

Abu Dhabi

مخطط رؤية
Vision

Plan Abu Dhabi 2030

Urban Structure Framework Plan

مجلس أبوظبي للتخطيط العمراني
ABU DHABI URBAN PLANNING COUNCIL





His Highness Sheikh Khalifa bin Zayed Al Nahyan
President of the United Arab Emirates, Ruler of Abu Dhabi



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SUMMARY OF MANDATE

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The Abu Dhabi Urban Planning Council was created by Emiri Decree number 23 of the year 2007 and is the agency responsible for the future of Abu Dhabi's urban environments, and the expert authority behind the visionary Plan Abu Dhabi 2030 Urban Structure Framework Plan published September 2007. Chaired by His Highness Sheikh Mohamed Bin Zayed Al Nahyan, Crown Prince of Abu Dhabi and Chairman of the Abu Dhabi Executive Council, the Abu Dhabi Urban Planning Council defines the shape of the Emirate, ensuring factors such as sustainability, infrastructure capacity, community planning and quality of life, by overseeing development across the city and the Emirate as a whole. The Abu Dhabi Urban Planning Council ensures best practice in planning for both new and existing urban areas.

The Abu Dhabi Urban Planning Council's primary purpose is to deliver upon the vision of His Highness Sheikh Khalifa bin Zayed Al Nahyan, President of the UAE, Ruler of Abu Dhabi for the continued fulfilment of the grand design envisaged by the late Sheikh Zayed bin Sultan Al Nahyan and the ongoing evolution of Abu Dhabi as a global capital city. By drawing on urban planning expertise locally, throughout the GCC and around the world, the UPC strives to be a global authority on the future of urban planning and design.

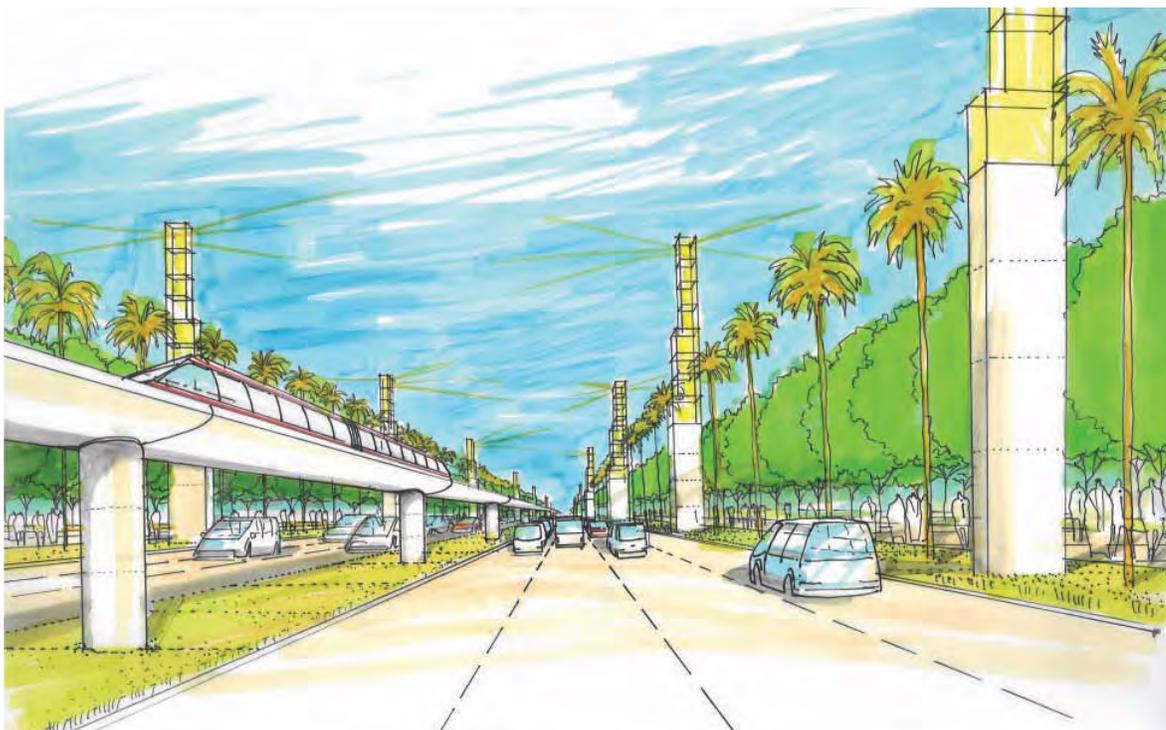
This document contains "Plan Abu Dhabi 2030" Urban Structure Framework Plan prepared by the Abu Dhabi Urban Planning Council and approved by the Abu Dhabi Executive Council.

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EXECUTIVE SUMMARY

EXECUTIVE SUMMARY



The Abu Dhabi Urban Planning Council designed and implemented a multifaceted initiative in order to produce an Urban Structure Framework Plan for the evolution of the city of Abu Dhabi. The council identified a quarter century timeframe plan, spanning the period from 2007 to the year 2030.

“Plan Abu Dhabi 2030”, the Urban Structure Framework Plan, is designed to help Abu Dhabi filter and respond to current and future development needs, establish a planning culture and introduce strong guiding principles for new development.

Work on the initiative that produced “Plan Abu Dhabi 2030” included:

- Inspirational sessions with His Highness Sheikh Mohamed bin Zayed Al Nahyan, the Crown Prince of Abu Dhabi, and senior representatives of the Abu Dhabi Executive Council and senior representatives of the Department of Municipalities, to better understand the vision for Abu Dhabi that would ultimately guide the planning process.
- A major social, cultural and economic analysis to understand the fabric of life in the Emirates, and the factors driving demand in the real estate sector;

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- A significant environmental analysis to better understand the ecological assets of Abu Dhabi, and its rare sea and desert location;
- A comprehensive audit by city planning experts, to evaluate the 'master plans' of proposed major developments here in Abu Dhabi;
- A much-needed analysis of the city's needs in terms of infrastructure and transport, in addition to a study into housing and settlement; and
- Two charrettes, or design workshops, held in Abu Dhabi in 2007, involving urban planning and community development experts from eight different countries and representatives from many of Abu Dhabi's authorities and departments working together to map out a future for the city.

Key Directions

This Urban Structure Framework Plan, "Plan Abu Dhabi 2030", is a conceptual document that distils all ideas, themes and directions explored in a stringent process of review and planning. It articulates the conclusions as a clear vision for Abu Dhabi. The herein contained principles, policies, geographic plans and schemes, and associated commentaries, combine to provide an interim tool for evaluating development and growth propositions prior to full induction of a planning culture within the city.

This Urban Structure Framework Plan is first and foremost grounded in the cultural and environmental identity of Abu Dhabi. The city's population may grow to three million or it may exceed five million by 2030. Regardless, this Plan presents a practical, flexible and sustainable view of the future. The key directions include:

- Sustainability – It is essential to accommodate major new population growth without over development, without unnecessarily tearing buildings down, and by conserving and respecting natural and cultural resources. Oil has brought considerable wealth to the city, but it is a finite resource. Abu Dhabi's future lies in the ability to cautiously use existing wealth, to actively explore renewable energy production, to reduce the consumption of non renewable resources and to educate future generations. Resource efficiency is vital.

- A Unique Environment – Planning for careful, sensitive growth is prudent so that we preserve the critical natural environment that makes Abu Dhabi unique. It is important to identify and conserve these distinct environmental and cultural amenities first and then determine where new development might best be located, striking a balance between conservation and development. Protected areas can always be sensibly developed at a later date, but it is very difficult to reclaim a damaged environment.
- An Evolving Culture – New development should be designed at a human scale to ensure the city is still pleasant to live in when the population surpasses three million. There should be a range of housing and services, targeting all income levels. Flexibility and creativity will be key to integrating the traditional way of living and simultaneously accommodating the new lifestyle choices that will emerge in a continually evolving culture.
- Identity and Opportunity – Abu Dhabi has the rare opportunity to offer a special combination of features in its urban identity: an authentic and safe but also progressive and open Arab city; a personality garnered from the desert and the sea; a traditional way of life but with the latest 21st century options; and a place of business but also of government and culture. The city should be defined as much by the natural islands and dunes surrounding it as the infrastructure, streets, and homes to be developed.
- Excellence and Livability – Abu Dhabi needs to define the quality and quantity of development that is acceptable to the city. It is wise to use explicit development principles to evaluate proposed projects and to not succumb to persuasive marketing. The tenets of comfortable and convenient livability must be pervasive in all development decisions.
- Connectivity – Abu Dhabi cannot rely solely on the auto when the population reaches three million. The city will need a multi-layered transportation network to connect the downtown core with new growth nodes and the developed islands. In the same sense, connectivity should be apparent in a hierarchical system of formal and informal open spaces and biologically-significant protected areas.

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A Sustainable Foundation

Abu Dhabi is a modern society shaped by an ancient culture. The strategic policies in this Urban Structure Framework Plan, “Plan Abu Dhabi 2030”, are inspired by this history to provide a way of reversing sometimes inappropriate development trends and of satisfying the needs of a growing population. These policies are grounded by the three basic elements of sustainability: the natural environment, economic development and cultural heritage.

Environment: The islands, sand dunes, sea, coast lines and native wildlife all blend to create Abu Dhabi’s incredibly intricate, sensitive and unique natural environment. This extraordinary mix has coexisted with the people living within it for thousands of years. The Plan protects these critical resources and preserves the connection between humans and the surrounding environment even as the city’s population triples in size.

Economics: Abu Dhabi is blessed by a rare abundance of fossil fuels. However, this finite resource will not create a windfall of wealth in perpetuity. The city needs to find new ventures and diversification for economic development. For example, Abu Dhabi can capitalize on the natural supply of solar and wind power to augment its fossil fuel driven economy. Additionally, when building a city of more than three million, there should be a carefully monitored balance between supply and demand of real estate. If the rate of development drastically outpaces the market there will be severely negative consequences.

Culture: Abu Dhabi’s past is rooted in the connection between the land and water. Many generations spent half of the year fishing and pearling around the islands and the other months farming and ranching in desert oases. This bond can be maintained by securing visual and physical links between the city and its surrounding landscape and by communicating this heritage to future generations. Local traditions are further preserved by incorporating historic architectural forms that are well-suited for the lifestyle and climate. Forms and patterns that are unique to Arabic society should pervade the city and punctuate the skyline.

“Those who forget their past, compromise their future”

H.H. Sheikh Zayed bin Sultan Al Nahyan, Founding Father of the U.A.E.

Conceptual design of the Capital District looking Southeast



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Urban Framework

This Urban Structure Framework Plan provides conceptual solutions to shape the growth of Abu Dhabi over the next quarter of a century. These solutions first address the major issues that shape urban form – the environment, land use, transportation, open space and the capital city image – and then provide more detailed analyses. Through this initiative, Abu Dhabi is pro-actively preparing for the planned growth of the city.

Environment: Abu Dhabi is uniquely positioned where the desert meets the Gulf. Each represents an intriguing ecological system in its own right, but the confluence of the two creates ideal conditions for mangroves and rich natural life. The health of the marine and intertidal ecosystems, as well as the country's fish stocks, is dependent on a robust population of mangrove trees. The best way to protect these critical environmental systems is to establish a National Park System that prohibits development and regulates activities. But, conservation and environmental awareness should not stop at the park borders. A 'green gradient' denotes appropriate levels of conservation, restoration, use and development from the natural core of the park to the urban city core. The Plan further protects the ecological wealth of Abu Dhabi by establishing a protected 'sand belt' and 'desert fingers' to contain urban growth and prohibit unplanned sprawl.

Land Use: Several strategic moves are needed to shift current land use allocations to a pattern that will tame sprawl and traffic congestion, and protect the environment and National identity. Instead of a dispersed pattern of commerce or several central business districts, most business development is congregated into one new Central Business District at a location adjacent to the old core city, expanding outwards from the existing center of business. This density is paired with a second city center on the mainland – the Capital District – to provide for a growing population and generate the critical mass needed to support new transit systems. Hudariyat Island and the south eastern portion of Abu Dhabi Island are marked for future development opportunities, and the Marina Mall area is targeted for additional residential development. Heavy industries are located as close as possible to their transportation hubs – the new port and airport – and light industry is contained to the Mussafah/Mafraq area. A distinct urban growth boundary is established around the future city footprint to preserve the surrounding environment.

Transportation: The best transportation plan is a good land use plan. The establishment of two city centers – one in the downtown area

of Abu Dhabi Island and the other in the new Capital District – will facilitate balanced traffic flow in two directions, thus minimizing congestion. The city will also need a layered transportation network when the population reaches three million. This will significantly reduce the number of cars on the road, creating a better experience for those who are driving. The transportation network should include high-speed rail to distant destinations, a local metro rail, freight rail, a surface network of buses, street cars and light rail, and a fine grain of interconnected streets. The potential for walking must be enhanced, so as to increase the tendency for people to walk, especially for short distances.

Open Space: The Open Space Framework Plan integrates a hierarchy of formal and informal open areas throughout the city and connects them to the broader National Park System. City parks, community recreation areas, green boulevards and public plazas will form the green backbone of the city and link the people of Abu Dhabi to the surrounding desert and protected islands. Two major parks already exist – the Mangrove Park and the Corniche – and Lulu Island could potentially include a third. Community green spaces and tree-lined streets provide a series of safe and shaded outdoor areas for walking, gathering, and playing. The fourth type of open space, the plaza, brings respite to busy areas. Public plazas or squares in front of government structures, public buildings (such as train stations), and major mosques emphasize these structures and provide meeting space for large crowds.

Capital City: It is important that Abu Dhabi's capital city identity continue to be expressed as the city grows. Major approaches and entry portals should communicate the city's values. Within a lush oasis setting, the grandeur of the Grand Mosque and government buildings will be symbolic images on the skyline. The city will need monumental spaces and processional routes for National commemoration. As the city focuses urban growth into districts, several key areas should emerge as iconic precincts, such as the Cultural District on Saadiyat Island, the Palace Row, and the Embassy District. National government activities and facilities will cluster in a formally-designated National District.

Patterns

Precincts: Precincts or districts are established to allow each city sector to embrace its own unique characteristics. While all precincts are mixed-use, a predominant identity often imbues, and capturing this identity creates interesting destinations.

Building Heights: The Plan uses building heights to emphasize Abu Dhabi's identity and core values. Height restrictions, such as those

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around the Grand Mosque and government buildings, reinforce important structures, preserve important view corridors and strengthen the skyline with intentional patterns. Preserving a visual connection to the Gulf, the desert and the minarets of the Grand Mosque is just as important as securing physical access points.

Density: Varying the intensity of development enables land uses to complement and reinforce each other. The Plan places the highest residential densities in the existing downtown core and in the central portion of the new Capital District, creating the critical mass needed for public transit and vibrant street life. Existing Emirati neighborhoods are preserved in their low-density configuration while new Emirati communities are built with a range of densities, providing several housing options. Office space and employment are concentrated in the new Central Business District and the Capital District. Retail density is distributed across the city, providing convenient, transit accessible services where they are needed, instead of just in sporadically placed regional malls. Significant industrial densities are confined to the new port, adjacent to the airport and the existing Mussaffah/Maffraq zone, although some light industrial opportunity will be included in all areas for local servicing.

