

AUS

American
University
of Sharjah

Name: Rewan Hesham
Partner: Laura AIDhahi

College: College of Architecture, Art and Design



Hydrocity of Ajman



Case Study of Housing in Ajman

RESIDENTIAL URBANIZATION

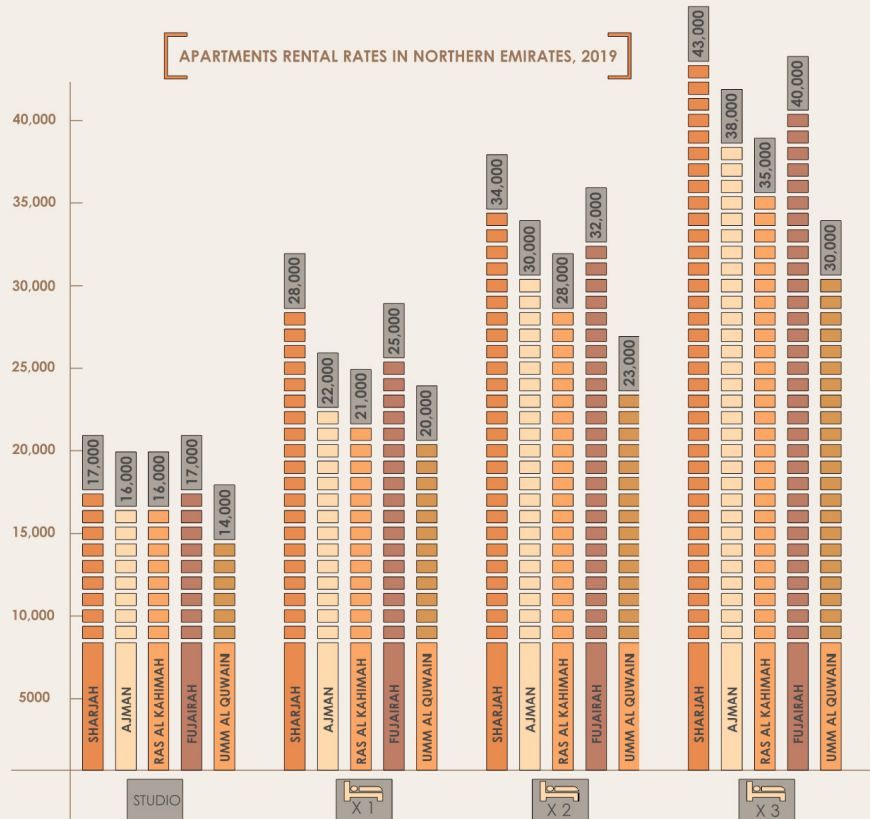
HOW URBANIZATION IS CHANGING THE EMIRATI IDENTITY

TODAY, MUCH OF THE TRADITIONAL CULTURE OF THE UAE IS BETTER PRESERVED IN THE RURAL AREAS OF THE COUNTRY WHILE THE NATION'S RAPID URBANIZATION IS CREATING REALITIES ON THE GROUND THAT ARE TOO FAST TO DEAL WITH.

THE ECONOMIC BOOST FROM THE OIL REVENUE AND THE INCREASE OF POPULATION GROWTH, RESULTED IN THE CITY'S RAPID URBAN CHANGE.

THE IMPORTED MODERNITY REFLECTS THAT THE AREA IS UNDERGOING AN ACCELERATED EXPOSURE TO NEW MODES OF ARCHITECTURE AND STRUCTURAL TECHNOLOGIES.

THE ARCHITECTURE HERE IS TREATED AS A MECHANISM OF SOCIAL AND ECONOMIC GROWTH, WITHOUT CONSIDERING THE SURROUNDING CULTURAL AND THE BUILT-IN CONTEXT.



