



IRAQI SMART CITY DEVELOPMENT

Dijlah Asset Management + Babil Governorate + Diwaniyah Governorate
October 2018

Why DijlahAM?



The situation in Iraq is exceptionally complex following years of domestic and international strife. The nation remains largely in ruins, and a masterplan for prompt, effective, and long-lasting reconstruction is urgently required. Despite having large areas of arable land, vast supplies of natural gas, and one of the largest proven oil reserves in the world, Iraq still faces serious challenges including:

- **High unemployment and underemployment**
- **Clean water shortages throughout the country**
- **Insufficient electrical power supply**
- **Outsourced petroleum refining**

DijlahAM has prepared a comprehensive masterplan that addresses both the strengths and challenges in Iraq today. No other approach has offered a better likelihood of successfully rebuilding the nation.

Our Solution

The DijlahAM masterplan builds on Iraq's great strengths to leverage the reconstruction of the nation. The DijlahAM masterplan:

- **Is revenue driven and profitable**
- **Creates and retains wealth in the region**
- **Provides a major income stream to local and national governments**
- **Produces a supply of top-quality distillates locally and internationally**
- **Greatly reduces total transport costs of petroleum and distillates**
- **Creates thousands of well-paying jobs**
- **Builds secure, safe, clean, car-free cities**
- **Provides high-quality education for children and adults**
- **Establishes affordable, world-class healthcare facilities**

The DijlahAM masterplan is an organized, complete approach to rebuilding Iraq and helping its people achieve a better life. Built into the masterplan is a massive social component for Iraqi society, making it the most promising strategy to achieving a lasting peace in the region. No other plan yet proposed addresses all of these considerations effectively. If DijlahAM applies its masterplan throughout Iraq, it will be a critical step towards restoring Iraq to its former glory.

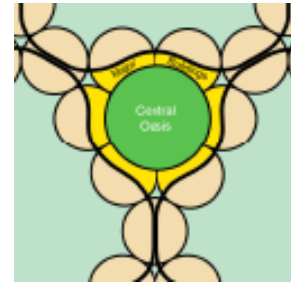
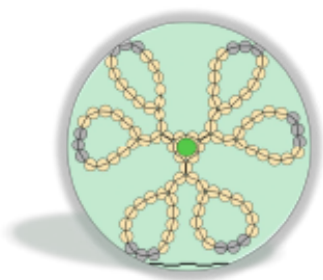
OUR PARTNERS

While the prospect of clean energy, fresh drinking water, and reliable power for the people of Iraq is within reach, it still requires coordination and contributions from companies and leaders across many industries.

DijlahAM is leading a monumental effort to plan, organize, and implement sustainable cities all across Iraq. We have assembled a world-class team of companies, comprised of industry-experienced experts in catalyst development, process engineering, scaleup, and commercialization. Partners include former executives and engineers from major oil and gas companies, as well as some of the top construction, urban development, and clean energy companies from around the world. This depth of experience and ability ensures this project will be completed in a timely manner while staying on budget.



THE NEW CITY OF AMMI DITANA (BABYLON)



The new city of Ammi-Ditana will be constructed near the ancient ruins of Babylon, Iraq. Its population will number approximately 100,000 homes, reckoned as 750,000 inhabitants. The city will be located between Hillah and Karbala close to the historic site of ancient Babylon. It will be connected by rail to Karbala and Hillah as well as ancient Babylon.

The city would be entirely car-free, and narrow streets like those in ancient and medieval cities would be laid out. Approximately 60 mixed-use, live-work districts would be constructed, plus a further 20 non-residential utility areas. Both the districts and the streets would be traditional in character. Each district would be about 750 meters in diameter, with a rapid-transit halt located at the center. The districts, including the utility areas, would be connected by a conventional underground heavy-rail metro system.

The most noteworthy facility in the city would be the central oasis, an area of peace and reflection right at the heart of the city. The best and most important buildings in the city would be sited near the oasis, but these would not be skyscrapers. Rather, cut-stone buildings would be erected in these prominent locations. Despite their monumental character, these buildings would be no more than 5 stories tall (which was always the case before elevators).

The central oasis would be arranged with 6 districts surrounding it, giving the oasis the same diameter as the districts, some 750 meters. A tree-lined boulevard would encircle the oasis but approximately 100 meters outside it. This creates a ring of building sites that face both the boulevard and the oasis, and it is here that the most important, highest-quality buildings in the city would be constructed. The buildings on the opposite side of the boulevard would be nearly as important. The metro system would be located below the boulevard.

NEW DEVELOPMENT OVERVIEW

Most of the remaining buildings would be 3 or 4 stories high, with the possibility of some 2-1/2 story buildings in the more outlying districts. All buildings would be of row-house type--there would be no open space between buildings or between a building and the street.

The utility areas would contain uses that are incompatible with residences. These would be warehouses, factories, waste handling facilities, water treatment plants, etc. Parking garages would also be included for visitors arriving from out of town or for residents to store their cars when they return to the city. The rapid-transit lines could be arranged for eventual completion of loops as the city grows, as shown in the original Reference Topology. Because the envisioned city is smaller than the Reference Design, there need only be 4 lobes, not the 6 originally envisioned. Thus, only 2 metro lines are required, although they would merge down to high-capacity 4-track lines in the central part of the city.

Each district would be approximately round, with its transport stop at the district center, which gives the most efficient transport arrangement. The walking distance from any location to the center is no more than 5 minutes. Each district would take its own architectural theme, which would be reflected in that district's name, such as Paris or Venice. All of the districts would have a strong urban character. The street plan would be radial in order to minimize walking times to the center, with less important circumferential streets further dividing the district into about 90 blocks of varying sizes and shapes.

Each block would be surrounded by narrow streets, down to a limit of about 5 meters. The buildings would be about 10 meters from front to back, and minor buildings would be as narrow as 3 meters. At the center of nearly all blocks would be found a green interior courtyard of considerable size, giving direct access to green space for the occupants. It is reasonably simple to arrange row houses as single-extended-family dwellings, and small interior courtyards can be arranged within the larger buildings.

The design does not rely on any particular architectural style, although traditional forms are highly adapted to cities of this nature. However, the buildings must abut one another, to save both land and cooling costs. This is how cities were always arranged before cars.

Carfree Cities© envisioned the development of a technology called metro-freight. This system delivers standard ISO shipping containers from the utility areas to all of the districts. The development of the technology would require a significant amount of work, but automated container handling has been a reality for decades.

