open space is the track and field facility at the school. The school site is likely to switch uses in the near future, which has implications for this facility.

design goals

» Create larger programmed open spaces within developments instead of multiple smaller parcels that are less useful and less frequented.

» Link together public accessways through a comprehensive landscaping plan along the canal system and major arteries.
neighborhood amenities diagram

The neighborhood amenities diagram shows the zones of activity in the Qibao region.

retail / commercial

Ground floor retail lines the major arteries in Qibao for the most part. In addition, there are hubs of commercial with large shopping centers. The Qibao township has grand plans for the intersection at the northwest corner of the site to be built in the image of Xiu Jia Hui, a major commercial center in downtown Shanghai. The combination of the ground-floor retail and the shopping hubs creates a commercial corridor along the major north-south artery.

institutional / cultural

This diagram calls out the relationship between the newly built government center and the school to the south that will be changing uses in the near future. These two institutional uses, in combination with the historic old town blocks create a parallel corridor of institutional and cultural uses on the eastern edge of Site 53.

design goals

» Preserve the cultural corridor by maintaining the public nature of the school site when its use changes. At a minimum, preserve the view corridor between the government center and the gateway to the old town on either side of the school parcel.

» Use Site 53 to connect the parallel commercial and cultural corridors.
**site 53 circulation diagram**

The circulation diagram displays the structure and disorder of the street system around Site 53.

**street patterns**

Primary roads are clearly defined, with one running more or less east-west and one running north-south. The secondary and tertiary roads are less consistent. Something close to a gridlike system exists, broken by the pedestrian road on the southeast edge of Site 53 and the Qibao Old Town. The private road network, determined individually by each development, has no connectivity except within individual developments.

**congestion**

Congestion is already significant at the proposed commercial center at the northwest corner of the site, as well as one block further north of Site 53. The primary north-south road will require mitigation to ensure accessibility of the site to other regional amenities.

**design goals**

» Avoid increasing congestion on primary roads: place vehicular entrances to the development on the northeast and southeast edges of the development.

» Provide safe pedestrian crosswalks, including diagonal access, at the proposed commercial center at the northwest corner of the site.

» Provide ample bicycle lane space on the primary and secondary roads.

» Sidewalks should be designed to accommodate heavier pedestrian flow after the opening of the subway stop.

» Increase connectivity between the site and regional amenities.
The goal of this diagram is to illustrate the creation of a small-scale, accessible, amenity-rich center with Site 53 as a focal point. This distinctive cluster of amenities should be connected with a network of bicycle lanes, sidewalks, canal walks, and iconic nodes. The following steps outline the intended connectivity.

1. Site 53 serves as a connection from the subway stops to the cultural amenities of the Old Town.

2. Site and adjacent design should create a consistent, clear connecting route along the northwest edge of the site green and civic space at the northwest corner, and further to a future iconic structure at the intersection of the road and canal.

3. Attractively designed canal walks should then lead pedestrians and cyclists southeast to the existing pagoda and park.

4. Further canal walks leading west with connecting bridges draw traffic into the Qibao Old Town and existing landscaped canal walk leading southwest, back to the primary northwest-southeast road.

5. At the intersection, an attractive greenway should be designed.

6. Reconnection to the new subway stop.

If possible, greenways and walks should extend to create a more regional network.
In contrast with directions given for the Baima site, Vanke wanted the Studio to concentrate our focus on a regional plan for Qibao’s Site 53. Analysis of the surrounding neighborhood around the site was based upon site visits, a study of aerial photographs of the area, and information from the Qibao planning exhibit. While it was important to gain a thorough understanding of the surrounding context to develop a plan for the site’s role in the region, the conclusions that were drawn have a direct impact on the highest and best use for the site plan as well.

» Site 53 lies between two major Qibao corridors, one commercial and the other civic and cultural. The site can provide a valuable connection between these two district features by providing a connection through the site, as well as by creating attractive northern and southern edges to encourage crossover.

» Site 53’s location at the intersection of two future subway lines provides many opportunities for the development. For example, the high volume of pedestrian traffic will be favorable for commercial tenants, and should be taken advantage of. Taken in combination with the shopping centers in development at this intersection, this highlights the need for traffic and circulation management in the future.

» On a smaller scale, this analysis also revealed that there are few private developers that will dedicate valuable land to open space beyond what is necessary on a practical level. While these smaller spaces are still valuable, this indicates a need for larger planned open spaces in future development.
Excessive Consumption
More Transportation Needs
Increased Construction Demands
Increased Consumption
High Resource Demands

Worsening Pollution
Resource Depletion
Increasing Energy Costs

Demographics
Aging Population
Fewer Children
Later and Fewer Marriages
In-Migration

Lifestyle
Increased Leisure
Better Transit
Increased Comfort Levels
Higher Incomr

Environmental Degradation

Sustainable Solution

Design Guidelines

Excess

Connectivity

Flexibility

Water

Energy

Transit

Gibao
Design Guideline Development

The program is based upon a set of goals that evolved out of three months of in-depth analysis of current and developing demographic and lifestyle trends in Shanghai (see diagram on opposite page). The Qibao Design Guidelines matrix on the following pages shows the goals (highlighted in yellow and green) that were developed in response to these changing demands. Further analysis of these goals led to specific design approaches and policy recommendations (in grey and blue) that could be implemented in different manners and at different scales. Modification of LEED criteria (the American standard for “green” building) and case studies from Portland, Oregon and Brisbane, Australia have also been used to inform the recommendations.