DRIVING FORCES OF URBANIZATION

COST EFFECTIVE AND HIGHLY PROFITABLE

FAST CONSTRUCTED AND MASS PRODUCED



TYPES OF RESIDENTIAL URBANIZATION, TOWERS



AL BUHEIRA, SHARJAH

VARIOUS BUILDING HEIGHTS ARE SPREAD ACROSS THE CITY WITH SIMILAR STYLES AND MATERIALS



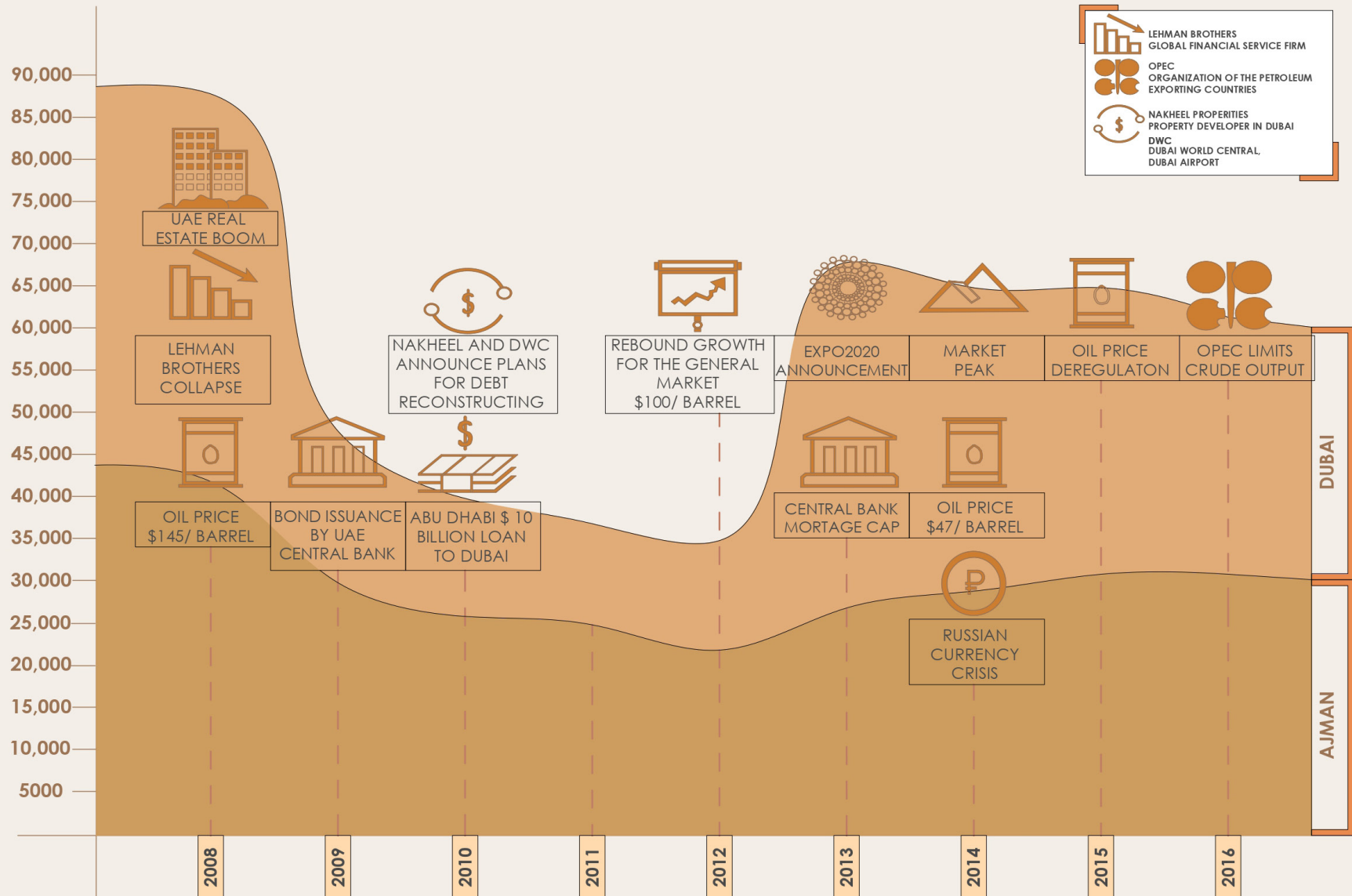
EMIRATES CITY, AJMAN

MODULAR RESIDENTIAL COMPOUND, BUILDINGS HAVE THE SAME HEIGHT, MATERIALS, STYLE AND EQUIDISTANT FROM ONE ANOTHER

What are the Average Rental Rates in Ajman in 2019 ?



Apartment Rental Rates in Dubai VS Ajman, Across 2016-2018



Where do Bachelors Live ?

AJMAN TARGETS BACHELOR HOUSING

RIISING RENTS AND THE MUNICILAITY'S ENFORCEMENT EFFORTS AGAINST BACHELORS SHARING VILLAS AND APARTMENTS HAS LED LAND OWNERS TO PAY FINES IN MILLIONS

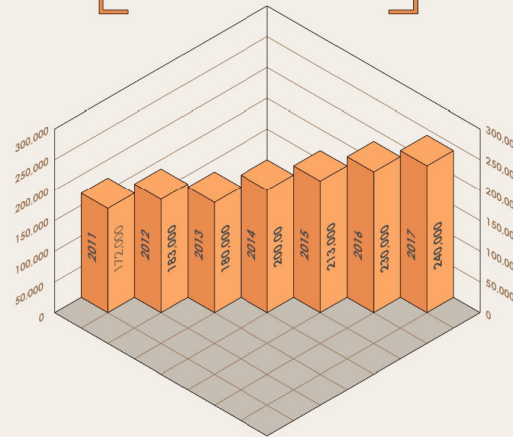
700 COMPLAINTS FROM FAMILIES ACROSS AJMAN ABOUT BACHELORS LIVING WITHIN THE SAME BUILDING.

13 APARTMENTS SPLITTING ROOMS, USING WOOD PARTITIONS IN ORDER TO ACCOMMODATE AS MUCH BACHELORS AS POSSIBLE.

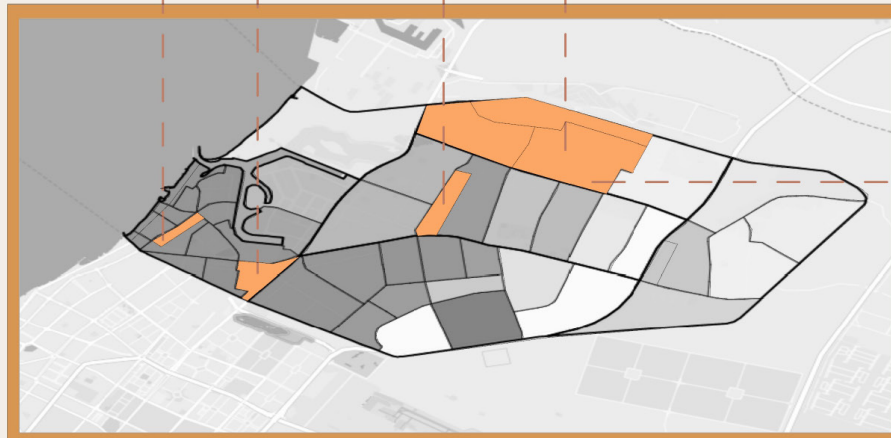
THE COMMITTEE HAS CUT OFF ELECTRICITY AND WATER TO APARTMENTS WHERE BACHELORS STILL RESIDE.