Both the sustainability and quality of life of the city would be unsurpassed by any modern city. The car-free nature of the city is an important reason for this, but efficient use of land, short utility runs, and comparatively low construction costs are also significant benefits of the design. The city would be safe and quiet, just as car-free Venice remains today.

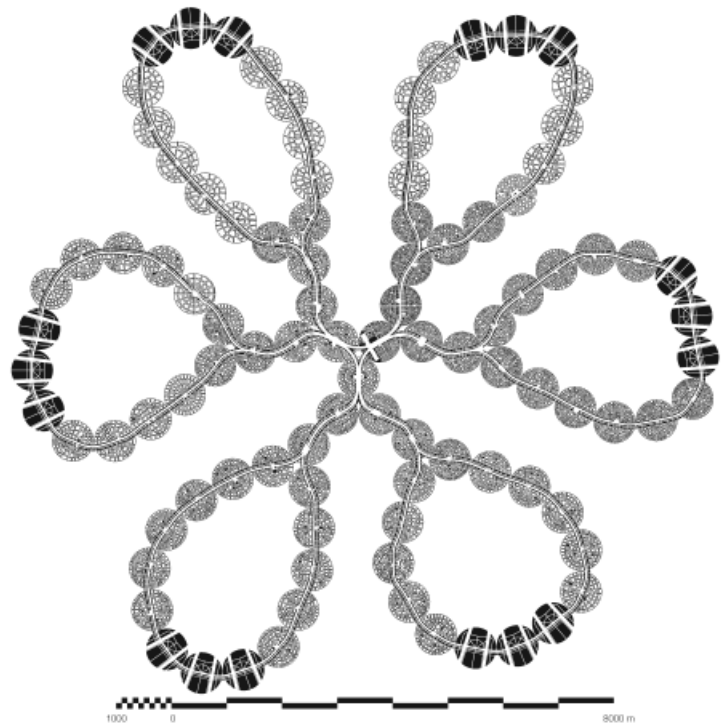
NEW DEVELOPMENT OVERVIEW

It could be expected that this unique city would itself become a major tourist draw. Proximity to the historical cities of Iraq, especially Babylon, would be a further major attraction.

Although the concept may seem revolutionary, it is for the most part a return to the way cities were arranged until just a century ago. We add rail systems to provide safe, quiet, clean transport of passengers and freight. Of course, state-of-the-art telecom networks would be essential. The resulting city would be attractive not just to Iraqis but to people around the world.



Artist Concept

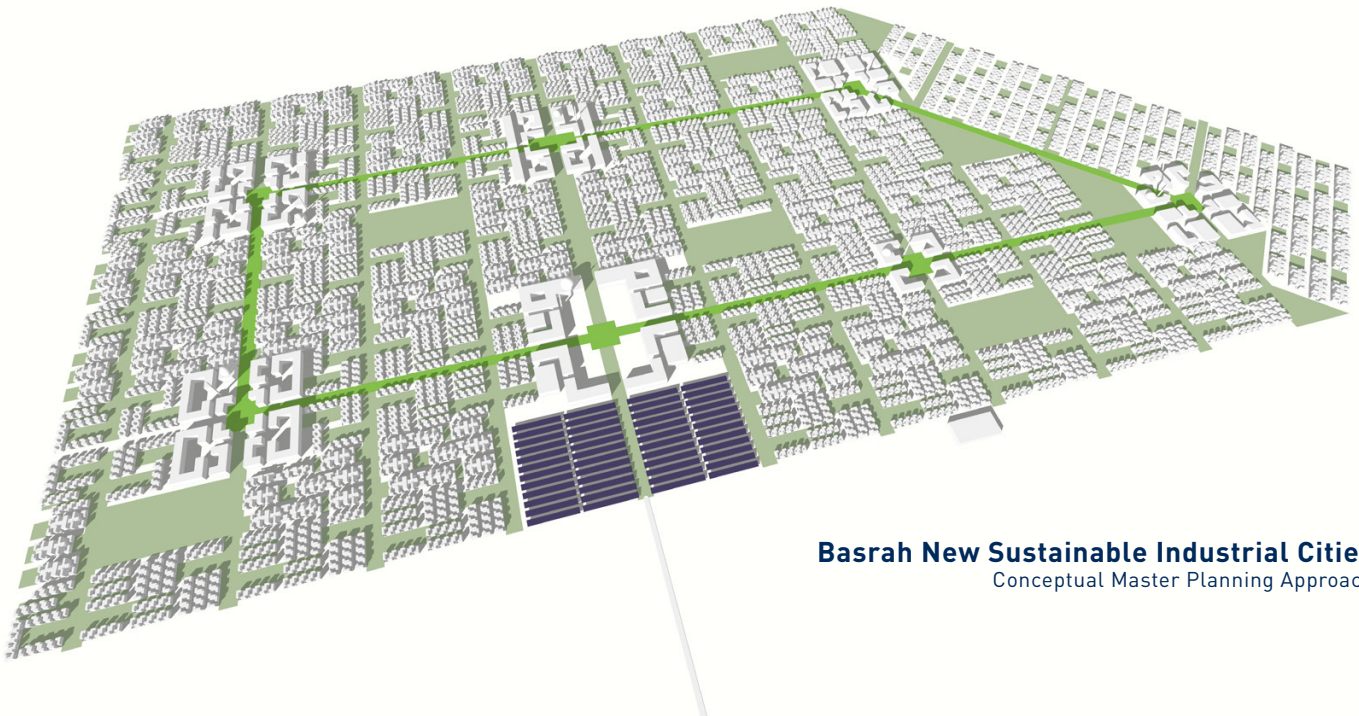


The dark circles are where the Industrial Compounds

The gray circles are the housing districts

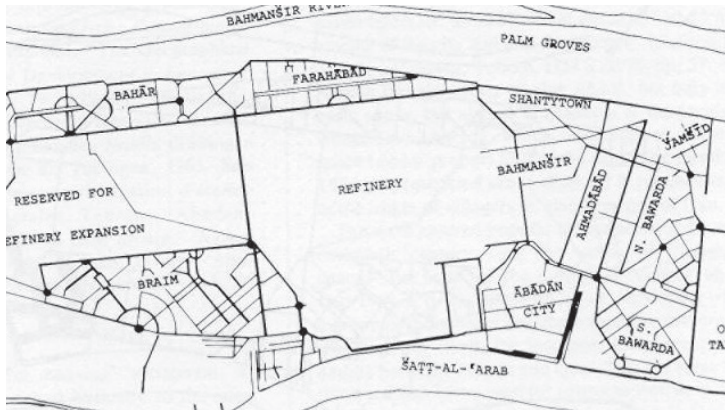
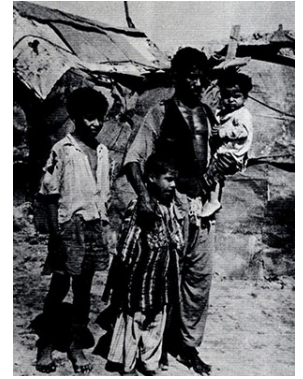
The white spaces inside and outside the loops are for organic farming and vegetations.