In addition, the chart shows the push and pull dynamic between the public and the private sectors. The interests of the two parties are sometimes aligned, but at times in conflict. Lifestyle and demographic trends will combine to create secondary trends such as increases in transportation needs and energy usage. This will lead to general increases in demand across the board, and the government must be prepared to deal with the impact on scarce, and increasingly expensive, resources.

The approach is unique in that the designs are informed directly from the analysis of future scenarios. The designs are treated as possible methods of dealing with the scenarios in a sustainable manner rather than as ends in and of themselves. Though the design approaches suggested from these guidelines have been integrated into the design process as much as possible, the most important aspect is the goals, not the specific design and policy recommendations. Site 53 and the regional proposal are intended as exemplar models of ways to achieve these overall goals.

Some of the more detailed level goals, such as programming and architectural scale items have not been dealt with sufficiently in the design. This does not mean that they are less important, but that the studio was not able to design to that level of detail. Some of these goals will require programming or architectural specification in the design but they should not by any means be assumed to be any less important than the goals that were addressed in more detail for this project. Some examples for how to hit these targets—particularly energy and water goals at the architectural scale—can be seen in the Baima section where the focus and expertise on these subject areas was stronger.

These guidelines are intended to serve not simply as a means of understanding the motivation for the designs in this document, but as a reference manual for future projects.

Please note that the icons below are used throughout to signify connection to the various overarching design goals as they are met in the project.
### Themed nodes of activity with concentrations of uses at transit hubs

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<td><strong>x x</strong></td>
<td>Design transit station connection as focus rather than peripheral interest</td>
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<td><strong>x x</strong></td>
<td>Use transit station connection as a gateway to the site</td>
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<td><strong>x x x</strong></td>
<td>Phase, locate and encourage a diverse mix of commercial amenities to create a sustainable economic core</td>
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<td><strong>x x</strong></td>
<td>Locate retail and food service along major arteries</td>
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<td><strong>x x</strong></td>
<td>Locate ground floor commercial along publicly accessible streets</td>
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<td><strong>x x</strong></td>
<td>Max out building heights by vertically integrating uses along major arteries</td>
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<td><strong>x x</strong></td>
<td>Encourage location efficient development</td>
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<td><strong>x x</strong></td>
<td>Increase levels of commercial development around transit nodes</td>
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<td><strong>x x</strong></td>
<td>Facilitate regular resident interaction through pedestrian-friendly internal circulation</td>
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<td><strong>x</strong></td>
<td>Ease physical conditions by providing adequate walkway, seating, and protection from the elements</td>
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<td><strong>x x</strong></td>
<td>Create “shortcut” pedestrian- and bicycle-only pathways</td>
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<td><strong>x x</strong></td>
<td>Create vehicle-free “safe zones” for children to commute</td>
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<td><strong>x</strong></td>
<td>Provide walkways with views that facilitate easy orientation and safety</td>
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<td><strong>x x</strong></td>
<td>Control traffic speeds on internal streets where vehicles share the road with non-motorized traffic</td>
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<td><strong>x</strong></td>
<td>Design land use plans that create mixed-use pedestrian-friendly commercial hubs</td>
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### Safe, comfortable and enjoyable multi-modal circulation