BOTH MARRIED MEN AND BACHELORS LIVE TOGETHER DUE TO RENT PRICES EXCEED THEIR SALARIES IF THEY LIVE ALONE.

NUMBER OF EMPLOYEES IN AJMAN



AL SAWAN AL NUAIMIYA GARDEN CITY AL JURF INDUSTRIAL AREA



MOST COMMON AREAS WHERE BACHELORS LIVE



AL JURF INDUSTRIAL AREA LABOR HOUSING ABOVE COMMERCIAL SHOPS



AUS

American
University
of Sharjah

Name: Rewan Hesham
Partner: Laura AIDhahi

College: College of Architecture, Art and Design



Hydrocity in Ajman



AUS

American
University
of Sharjah

Name: Rewan Hesham
Partner: Laura AIDhahi

College: College of Architecture, Art and Design



TABLE OF CONTENTS

ABOUT HYDROCITY

SITE LOCATION

SITE TIME DESTINATION

SITE FEATURES

TOWER MODULE

TOWER COMPONENTS

RESIDENTIAL MODULES

POWER GENERATION

WATER TOWER

SECTION PERSPECTIVE

LIFESTYLE



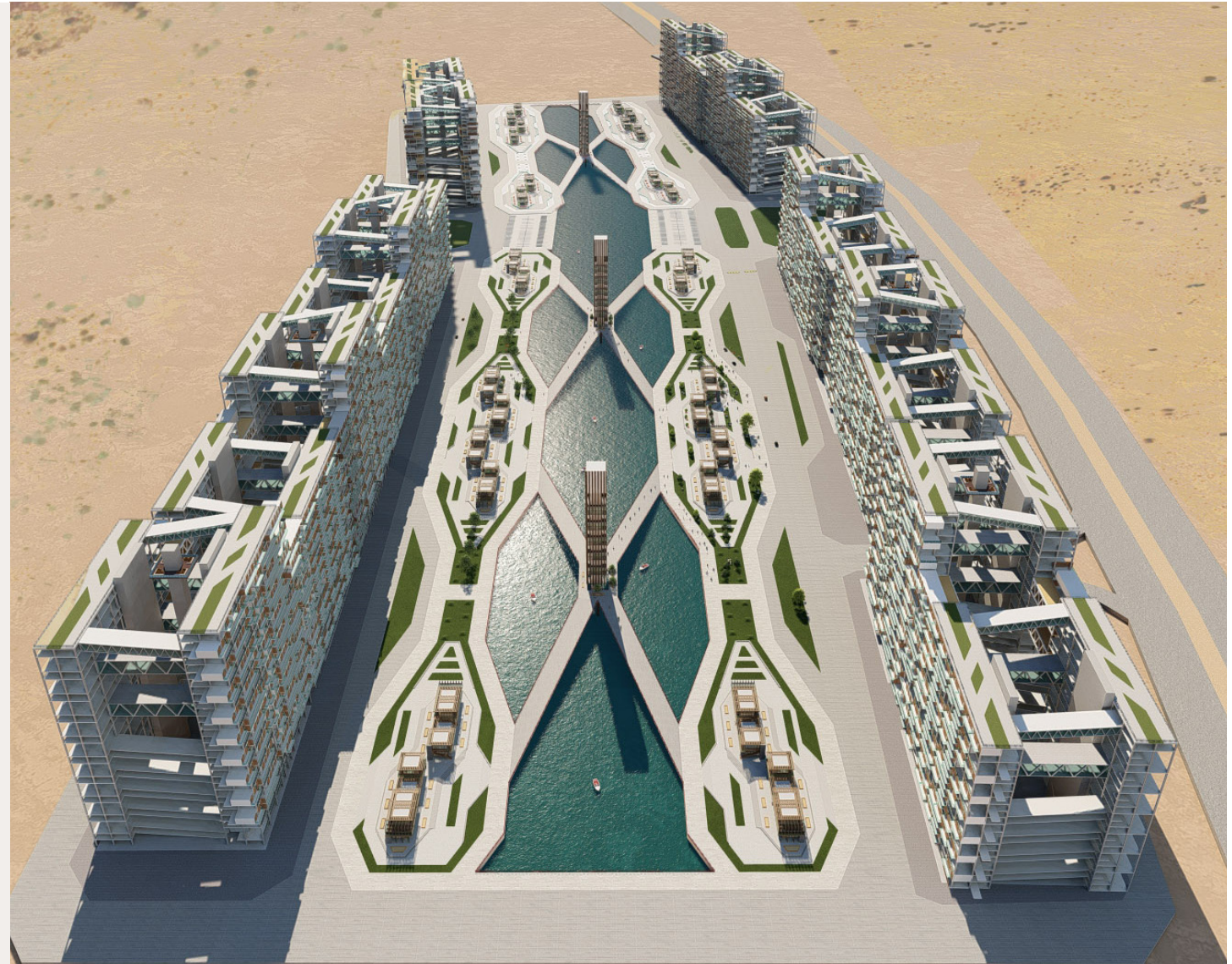
About Hydrocity- Master Plan Vision

Hydrocity- Hydropower generation enhancing the environmental, social and economical aspects of future cities.

Project Proposal

Hydrocity in Ajman is primarily a re-urbanization of a district in Ajman called Emirates city, it is adjacent to the E311 road where it links all the emirates together in the United Arab Emirates.

Hydrocity in Ajman represents a place of modern mixed-use project offering offices, residential units, commercial and entertainment programs expressing a contemporary way of living. In which it combines the elements of work, live and socialize together within the same context, to provide a flexible and easier lifestyle for the residence.



Site Location

The site before the proposal consists of a cluster of residential towers in different construction stages that are relatively placed close to one another. They all have the same typology, style and height in which these towers rest on a multi-storey parking structure as a podium.