ORIGINAL PROPOSAL FOR IRAQI INDUSTRIAL DEVELOPMENT



Basrah New Sustainable Industrial Cities
Conceptual Master Planning Approach

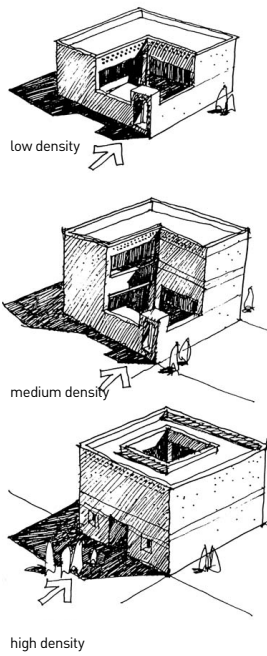
ARUP OVERLAND



Model: garden suburb in the desert

- Structural Expression of Oil Company at 3 scales: urban, architectural, and social
- 3 house typologies
- assignment of housing and neighborhoods based on ethnicity and rank in the company

Conceptual Master Plan Approach



Model: Islamic town planning

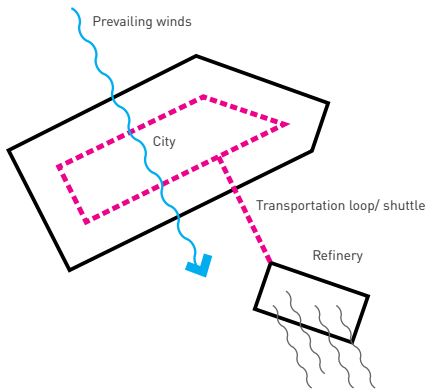
- Externally-oriented urban connections
- Town plan rooted in Islamic city life
- Mosque is the town center/ not the company



Conceptual Master Plan Approach

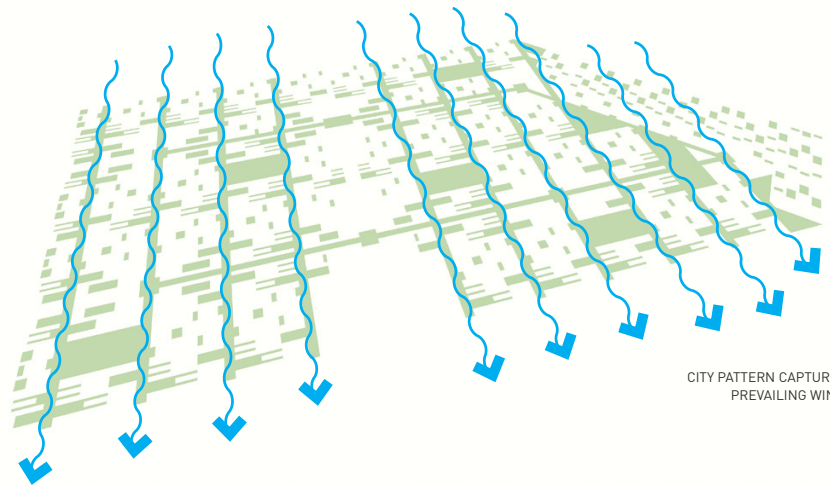
Planning Strategy

Based on psychrometric and climatic analysis of the region, comfortable space conditions can be achieved using only natural ventilation for at least 22% of the year in office and commercial spaces, or 30-40% of the year in residential spaces. The city is scaled and oriented to the regional climate. Major streets are organized to run parallel to prevailing winds from the north west, forming corridors that allow the wind to penetrate deep into the city. Courtyards and wind towers are strategically placed within buildings throughout the neighborhoods of the city to further utilize the wind for natural cooling, ultimately reducing energy costs associated with mechanical ventilation.