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<td><strong>x x x</strong></td>
<td>Encourage multi-modal transit and avoid conflict between modes</td>
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<td><strong>x x</strong></td>
<td>Provide bicycle facilities (parking/station)</td>
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<td><strong>x x</strong></td>
<td>Provide for car sharing or bike rentals</td>
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<td><strong>x</strong></td>
<td>Coordinate main pedestrian entrance with public transit (on northwest corner)</td>
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<td><strong>x</strong></td>
<td>Locate auto entrance(s) along non-arterial (eastern) edge</td>
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<td><strong>x x</strong></td>
<td>Enable direct entrance to individual buildings from the street</td>
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<td><strong>x</strong></td>
<td>Require traffic impact assessments for all new developments</td>
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<td><strong>x</strong></td>
<td>Implement high tax (or other deterrent) on second car ownership</td>
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<td><strong>x</strong></td>
<td>Set/Lower minimum parking ratio requirement to 0.5</td>
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<td><strong>x x</strong></td>
<td>Designate preferred parking and driving lanes for car share or alternative energy vehicles</td>
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<td><strong>x x</strong></td>
<td>Require employees to develop rideshare or commute trip reduction programs</td>
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<td><strong>x x</strong></td>
<td>Encourage businesses to subsidize public transportation options</td>
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<td><strong>x</strong></td>
<td>Encourage the development and use of bike stations at major transit nodes</td>
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<td><strong>x</strong></td>
<td>Reconfigure streets to include left turn lanes</td>
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<tr>
<td><strong>x x</strong></td>
<td>Construct pedestrian overpasses or underpasses at select busy crossings</td>
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<td><strong>x</strong></td>
<td>Prohibit parking on sidewalks where pedestrian traffic flow is impeded</td>
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<tr>
<td><strong>x</strong></td>
<td>Remove pedestrian barriers on sidewalks (eg misplaced benches)</td>
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<td>Inc Reg Mkt Mng</td>
<td>Connect people and places</td>
<td>Com Site Bldg Rgn</td>
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<td>x x x</td>
<td>Increase programmed public spaces</td>
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<tr>
<td>x x</td>
<td>Use canals as public connections and centers for placemaking</td>
<td>x x x</td>
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<tr>
<td>x</td>
<td>Include community spaces and common rooms</td>
<td>x x x</td>
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<td>x</td>
<td>Include shared mailbox spaces</td>
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<td>x</td>
<td>Encourage public connections between district-wide amenities (old town and commercial center, old town with pagoda park to the east)</td>
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<td>x x x</td>
<td>Plan for the U-City</td>
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<td>x</td>
<td>Provide Internet and Intranet infrastructure to facilitate resident interaction</td>
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<td>x</td>
<td>Provide both real and virtual bulletin boards</td>
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<td>x x</td>
<td>Provide Municipal Wireless Internet</td>
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<td>x x</td>
<td>Provide age-appropriate services as well as intergenerational interaction</td>
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<td>x x</td>
<td>Design open spaces and playgrounds to provide interactive educational environment for children</td>
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<td>x x</td>
<td>Locate health clinics and services within convenient access of homes and clusters of senior housing</td>
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<td>x x</td>
<td>Provide infrastructure for a more dynamic Community Council or a new group that takes a comprehensive approach to service provision</td>
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<td>x</td>
<td>Provide support for the development of an engaged, active, volunteer community</td>
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<td>x</td>
<td>Rethink the role of the Community Council to meet the needs of all residents</td>
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<td>x x</td>
<td>Develop requirements to ensure that certain services are provided within each community and assess overlap between services</td>
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<td>x x</td>
<td>Provide health services for all age groups and strategize on engaging entire family in health care</td>
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<td>x</td>
<td>Require minimum level of public access to certain facilities</td>
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<td>x x x</td>
<td>Create strategically porous boundaries to increase onsite amenity use</td>
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<td>x</td>
<td>Develop variety of subtle access points to improve flow while maintaining a sense of privacy and community inside the development</td>
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<td>x</td>
<td>Provide pedestrian-specific access distinct from vehicular access</td>
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<td>x</td>
<td>Provide convenient access to homes and amenities via attractive walkways</td>
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<td>x</td>
<td>Create a “grey area” of intermediate space between public and private space as a soft boundary</td>
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<td>x</td>
<td>Create public areas on development boundaries when appropriate, making use of available amenities</td>
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<tr>
<td>x x</td>
<td>Require coordination of access between developments and establishment of softer boundaries</td>
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<td>x</td>
<td>Manage the diversity of programmed public spaces within a district</td>
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<td>x x x</td>
<td>Minimize the visual presence of security systems while maintaining residents’ sense of security</td>
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<td>x</td>
<td>Reduce the use of physical barriers such as fences and walls</td>
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<td>x x</td>
<td>Create clear distinctions between public and private spaces</td>
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<td>x</td>
<td>Use canals, building massing, and landscaping features like paving, plantings, and decorative gates</td>
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<td>x</td>
<td>Increase number of security personnel instead of physical barriers</td>
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<td>x</td>
<td>Use technology such as card entry systems and closed circuit TV</td>
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<td>x</td>
<td>Develop design regulations and design review to reduce the use of fences and walls, particularly around areas designated for public use</td>
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<td>Facilitate meetings between management companies and local police to address safety and security issues on a district level</td>
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## Domestic Water: Reduce and Reuse

### 1st Reduce
- Include composting/dual flush toilets pre-installed
- Include waterless urinals and/or sensor equipped fixtures in commercial/office spaces
- Provide low flow fixtures/educational materials at purchase to build-out units
- Permit and encourage and/or require composting/waterless urinals in commercial use
- Develop programs to educate and hand out low-flow fixtures free to residents
- Require 20% reduction of domestic water use in new constructions, 10% for retrofits

### 2nd Reuse
- Utilize greywater reuse for toilets, irrigation (requires filtration)
- Permit and encourage and/or require greywater reuse