However, the density, organization and proportion of these towers made the site look as a dense concrete jungle of towers that lacks an interactive space for the residents to socialize.



The project is accessible by E311 Road that links all major emirates in the UAE, which costs US\$2.1 billion and carries 6 lanes both ways, with a capacity of 8,000 vehicles an hour.



Existing Site Condition



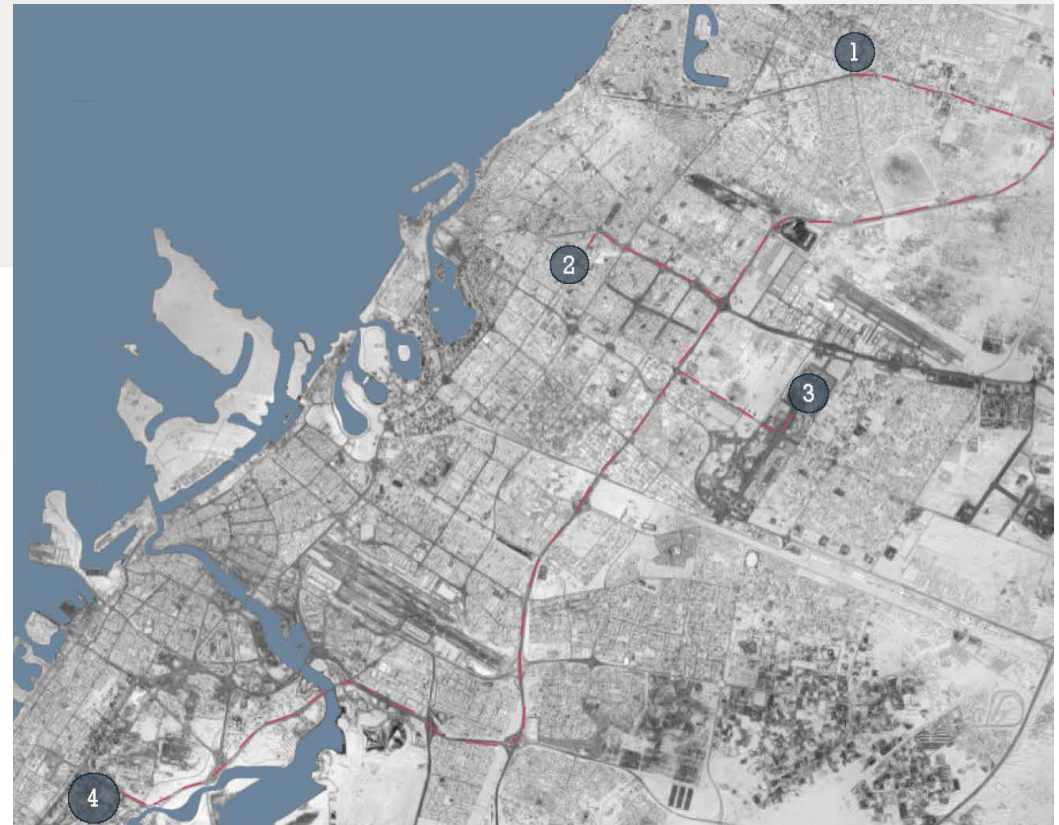
Existing Site Condition

Site Time Destination

A PRIME SPOT IN AJMAN

At the heart of Ajman, the development is connected to the emirates of the UAE through E311 Road that begins in Abu Dhabi and extends all the way to Ras AIKhaimah and the UAE's northern border with Oman.

① Heart of Ajman	② Heart of Sharjah	③ University City	④ Dubai
Time: 15 min	Time: 18 min	Time: 17 min	Time: 30 min
Distance: 11.5 km	Distance: 21.6 km	Distance: 21.3 km	Distance: 46.3 km





Site Features

AN AGENT'S GUIDE

FOUR THINGS TO KNOW ABOUT HYDROCITY OF AJMAN



LOCATION



RENEWABLE ENERGY



FEATURES



ENTERTAINMENT

The project addresses 3 main points of resiliency which are economic, social and environmental.

Economic- Each tower is mainly designed as an open concrete parking structure with a central courtyard and a modular grid system with modular size program units that would be adapted and converted interchangeably depending on the demand of the economy over time.