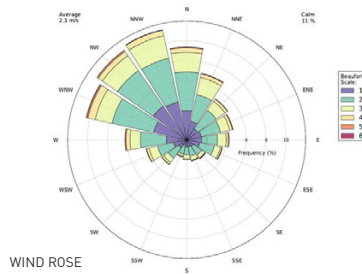


CONCEPTUAL SITE ARRANGEMENT

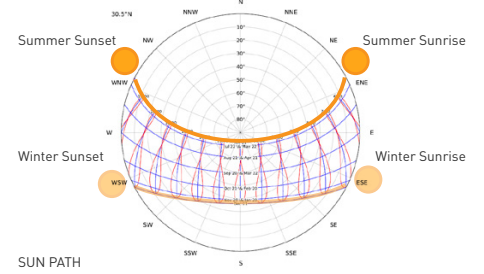
Conceptual Master Plan Approach



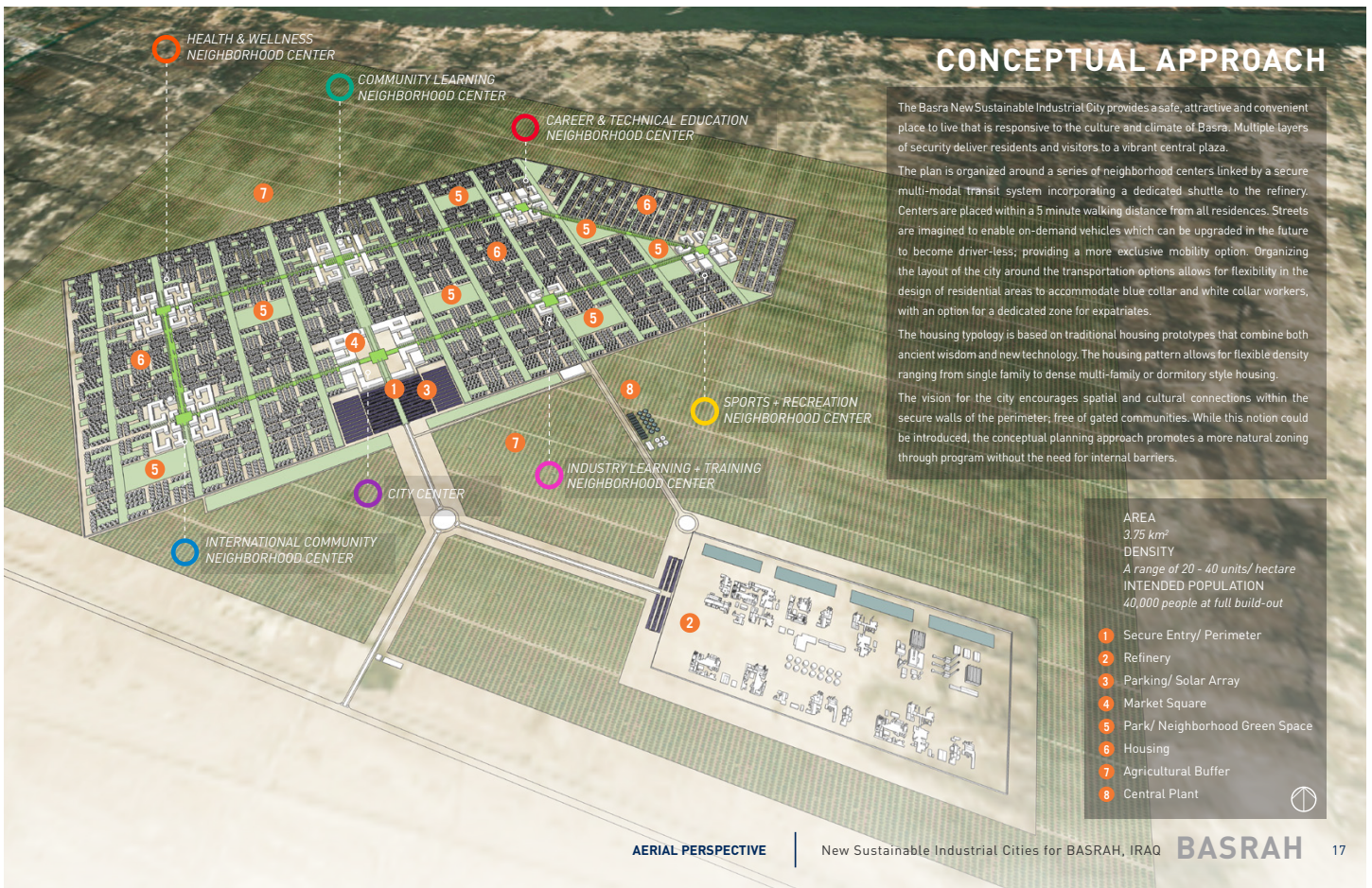
CITY PATTERN CAPTURING PREVAILING WINDS

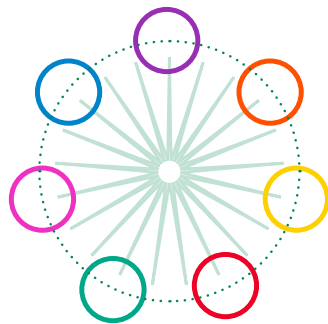


WIND ROSE



SUN PATH





Neighborhood Centers



(1) CITY CENTER

- Market square/ bazaar
- Shopping mall/ entertainment center
- Supermarket
- Arts or crafts center/ gallery
- Civic water feature
- Friday mosque
- Transit stop



(2) HEALTH + WELLNESS NEIGHBORHOOD CENTER

- Community health clinic
- Neighborhood shop, bakery, cafe
- Mosque
- Transit stop



(3) INTERNATIONAL COMMUNITY NEIGHBORHOOD CENTER

- International school (K-12)
- Community center, playground
- Neighborhood shop, bakery, cafe
- Church, mosque
- Transit stop



(4) COMMUNITY LEARNING NEIGHBORHOOD CENTER

- Girls elementary school
- Girls high School
- Library
- Park
- Community center, playground
- Neighborhood shop, bakery, cafe
- Mosque
- Transit stop



(5) CAREER & TECHNICAL EDUCATION NEIGHBORHOOD CENTER

- Boys elementary school
- Boys high school (vocational focus)
- School athletic fields
- Neighborhood shop, bakery, cafe
- Mosque
- Transit stop



(6) SPORTS + RECREATION NEIGHBORHOOD CENTER

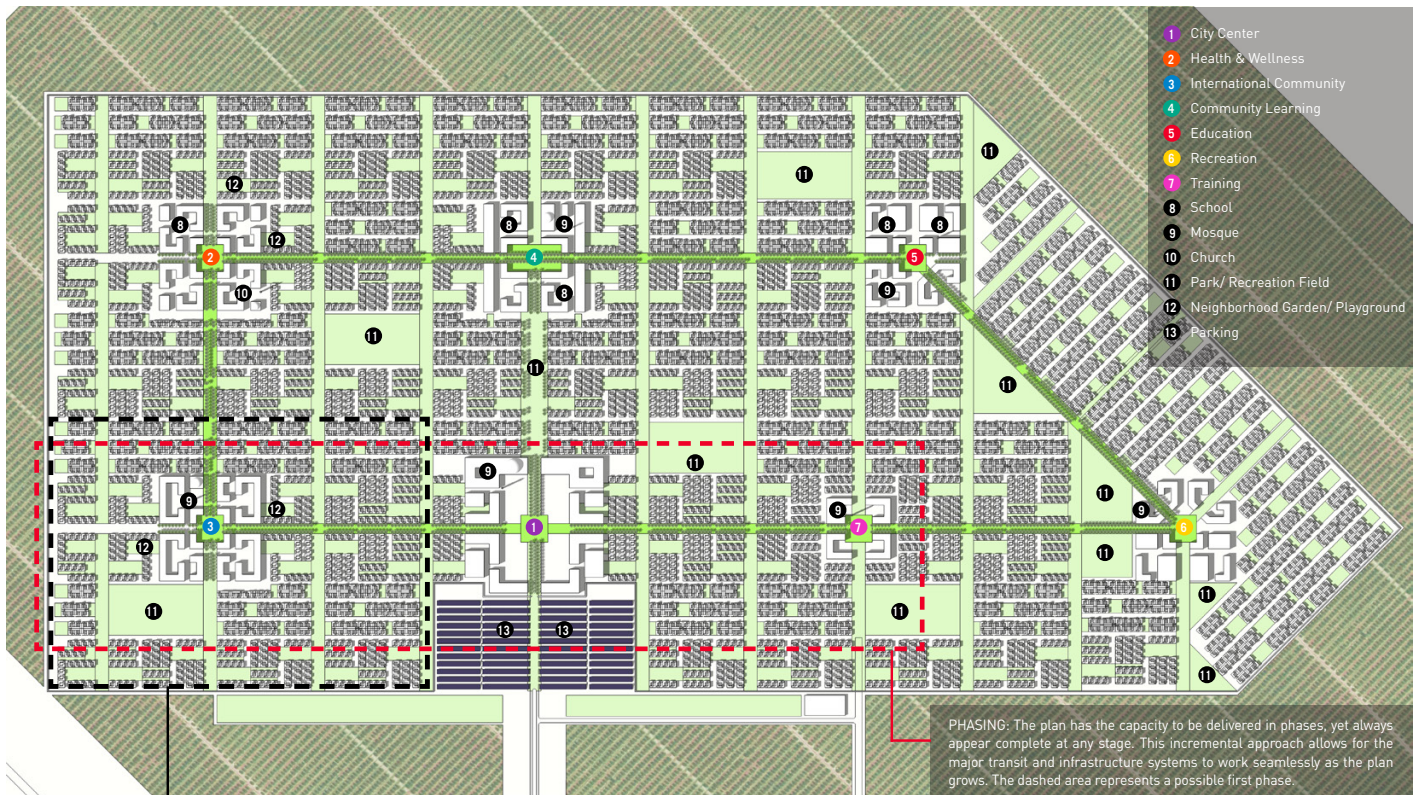
- Community gym, natatorium, sports fields
- Dormitories
- Neighborhood shop, bakery, cafe
- Mosque
- Transit stop