## Stormwater: Reduce, Mitigate and Reuse

### 1st Reduce
- Develop water efficient landscaping
- Use timers and drip hoses for landscaping
- Require minimum 50% reduction in landscaping water usage on new construction

### 2nd Mitigate
- Include rainwater filtration systems for drinking/showers, otherwise use for irrigation
- Consider green roofs (note: roofing angle and materials, overlap/conflicts with other roof uses)
- Utilize pervious paving
- Consider bioswales
- Constructed wetlands (canals)
- Develop Tradable Stormwater Credit program
- Increase FAR for rooftops that infiltrate onsite
- Provide pollution reduction exemption for rooftops that infiltrate onsite
- Require 70% removal of Total Suspended Solids (TSS) from 90% of avg. annual rainfall
- Require submittal of operation and maintenance plan for stormwater mitigation
- Require onsite stormwater mitigation (rate, quantity and treatment)
- Establish codes for onsite wastewater treatment
- Develop a program to restore canals to swimable levels

### 3rd Reuse
- Consider rainwater harvesting (note: roofing angle and materials, overlap/conflicts with other uses)
- Permit and encourage rainwater harvesting
### flexibility

**Maximize overlap between connectivity, aesthetic, recreation, stormwater uses**

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- Multifunctional spaces (timescale = now)
  - Design spaces with open floor plates
  - Design for multipurpose rooftop usage
  - Include gymnasiums adaptable for multiple sports (basketball, badminton, volleyball)
  - Provide lobby-type spaces and plazas that can accommodate tables and chairs for everyday social uses as well as cultural events
  - Provide programming that lasts throughout facility hours, and hours that accommodate all user types.
  - Hire specialized staff to plan and lead programming and partner with firms specializing in facilities maintenance and programming
  - Provide operational support for sites that provide cultural recreation
  - Develop design review of planned facilities to minimize duplication of existing district facilities.

- Adaptable spaces (timescale = later)
  - Design 2-3 BR units that can be converted to 1-2 BR units with more open/office space in the future (same size, different layout)
  - Develop flexible, modular shells that can accommodate establishments of different sizes and uses over time
  - Develop flexible “SoHo” space to accommodate shifts between residential and commercial demand, ensuring that market volatility is tempered
  - Encourage Live/Work uses through zoning, policy

### energy

**Conserve and generate renewable energy**

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1st Conserve
- Take into account 20 degree obstruction angle
- Consider living walls
- Maximize shared walls
- Assess passive solar façades for heating and lighting needs
- Consider green roofs (note: roofing angle and materials, overlap/conflicts with other roof uses)
- Consider super insulation
- Take into account cross ventilation
- Include high albedo materials on pavers and roofing materials (mitigate heat island effect)

2nd Generate
- Consider solar thermal water heaters
- Consider wind power (vertical axis)
- Consider thermal store
- Consider ground coupling

3rd Verify performance
- Require 40% energy reduction in new constructions, 30% for retrofits, incentivize for higher targets
- Require 5% onsite energy generation in new constructions, incentivize for higher targets
- Require measurement & verification (additional commissioning)
- Require post-occupancy evaluation
qibao overview recommendations

This diagram shows how the design goals could be implemented on various sections of the area. Metro stations are marked, as are major roads (red), canals (blue) and greenspaces (green).

transit
- Mixed-use nodes at transit stations with concentrated uses: each station can be a hub of activity though concentrations of development type need not be identical. For example, one node such as Site 53 may be focused on commercial with some residential. Another may be primarily industrial with some commercial.
- Location efficient development: site complementary uses nearby one another (eg schools near residential)
- Efficient mobility: encourage alternative transportation options to the single-occupancy vehicle to reduce congestion and pollution

connectivity
- Encourage connections between district-wide amenities such as Site 53 and Old Town
- Clean up and develop canal systems as connective elements

flexibility
- Multi-functional, smaller block sizes can accommodate a variety of uses and adapt to change over time

water
- Use extensive canal system to become integrated stormwater management system
- Vegetated canal network can become water purification system
- Permeable pavers, greenrooves, native plantings, and low-consumption landscaping reduce demand for treated water and mitigate stormwater runoff
- The greenspace transition in the northeast was reconsidered. The final version calls for keeping the greenspace as planned by the government by the highway but adding a smaller park to the west near the canal. This maintains an ecological corridor for habitat to the east while providing proper siting for a stormwater mitigation system. It also increases the value of the park land along the canal and surrounding real estate.

energy
- Transit positioning, walkable block size, efficient amenity locations, and functional natural systems lead to a less energy dependent population
Phase I Recommendations

Problem: Disconnection

Proposed metro stations are well-located at 10-15 minute walking intervals from each other. Most areas of town will be within a 15 minute walk to a nearby stop. Major circulation routes are also appropriately distanced. However, the number and connectivity of smaller feeder roads are inadequate due to large block sizes, leading to congestion on major roads. The town is otherwise ideally positioned for development and connection to the broader Shanghai region.