Details

The New Central Business District: To emphasize the important connection between Abu Dhabi and the Gulf, the existing city core is shifted northeast to encircle the water. The new CBD encompasses Al Suwwah Island and the adjacent edges of Al Mina, Al Reem and Abu

Dhabi Islands. This mixed-use district is home to the tallest points on Abu Dhabi's skyline, the highest concentration of office development, and many features catering to local residents and tourists such as sophisticated shopping and attractive souks. The densities of Al Mina, Al Reem and Saadiyat have all been reduced to more appropriately reflect the market demand for 2030. Al Suwwah has been expanded to create a critical mass of development, maintain a close connection with the existing city and facilitate pedestrian access. The intensity of residential development is strongest at the heart of the CBD but generally tapers off towards the peripheral edges, providing the opportunity for lower density housing communities in a city setting.

Capital District: The Capital District is the complementary counterpart to the new CBD. This 'city brain' is home to medical centers, higher-education facilities and government buildings – elements that do not compete with the CBD's focus on big business, commerce and finance. The Capital Boulevard is enhanced to provide a beautiful and dramatic connection between the Presidential Palace, the Grand Mosque and the new Capital District. The approach to the Capital District is very visual, symbolic and memorable. For example, it is proposed that the Boulevard will travel under seven high arches, representing the seven Emirates of the UAE, and terminate at a main capital square. A rail station is located at the center of the new city, linking Emiratis living across the country to their capital. Inside the central square might be monuments, palm gardens and water features. Rings of government buildings, National institutions, and embassies border universities, a medical campus and biomedical research facilities. Low- to medium-density housing permeates the Capital District. A final name for this district will be resolved as development planning is finished.

Grand Mosque District: Halfway between the two city centers, the Grand Mosque District includes the Grand Mosque, Officer's Club and Sports City, as well as adjacent lands. The central location and current sprawling development pattern render this site a prime candidate for densification, especially considering the redevelopment of the Al Bateen Airport site. New development in this neighborhood creates the opportunity to introduce additional retail and employment which, in turn, enhance the viability of public transit and vibrancy of street life.

Lulu Island: This 400-hectare manmade island presents a rare opportunity for Abu Dhabi to display its cultural, environmental and UAE National values in a 'city sanctuary' with, nonetheless significant tourist development and housing. This distinctive type of development would embrace cultural tourism, environmental education, leisure and National commemoration.

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Building Blocks

Emirati Communities: Informed by the current needs of Emirati communities, several prototypes are proposed to guide the full integration of Emirati neighborhoods throughout the Plan. Whether located in an urban neighborhood or a desert or island eco-village, these settlements reflect the same community development principles seen elsewhere in the Plan. Residential, retail, infrastructure and amenity development are clustered around a 'high street' or public square, but the shape, boundaries and size of each community differ depending on the setting. Residential densities vary in urban communities to preserve the traditionally lower-density housing style while also providing Emiratis with multi family housing options. Urban communities are more rigidly defined, by a grid-like system of blocks, while the desert and island eco-villages are more organically set within their landscape. This allows the urban Emirati neighborhoods to fit seamlessly within the surrounding pattern of the city and the eco-villages to sustainably respect their environment. The 'green gradient' pervades this network of Emirati communities through green building, renewable energy use, compact development and layered transportation systems. Island eco-villages exhibit the lightest possible footprint with self-sufficient infrastructure, limited auto access, and limited grading and paving.

Block retrofits: To keep the existing city active, healthy, and integrated with new development, the existing superblocks need to be divided, infilled with appropriate new structures and facilities, and revitalized. Parking should be moved underground or into parking structures so existing surface lots can be reclaimed for other uses such as new buildings, parks, schools, child care, mosques, and gardens. New real estate development will help finance the construction of parking facilities and introduce additional amenities and uses to a block. This regeneration will improve the transportation system and the pedestrian realm, while creating more shade, additional development opportunities, and new amenities.

Streets: When patterned correctly, streets carry their full traffic load but also create a strong, comfortable pedestrian realm and allow transit to work – an essential component of the city in 2030. A successful system can be achieved by reconfiguring the existing streets and carefully designing new ones to provide more space for people and more transit options. Wider sidewalks, frequent and clearly denoted crosswalks, and shading should be minimum standards. Additional options, such as bus-only lanes, street cars, express lanes, and light rail medians, can be added as demand for public transit grows.



Supporting the Plan

The principles and policies contained herein are tools for communicating the graphical elements of the Plan at the interface of the government, developers, and residents of Abu Dhabi, and for stimulating further actions necessary to transform these words and drawings into progress on the ground. The principles guide the creation of plans, provide criteria for evaluating existing developments, and shape new development proposals. The policy statements clarify the Plan's objectives and guide its implementation. These statements dictate standards and boundaries, identify further actions and research, and outline the best practices associated with each component of the Plan.

Principles

The planning process has been based on a set of overarching principles. These were developed as a result of the research, analysis and consultation conducted in the early stages of the process. These principles have shaped every element of the plan, and will continue to guide the development of policy.

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The overarching principles of Abu Dhabi's urban planning process are as follows:

1. Abu Dhabi will be a contemporary expression of an Arab city, which has people living, doing, and thriving in healthy supportive proximity to each other.
2. Abu Dhabi will continue its practice of measured growth reflecting a sustainable economy, rather than an uncontrolled growth.
3. Abu Dhabi will respect, be scaled to, and shaped by the natural environment of sensitive coastal and desert ecologies.
4. Abu Dhabi will manifest its role and stature as a capital city.
5. Abu Dhabi's urban fabric and community infrastructure will enable the values, social arrangements, culture and mores of this Arab community.

Policies

Guided by these principles, specific policies have been developed under the following topics: environment; land use; open space; capital expression; transportation; urban design; building blocks; social considerations; economic development; and, continuous planning.

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1.0 INTRODUCTION

Introduction

Statement of Intent

Project Process

Ecological Context

1.1 INTRODUCTION



The City of Abu Dhabi is the capital of the Emirate of Abu Dhabi and the federal capital of the United Arab Emirates (UAE), a sovereign country of seven Emirates on the edge of the Arabian Gulf. Abu Dhabi is the largest of the Emirates, and the federal seat of Government. The City of Abu Dhabi is the largest city in the Emirate.

The City of Abu Dhabi is at a crossroads. It was first settled in the mid-18th century as a hunting and pearling base. Its significance increased with the mid-20th century discovery of oil and the formation of the UAE in 1971. Since then, the city has experienced steady but manageable growth. It is now a gracious, comfortable and well functioning city of over a half-million people.

Recently, with the introduction of limited private ownership of land and an increasing world focus of attention on the UAE as a safe, hospitable investment area, the potential for rapid, even explosive, growth has risen dramatically. While new growth is essential to support the broader ambitions of the Government of Abu Dhabi, it is important that this growth is managed in a coordinated and sustainable way.

This Urban Structure Framework Plan, “Plan Abu Dhabi 2030”, presents a coherent picture for the future of the City of Abu Dhabi as an environmentally, socially and economically sustainable community and as an increasingly important National capital. It provides for a way to grow and take advantage of the economic opportunities at hand without sacrificing the best of the city and while adding new elements to make it a great world metropolis.

Introduction

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1.2 STATEMENT OF INTENT



The former general plan for the city of Abu Dhabi, prepared in the late 1980s, has served the city well during a time of measured growth. Its conceptual limits have now been reached and it does not have the scope to further shape the type and intensity of development that can benefit the city moving forward.

In order to deliver upon the vision of His Highness Sheikh Khalifa bin Zayed Al Nahyan, President of the UAE, Ruler of Abu Dhabi for the continued fulfillment of the grand design envisaged by the late Sheikh Zayed bin Sultan Al Nahyan and the ongoing evolution of Abu Dhabi as a global capital city, Abu Dhabi now requires a long-term Comprehensive Plan to guide future growth and to enable detailed plans for various areas and overall development regulations.

The completion of a full Comprehensive Plan will take several years of complex technical work. In lieu of the completion of that comprehensive plan, this Urban Structure Framework Plan provides a vision for use by all entities with an interest in the future development of Abu Dhabi.

The Urban Structure Framework Plan articulates a clear direction and description of growth for Abu Dhabi. It has been made available in a short timeframe because it does not go into extensive detail about that

growth. It sets an environmental context, confirms an urban structure of land use, transportation, open space, built form and National capital arrangements. It outlines key “building blocks” through which the urban structure will come together logically and organically over time. It starts with a road map of principles and culminates in a comprehensive set of policies for the important elements of community development. It will engender the “urban capital” to match the financial and social capital that already exists.

This Urban Structure Framework Plan is targeted to the year 2030 and an expected population of over 3 million people. It is conceived so that it can continue to grow in a compatible way to 5 million people or even more. It is not geographically contained by existing administrative boundaries but, instead, encompasses the whole urban region of the city of Abu Dhabi out to the natural boundaries that can reasonably be expected from growth at the scale envisioned. At the same time, it does not aspire to cover all of the Emirate, leaving separate planning initiatives for Al Ain and the Western Region to set the concepts for those communities.

The Urban Structure Framework Plan must be conceptual enough to be completed quickly but detailed enough to be of both immediate and ongoing utility in responding to proposals for urban change in Abu Dhabi. It is designed to be used for the following purposes:

- The Plan will be the guide to diagnose new developments to insure they will be consistent with the needs and wants of the people of Abu Dhabi and will come together as a coherent, viable urban whole. The Plan must suffice until the Comprehensive Plan is prepared and approved.
- The Plan will suggest a detailed work program for the further planning of Abu Dhabi, resulting in both a Comprehensive Plan and an array of area plans. It will also set the direction for regulatory guidelines and zoning.
- The Plan will offer interim input into other initiatives in Abu Dhabi that shape the city, such as infrastructure schemes, transportation improvements, housing allocation programs, and economic development projects such as tourism.

Many new areas and districts will be developed as the city grows and the intentions and patterns of this Urban Structure Framework Plan come about. It should be noted that the names given to new districts in this Plan are conceptual. Final area names will be decided as development takes place.



Introduction

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1.3 PROJECT PROCESS



This Urban Structure Framework Plan has been completed through various and rigorous research and creative processes. While conceptual in nature, and able to be expedited because of that, the Plan reflects a solid base of understanding about Abu Dhabi as it is today – in terms of both opportunities and challenges – and a broad, progressive picture of what the city can become over the next quarter of a century.

The planning process began in December 2006, with preparatory analysis and reviews published in a Briefing Book and several other reports.

The following studies and reviews were undertaken:

- An analysis of the economic situation of Abu Dhabi, projecting the sectors of economic growth, the expected parallel population, employment, and tourism growth, and the accommodation needed for this expansion. This report was authored by the Boston Consulting Group.
- Growth targets were framed to which the Plan has responded. These targets were generated by Economic Research Associates.
- A review of the Emirate's infrastructure and the plans and policies related to the operation and growth of that infrastructure was completed by Arup Engineering. The contributions of the different infrastructure authorities in Abu Dhabi were important and greatly appreciated.
- A conceptual overview was completed of the environmental setting of Abu Dhabi, tapping into the progressive, state-of-the-art policy work of the Environment Agency. The Plan took this policy work as an inspiration and a guide.
- A conceptual overview was completed of the transportation situation and traffic circumstances in the city, including a review of the city's computer traffic model. Inputs from the Emirate Transportation Department and Municipality were vital.
- The situation and policies regarding worker housing and settlements were reviewed with advice from Zones Corp.
- Interviews were completed with a cross-section of people in the Abu Dhabi community to understand their needs and wants and to frame a statement of challenges and opportunities. These have been addressed in the Plan.
- Extensive meetings with major development proponents were undertaken and their development schemes or master plans reviewed and evaluated.



- Information was collected on Abu Dhabi's historical settlement traditions, as well as urbanization precedents from the wider region and Arab world. Precedents were sought in desert communities around the world.
- A general assessment of the existing built form, open space and community development patterns in Abu Dhabi was completed, involving extensive site visits, documentation and analysis. Visits to Al Ain were inspirational in regard to these patterns.

The statements of His Highness the late Sheikh Zayed bin Sultan Al Nahyan, Father of the Nation, and His Highness Sheikh Khalifa bin Zayed Al Nahyan, President of the UAE and Ruler of Abu Dhabi, pertaining to the vision for Abu Dhabi were explored in depth. These were fundamental in guiding the planning process, as were initial sessions held with His Highness Sheikh Mohamed bin Zayed Al Nahyan, Crown Prince of Abu Dhabi and Chairman of the Executive Council. The primary formation of the "Plan Abu Dhabi 2030" Urban Structure Framework Plan occurred through the assimilation of all the preparatory findings and generation of ideas for growth at two major working sessions, called charrettes, held in Abu Dhabi in February and March, 2007. These 4-6 day events were intensive creative sessions bringing together the following groups: a technical team of urban specialists and production people; a distinguished group of urban experts from academia, private practice and government from seven countries around the world; senior people in many departments of the Abu Dhabi government, including strong representation from the Municipality of Abu Dhabi and also several officials from the Municipality of Al Ain; several distinguished academic and professional experts from Abu Dhabi; and the senior leadership of the Executive Council and Sheikhs of Abu Dhabi. Of particular merit was the ongoing involvement and guidance provided by H.H. Sheikh Mohamed bin Zayed Al Nahyan.

These charrettes are extensively documented in the "charrette proceedings", a two-volume set consisting of Interim Reports #1 and #2. The planning work included the development of an environmental framework, the generation of a series of urban growth scenarios, and the formulation of a set of essential principles to evaluate these scenarios. Ultimately, several growth options were developed, drawn out fully, discussed and evaluated. They were subsequently reviewed by members of the Abu Dhabi Executive Council. Through this extensive process a preferred growth option was synthesized and confirmed. To provide substance and depth for the growth options, a series of urban "building blocks" relating to the preferred patterns of Emirati communities were conceptualized and applied through a range of scenarios, including in various kinds of villages and in urban neighborhoods. These



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Plan Abu Dhabi 2030 Urban Structure Framework Plan



building blocks were also used to demonstrate patterns of inner-city regeneration and to develop street configurations.

The “building block” models were applied to the preferred growth option leading to a hypothetical plan. This plan hypothesis was then reviewed in regard to proposed development schemes to reconcile the Urban Structure Framework Plan and development “master plans” as much as possible. This required a third major work session to reconcile the emerging Plan with inner-city expansion proposals and their associated transportation access plans, focused in particular on the development of islands adjacent to the existing core. Current proposals for industrial relocation and expansion were integrated into the emerging Plan. Initiatives for transportation improvements and traffic management were evaluated and, where consistent, were integrated into the emerging Plan. Housing needs, government facility needs, Capital City requirements and special economic development initiatives, including airport expansion plans, were integrated into the emerging Plan.

The environmental framework deserves special mention as it helped shape the Plan at all stages and was particularly influential throughout the integrative work. Urban growth, ecological stability and the potential for regeneration, have been reconciled in this sensitive ecological context.

As the planning work unfolded, two parallel efforts were especially insightful. First, growth targets were continually refined and growth potentials evaluated and updated as the Plan developed. All sectors of practical, even optimistic, growth are accommodated. Second, the infrastructure implications were closely monitored. The Plan requires extensive infrastructure expansion and diversification. While the exact nature, extent and timing of this infrastructure development is beyond the scope of this conceptual planning phase, it has become clear that a strategy to develop the required infrastructure should be completed as soon as possible as a prelude to implementation of other aspects of the Plan.

The result of these activities is the “Plan Abu Dhabi 2030” Urban Structure Framework Plan, offered herein. As its name suggests, it is a clear, viable vision for the future of Abu Dhabi. It is a broadly drawn complex of ideas, directions and patterns; it is not a detailed scheme, articulated property by property. It can be used to evaluate development and growth propositions in a general way but not to provide detailed guidance for individual sites. It will be best used in concert with specific site analysis and plan making where its general plan directions and intentions can be translated into specific terms.