(7) INDUSTRY LEARNING + NEIGHBORHOOD CENTER

- Offices/ classrooms
- Neighborhood shop, bakery, cafe
- Mosque
- Transit stop

ARUP/OVERLAND ORIGINAL PROPOSAL



PHASING: The plan has the capacity to be delivered in phases, yet always appear complete at any stage. This incremental approach allows for the major transit and infrastructure systems to work seamlessly as the plan grows. The dashed area represents a possible first phase.

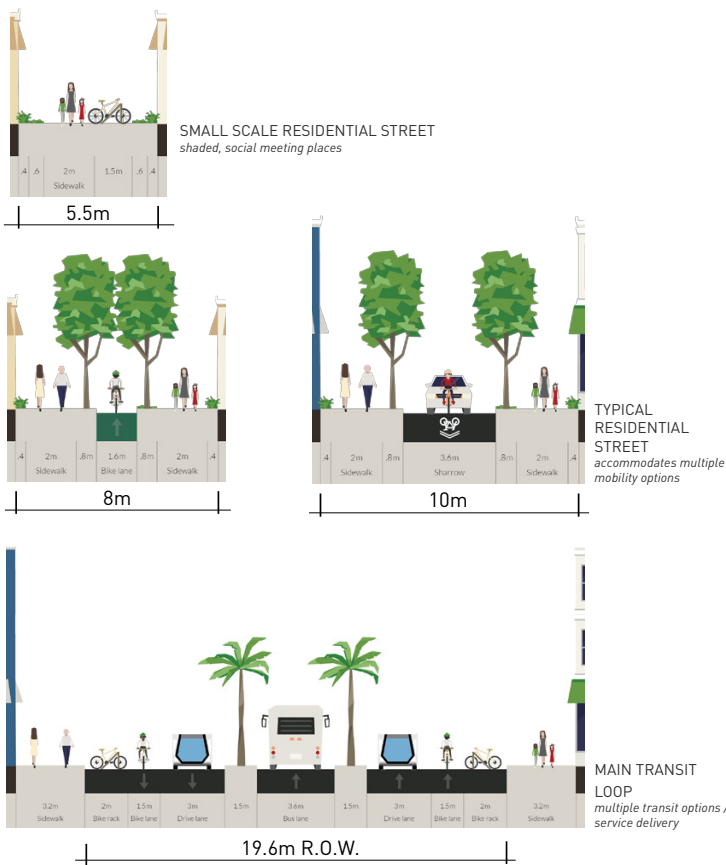
INTERNATIONAL COMMUNITY NEIGHBORHOOD CENTER

CONCEPTUAL MASTER PLAN

New Sustainable Industrial Cities for BASRAH, IRAQ **BASRAH**



ARUP/OVERLAND ORIGINAL PROPOSAL



Conceptual Master Plan Approach



(1) PUBLIC SQUARE

One at the center of each neighborhood center. Each public square is flanked by local shops, bakeries and cafes.



(2) TRANSIT STOP

A stop for the cross city shuttle and on demand cars. All residents will be within a 5-10 minute walk of one.



(3) MOSQUE

A mosque will be placed in the center of the neighborhood center for surrounding residents.