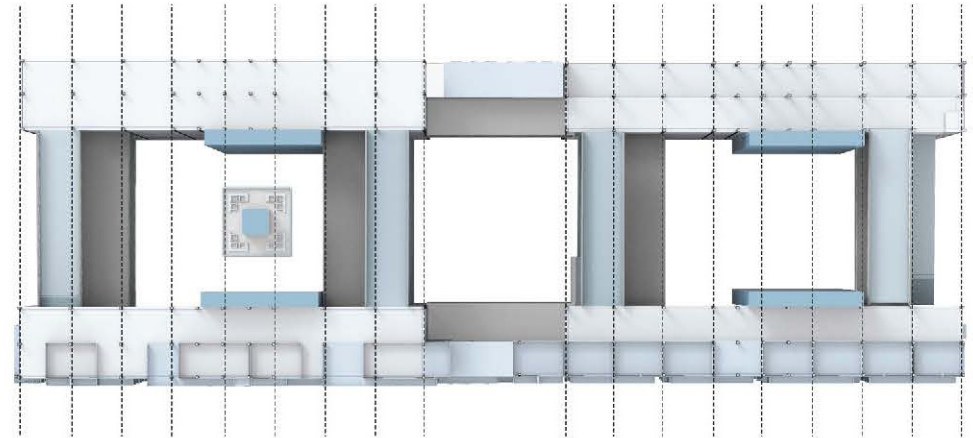
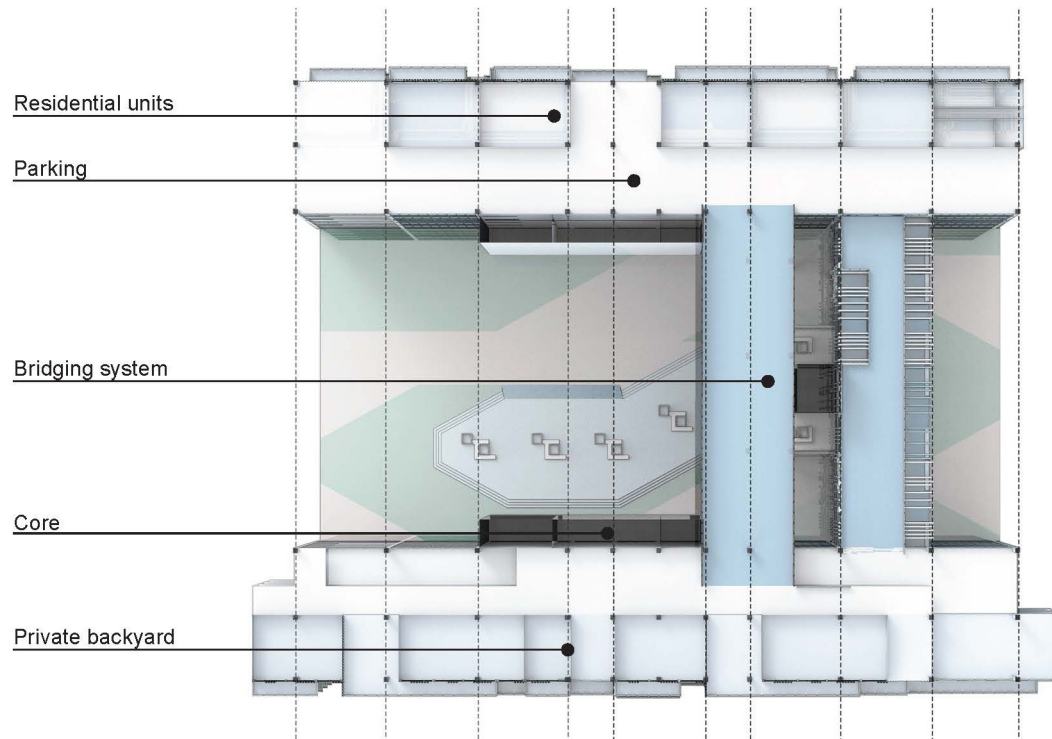
Social - The project proposes various scales of public space both within and outside the tower just to create a variety of leisure experience for all age groups. For example, we have sky dine that is in the hydropower tower and other wide range of entertainment, commercial and retail facilities, as well as roof gardens that all overlook a panoramic view of the central water body in the proposal.

Environmental- The use of hydropower towers located in the center of the master plan and captured kinetic energy from vehicles, so both these forms of energy are used to generate electricity and provide it back to the grid and the hydrocity as whole.