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Plan Abu Dhabi 2030
Urban Structure Framework Plan

1.4 ECOLOGICAL CONTEXT



The UAE and its capital, Abu Dhabi, are characterized by their location at the intersection of the desert and the sea. Winter temperatures hover around 20°C, while summer temperatures regularly exceed 45°C. Humidity is generally high in the summer. The Gulf sits on the Arabian platform, an extension of the continental crust, and is not a true ocean inlet. It is very shallow; offshore from Abu Dhabi, the water is no more than 10m deep for up to fifty kilometers. The Shamal – the prevailing northwesterly wind – blows across the shallow Gulf and, coupled with relentless heat and sunshine, produces an extremely high rate of evaporation. This makes the Gulf both much warmer than the nearby Indian Ocean and hypersaline.

About 85% of the Emirate is sand desert replete with spectacular dunes. The dunes form patterns across a wide variety of scales, from the giant ridges in the Empty Quarter that run for tens of kilometers to smaller formations tens of meters in length, to textured surface ripples no deeper than a finger tip. The dunes are formed by wind.

Another 7% of Abu Dhabi's land mass is sabkha, an Arabic term adopted by geologists to describe low-lying salt flats subject to periodic inundation. Sabkhas routinely flood and crust over with salt, discouraging all life save for cyanobacteria. They are predominantly found along the coast, but also occur in interdunal depressions, and present major difficulties for any kind of construction. In effect, 93% of the Emirate's land mass is prohibitively difficult to inhabit.



However, there are some biologically productive habitats. Mangroves along the coast account for a large portion of the biodiversity of the country and provide an excellent habitat for the many migratory birds that transit the country between Central Asia and Africa. While most mangroves around the world are declining, those in Abu Dhabi are actually increasing due to protection and a major plantation program. Offshore seagrass beds are also highly productive and provide food for endangered species like turtles and dugongs, and a hatchery for the Gulf's rapidly declining fish stocks.

The coast has more than 200 natural islands, some of them formed by spectacular protruding salt domes that have never been inhabitable due to the lack of fresh water. Desalinization technology has changed this dynamic, and opens them to commercial development. There are some off shore coral reefs, but the hypersalinity of the Gulf has always made these extremely marginal and higher water temperatures in recent years have essentially confirmed their non-viability.

The Abu Dhabi Environment Agency is charged with conservation and management of the Emirate's natural environment, resources, wildlife and biodiversity. Most of its initiatives involve protecting wildlife, addressing threats, monitoring and regulation. It also seeks to promote awareness of the environment through educational programs.



2.0 FOUNDATION

Overall Conceptual Statement

A View of the Challenges

Environmental Inspiration

Cultural Inspiration

Principles

2.1 OVERALL CONCEPTUAL STATEMENT



Abu Dhabi has a choice of how, when and where it will grow to meet the needs of its people over the next quarter of a century. This Plan is focused on satisfying those needs by attaining and setting an international example of cutting edge sustainable growth – that which filters all decisions through environmental, social and economic criteria. This ‘triple bottom line’ approach is the premise of this Urban Structure Framework Plan, with the intent to:

- protect and enhance the natural resources and cultural heritage of Abu Dhabi;
- integrate nature and humanity; and
- foster economic development and leverage financial resources in a thoughtful and prudent manner.

The elements forming the environmental and cultural foundation of the Plan are described in greater detail in Sections 2.3 and 2.4.

A set of guiding principles is presented in Section 2.5. These tenets are a tool for assessing, identifying, and constructing plans and projects that align with this ethic of responsible growth. They are visionary yet practical, to ensure the ongoing robustness of the Plan. Highlights include:

- the conservation and retention of Abu Dhabi’s unique natural setting;
- the need for conscious and deliberate design of the city’s public realm, especially its streets; and
- the role of proper land use programming in enhancing and reinforcing the city’s unique cultural identity and capital city status.

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Plan Abu Dhabi 2030 Urban Structure Framework Plan

2.2 A VIEW OF THE CHALLENGES



In order for the “Plan Abu Dhabi 2030” Urban Structure Framework Plan to achieve its objectives, it must embody principles that protect the city from:

- a loss of components of the traditional Emirati family lifestyle;
- a loss of the unique Abu Dhabi civic identity;
- intrusion of development into key natural areas;
- a loss of natural connections and nature’s amenities in the core of the city; and
- potential stagnation and neglect in the core of the city.

There is also a need for the plan to ensure that the city:

- expresses itself as a capital city and the seat of National government;
- minimizes traffic congestion on streets, provides sufficient parking, and offers alternative travel choices;
- avoids a ‘boxing in’ of the airport expansion areas and approaches; and
- contains a fully-planned range of affordable housing options to meet the needs of all its population.



The plan must guard against a loss of coherence in the overall urban form, preventing specifically:

- too much commercial development;
- commercial nodes proposed in the wrong places – in cul-de-sacs not easily accessed by car and at locations far removed from the city center and customers;
- new road systems based on limited access configurations; and
- too much high density housing for non-locals and not enough housing for Emirati households.



2.3 ENVIRONMENTAL INSPIRATION



The environmental and ecological context for Abu Dhabi's Urban Structure is directed by three key elements:

- the reality of its land mass existing as an archipelago;
- its position at the intersection of desert and coast; and
- the uniqueness of an abundance of fossil fuels.

These ideas and concepts are not new to Abu Dhabi, but instead are grounded in existing environmental policy.

As a desert city, Abu Dhabi faces a significant resource imperative related to water. While desalination represents an obvious solution to future water needs given Abu Dhabi's proximity to the Gulf, it is expensive both in terms of energy and dollars, as well as its potential cost to the environment due to the production of brine concentrate that must be disposed of. Only 4% of the water in use today is reclaimed from wastewater streams, a logical source of future irrigation. As Abu Dhabi moves forward in its planning, a water balance model must be established and managed rigorously.

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Plan Abu Dhabi 2030
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As a coastal city, the mangroves provide a defining backdrop for the urbanized and urbanizing areas of Abu Dhabi. Perched at the ecotone of aquatic and terrestrial ecologies, the mangroves are an important symbol for the city, as well as a barometer of how successfully growth is being managed. As development moves forward, an Integrated Coastal Environment Management Plan must be developed to address critical issues of preventing contamination while providing effective wildlife management, conservation, education and awareness – all with the intent of protecting and nurturing this sensitive ecology. Additionally, the emerging reality of global warming and its potential to raise mean sea level means all new waterfront development should be planning for higher water levels at their edge. Preliminary research done during the charrettes indicated anticipation of a 0.75m rise in sea level around Abu Dhabi over the long run.

Robust, thriving ecosystems require connectivity between wild areas. A fully connected and integrated approach to open space along with protected, conserved and managed environments, is an essential foundational element of the “Plan Abu Dhabi 2030” Urban Structure Framework Plan.

Environment, Health, and Safety

The Urban Structure Framework Plan:

- integrates environmental, social, and economic considerations in all decision making;
- adopts the precautionary principle based on scientific knowledge and clean technologies;
- ensures environmental health, diversity and productivity is maintained through sustainable development; and
- promotes environmental awareness and sense of responsibility.

Integrated Coastal Zone Management

The Urban Structure Framework Plan:

- establishes a comprehensive network of marine and terrestrial protected areas;
- integrates environmental considerations into all land-use planning;
- endorses creation of environmental education facilities;
- suggests removal of existing development / does not support new development that compromises attainment of these goals; and
- recommends specific actions directed to urbanization and urban sprawl, including:
 - establishing urban development boundaries;
 - setting aside critical areas and non-development zones;
 - protecting coastal landscapes and other sites of value by redirecting development elsewhere; and,
 - preventing habitat fragmentation.

Sustainable Green Building Design Criteria

The Urban Structure Framework Plan advocates green building practices, including:

- site development and layout;
- landscaping;
- life cycle materials usage;
- water conservation, harvesting, and reclamation;
- energy and thermal efficiency;
- indoor environmental quality; and
- historically compatible buildings.



2.4 CULTURAL INSPIRATION



The true spirit of Abu Dhabi rests with the history, family structure and religion of its people.

Land and Water: The culture of Abu Dhabi has strong roots in both the sea and desert. For many generations the tribes of Abu Dhabi were unique in that they spent part of each year fishing and pearling from an island base and part of each year farming and ranching in desert oases. The people feel a strong attachment to both water and land and they understand the interface between the two. Therefore the Urban Structure Framework Plan must protect both ecosystems, keep them linked, and preserve the close association of urban dwellers to both water and desert realms. The practices of the late Sheikh Zayed, Father of the Nation, are the original inspiration but the Government of Abu Dhabi has offered a specific contemporary challenge: how can we protect the water and island ecology and the desert ecology yet accommodate settlement that will not diminish these areas? In response, the Urban Structure Framework Plan not only envisions an environmentally sustainable urban structure and infrastructure, close to and attuned with nature, but also enhances this with a gentle pattern of eco-villages at selected island and desert locales.

Families: The people of Abu Dhabi live in strong, complex family units. The extended family is the foundation of social activity and mutual support. Brothers and sisters of each generation, as they marry and form their own families, wish to live in clusters and in close proximity to other family members. Children are at the center of everybody's activities. The proposed structure of the city in the Urban Structure Framework Plan is to be built out from this basic unit of settlement – the "fareej". The Plan applies this urban DNA of how housing is clustered to accommodate extended families to many kinds of circumstances, from the low density suburban subdivisions and villages at the urban fringe to the medium and high density core and town centers. It articulates the specific scale and nature of this family-based settlement unit in the context of contemporary living; and uses this as the building blocks of the growing city.

The Mosque: Prayer, as a regular offering of faith, is central to day-to-day Abu Dhabi life. Religious tenets are strong and deeply observed. A pervasive built form that results from this commitment are the mosques – large and small. Minarets punctuate the skyline. The great question in planning Abu Dhabi is: "What represents a truly Arab city with the specific character of Abu Dhabi Arab culture?" While establishing contemporary provisions and structures that modern people expect, the Plan must also discern the forms and patterns that are unique to an Islamic society. His Highness Sheikh Mohamed bin Zayed metaphorically calls it the "smooth flowing" city of interaction and linkage and exchange. Policies in the Plan call for expressing it in the rhythms and harmonies that will make Abu Dhabi a unique and truly memorable Arab capital.

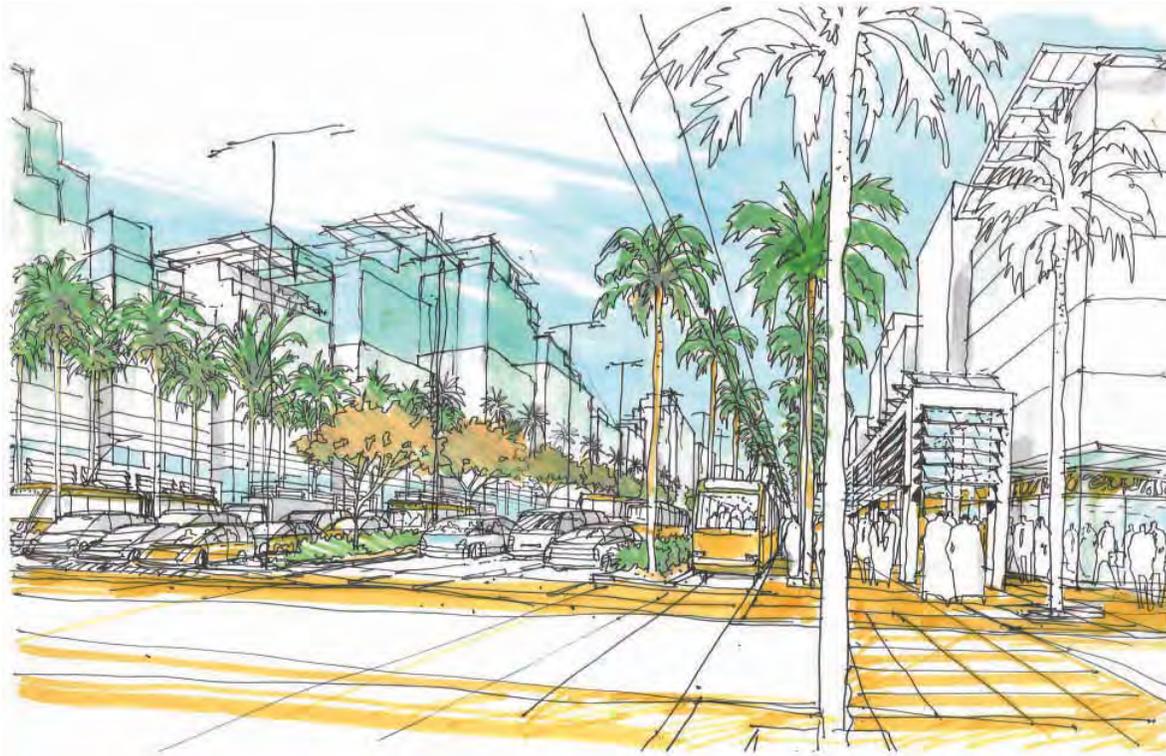
These are the inspirations from the dialogue with local people that have shaped the "Plan Abu Dhabi 2030" Urban Structure Framework Plan for the city.



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Urban Structure Framework Plan

2.5 PRINCIPLES



Over-Arching Principles

1. Abu Dhabi will be a contemporary expression of an Arab city, which has people living, doing, and thriving in healthy supportive proximity to each other.
2. Abu Dhabi will continue its practice of measured growth reflecting a sustainable economy, rather than an uncontrolled growth.
3. Abu Dhabi will respect, be scaled to, and shaped by the natural environment of sensitive coastal and desert ecologies.
4. Abu Dhabi will manifest its role and stature as a capital city.
5. Abu Dhabi's urban fabric and community infrastructure will enable the values, social arrangements, culture and mores of this Arab community.

Underlying Principles

Urban Structure

Because of the variable pace of future growth, Abu Dhabi will build out incrementally from the central city.

The basic units of Abu Dhabi's urban structure will be neighborhoods, districts, and mixed-use centers of various scales.

Land use and development will be based on a framework of connected centers, public places, and open space that together offer an accessible and hospitable public realm.

The city will be structured to provide public access to the water's edge, the island environment and the desert.

A capital city framework will link the institutions, activities and important places of government.

The traditional patterns of an Arab city will be reflected in an intricate urban fabric of mixed use.

Many human-scaled, interconnected streets will optimize mobility and livability, rather than a few wide, disconnected streets or large, limited access highways.

Because all trips begin and end with a walk, walking should be made as comfortable as possible all year round in Abu Dhabi.

To reduce congestion and allow for more human scaled streets, movement growth will be accommodated with transit.

Environmental Leadership

The water, inter-tidal, and biodiverse habitats and adequate bio-reserves will be conserved and respected.

A green infrastructure will respond to the environmental features of this climatic zone.

High performance green buildings, and arrangements of buildings, will maximize resource efficiency and human comfort in an arid climate.

Visible and accessible green practices and natural processes will demonstrate environmental stewardship.

Livability

Neighborhood centers of "community-making" facilities such as local mosques, gathering places, services, and local shops will be distributed throughout residential areas.

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Plan Abu Dhabi 2030 Urban Structure Framework Plan

A range of suitable and affordable housing options will meet the various needs and desires of Abu Dhabi's diverse population (including Emirati extended families, various expatriate households, and expatriate workers).