Extremely large private developments break up the connectivity of the town as they do not let traffic or pedestrian flow through. This forces flow of movement out onto major circulation streets and creates inactive internal streets within developments. Developments do not take the broader region into consideration which reinforces problems surrounding their borders.

Resolution: Break Up the Block Size

Start with the easy gains. Bring small circulation routes through existing superblocks where currently feasible with no or minimal demolition of existing structures. Create a greenway along canal routes near the central transit hub that integrates vegetated treatments to purify the canals. Redevelop light industrial sector to the northeast of Site 53 as a park close in to the central city and surrounded by commercial. Connect it to the Old Town via the new canal network.
Phase 1 Recommendations (Detail)

This diagram shows exactly how the area would be affected by this new change. Grey buildings are new. Black buildings are existing. Site 53 is the RTKL plan.
Phase II: Pushing the Idea

This diagram shows how existing Qibao block sizes match up with block typologies from around the world. Note how much larger they are than nearly all other cities. Sizes that have been suggested and implemented into the more progressive design at left have been marked with a check mark.

- 60 x 60 = 3,716 sq. m.
- 60 x 90 = 5,574 sq. m.
- 75 x 120 = 9,290 sq. m.
- 60 x 180 = 11,148 sq. m.
- 90 x 150 = 13,935 sq. m.
- 60 x 240 = 14,864 sq. m.
- 120 x 120 = 14,864 sq. m.
- 90 x 180 = 16,722 sq. m.
- 215 x 450 = 97,548 sq. m.
**Site Layout Options:**

**Commercial Residential Split (Left):**
- **Pros:**
  - Easily implementable from the beginning with no other agreements with adjacent land uses.
  - Enables public 'service' road to penetrate site.
  - Logical and no cultural or financing structure change required.
- **Cons:**
  - Maintains a 'private development' feel.
  - Less opportunity for new typologies.

**Urban Blocks (Right):**
- **Pros:**
  - Increases connectivity and flow to site's surroundings.
  - On street parking potential.
  - Flexible for different building types.
- **Cons:**
  - Would require a cultural and financial adjustment.
  - Only works if adjacent sites link up as well.
  - More traffic control measures needed.

**Potential Hospital Site Commercial Expansion:**

**Street Level Commercial:**

**New Development Site 53:**
Moving from the regional scale of the Qibao neighborhood to site 53 begins with an analysis of the RTKL proposal. It suggests a secondary pedestrian commercial street running parallel to a major street creating a clear separation between commercial and residential zones. While this plan uses buildings as walls, it limits the vertical mixing of uses and confines the land uses to their areas.

Taller residential towers approaching the 45 meter height limit are placed on the southeastern edge of the site, which is closest to the mostly one and two story structures of Qibao old town, instead of along the busy street edges where transit is available. The heights of these structures will create a stark and overwhelming contrast between the two developments, representing a lack of contextual responsiveness.

The separate realms of public and private space are reinforced in this plan, which follows the status quo of ‘gated communities.’ Our studies on the following pages begin to dissect these points and imagine new ways of density massing and blurring the boundaries between public and private while still maintaining a comfortable and safe environment.
Our group approached parcel 53 as a transitional site between a major commercial intersection with a bustling metro stop, a group of residences, and historic old town Qibao. Rather than route metro traffic through the site, we propose the interior of the site as a private, residential space. The valuable corner near the metro, the highest-value retail real estate, is reserved for high-density retail, with a hotel nearby, the tallest commercial building, which becomes the architectural focal point of the block. A public plaza on the Western side of the site becomes a busy node as a junction where hotel users, those walking to the residential area, and shoppers from the nearby retail uses mix. Raised green spaces on top of structured parking behind the hotel and the retail become semi-private parks where hotel guests and residents can relax, and workers at the office buildings on the northern side of the site can eat lunch.

The plan envisions four types of travelers arriving via the metro – workers who will appreciate the proximity of the offices, residents, shoppers who will continue on down the western side of the site, already facing a major retail corridor, and visitors to historic old town Qibao. These visitors will be routed through signage to walk east from the metro, around the corner, where some type of architectural marker and the park across the street signal their entrance to the old Qibao district. The low-density retail on the eastern side of the site mirrors old town Qibao both architecturally and through its use, and extends the old city into the more modern urban fabric.

One road is cut through the center of the site. The road is public, but will not be highly visible from the street, maintaining a quiet, residential character. The yellow pavilions in the center are used for mainly non-retail community programming, like community mailboxes, a visitor entrance, activity rooms, and a small shop.
In addition to the planning for program, the site design also views sustainability through designing an energy- and water-efficient site. In order to maintain airflow on the site, allowing summer cooling and mitigating the possible effects of local air pollution on such an urban site, the site plan uses staggered residential towers. These towers also create some corners of sunlight even in the darkest winter afternoons (the time period used for our shadow study). High surfaces are used for rainwater catchment, in accordance with Building System programming guidelines.
The work done by the Baima team during the switch period provided the initial impetus for re-focusing the design at the site level. These diagrams show the design process that the studio underwent on Site 53 after the switch period.