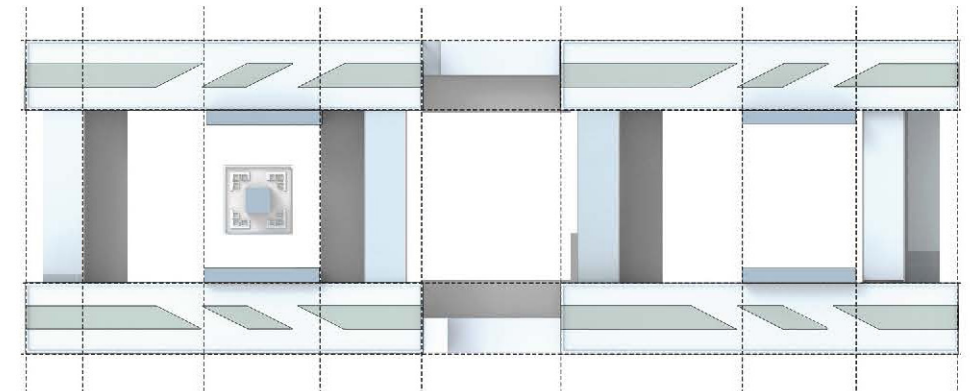
Tower Modules

COMMUTE WITHIN YOUR TOWER

TRAVEL WITH EASE

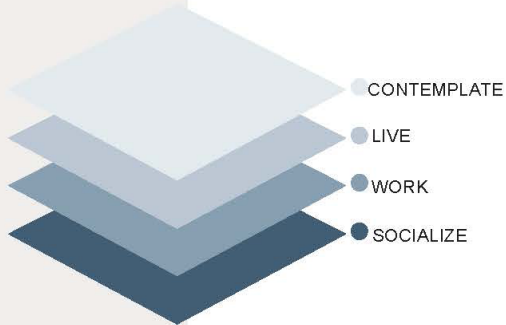


One tower module is linked with another to create a chain of buildings



Each building has its own central courtyard and sky-high roof gardens

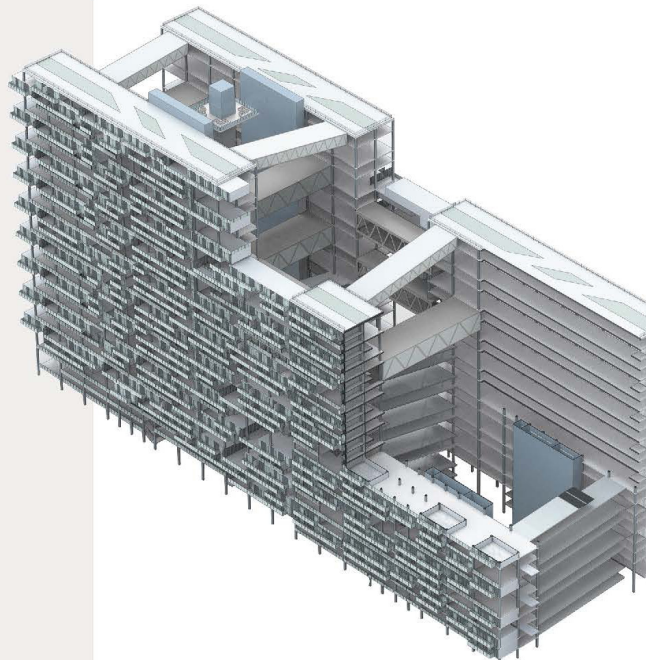
Tower Components



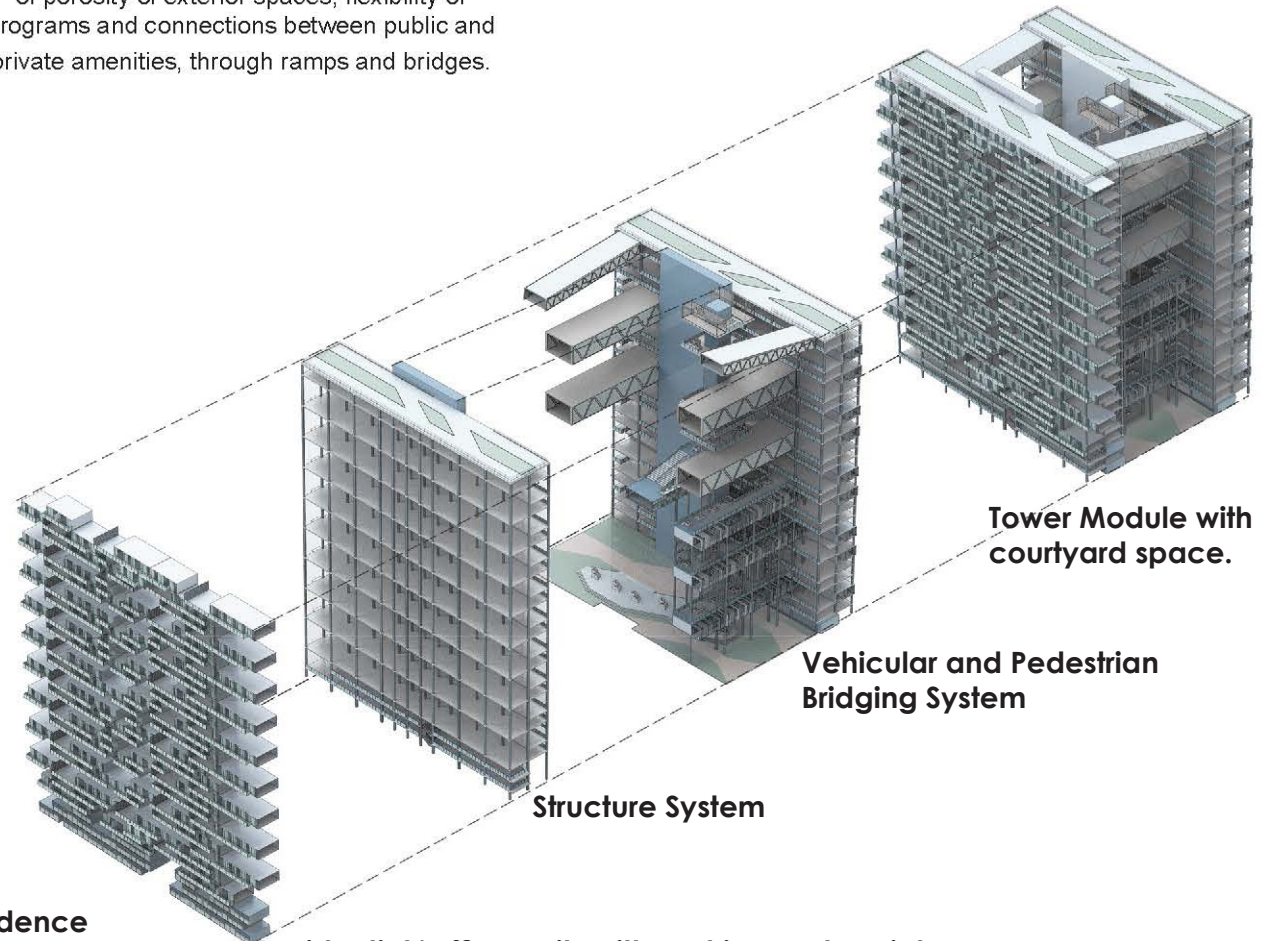
Experience a new lifestyle

POROSITY & FLEXIBILITY OF SPACES

The design of the towers address concepts of porosity of exterior spaces, flexibility of programs and connections between public and private amenities, through ramps and bridges.



Each tower has a car elevator that allows the residence and employees to park their car right next to their working or living space.