The traditional inner city's fine-grained pattern of public ways that are accessible, comfortable, easy to cross, interesting, and pleasant will be recovered and extended.

Innovative ways will be developed to shade and cool the public realm in Abu Dhabi's summer climate.

Identity and Imageability

An urban fabric that reflects and expresses Abu Dhabi's local landscape of calm water, mangrove islands, vast desert, blue sky, and constant sun will be created.

Abu Dhabi will be a graceful and memorable city through great public architecture, well-designed streets, heritage preservation, lively public spaces, and a gentle skyline.

Capital city places and monuments will commemorate, celebrate, and give identity to the seat of government.

Distinct public landmarks – mosque domes and minarets, monumental palaces, vibrant markets, and stately public buildings – will punctuate the urban fabric as highlights within a coherent built form context.

The unique Arab traditions and motifs of Abu Dhabi and its environment will be expressed in a pervasive architectural style.

The unique family culture and traditions of Abu Dhabi Nationals will be celebrated and enhanced.

Cultural, Social, and Economic Development

Social services and community facilities will be provided that meet the basic and evolving needs of Abu Dhabi's diverse population of Nationals and expatriates.

The cultural aspects of the mixed population will enhance the character of Abu Dhabi.

Urban arrangements will facilitate the growth of Abu Dhabi's key economic sectors, including health, education, value-added manufacturing, and tourism.



3.0 ECONOMICS

Economic and
Demographic Analysis

Market Projections

3.1 ECONOMIC AND DEMOGRAPHIC ANALYSIS



Nothing has been more crucial to developing the Urban Structure Framework Plan than a well-grounded picture of the projected economic and demographic trends for the next quarter of a century. Enormous growth is envisioned over this timeframe – between a tripling and quadrupling of the current population – and the Plan must identify how this growth, and accompanying economic expansion, will be manifested in built form.

There are considerable complications in generating accurate projections. The economic growth envisioned does not mirror past growth, either in scale or in business sector. In the absence of a track record, comparisons with other cities worldwide assume greater importance. The size of the diverse expatriate workforce does however limit the effectiveness of direct international comparisons.

The economic projections established by the government's spending priorities in areas such as healthcare, education, tourism and industrial diversification are the core source of the population growth and market projection scenarios outlined in the following section. Per-sector demand is expected as follows:

- Residential: Abu Dhabi will see strong demand for residential units across all sectors of the market as the population grows. Strong governmental and service sectors will lead to a gradual increase in the proportion of white collar workers.

Economics

Plan Abu Dhabi 2030 Urban Structure Framework Plan

- **Office:** While Abu Dhabi's economy will remain strongly influenced by the energy sector, growth in government, institution and service sector employment will lead to increasing demand for office space as the market matures.
- **Retail:** Increasing population and tourism will lead to a growing demand for retail space.
- **Industrial:** The industrial sector will grow with the expansion and relocation of the port area, combined with the development of a significant industrial zone in close proximity to the new port..
- **Hotel:** Increases in hotel room supply will be essential to accommodate the anticipated growth in both business and leisure guests to Abu Dhabi. The islands will be the primary location for leisure hotel development, while new business hotels will be needed close to the business centers and the airport.
- **Golf:** Golf development is envisaged in a number of the resort development areas and the creation of a number of courses will help drive golf-related tourism to Abu Dhabi. Golf serves to increase the value and desirability of residential and resort real estate, but the construction and operating costs of such facilities are high in the UAE. Therefore, the level of supply is expected to remain relatively modest.
- **Marina:** Demand for marina berths is likely to rise as developments on the islands around Abu Dhabi mature, but boating remains an expensive pastime and thus a steady growth rate, in line with population growth, is expected.
- **Education:** A primary goal of the Abu Dhabi Government's education policy is to create the highest quality, comprehensive system of education that applies world-class standards and expertise to the delivery of education at all levels.
- **Hospital and Healthcare:** The Government of Abu Dhabi is making significant improvements to the Emirate's healthcare system, expanding capacity and raising standards across the sector. This includes a number of new healthcare institutions and the development of existing facilities.

3.2 MARKET PROJECTIONS

The growth assumptions for the Abu Dhabi metropolitan area used in this Urban Structure Framework Plan are calibrated to the following projections. Suggested estimates of which course the growth will take are indicated, and the Urban Structure Framework Plan has been designed to meet these recommendations.

2007 - Baseline

- 930,000 residents
- 1.8 million annual tourist visits
- ~180,000 residential units

	Office Space (million m ²)	Retail Space (million m ²)	Industry Space (million m ²)	Hotel rooms	Golf courses	Schools	Tertiary Institutions	Hospital beds
Baseline	1.4	0.86	4.0	10,000	3	236	13	2,800

2013 - Five Year Projection

- 1.3 million residents
- 3.3 million annual tourist visits
- 251,000 residential units

	Office Space (million m ²)	Retail Space (million m ²)	Industry Space (million m ²)	Hotel rooms	Golf courses	Schools	Tertiary Institutions	Hospital beds
Emerging	1.8	1.1	1.0	--	9	224	8	3,495
Growing	2.7	2.8	6.5	--	12	357	14	6,311
Suggested	2.5	1.5	6.5	21,000	10	330	25	4,500

2020

- 2.0 million residents
- 4.9 million annual tourist visits
- 411,000 residential units

	Office Space (million m ²)	Retail Space (million m ²)	Industry Space (million m ²)	Hotel rooms	Golf courses	Schools	Tertiary Institutions	Hospital beds
Emerging	3.0	2.0	1.8	--	15	374	14	5,454
Growing	4.5	4.7	11.6	--	20	597	25	9,850
Suggested	3.5	2.5	10.0	49,500	18	450	30	6,500

2030

- 3.1 million residents
- 7.9 million annual tourist visits
- 686,000 residential units

	Office Space (million m ²)	Retail Space (million m ²)	Industry Space (million m ²)	Hotel rooms	Golf courses	Schools	Tertiary Institutions	Hospital beds
Emerging	5.2	3.5	3.3	--	25	637	27	8,418
Growing	7.7	8.5	21.8	--	35	1,017	47	15,201
Suggested	7.5	4.0	15.0	74,500	25	650	40	10,000



4.0 URBAN STRUCTURE FRAMEWORK PLANS

Urban Structure Overview

Environmental Framework

Land Use Framework

Transportation Framework

Public Open Space Framework

Capital City Framework

4.1 URBAN STRUCTURE OVERVIEW

The Plans presented on the following pages, that together comprise “Plan Abu Dhabi 2030”, the overall Urban Structure Framework Plan for the city, are conceptual solutions to the diverse array of challenges facing Abu Dhabi as it grows rapidly over the next quarter of a century. As sketch concepts, they should not be taken literally as one would a zoning map in regard to specific development allowances for individual plots or sites. Each of these Plans requires further refinement, testing and articulation at a much finer scale before it can be used to take on a regulatory role. Under no circumstances should any of the plans, drawings, models or sketches contained herein be construed as directives for specific sites or areas. Rather, they represent themes of land use, form, access, and character to be achieved through detailed planning and design.

The plans are organized into four sections:

The first section deals with the major issues that set the framework of the urban form: environment, land use, transport, public open space, and expression of the capital city. These plans consider the wider context of the city within the Emirate, Nation and region, and embody the large strategic moves necessary to balance the competing forces shaping the city.

The second section concerns patterns arising from the Framework Structural Plans, the ‘nuts and bolts’ that give the Plans their substance – precincts, densities, and building heights. These patterns provide specific metrics for the vision proposed in the frameworks and flesh out the implications of adopting this urban form.

The third section presents focus areas that warrant closer study due to their centrality to the proposed urban structural framework. These areas are presented at a higher level of detail in order to ensure that there are no major conflicts between the various systems that make the city work and their expression in the plan. The four focal areas are: the new Central Business District (CBD) and surrounding islands, the Capital District at a key crossroads on the mainland, the Grand Mosque District at the southeast side of Abu Dhabi Island, and Lulu Island.

The last section deals with prototypes of the building blocks of Emirati communities. These studies test the various assumptions inherent in the broader scaled plans and can be construed as the DNA of the urban structure of these communities. They are based on a pattern developed through analyzing the requirements of Emirati communities at different scales and different circumstances. The building blocks provide the fine grain, complementing the moves at the broader scales.

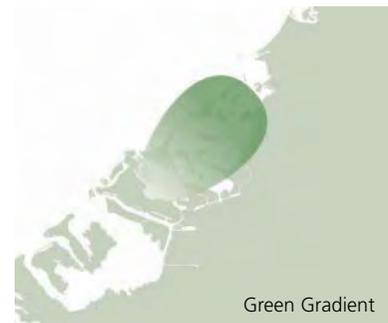
4.2 ENVIRONMENTAL FRAMEWORK

Many factors combine to give Abu Dhabi one of the most distinctive ecological contexts in the world. Fundamentally it is an edge, defined by the interface of desert and sea. While the desert is a very marginal environment for most forms of life, the shallow, sandy tidal flats created by its meeting with the Gulf are ideal for mangroves. These mangroves are a thin strip of biodiversity that provide an attractive habitat for the many species of birds that migrate between Central Asia and Africa. The tidal flats are also fertile ground for sea grass, which is the foremost hatchery for the Gulf's fish stocks. Taken together, the mangroves and sea grass beds that surround the city are the most important ecological resources in the entire country. That the city should sit astride them is both a challenge and an opportunity.

The Environmental Framework Plan is predicated on the notion that these vital ecologies must be preserved. The best way to accomplish this is through the establishment of a National Park system adjacent the city that takes in both terrestrial and marine environments. Development would be forbidden in the National Park, and all activity carefully regulated to ensure that the mangroves, sea grass beds, and migratory birds will always be a part of Abu Dhabi's ecological identity.

In order to accommodate the city's legitimate need to expand, the Plan incorporates the notion of a 'Green Gradient' between the natural core of the park and the urbanized core of the city. The Green Gradient proceeds through five echelons of increasing inhabitation, beginning with the 'Park Core Islands' where development is most stringently controlled. 'Park Edge Islands' permit a greater range of activities and structures, 'City Buffer Islands' an even greater range, and 'City Edge Islands' are slated to be developed as 'Island Eco-Villages'. These eco-villages, while being small settlements, would approach the residential densities of the urban areas of Abu Dhabi Island. Building and planning regulations for these areas will be more 'green' than for other parts of Abu Dhabi, to respond to their environmentally sensitive locales.

The third major device in the Environmental Framework Plan to safeguard the ecological wealth is a 'Sand Belt' ringing the city through the desert, defining the outer limit of growth. Nothing is worse for the environment than an unplanned, undifferentiated sprawl. Sprawl eats up land and taxes infrastructures that are already overstretched. It also adds distance to every journey residents must make and reduces the viability of public transit. The Sand Belt is a tool to contain this, adapted from the 'Green Belts' that ring other world cities, defining the limits of development. Outside the Sand Belt development is only permitted in Desert Eco-Villages along the axis to Al Ain.



Urban Structure Framework Plans

Plan Abu Dhabi 2030

Urban Structure Framework Plan



The final device developed to protect Abu Dhabi's environment is a series of 'Desert Fingers' that reach through to the Gulf shore to the north of Abu Dhabi along the axis to Dubai, and south of Abu Dhabi. There is a particular danger that development along the corridor to Dubai will create an endless sprawl, forever cutting the desert off from the water. As the junction of desert and Gulf is the most fundamental defining feature of Abu Dhabi's environmental context, this sprawl must be prevented. The Desert Fingers provide undeveloped buffers between the city, each coastal town, and Dubai, giving wildlife corridors to the protected coastal areas.

The level of land use allocation, the Green Gradient, Sand Belt, and Desert Fingers provide a framework that can accommodate both the needs of economic development, and the needs of ecological preservation. This ecological framework has informed all further aspects of the Urban Structure Framework Plan.

4.3 LAND USE FRAMEWORK

The Land Use Framework Plan addresses the critical issues facing Abu Dhabi through several strategic moves. Firstly, the Central Business District (CBD) that is scattered over several diverse islands in a number of pending developers' proposals is collected into a single concentrated district centered on Al Suwwah Island. This greatly improves its legibility and facilitates the close proximity big business requires. This CBD takes in the adjacent edges of Al Mina, Al Reem and Abu Dhabi Islands. The remainder of Al Mina, Al Reem and Saadiyat Islands are proposed as medium density residential with enough retail and commercial space to serve local demand only. This creates a scenario where the single, concentrated CBD – the major employment hub – is surrounded on all sides by residential neighborhoods, rather than being a dispersed assortment of cul-de-sacs on peripheral islands.

The second major move is to create a new Capital District on the mainland to the east of the city, in the midst of major new Emirati neighborhoods. This secondary core will have an equal amount of jobs and office space, but will be distinguished from the CBD by the type of employment it offers. Where the CBD is the center of finance and commerce, the Capital District is focused on the government and knowledge-based sectors. The two cores are separated by enough space, and have employment foci that are different enough that they will complement, rather than compete with each other. Balancing the bulk of jobs between two employment centers surrounded by residential districts will help to disperse traffic, rather than concentrating it into one destination route which becomes a bottleneck. The Capital District concentrates the functions and image of government into a single iconic precinct like other great capital cities around the world.

The third major initiative is to define the limits of growth for the city. This is essential for preserving the sensitive ecology on the city's edge, and for preventing an unending, undifferentiated sprawl through the desert to Dubai. Development through the islands to the northeast of the city is regulated by the Green Gradient of island eco-villages of descending intensity towards the National park. The mainland boundaries of the city are defined by the Sand Belt that meets the Gulf at the National park and arcs around the city following the new truck highway for goods movement (See 4.4: Transportation Framework). Development outside of the Sand Belt is only permitted as desert eco-villages along the axis to Al Ain and as coastal towns separated by Desert Fingers on the axis to Dubai.



Concentrated CBD



Dispersed CBDs



Complementary Cores

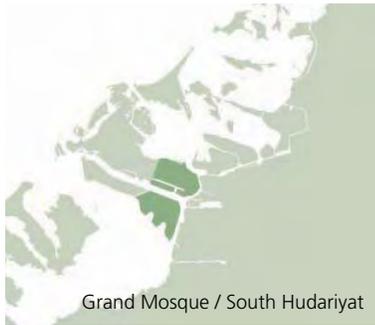


Limits to Growth

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Two areas have been identified as major development opportunities to augment the two main cores. The Grand Mosque District is home to Sports City, the Exposition development, the Al Bateen Airport redevelopment zone, and as its name indicates, the Grand Mosque. As the Al Bateen airport moves out and the large amount of empty adjacent land fills in, a smaller employment and residential node will be created, strategically positioned almost exactly equidistant between the two major cores. This smaller node is an ideal location for a metro transit station that accesses the Sports City and the Grand Mosque. Adjacent the Grand Mosque District, the south portion of Hudariyat Island has been designated for Emirati neighborhoods in contact with the water and in close proximity to both city cores. South Hudariyat Island will be significantly expanded to the south and cut through by canals, with a transition to mangroves along its outer edge.



Several other areas are logical candidates for residential intensification. The area around the Marina Mall can absorb significant new housing, giving it the critical mass necessary to warrant a metro transit terminus. The transit corridor along the Airport Road needs to be densified in order to produce the critical mass of inhabitants necessary to support the transit line.