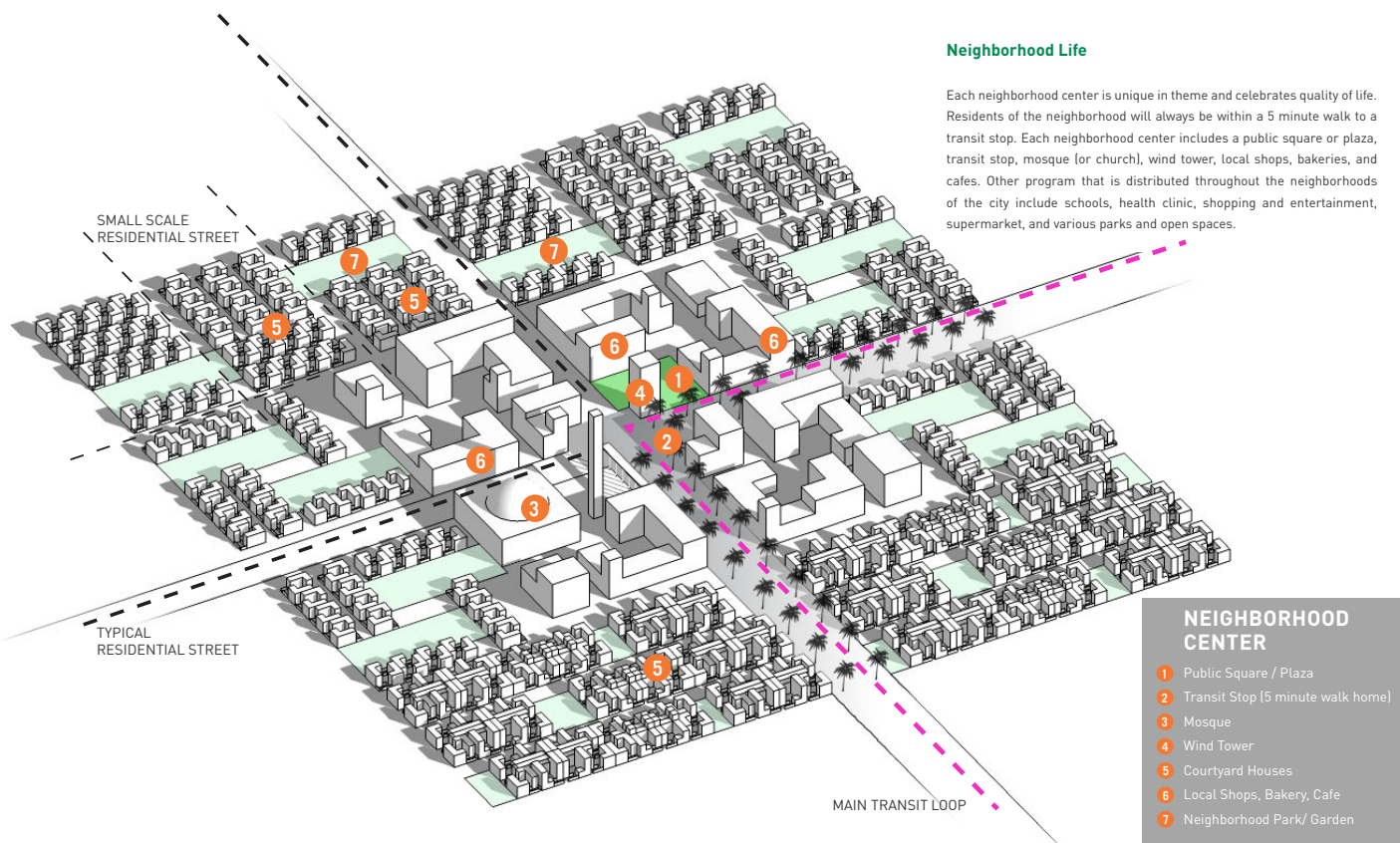
(4) WIND TOWER

Located near the public squares, community wind towers serve as markers and a means for natural ventilation.



(5) COURTYARD BUILDINGS

The dominant building type leverages passive strategies for ventilation while fostering the social network of the neighborhood

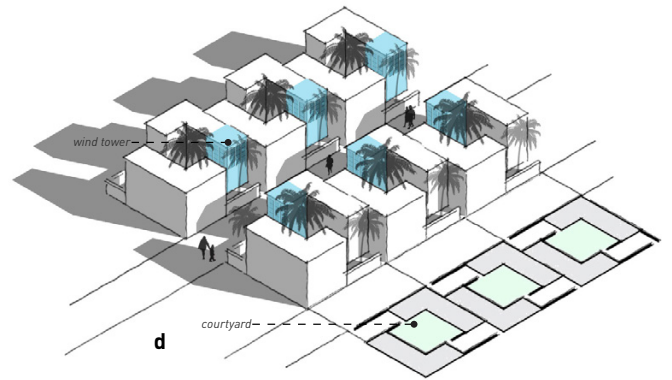
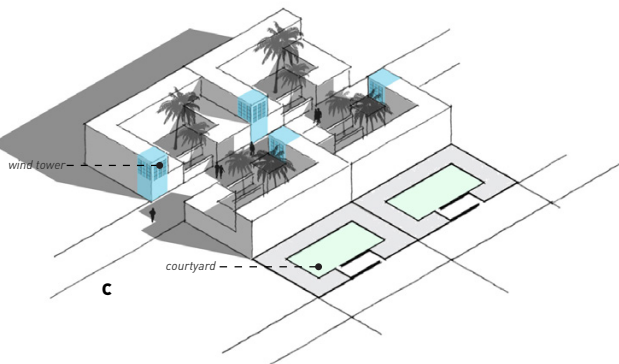
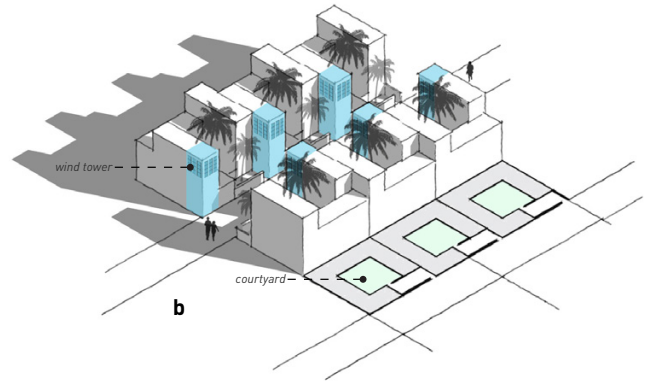
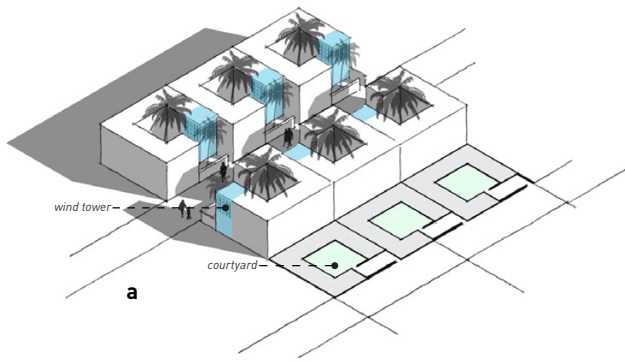


Neighborhood Life

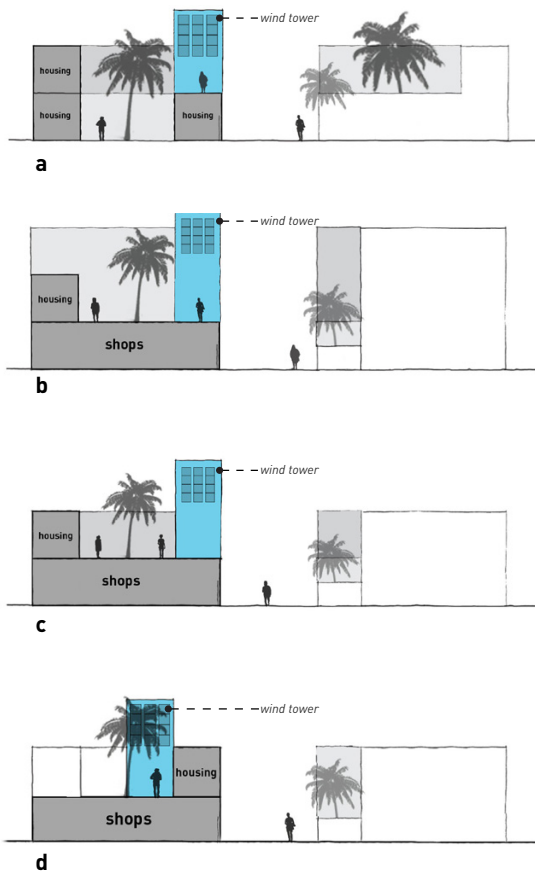
Each neighborhood center is unique in theme and celebrates quality of life. Residents of the neighborhood will always be within a 5 minute walk to a transit stop. Each neighborhood center includes a public square or plaza, transit stop, mosque (or church), wind tower, local shops, bakeries, and cafes. Other program that is distributed throughout the neighborhoods of the city include schools, health clinic, shopping and entertainment, supermarket, and various parks and open spaces.