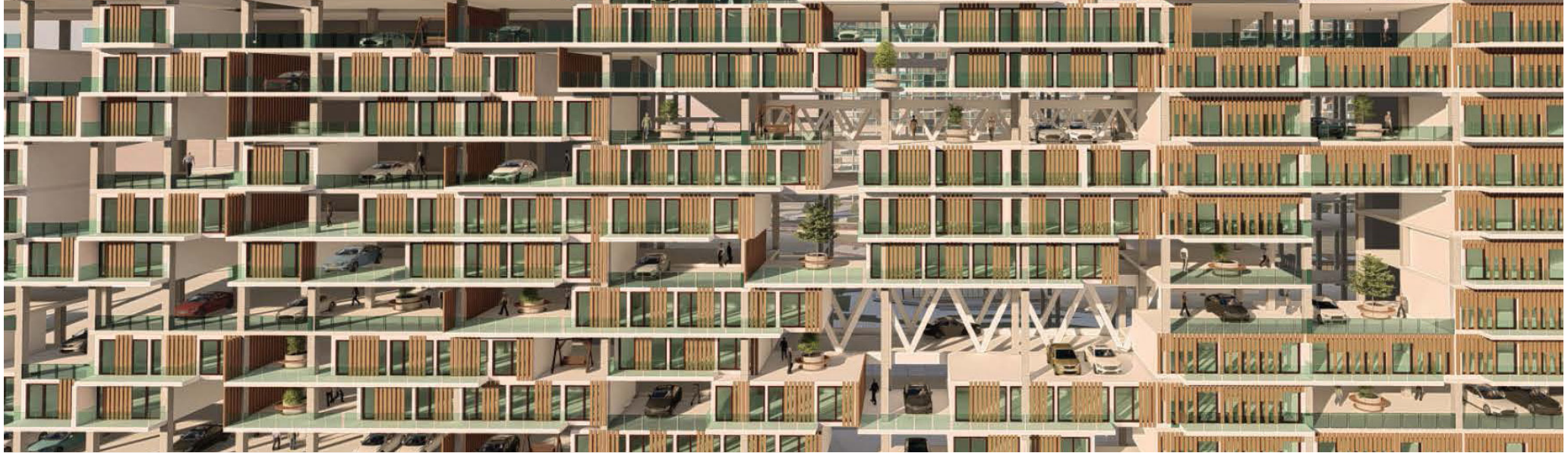
Tower Module with courtyard space.

Vehicular and Pedestrian Bridging System

Structure System

Residential/ office units with parking and social zones

Residential Modules



THERE IS SO MUCH TO CHOOSE FROM
THE DECISION IS YOURS

CHOOSE YOUR FUTURE HOME

Studio Apartment units

- 128 sq. metres
- 96 sq. metres

1 Bedroom Apartment units

- 200 sq. metres
- 160 sq. metres
- 128 sq. metres

2 Bedroom Apartment units

- 200 sq. metres
- 160 sq. metres
- 128 sq. metres

3 Bedroom Apartment units

- 200 sq. metres
- 160 sq. metres

Residential Modules

Office Module- 128 sq.m.



Studio Module-96 sq.m.



2 Bedroom Module- 200sq.m.



Power Generation- Kinetic Energy into Electrical Energy

YOU CAN POWER THE CITY YOU LIVE IN

THE FIRST SELF-GENERATING CITY IN THE UAE

With the help of advanced technology and physics of infrastructure, the system essentially harnesses the power of the earth's gravitational force and kinetic energy. Due to the scarcity of water on site, the use of subsidiary energy is fundamental for energy storage, backup power and create a dynamic city down the line.



Gravitational hydro-system water towers



Kinetic energy captured through speed bumps



Both energies are stored then converted to generate electricity

PREPARING FOR THE FUTURE

THE FIRST GREEN CITY IN AJMAN

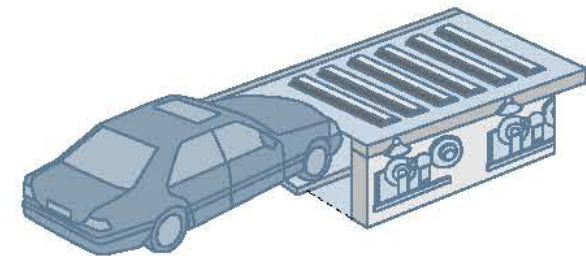
WATER TOWERS & KINETIC ENERGY

HydroCity of Ajman offers a green lifestyle of conserving and generating energy from the city, to the city, using hydropower towers and captured kinetic energy from vehicles, which is later turned into electricity.



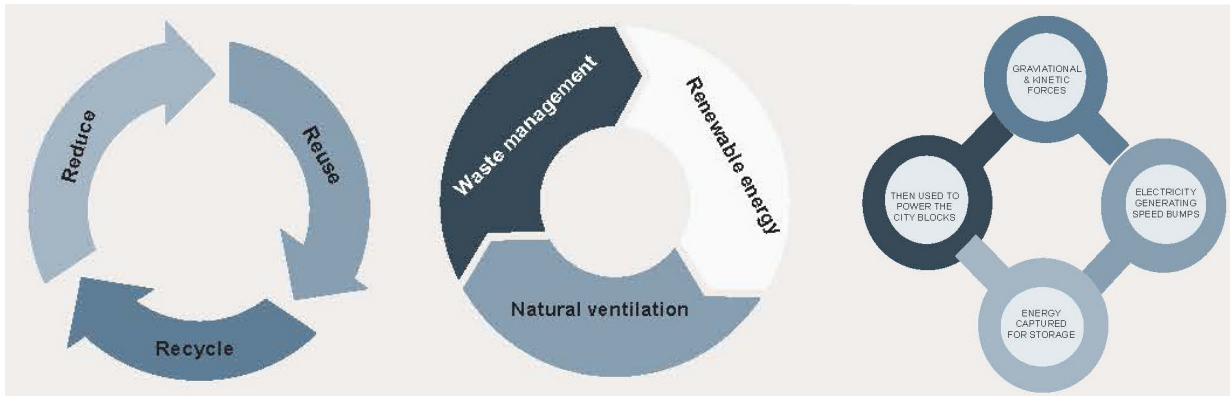
Vehicular Kinetic Pressure = Electrical Energy