As previously described, Emirati neighborhoods have been strategically located around all higher-density commercial nodes, rather than being forced to spread further and further away from work places and entertainment or shopping venues. This strategy will also avoid segregation between Emirati and expatriate housing, and ensure good Emirati housing choice in all parts of the city. Most Emirati Nationals choose to live at lower densities, and the plan reflects this, but some medium and higher density alternatives are also included in the plan for more housing choice. The Plan proposes that Emirati neighborhoods be complete communities, with mixed uses and services at hand. Further, it proposes that they be scaled and configured to accommodate walking and to encourage clusters of family housing, reflecting the traditional fareej arrangement (see "Building Blocks"). In higher density situations, the Plan intends a 'vertical fareej' model.



Lastly, industrial lands are strategically allocated. Heavy industries surround the new port, putting them in close proximity to the in-bound materials that fuel them. High tech industries surround the airport, providing a clean, modern gateway image at this important entry portal. Smaller service-based industries are allocated to the Mussafah and Mafraq areas and as an integral part of every neighborhood in small, accessible enclaves. All three major industrial areas are linked by the freight rail corridor and truck highway.

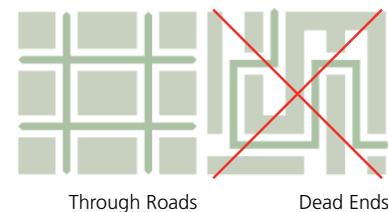
4.4 TRANSPORTATION FRAMEWORK

Nothing is more fundamental to the smooth flow of traffic than the proper allocation of land use. By spreading traffic loads evenly through the roadway system, the Land Use Framework Plan lays the foundation for a viable Transportation Framework Plan. The best transportation plan starts with a good land use plan. A city of more than 3 million diverse inhabitants requires a developed transit system. 'Modal shift' to transit is one of several other keys to creating the comfortable and efficient transportation scheme that Abu Dhabi deserves. No matter what form of transportation people ultimately choose, every journey begins and ends with a walk, so provisions for walking are key to the Transportation Framework Plan.

The regular grid of boulevards running through Abu Dhabi has the virtue of distributing traffic evenly through the core, allowing congestion on one street to dissipate through the grid. Large freeways defeat this virtue by channeling all of the traffic flow through bottlenecks with very limited access and exit opportunities. Freeways also blight large swathes of land, devalue nearby property, and are a barrier to pedestrians. The most important principle for the roadway system in Abu Dhabi is to maximize connectivity, providing the largest amount of smaller options, rather than the smallest amount of large options. This is most graphically illustrated in the proposed new CBD area centered on Al Suwwah Island, where the Transportation Framework Plan proposes a distributed system of ten or more bridges, each a continuation of a normal city street, connecting the city to Al Suwwah and Al Reem Islands. These bridges will knit Al Suwwah and Al Reem into the fabric of the city, provide many options for relieving congestion, and comfort for pedestrians.

This same principle is also employed in the regeneration of the existing CBD – connectivity is enhanced by making through-roads out of the dead end streets within the super blocks. This provides congestion the maximum opportunity to dissipate, and eliminates the need to make three long right turns in order to make one short left movement.

Freeways still play an important role in the roadway network, but are only employed where they are truly needed: connecting Saadiyat Island to the Airport and connecting Al Reem and Saadiyat Islands to Al Raha Beach. These two new parkways will shorten the driving distance to Dubai, provide alternate entry points to the new island developments, and take the traffic pressure off Al Salaam Street, reducing the need to make this prime gateway to the city a tunnel or a freeway trench. These freeways should be designed to maximize their parkway character, with



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High Speed Rail



Metro



Dense Public Transit

extensive landscaping and preservation of vistas. The final new highway is a truck route for goods movement to the east of the Capital District, proposed as the furthest extent of development into the desert.

A well-conceived transit network will help guide and phase development as Abu Dhabi's population increases. The first component is a high speed rail line, originating at the Central Souq train station, connecting the downtown to the Capital District, Airport, and ultimately Dubai. A freight rail line will operate in the same right-of-way, connecting the new port, airport, and Jebel Ali with the other GCC countries. The city needs at least two high capacity metro lines. One of these would have spurs originating on Saadiyat Island and Al Mina, turn left at Central Station to follow the Airport Road out to the Grand Mosque District, Capital District, and Raha Beach. The other line would traverse the downtown from east to west, connecting Al Reem and Al Suwwah to the Central Station and the Marina Mall development.

The next layer is a fine-grained network of surface light rail, street-cars and buses to ensure that no one ever has to walk more than five minutes to use public transit. The generous boulevards of Abu Dhabi provide ample space for median light rail or dedicated transit lanes for street cars or buses.

Finally, since walking is inescapable with even the most advanced transit planning in the world, improving the streetscapes to maximize pedestrian safety and comfort is an absolute priority. This will involve increasing the width of sidewalks, adding shade trees and shading devices, and comprehensively designing the entire public realm.

4.5 PUBLIC OPEN SPACE FRAMEWORK

The Public Open Space Framework Plan is based on a hierarchy of open spaces, informed at a macro level by the Environmental Framework. That framework envisions a ring of undeveloped land around the furthest extent of the city to protect vital ecological assets and maintain a compact footprint for the city. It is the contrast between built up areas and undeveloped areas that gives the city its character. Unregulated development produces an unending undifferentiated sprawl that eliminates this important contrast. Not only is this bad for ecology, but it will also make a city that is difficult to live in. Services will be too spread out, infrastructures overstretched, and the sense of being somewhere unique and special will be significantly diminished. The ring of undeveloped land is defined by the Sand Belt to the east of the city, and the National Park System to the northeast.

The next echelon in the open space hierarchy is the 'City Park', of a scale and magnitude that it serves the entire city. There are three important parks that fit this description: the Mangrove Park, the Corniche, and Lulu Island. Each of these parks has a stature that recommends it as a City Park, and each is distinguished by the programming it offers. The Mangrove Park is an 'urban wild', the Corniche a 'public water front', and Lulu a space for 'recreation, tourism and commemoration'. Golf courses are similar in size to City Parks, but are not shown as they will be an integral part of development proposals.

The third echelon of open space is a distributed network of community parks and recreation spaces – sports fields, playgrounds, and landscaped squares. The network of community parks embeds local green spaces within the structure of the city, creating a 'garden' ambience. The community parks ensure, among other things, that children have safe play areas close to their homes and all citizens can find green relief when they need it (see "Building Blocks" for design directions).

Continuing the policy set by the late Sheikh Zayed, Father of the Nation, echelon four is a continuous framework of planted boulevards and byways linking the community parks to each other and to the City Parks. These green links make it possible to traverse the city under the cover of shade trees and reinforce the vision of the city as a garden on the shores of the Gulf. In this way all streets, especially local streets, can be seen and used as public open space, not just as traffic routes. Planted byways are facilitated in the CBD by putting parking underground or in structures (see the CBD regeneration scheme in "Building Blocks"). Grade-separated parking frees up space for a comprehensively planted public realm, and lowers the temperature of the microclimate by replacing hot metal and pavement with plants and permeable ground. Of special note is the preservation of the green link to Al Ain.



Urban Structure Framework Plans

Plan Abu Dhabi 2030

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The final echelon of the open space hierarchy is open spaces associated with certain kinds of buildings. Large government and public buildings like train stations traditionally have squares in front of them to emphasize their importance and create view opportunities. Mosques usually require open space in front of them to accommodate worshippers. In all cases, these spaces should be comprehensively landscaped and planted to ensure the coolest possible microclimate. These squares will also help emphasize and accentuate important elements of the capital city framework.

Golf courses, as private open spaces, are not mapped, but may be included in large comprehensive community developments outside the main intensive business districts. With the inclusion of golf courses in residential schemes, the identified densities and heights in this plan may need to vary modestly. The viability of this will be reviewed on a case-by-case basis.

4.6 CAPITAL CITY FRAMEWORK

The Capital City Framework Plan is predicated on movement – how one arrives in Abu Dhabi and proceeds through the city – as well as identifiable districts for government functions and important places for commemoration and celebration.

First impressions are formed by the entry portals, which therefore warrant special treatment. The airport is already slated for expansion and, as the primary portal for international visitors, this is an opportunity to create an iconic building that immediately indicates the power and stature of Abu Dhabi as a major world capital. Main road portals into and through the city should be distinguished by characteristic landscaping, monuments and signage to indicate to motorists that they are now in the nation's capital.

The approaches to the city are the second major experience that every visitor to Abu Dhabi has. There are four main approaches that each emphasizes and showcases the very unique ecology that makes the city so special. They are: the Wetlands Parkway, the Mid-Island Parkway, the Mangrove Corniche, and the western approach. Although there are other ways to enter the city, these main approaches give the visitor calibrated views of the skyline across the expanses of mangrove, reinforcing the grandeur and monumentality of the city as capital.

Once in the city, a network of grand processions down monumental boulevards further expresses the monumentality of the capital. The processional routes link the precincts in the city that express the capital city functions and are the obvious places for monuments and landmarks as the need for these arises. The processional boulevards include the Corniche, Al Saada St., the Mangrove Corniche, and the Capital Boulevard. As in other world capitals, these boulevards are the ideal thoroughfares for the parades, celebrations, and events that are an integral part of the life of a capital. The Capital Boulevard is a particularly important component of the procession, as it links the Presidential Palace and Emirates Palace to the new Capital District. It is enhanced to provide a beautiful and dramatic procession past the row of palaces, the Grand Mosque and the Embassy Precinct. The approach to the Capital District is very visual, symbolic, and memorable. For example, the Capital Boulevard might travel under seven high arches – the 'Avenue of the Emirates' – representing the seven Emirates of the UAE, and terminate at a main capital square.



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The most important expression of government will be the identified Capital District. In addition to National health and education institutions, this District will increasingly be a key seat of the Emirate and National governments, with departmental offices, embassies, and a coherent open space system of monuments and commemoration..

A second focus of institutions and commemoration will be the Corniche in Downtown Abu Dhabi. This high-profile waterfront area should ultimately provide a showcase of important National activities.

Other iconic precincts within the fabric of the city are designated to further reinforce the capital framework. These iconic precincts include the Cultural District on Saadiyat Island, the 'Palace Row' on the western edge of the island, and the Grand Mosque. The special quality and importance of these areas should be highlighted with special public realm treatments, signage, and mapping.

Lastly, Lulu Island is identified as perhaps the most important element of the Capital City Framework. Situated at the head of Abu Dhabi Island, every trip to the downtown ends with a view of it. It has immense symbolic importance and is proposed as a primary site for unfolding the story of Abu Dhabi's history, achievements, personality and culture.

What emerges with the consolidation of this Capital City Framework is a distinct Royal City, a National place triangulating the key aspects of Abu Dhabi and UAE identity: state, culture, and religion.



5.0 OVERALL PATTERNS

Precincts and Heights

Land Use Distribution and
Densities

Phasing

5.1 OVERALL PATTERNS: PRECINCTS AND HEIGHTS

The Urban Structure Framework Plan precipitates many implications. The following patterns put specific measures to many of those implications and flesh out some of the details of the urban form that will result from the Plan.

Precincts

Precincts have been created to provide a finer grain of organization within the city, aiding area planning and infrastructure development. In general, the cultural boundaries of existing neighborhoods, and the likely cultural boundaries of new neighborhoods has been used to delineate the precincts. Preserving the character of the well-loved older neighborhoods in the middle of Abu Dhabi Island is one of the main goals of the Plan, and this is facilitated by defining them as a precinct. While all precincts in the city are mixed-use, in certain of them a characteristic economic activity predominates. This is most evident in the new CBD and Capital District. Without going too far down the road of overspecialization, the special character of certain precincts should be developed and brought out, such as the Cultural District on Saadiyat Island, and the Recreation and Leisure District on Yas Island. As a rule, opportunities to infill and expand within precincts should be exhausted before construction on greenfield sites is considered.

Heights

Many factors inform building heights. Heights are used to communicate the intrinsic order of the city. Tall buildings mark the location of the centers of commerce and are legible at great distance. Height restrictions surround the Grand Mosque and government buildings reinforcing their importance as key elements of the city and nation. Building heights are rationalized through each precinct to create a uniform character, maintain important view corridors and prevent a random and confusing pattern of tall buildings without any obvious rationale.

One of the characteristic features of Abu Dhabi is its flat 20-25 storey skyline. The Framework Plan sees this preserved, with selected pockets of taller buildings for emphasis at certain special points – the new CBD centered on Al Suwwah Island, the Central Market, the Etihad Towers, and at the Al Raha Beach development.

The Capital District has a much different kind of urban fabric to provide counterpoint to the precincts on Abu Dhabi Island. It is envisioned as a predominantly midrise (5-10 storey) streetwall typology, similar to Paris and Berlin with a punctuation of 20-25 storey buildings marking its central core.

Overall Patterns

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Urban Structure Framework Plan

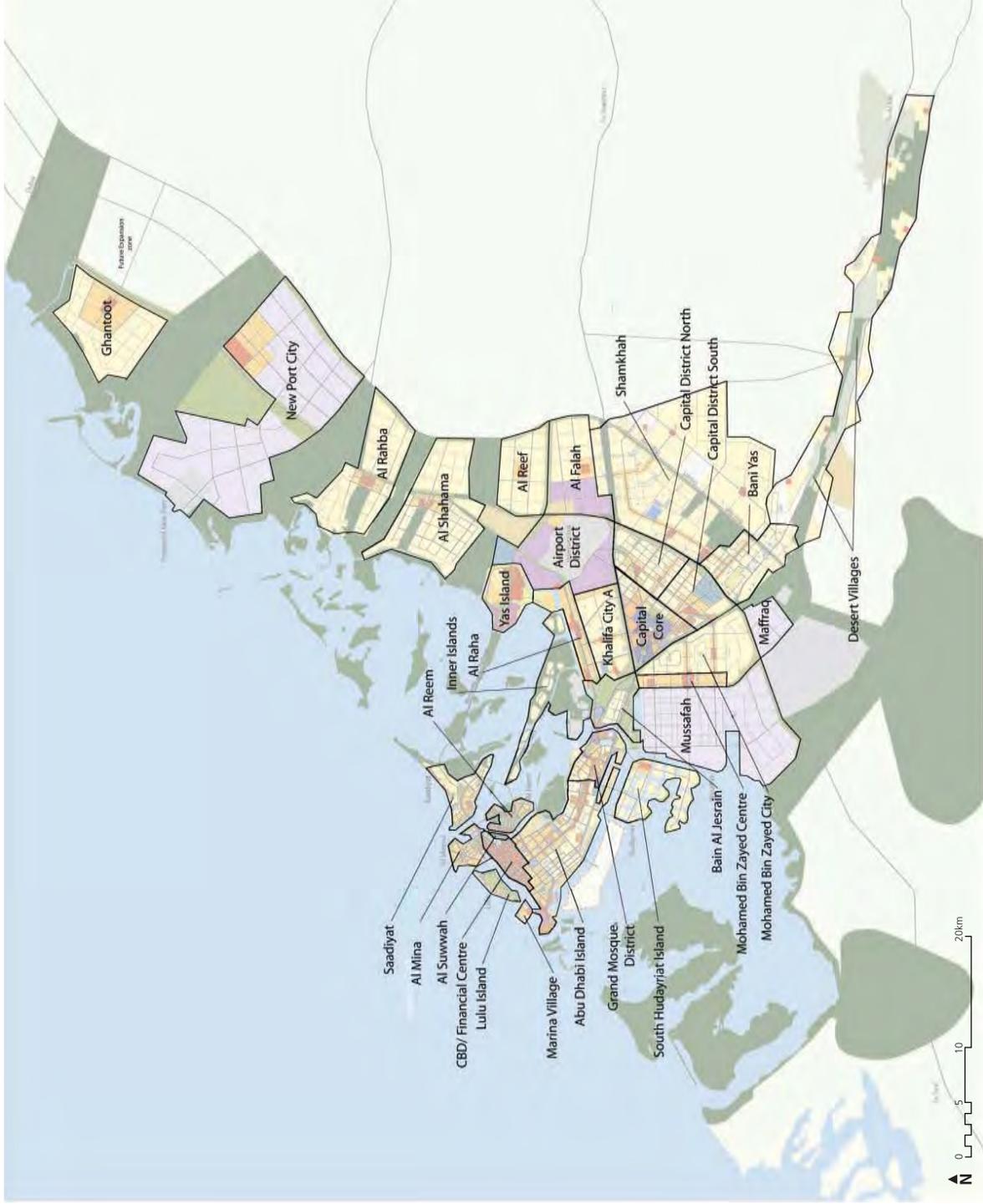
The Grand Mosque District is governed by the priority of reinforcing the predominance of the Grand Mosque – its minarets must remain the tallest structures. Important view corridors to the Grand Mosque must not be obscured.