NEIGHBORHOOD CENTER

- 1 Public Square / Plaza
- 2 Transit Stop (5 minute walk home)
- 3 Mosque
- 4 Wind Tower
- 5 Courtyard Houses
- 6 Local Shops, Bakery, Cafe
- 7 Neighborhood Park/ Garden



Conceptual Master Plan Approach



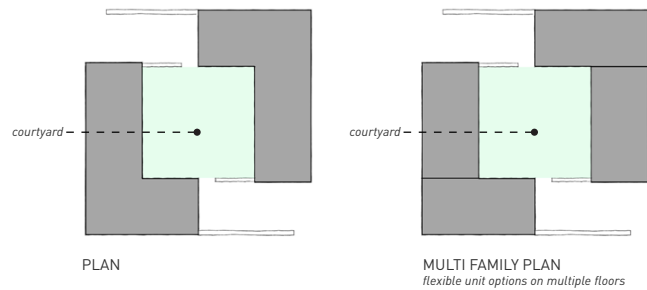
SECTION OPTIONS FOR TYPICAL HOUSING BLOCKS

Courtyard House Typology

The concept for housing is rooted in flexibility to allow for a range of lifestyles and densities while fostering culturally diverse neighborhoods.

The parcelization of housing blocks are flexible enough to support a range of dwelling types with neighborhood patterns that are oriented to leverage natural light, shade and ventilation. The area of each dwelling can be maximized by making full use of rooftops and courtyards. Neighborhood shops, cafes and live/ work spaces can be integrated into the ground floor of the houses.

Within the flexible neighborhood framework, each courtyard building can be designed to accommodate various combinations of unit types and living arrangements. One nuclear family can occupy a whole house - or a nuclear plus their extended family. Alternatively, a unit can be subdivided into as many as eight living quarters that can be rented per room - and many combinations in between.



ARUP/OVERLAND ORIGINAL PROPOSAL

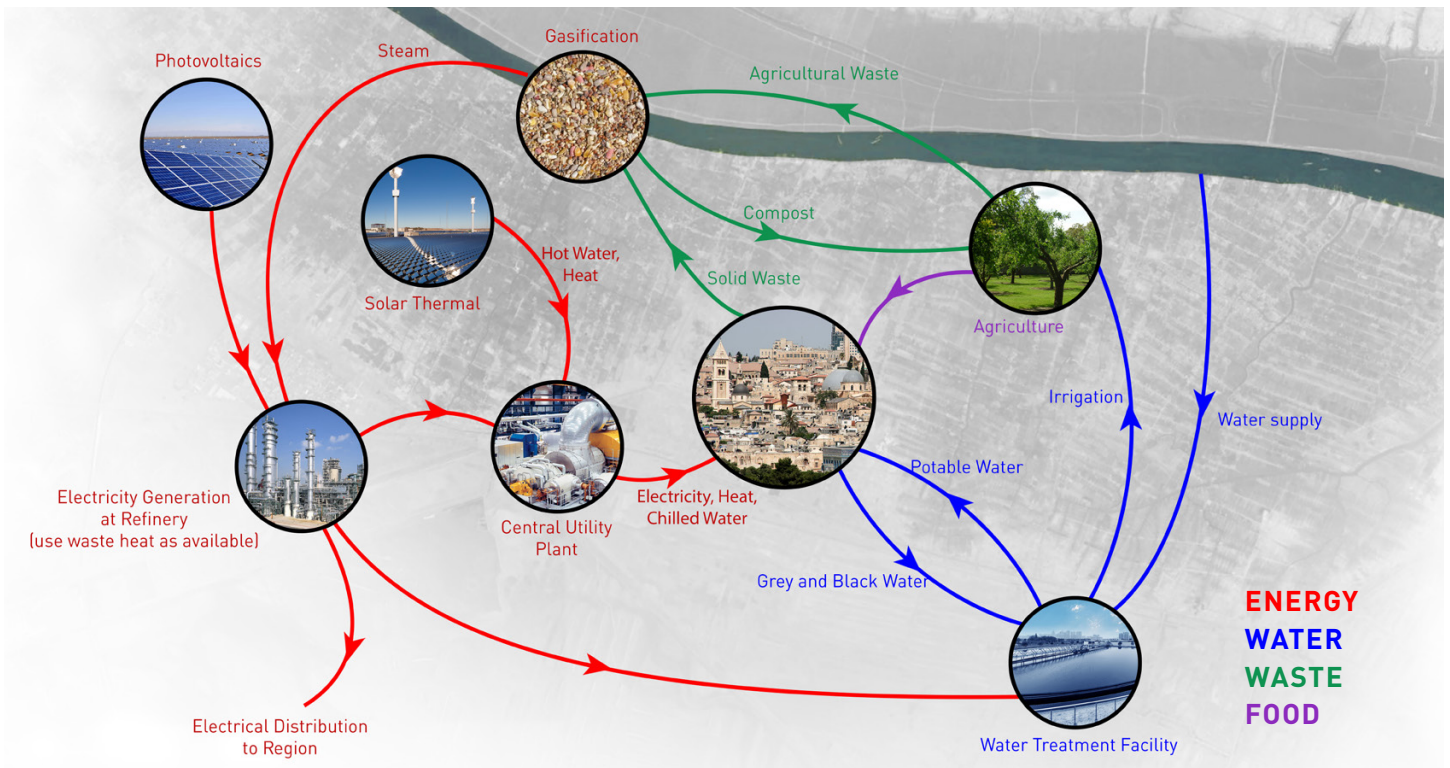


MASDAR CITY



Conceptual Master Plan Approach

SYSTEMS PERFORMANCE & LOGISTICS



INTEGRATED SYSTEMS

New Sustainable Industrial Cities for BASRAH, IRAQ

BASRAH

TRANSPORTATION, TRANSIT, PARKING & SECURITY SYSTEMS



(1) SECURITY CHECKPOINTS

All vehicle entering the city will pass the first security checkpoint and be directed to refinery parking, general city parking, or commercial parking. Secondary security checkpoints will be located at the city and refinery gates.