1: The first four plans are somewhat more conservative. They follow on the idea to break up the size of the block typology into more “Manhattan” style blocks with commercial on the west façade and residential on the more “interior” eastern section. This was abandoned because the spaces between the buildings were rather dead, unprogrammable spaces and the roads didn’t connect any existing network. Instead, they seemed more likely to cause traffic problems along Qixing Lu.

2: The next three plans look into making the obvious connection between the main intersection and Qibao Old Town. There is a pedestrian street cutting diagonally across the site with two service roads that meet in the back. This idea was rejected because it was decided that the only vehicular entrances should be along the east side of the site to minimize congestion on the major artery. Also, there was a need for more development on the site due to a recalculation of predicted demand with regard to the design guidelines.

3: The final iteration is a combination of two designs. The diagonal pedestrian path is maintained while pedestrian access to the park exists on the eastern façade. Two anchor points draw people into the site (hotel on the northwest corner and theater/community center on the southeast). Public and private are blurred in this model and walls are all but done away with in favor of commercial frontages. Private open space is exists in the interior spaces. In order to meet increasing programmatic requirements in accordance with the scenario analysis and design guidelines, the height limits have been pushed by five meters on certain buildings.
The scenario and resulting design guidelines are used to determine the specific programming and square meter requirements for the final design of Site 53.

The baseline model incorporates Vanke specifications, meeting existing demand and relevant for the current urban context. Consideration of the scenario, and the goals in the toolkit responding to that scenario, result in some changes in the square meter allocation to specific programming of land use. The new square meter area devoted to land use based on scenario conditions were compared to Holiday Town and Shanghai standards, to determine whether outcomes are realistic, taking into account they consider future, changing needs and restrictions.

The baseline Vanke model, summarized in the table to the left with a version with hotel and a streamlined version, account for the needs of an estimated population of 1035 as well as additional users from outside of the development. The population estimate comes from the proposed units times an average number of people per household. The scenario model assumes a slightly smaller population of 963, due to demographic and lifestyle trends and resulting increased demand for smaller units and lower average number of people per household.

Consideration of scenario impacts results in the second table to the left. The land use programming in red text has changed. Changes are summarized below and in the accompanying charts on the opposite page. The result of these changes is a very dense site with an FAR of 3.43:

- Increased commercial allocation (to accommodate changes in lifestyle):
  - movie theater and flexible civic auditorium space that can be used for the public or the community
  - anchor restaurant
  - small dining
  - health center
  - children's areas
  - leased shops
  - live/work space

- Shift in residential unit allocation (to accommodate changes in demographics):
  - number of three-bedroom units reduced by 75, redistributed to smaller units
  - larger sizes for each type of unit (increase of 10 square meters per unit)

- Additional service requirements (to accommodate changing needs due to demographic and lifestyle trends):
  - space allocated specifically for a larger community council space, which has a more challenging task of addressing community needs in a more public development, and a health clinic
Redistribution of Land Use/Programming

Residential Programming
- Scenario Model
  - Number of Units: 260, 280, 290, 145
  - 3-Bedroom Units: 260
  - 2-Bedroom Units: 280
  - 1-Bedroom Units: 290
  - Studio Units: 145
- Vanke Model
  - Number of Units: 235, 361
  - 3-Bedroom Units: 235
  - 2-Bedroom Units: 361
  - 1-Bedroom Units: 120
  - Studio Units: 120

Total Square Meters
- Scenario Model
  - 12,000, 11,950, 5,050, 42,900
- Vanke Model
  - 8,750, 34,000

Vanke Model
- Number of Units: 83,640
- Total Square Meters: 62,960

Scenario Model
- Number of Units: 87,175
- Total Square Meters: 110,500

Commercial Programming
- Hotel
- Live/Work
- Shops Leased and Condos
- Kids Courts
- Health Clubs/Salons
- Restaurants/Food Courts
- Movie Theater/Auditorium
- Department Store

Vanke Model vs. Scenario Model
- Square Meters
  - 0 to 60,000
  - Vanke Model
  - Scenario Model
parking

The following section analyzes the outcomes of recommended square meter allocation after applying the scenario model and resulting design guidelines to parking for automobiles and bicycles. To promote sustainable development, vehicles are accommodated somewhat, but car sharing, and alternative modes of transportation are encouraged through the parking allocation.

residential parking:

Residential parking allocation was reduced to 0.6 parking spaces per unit, supportable by the high accessibility of the site.

As recommended in the design guidelines, a certain percentage of parking spaces should be reserved for shared parking spaces. An example of a for-profit company providing car sharing services is Zipcar, www.zipcar.com. In this business model, members pay a yearly fee and then when needed, reserve cars online for specific times. Car usage is paid for by the hour, and gas is included. This model works well for leisure and shopping trips, but would not be useful for commuting. Incentives should promote car pooling, and amendable bicycle parking and design promoting linkages to regional amenities will all create less need for vehicle ownership at this development.