Private buildings taller than three storeys are not permitted north of the south edge of the Corniche and on most of Lulu Island (one exception, a single “identifier” tower, may be considered on the Island). Public buildings taller than three storeys will have their merits judged on a case-by-case basis. These measures are calibrated to retain the impact of these spaces for commemoration. Monuments lose their meaning and power when they are towered over by private structures.

Overall Patterns

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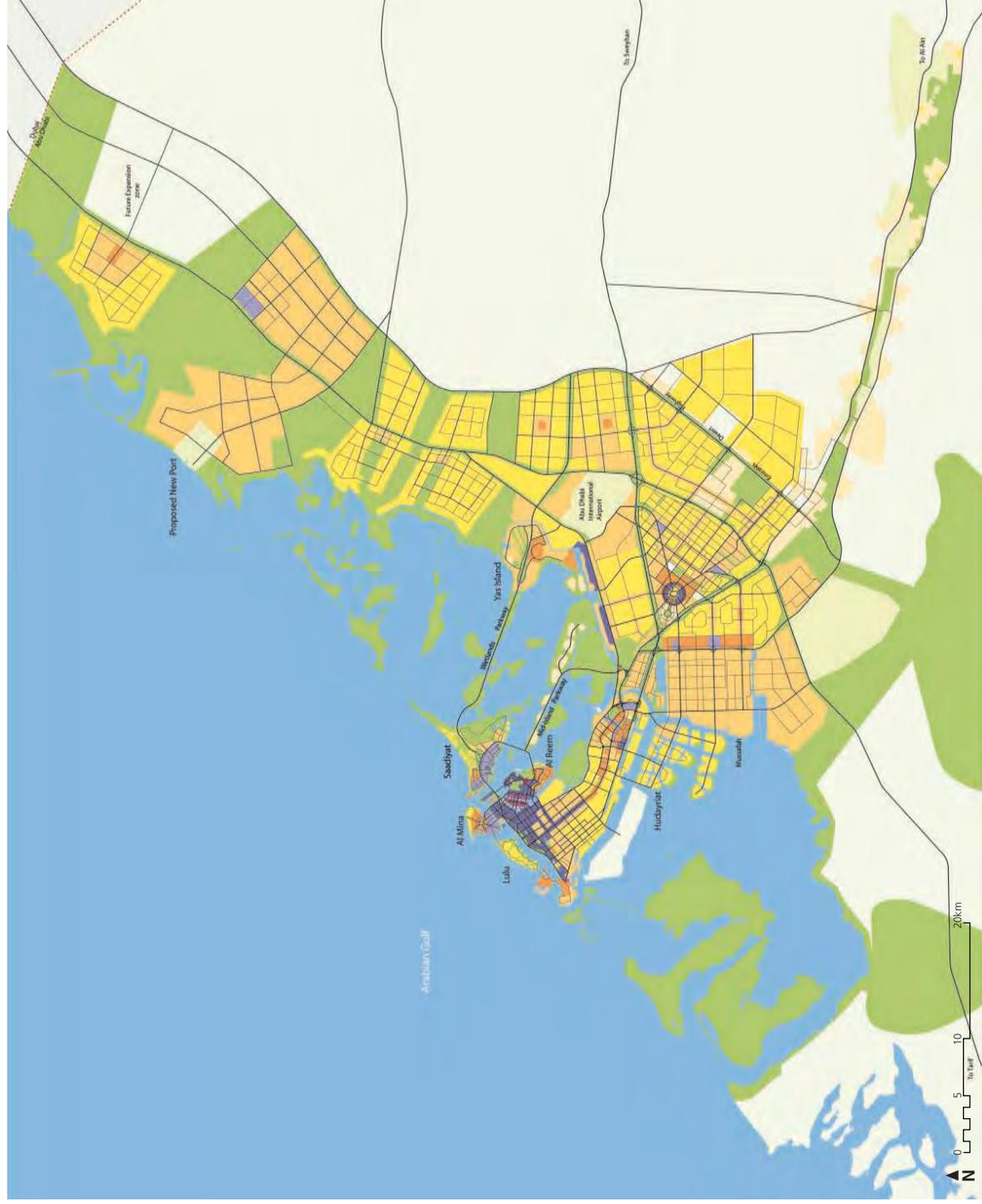
5.1.1.1 PRECINCTS MAP



Note: These plans represent themes to be refined in further planning and design. Land uses, street patterns, and exact alignments in all areas are conceptual, and to be subjected to detailed evaluation and confirmation. Under no circumstances should these plans be construed as final directives for specific sites or areas.

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5.1.1.2 MAXIMUM BUILDING HEIGHTS



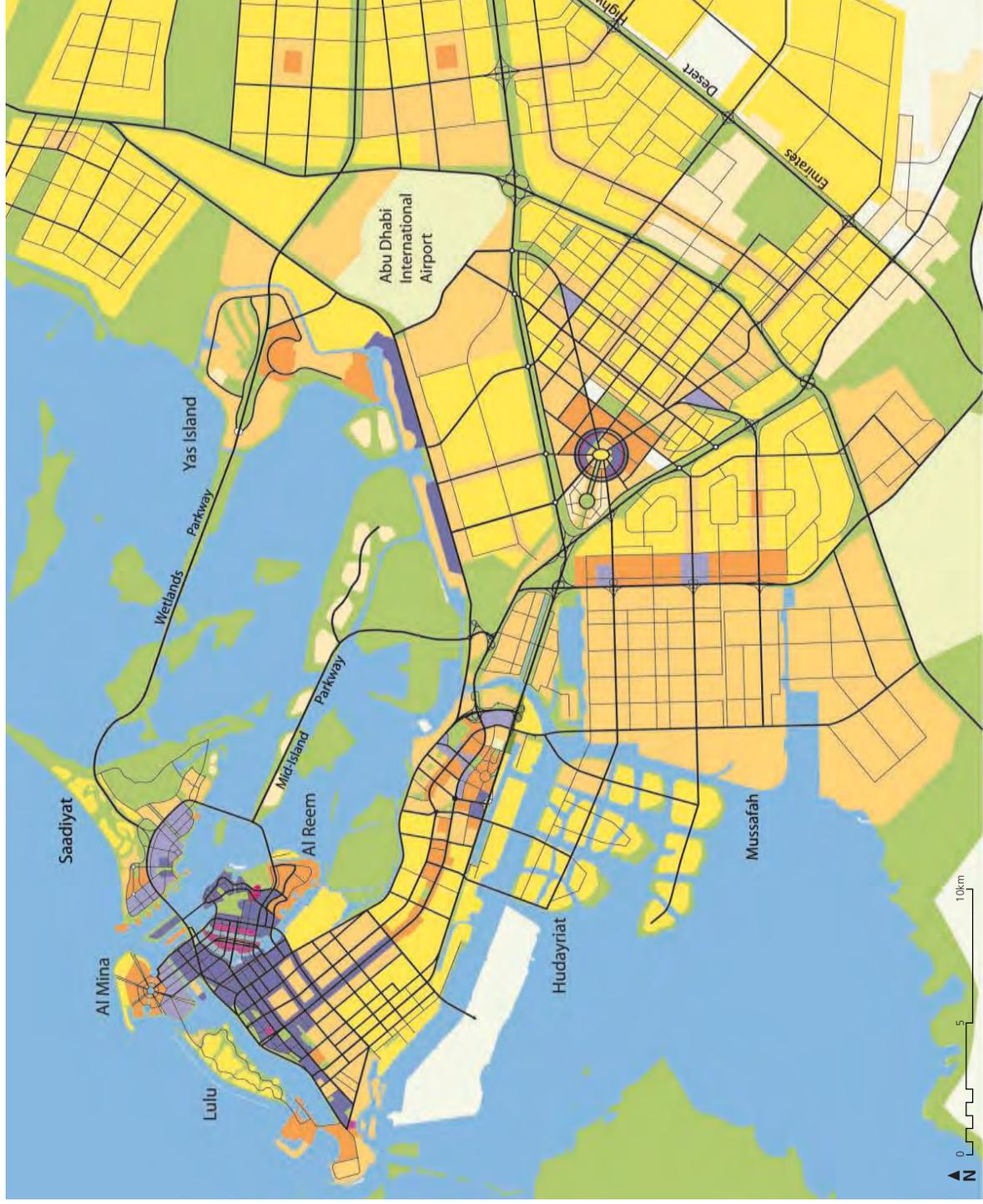
- 300 m (75 storeys typical)
- 200 m (50 storeys typical)
- 100 m (25 storeys typical)
- 60 m (15 storeys typical)
- 40 m (10 storeys typical)
- 20 m (5 storeys typical)
- 12 m (3 storeys typical)
- 8 m (2 storeys typical)
- Open Space

Note: These plans represent themes to be refined in further planning and design. Land uses, street patterns, and exact alignments in all areas are conceptual, and to be subjected to detailed evaluation and confirmation. Under no circumstances should these plans be construed as final directives for specific sites or areas.

Overall Patterns

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5.1.1.3 MAXIMUM BUILDING HEIGHTS (DETAIL)



- 300 m (75 storeys typical)
- 200 m (50 storeys typical)
- 100 m (25 storeys typical)
- 60 m (15 storeys typical)
- 40 m (10 storeys typical)
- 20 m (5 storeys typical)
- 12 m (3 storeys typical)
- 8 m (2 storeys typical)
- Open Space

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5.2 OVERALL PATTERNS: LAND USE DISTRIBUTIONS AND DENSITIES

While land use allocations determine what takes place on each portion of land, it is density that determines the intensity of development. Density is unrelated to height: a district with 75-storey towers can have a lower density than a district with a mid-rise street wall typology. There are densities associated with each kind of land use and the general principle has been to allocate different densities so as to complement and reinforce each other, creating well-defined nodes within the urban structure. As an example the Marina Mall currently has a large amount of retail density but very low residential density, producing a lot of traffic to and from the mall. Allocating residential density there will improve the traffic profile and provide a nearby consumer base.

Residential

The highest density is preserved at the head of the island with density sloping away on all sides. The central portion of the Capital District is allocated a similar amount of residential density to create the critical mass of people necessary for a vibrant street life. The traditional Emirati neighborhoods in the middle of the island are preserved at low density, with the exception of the transit corridor along the Airport Road that is developed at a higher level sufficient to support the transit investment. New Emirati neighborhoods are mostly developed at lower densities but with proximate 'high streets' that combine street level retail with higher density housing. Every effort has been made to create a range of housing opportunities in each precinct such that there is no part of the city that Emiratis would not wish to live in.

Office space

Two major centers of office space are created – the new CBD and the Capital District – at sufficient distance from each other, and with differentiated employment focuses, so that they will complement, rather than compete with each other. The remainder of office density is distributed through the urban fabric to ensure employment options in every neighborhood.

Retail

In general, retail density has been allocated to serve a neighborhood's needs and no more. Some of this retail will happen along city streets and some within climate controlled malls, scaled to the neighborhood. Large regional malls are minimized and new ones are strategically located because they create intense traffic congestion. For traffic reasons, any large regional retail areas, like the new Central Souq and the fish and vegetable markets should be centrally located. There

Overall Patterns

Plan Abu Dhabi 2030 Urban Structure Framework Plan

could, perhaps, be one more larger regional mall or area in each of the large quarter sections of the city, easily accessible by transit so as to be convenient for the greatest number of people. Distributed retail density reduces the number of vehicle trips by providing services near to where they are needed.

Industrial

Three major industrial districts have been created. The new Khalifa Port and Industrial Zone is the proposed site for heavy industry that relies on bulk materials imported from abroad. This minimizes the amount of overland travel required for these materials and products and keeps necessary processes of heavy industry sequestered from the centers of population density. Adjacent the Abu Dhabi International Airport is the second industrial zone focusing on clean, high tech industries, next to their supply and distribution portal, that provide a compelling gateway image to the city. Finally, the types of industry that are more service-oriented will be in the existing Mussafah and Mafraq industrial zone and integrated in small enclaves in each residential area, within close proximity to the bulk of the population. Allowances have been made to accommodate industrial warehousing at key locations to serve trans-shipment needs, wherever it is most needed.

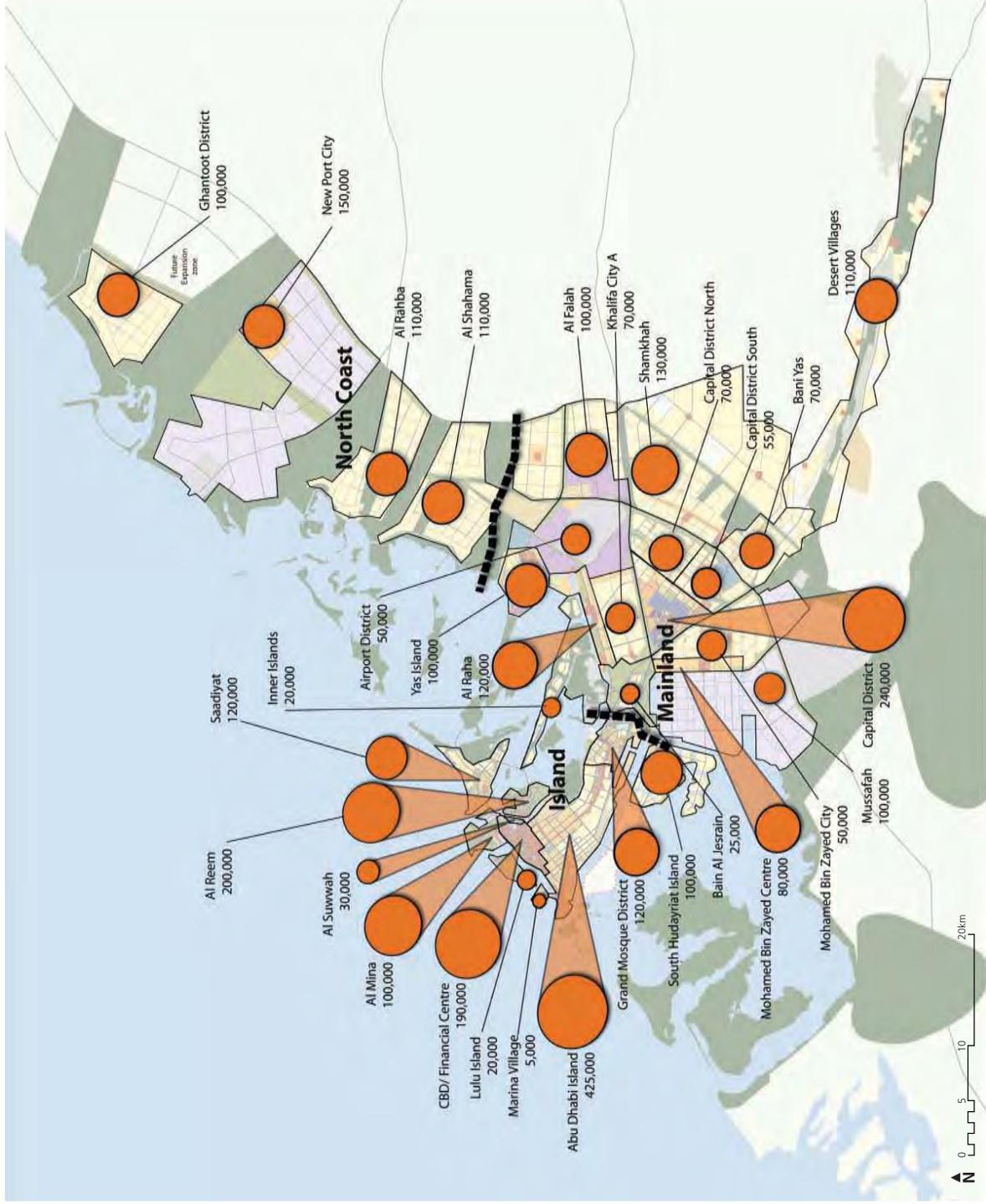
Hotel

Hotel density is clustered to take advantage of the major tourism assets (the Cultural District on Saadiyat Island, the Entertainment and Recreation District on Yas Island, and the Desert Heritage District on Lulu Island) and to serve the business centers (the CBD extension, the Capital District, and the Abu Dhabi International Airport). Lighter impact "eco-resorts" can take advantage of the considerable ecological appeal of the mangroves and National Park System. Finally, hotels will also be situated outside the city in exclusive resort configurations.