Energy Generating Speed Bumps

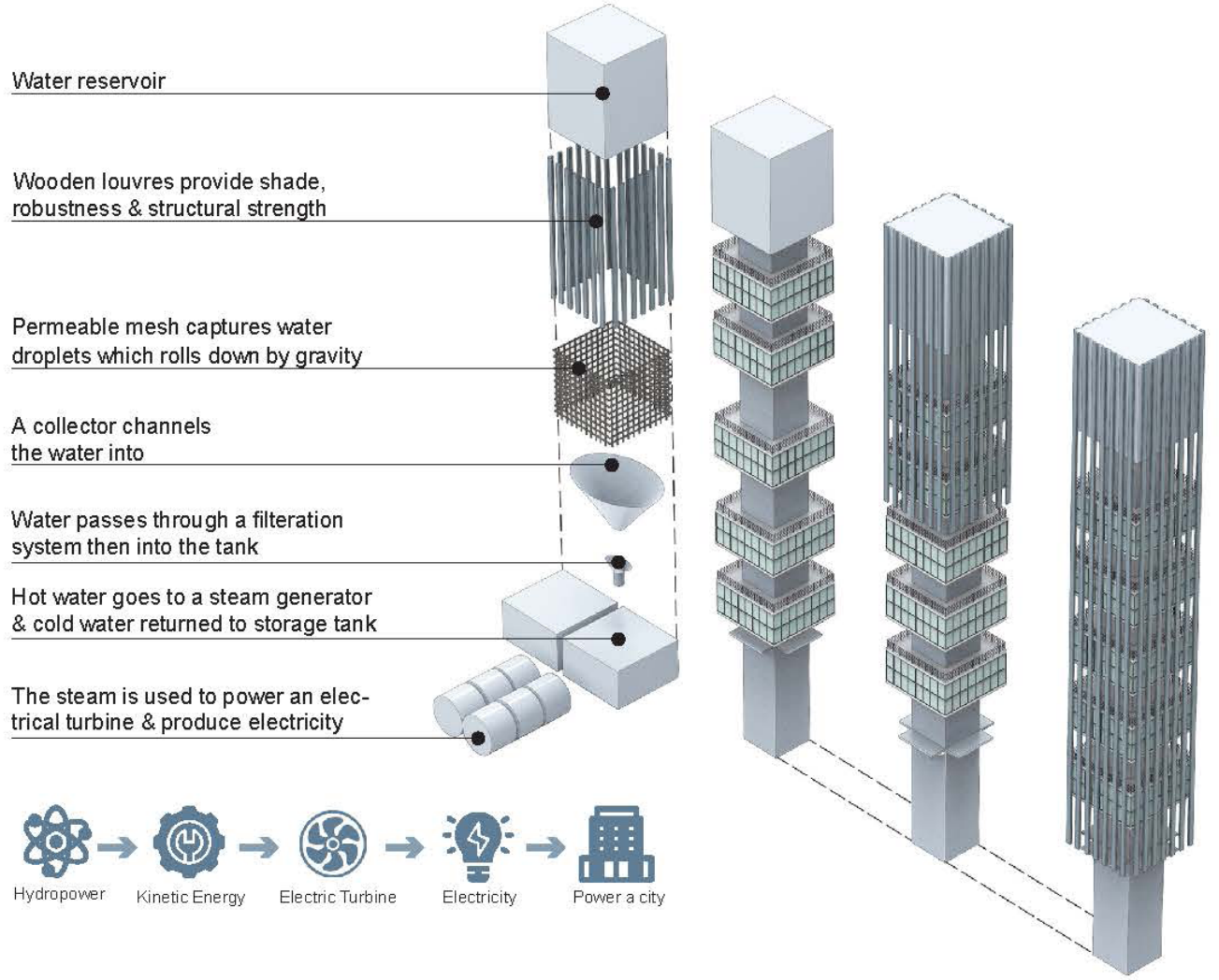


Turbine generators create, stores then redirects energy to power the buildings

Every press = 50W x 12S



Hydropower Generation- Gravitational Potential Energy into Electrical Energy



In a pumped storage tower water is pumped from a lower reservoir to a higher reservoir during off-peak times when electricity is relatively cheap, using electricity generated from other types of energy sources. Pumping the water uphill creates the potential to generate hydropower later on. When the hydropower power is needed, it is released back into the lower reservoir through turbines.

Hydropower tower capture the energy of falling water to generate electricity. A turbine converts the kinetic energy of falling water into mechanical energy. Then a generator converts the mechanical energy from the turbine into electrical energy.

Section Perspective of one Tower

Section Perspective showing a set of social bridges connecting one side of the tower to the other and accommodating social programs, such as gym, kindergarten and arcade spaces.

YOUR SHOPPING & LIFESTYLE DESTINATION

SO MUCH TO ENJOY

Only one minute away from your house. Hydrocity is the new center of shopping, entertainment and leisure to counterbalance your workday with a variety of facilities including:



Shopping &
Dining Outlets



Hyper-Market



Private Living



Movie Theatres



Offices



Family Entertainment
Activities



AUS

American
University
of Sharjah

Name: Rewan Hesham
Partner: Laura AIDhahi

College: College of Architecture, Art and Design



Hydrocity Landscape and Exterior Views



AUS

American
University
of Sharjah

Name: Rewan Hesham
Partner: Laura AIDhahi

College: College of Architecture, Art and Design



Social Bridges for Circulations and Occupying Social Programs



Social Programs in a Tower

Solo Basketball Courts



Kindergarten



Exercising Tracks



Social Gathering Spaces



AUS

American
University
of Sharjah

Name: Rewan Hesham
Partner: Laura AIDhahi

College: College of Architecture, Art and Design



View of Cafe and Restaurants located at the center of Hydrocity



AUS

American
University
of Sharjah

Name: Rewan Hesham
Partner: Laura AIDhahi

College: College of Architecture, Art and Design



View of Cafe and Restaurants at Night