(2) PARKING

Since there are no private motor vehicles within the city, visitors can park in the designated lot outside the city, which will be shaded by photovoltaic panels.



(3) TRANSPORTATION HUB

A shaded or interior walkway will connect visitor parking facilities to the transportation hub, which connects to transit services and on demand transportation.



(4) CITY TRANSPORTATION

Buses will circulate around the city, leaving any location in the city within a five minute walk of one of the seven stations.



(5) ON DEMAND TRANSPORTATION

No private motor vehicles will circulate in the city, but on demand vehicles, potentially driverless, will provide local services on streets away from the main transit loop.



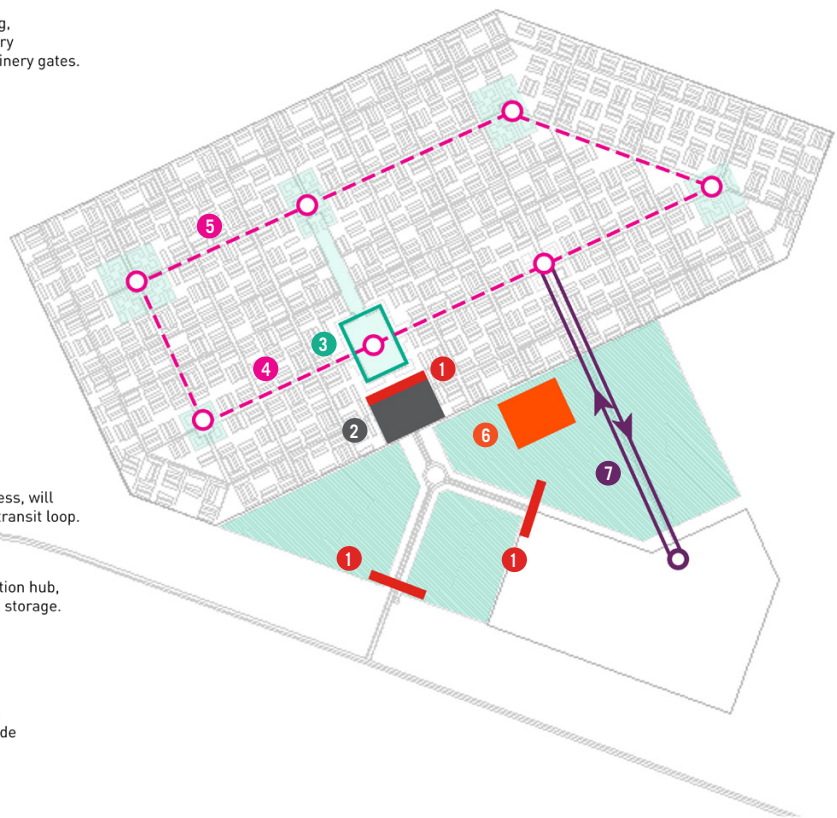
(6) DISTRIBUTION HUB

Commercial vehicles will deliver goods to the distribution hub, which will be equipped with cold rooms and dry goods storage. Electric vehicles will distribute goods within the city during quieter hours.



(7) REFINERY SHUTTLE

A shuttle will provide two-way transportation between the city and the refinery. The shuttle will only stop inside the city and refinery boundaries.



Conceptual Master Plan Approach



[1] SOLAR FARM

Photovoltaics over the parking lot harvest solar energy to supply electricity to the city.



[2] SOLAR THERMAL

System will produce high temperature water for chilled water production.



[3] GASIFICATION

City solid waste and agriculture biomass from agricultural activities will be converted into steam and electricity.



[4] REFINERY

Steam byproducts used for electricity generation to heat the city.



[5] COMPOST

By-product compost from gasification process is returned to farms to nourish soil, supporting long-term abundance.



[6] INTERNAL VEGETATION

Greenery lines streets of the city, for both aesthetics and food production.



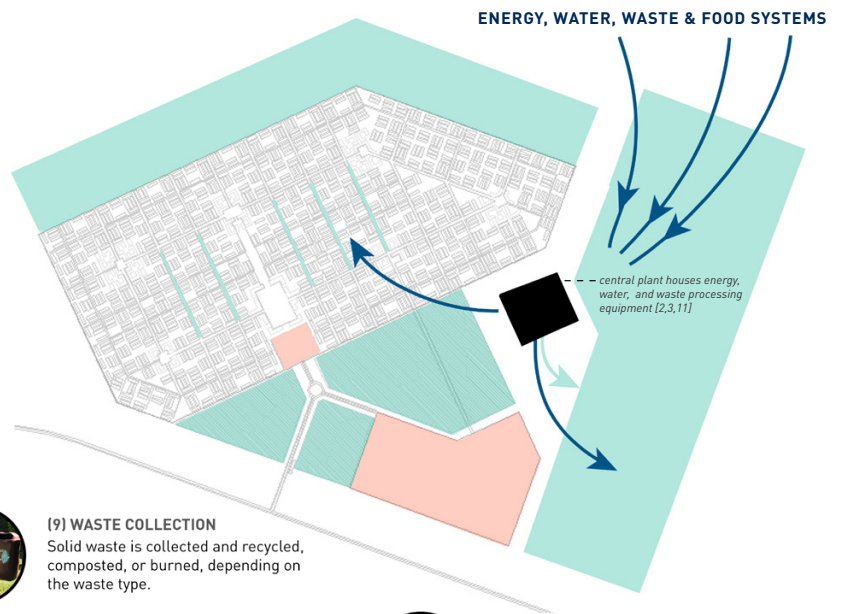
[7] PERIMETER CROPS

Shorter crops, such as wheat, will be planted at the perimeter of the city.



[8] OUTLYING CROPS

Other, taller crops, such as fig trees, will be planted farther from the city.



[9] WASTE COLLECTION

Solid waste is collected and recycled, composted, or burned, depending on the waste type.



[10] EXISTING CHANNELS

utilize existing water channels to divert water from the river to the water treatment facility.



[11] WATER TREATMENT FACILITY

Facility cleans water from nearby river and black/grey water from the city, delivers potable water back to the city and irrigation water for agriculture.



[12] WATER DISTRIBUTION

Clean, potable water is delivered to the residents and businesses in the city.



[13] IRRIGATION

Water is delivered to crops via irrigation channels and lines.

INTEGRATED SYSTEMS

New Sustainable Industrial Cities for BASRAH, IRAQ **BASRAH**

LOCATION SUMMARY



LOCATION SUMMARY