Overall Patterns

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5.2.1 POPULATION DISTRIBUTION



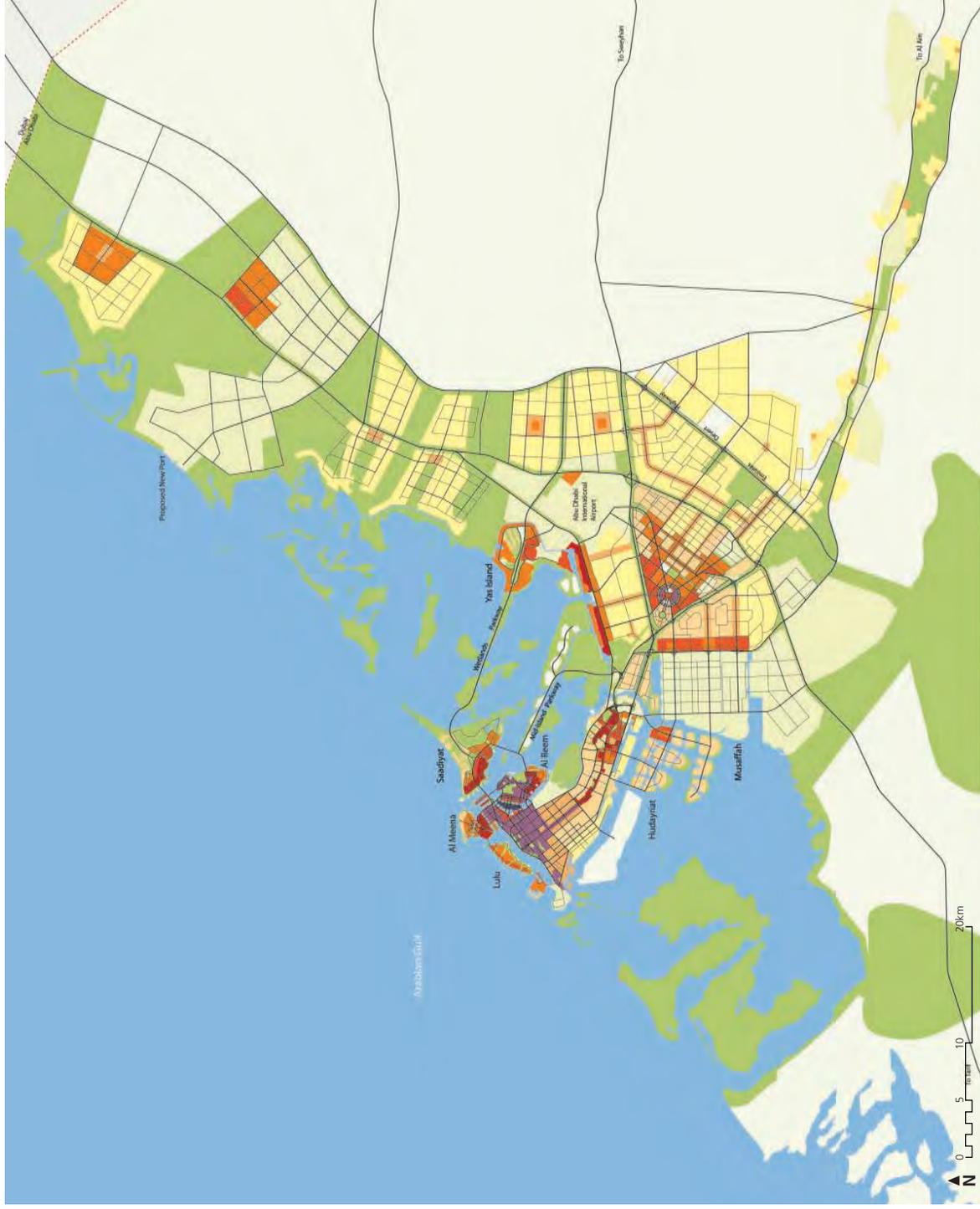
Island 1,330,000
Mainland 1,370,000
North Coast 470,000
Total 3,170,000

(Construction worker population in temporary housing not shown.)

Note: These plans represent themes to be refined in further planning and design. Land uses, street patterns, and exact alignments in all areas are conceptual, and to be subjected to detailed evaluation and confirmation. Under no circumstances should these plans be construed as final directives for specific sites or areas.

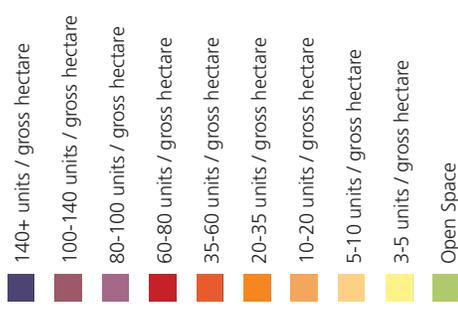
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5.2.2 RESIDENTIAL DENSITY



Overall Patterns

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5.2.3 RESIDENTIAL DENSITY (DETAIL)

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- 140+ units / gross hectare
- 100-140 units / gross hectare
- 80-100 units / gross hectare
- 60-80 units / gross hectare
- 35-60 units / gross hectare
- 20-35 units / gross hectare
- 10-20 units / gross hectare
- 5-10 units / gross hectare
- 3-5 units / gross hectare
- Open Space

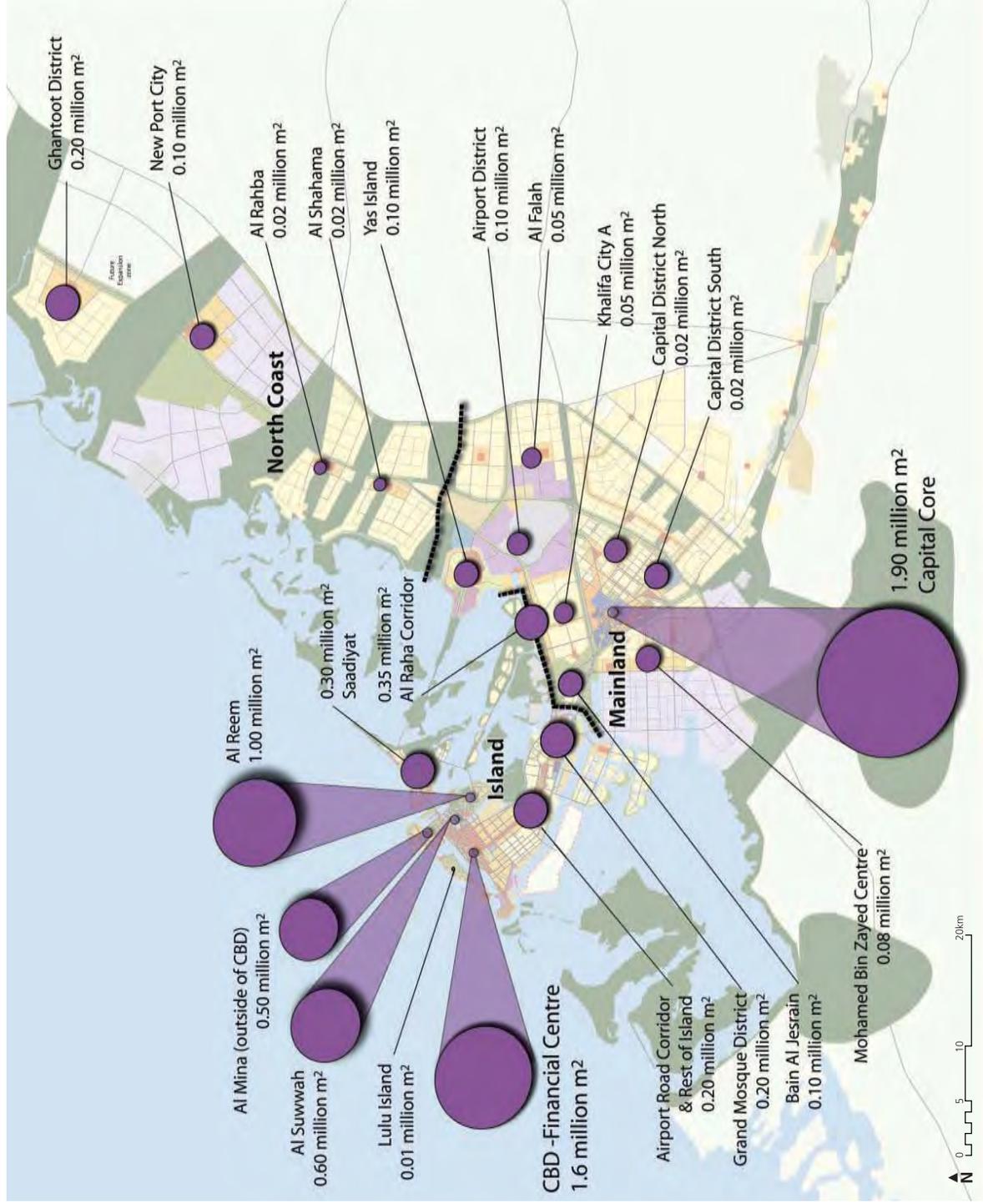
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Overall Patterns

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5.2.4 OFFICE DISTRIBUTION



2030 Projections

Island	4,410,000 m ²
Mainland	2,770,000 m ²
North Coast	340,000 m ²
Total	7,520,000 m²

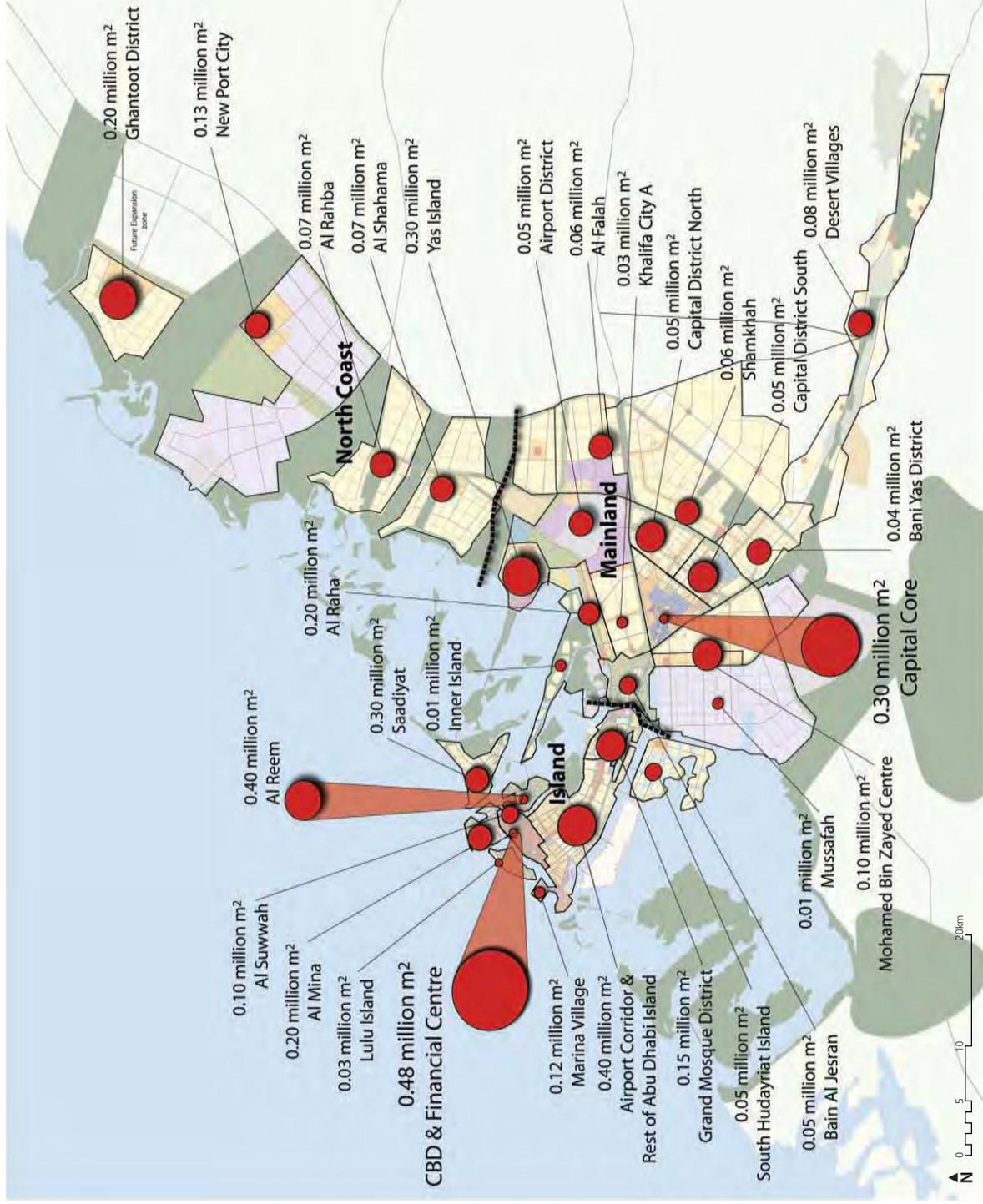
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Overall Patterns