891 bicycle parking spaces are accommodated at a ratio of one per unit. More, rather than less bicycle parking spaces should be constructed if possible. In addition, residents should have discounted use of the on-site bicycle station, which provides protected parking, lockers, a café and other social space, a repair center, and bathrooms with showers, for members’ use.

commercial/public Parking:

The U.S. Institute of Transportation Engineers (ITE) Trip Generation Manual (http://www.ite.org/tripgen/index.asp) is used to determine parking demand created by the commercial and recreational land uses. This manual contains datasets of trips generated for certain types of land uses in the U.S. Formulas are created using regression analysis that can be used to determine trip generation for specific square footages. Of course, this method of determining parking demand at Site 53 is flawed in that it is based on U.S. studies, and will therefore be somewhat inaccurate for Shanghai land uses. However, it provides enough of an estimate for this purpose.

ITE formulas produce estimated vehicle trips. When other transportation modes are present (subway, pedestrianism, and cycling), the number of vehicle has to be transformed into person trips based on average vehicle occupancy (we used 1.2). The resulting person trips then have to be distributed to the estimated mode share. In this case, we used Xujiahui mode share, as reported in a working paper entitled “Rail Transit Shaping Urban Travel and Land Use: Evidence from Shanghai, China” by Haixiao Pan and Ming Zhang:

- 2% auto (.4% motorbike)
- 70% transit (52% subway and 17% bus)
- 10% walking
- 18% bicycle (3.26% powered bicycle)

Once the trips are redistributed on this mode share, the highest volume day is considered for the maximum parking demand on a give day. The trips for that day are then divided by how much originates from the different commercial and office land uses. Those generated trips are then adjusted by a scaling factor, which takes into account that a number of trips occur at different times of the day and therefore can use the same parking spot over the course of the day. The adjusted number of parking spaces required by the existing public-oriented land use on Saturday, the highest use day, is 665. At 28 square meters per spot, 18,620 square meters is required for parking spaces for the public.

This analysis also yields an estimated 1,128 bicycle parking spots, after adjusted using a different scaling factor. 330 of these required spaces are accommodated in the bicycle station, and at least an additional 800 spots should be provided. Once again, this is the bare minimum number of bicycle parking spaces that should be provided.
The Qibao Building Massing as Proposed

The following design for Site 53 applies the design guideline tool kit through the use of the scenario programming. The resulting design differs from the RTKL proposal in the following key ways.

1. The FAR is 3.43.
2. The retail to residential ratio is 1.1:1.
3. The design considers the context of a larger regional connective network.
4. The “gated” effect is achieved through use of commercial as barriers and card access for security, creating more overlap between land uses.
5. Vertical and horizontal connections provide more public/private crossover in mixed use spaces, linking residents to more public amenities without sacrificing the sense of community.
6. Porous boundaries provide various access points for different users.
7. Parking design is clearly defined.
8. Sustainable features are incorporated, such as green roofs, building orientation, and water treatment.

The Qibao Building Massing By RTKL
Three major program components, residential, commercial, and parking, are integrated to create a more overlapping, connected program design. Residential is coded as yellow, commercial as red, and underground parking as blue.
ground level

The central characteristic of the ground level is a walkway cutting through the center of the site diagonally from the subway to the Qibao Old Town. Stores, shops, restaurants, and landscaping create a vibrant public commercial corridor. At one end of the corridor, where pedestrians exit from the subway section, the distinctive architecture of the northwest corner canopy draws pedestrians and cyclists in. The other end, the southeast corner of the site, is marked with a visually compelling community center and theater. Another noteworthy characteristic of this design is the lack of traditional walls. Instead, as previously mentioned, the “gated” effect is achieved through commercial walls horizontally and vertically (with residential on top of commercial), with privacy of residents protected by card access.
Pedestrian System
Retail Circulation
Residential Circulation
Parking Entrance / Exit
Subway Exits

Private Space
Public Space

The Qibao Ground Floor - Circulation Diagram
The Qibao Ground Floor - Public and Privacy Diagram
underground level

Underground parking for vehicles minimizes conflicts between pedestrians, cyclists, and cars. In addition, the great majority of bicycle parking is provided underground. Private card access creates safe resident bicycle parking, and public racks are provided for visitors.

Underground parking is divided into several parts accordingly to the previously mentioned programming; there are two residential parking lots with elevators that provide direct access to residential buildings. A small amount of commercial parking is provided by shared parking spaces, which residents can use in the evening.

There are two direct connections to the subway. The northwest entrance provides access to retail with two and three-bedroom apartments on top. The subway entrance on the northeast edge of the site has secure card access to single and senior apartments.
Single Units / Senior Units

Food Court

Beauty Salon

Public Family Space

2-3 Bedroom Apartments

Shops

Restaurants / Bars

Public Family Space

2-3 Bedroom Apartments

Green Roof Garden

Public Family Space

2-3 Bedroom Family Apartments

Movie Theater / Auditorium

2-3 Bedroom Family Apartments with Single Units

The Qibao North Floor Plan
Semi-public amenities for communal resident use are on the bridge connecting the two residential sections and in the semi-public space within the residential buildings. The goal of such placement is to preserve the Lilong community feel, an idea called “under the same roof” in Chinese, on a modern, urban site.
sections

The first section cuts through the building canopy over the subway plaza on the northwest corner of Site 53. The canopy is designed to be visually appealing with green roof setbacks, drawing pedestrians into the commercial corridor and providing a clear view to the commercial uses along the corridor and the community center/theater at the southeast corner of the site. This first section also illustrates the vertical program elements. The sections on the following pages further illustrate program and design interaction.
Shops / Restaurants
Underground Parking
2-3 Bedroom Apartments
Restaurants / GYM Serve for Residents
Roof Garden
The Qibao 3-D Public and Private Diagram

Private Space: Residential Community
Public Space: Retail and Recreation
Semi-Public: Public Space inside Residential Community
problem streets

- Lack of feeder roads
- Narrow sidewalks
- Congestion
- Dangerous, busy intersections
- Insufficient bikeways
- Sidewalk parking
solution streets
regional phasing strategy

The completion of Site 53 is phase one. However, improvements at the regional level should occur simultaneously and over time, creating a sustainable development core for the Qibao neighborhood.

phase 2

Most public circulation happens along the major roadway corridors of Qibao. It is imperative that these roadways are viewed as a networked public system, with major traffic and streetscape improvements to make them safe, effective and enjoyable. The canal system provides an opportunity for a second-tier of circulation networks, joining up with the roadways at key points. In contrast to the urban edge experience of the streetscapes, a regional, publicly-accessible canal network would provide a different, more park-like experience for the pedestrian to move through Qibao. When combined with larger open spaces along the way, these interconnected public canal systems can provide both aesthetic benefit and attract development. All of this depends on improved water quality, which should be pushed from the regional level all of the way through the designed detail stage, and should be pursued as soon as possible.

phase 3

What is currently a vast area of temporary and ad-hoc industrial uses can be envisioned to become a major shift in development in the Qibao neighborhood. The development can be centered around a large public park with recreation fields that becomes a catalyst for new progress in this area. Further expansion of open space networks will continue in areas such as the school site directly adjacent to Site 53.

phase 4

The corner of Site 53 will become a major central business district hub incorporating the principles of sustainable development. Small block sizes, intricate public circulation networks and large structures will become a dense core of mixed-use activity. The area becomes the heart of the neighborhood, with all of the circulation networks established in previous phases connecting it to other areas in the region.
As energy prices continue to rise, pollution and traffic become worse, the family structure continues to shift and become more prosperous, QiBao will be prepared. Planners and designers from this era will be viewed as leaders in the development field, not as critics or critics. These guidelines and plans represent a blueprint for change; a blueprint for a prosperous, green future.

The suggestions in this manual are not intended to limit development, restrain economic growth, or otherwise impede or discourage China’s progress into the 21st century. On the contrary, these suggestions will enable QiBao to serve as a model for how Shanghai might predict and subsequently overcome many of the challenges that are currently or will shortly be facing America and other developed nations. Using these design guidelines as a toolkit for future developments will give QiBao the leading edge over the rest of Shanghai, over China, and over America both economically and environmentally.

As energy prices continue to rise, pollution and traffic become worse, the family structure continues to shift and become more prosperous. QiBao will be prepared. Planners and designers from this era will be viewed as prescient and full of foresight rather than with their eyes on short-sighted economic or political gain. In the current situation, it is urgent that we act quickly and decisively in a manner that “meets the needs of the present without compromising the ability of future generations to meet their own needs.” With the insightful collaboration between the public and private sectors, these plans and guidelines offer a blueprint for change; a blueprint for a prosperous, green future.

CONCLUSION

At the heart of this analysis is the proposition that these goals cannot all be met by the private sector alone. The public sector will need to be involved to provide oversight, incentives and, in some cases, to regulate market developments to guide the market along. The guidelines suggest which options might be best suited to achieve certain goals but have purposefully been left as suggestions with options rather than dictating one way or another to proceed. In this fashion, it is hoped that those with the best sense of the specifics of the tools and tactics at their disposal will make wise executive decisions based on our suggestions.

This is not meant to be restrictive to those in the private sector, but rather to encourage and provide support for leaders in the development field such as Vanke. If Vanke follows these design guidelines, it will provide positive examples that this can be done successfully, thus pushing the public sector to implement regulations and incentives for the future. At this point, Vanke will have a leading edge over the competition and will prosper from its foresight while simultaneously encouraging progressive, sustainable growth.