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5.2.5 RETAIL DISTRIBUTION



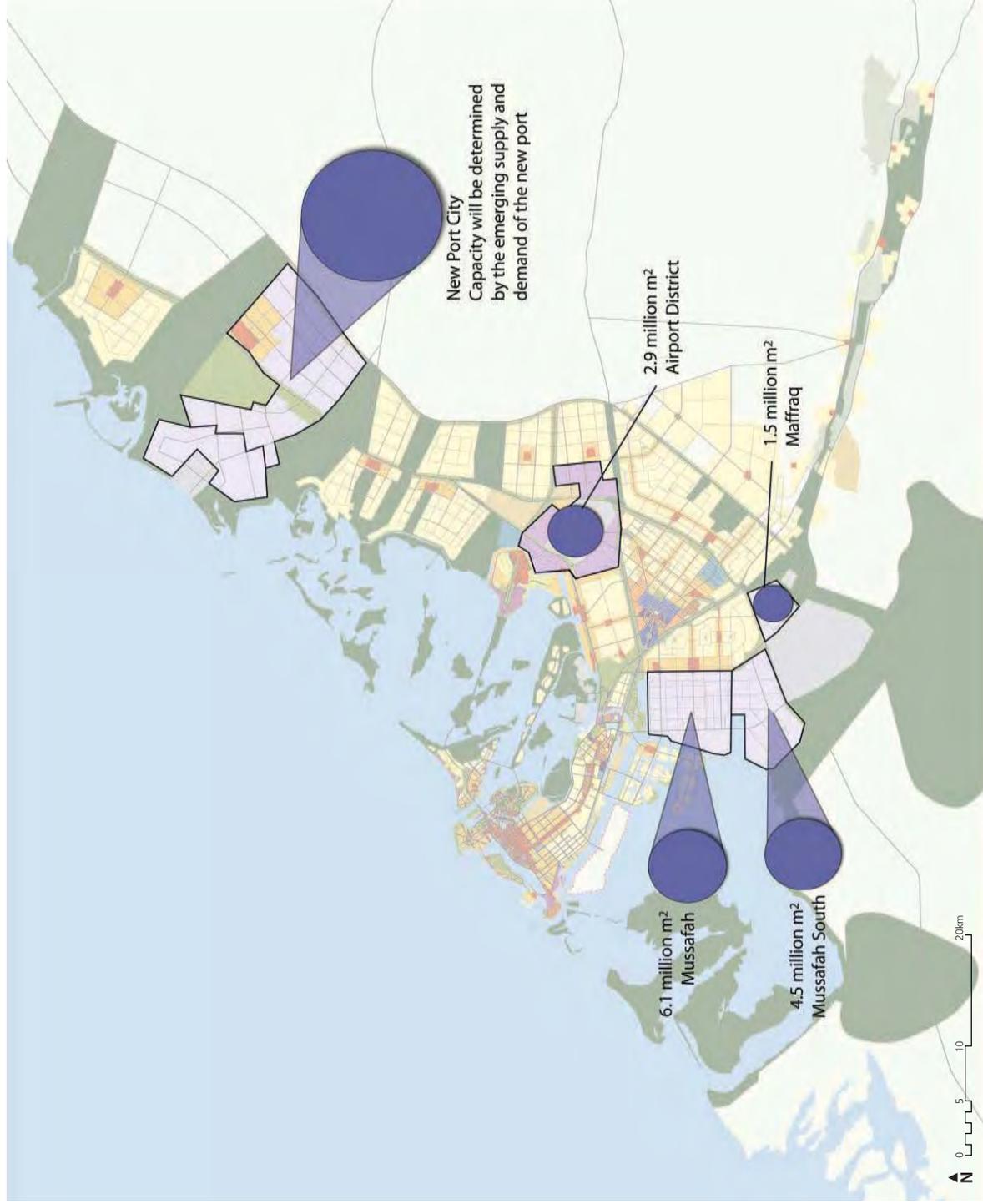
2030 Projections

Island	2,240,000 m ²
Mainland	1,380,000 m ²
North Coast	470,000 m ²
Total	4,090,000 m²

Note: These plans represent themes to be refined in further planning and design. Land uses, street patterns, and exact alignments in all areas are conceptual, and to be subjected to detailed evaluation and confirmation. Under no circumstances should these plans be construed as final directives for specific sites or areas.

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5.2.6 INDUSTRIAL DISTRIBUTION



Overall Patterns

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2030 Projections

15,000,000 m² (not including New Port City)

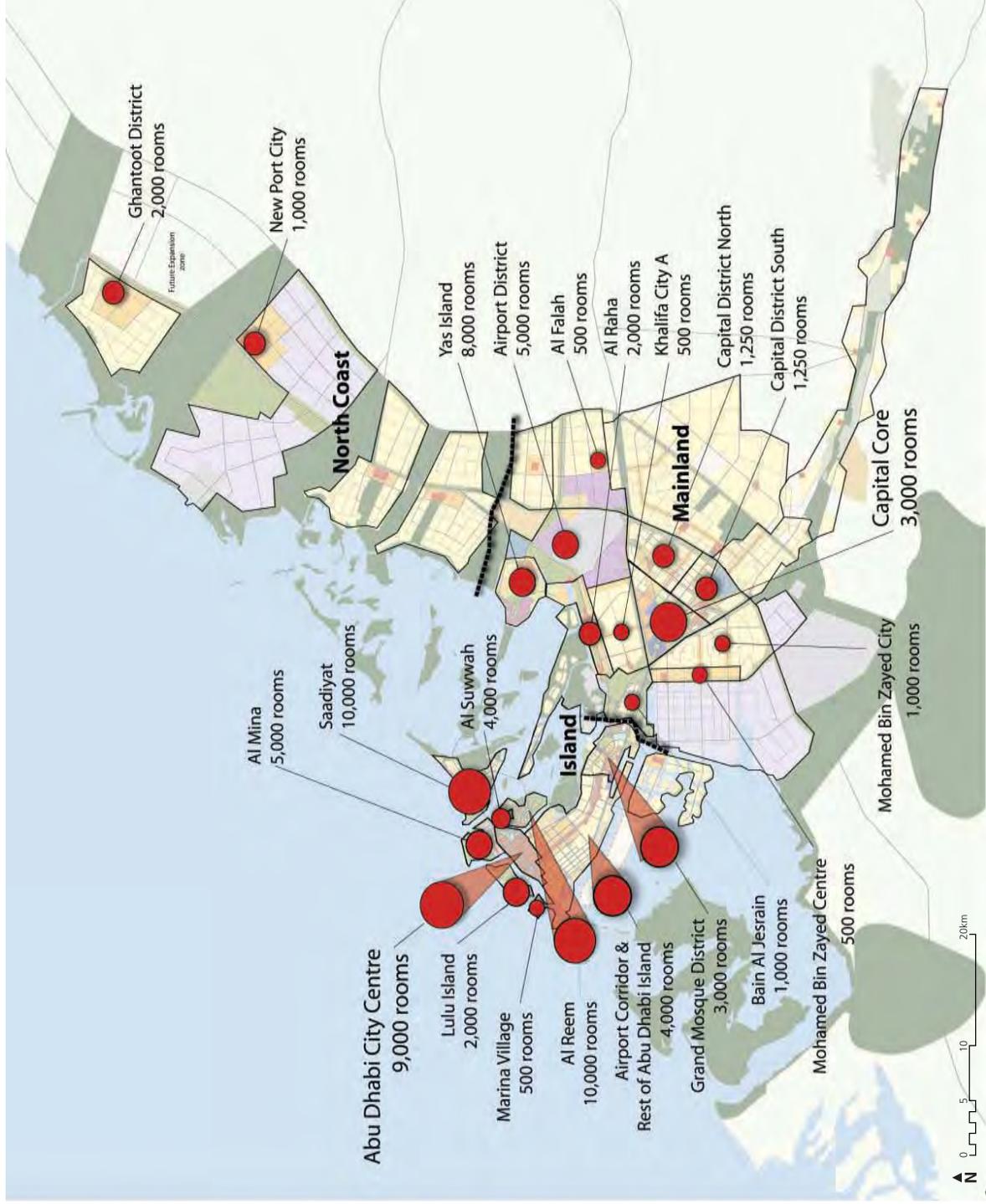
Note: These plans represent themes to be refined in further planning and design. Land uses, street patterns, and exact alignments in all areas are conceptual, and to be subjected to detailed evaluation and confirmation. Under no circumstances should these plans be construed as final directives for specific sites or areas.

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Overall Patterns

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5.2.7 HOTEL DISTRIBUTION



2030 Projections

Island	47,500 rooms
Mainland	24,000 rooms
North Coast	3,000 rooms
Total	74,500 rooms

Note: These plans represent themes to be refined in further planning and design. Land uses, street patterns, and exact alignments in all areas are conceptual, and to be subjected to detailed evaluation and confirmation. Under no circumstances should these plans be construed as final directives for specific sites or areas.

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5.3 OVERALL PATTERNS: PHASING

There are many factors informing phasing. Some initiatives need to be undertaken as a matter of urgency, due to the timeframes of committed real estate developments. Other elements need to be started early because they will have a large impact on the form of the city at the macro level. Still other features must be implemented in order to facilitate later stages. In all cases, however, the principle is to match the rate of development of the city as closely as possible to demand. A sudden cataclysmic burst of development that oversupplies the market will produce negative economic impacts and is to be avoided. A second principle is to build out from existing places or key new nodes to avoid gaps and dead zones and conserve natural areas and future development options. The third principle is that development must be tied to the completion of infrastructure, including availability of rapid transit supporting higher density nodes.

Conceptually, two major phases are envisioned: development to begin now, likely up to 2015, and development to start later, likely after 2015. It is notable that this phasing scheme is based upon existing market projections. If demand emerges faster than expected, then the horizon dates must move forward accordingly. However, the management of development over these next five years is especially critical. As early developments are approved, overall capacity will be monitored and controlled to ensure it does not exceed expected demand.

Regeneration of the existing city should start immediately. Improving the public realm, putting parking underground or in structures, introducing shading devices – these are all initiatives that do not depend on other aspects of the Plan and can be piloted at any time. It is essential that these efforts start early in order to maintain the competitiveness of the old downtown as new developments occur elsewhere, and to avoid the onset of malaise that can be hard to address after the fact (see “Building Blocks”).

Regardless of phasing indications, Emirati housing neighborhoods need to be constructed as quickly as necessary to fulfill the ongoing demand through formation of new households, so that Emirati households do not have to wait for their housing. Such new housing can, if required, proceed as a priority item with the planning of the Capital District, Al Mina, Al Reem, South Hudariyat, and Saadiyat Islands, all of which have provisions for Emirati housing.

Overall Patterns

Plan Abu Dhabi 2030
Urban Structure Framework Plan

Initial Phase - To Start Early

Horizon to 2015. The priority in this phase is to put in place the macro-level moves that will provide the structural framework for future growth, such as transit and infrastructure, and to address areas of acute pressure. The two main cores – the new CBD centered on Al Suwwah Island and the Capital District on the mainland are developed during this phase. These two areas provide the opportunity to channel the enthusiasm of Abu Dhabi's new real estate development sector and realize the potential of Abu Dhabi as a major world capital. Planned developments for Yas Island, Saadiyat Island, Al Raha Beach, Al Mina, Al Suwwah and Al Reem Island will also proceed in this phase.

Further Phase - To Start Later

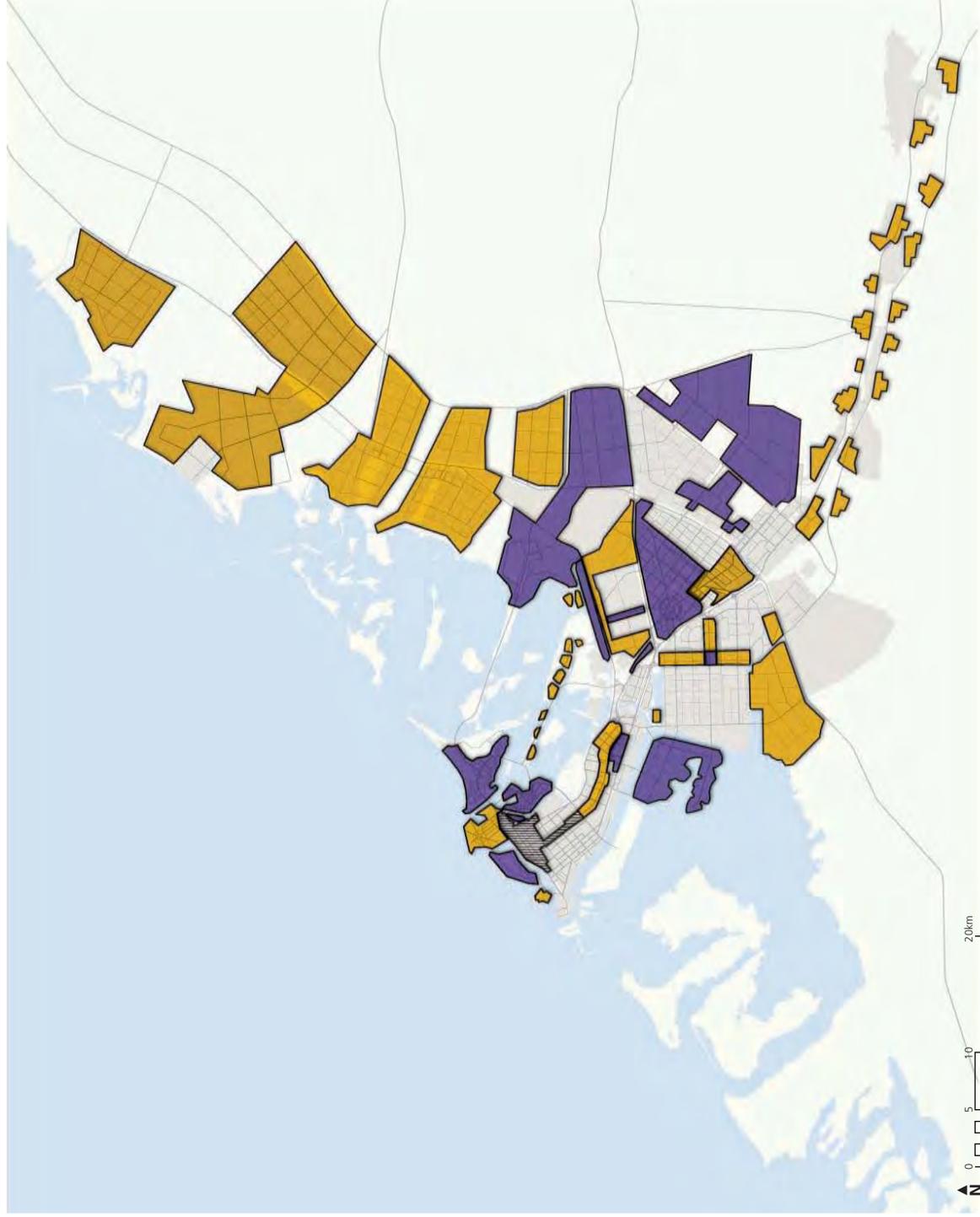
Horizon is 2015 to 2030. Initiatives taking place in this phase are primarily concerned with accommodating the rapidly expanding economy and population. Higher density housing is developed along the Airport Road transit corridor, the industrial areas are ramped up, and existing areas are infilled to the maximum comfortable limits. Beyond this, further development would flesh out the full extent of the urban structure framework. This should be carefully managed to avoid disparate new development sites, maximize the cohesion and continuity of the urban fabric, and comfortably accommodate the growth trends that are being experienced.

It is essential that rapid transit development commence as soon as possible so that a significant component of new transportation demand can be satisfied by rapid transit into the future.

5.3.1 DEVELOPMENT PHASING

Overall Patterns

Plan Abu Dhabi 2030
Urban Structure Framework Plan



This phasing indicates when it is preferred for development to commence. Development in an area may be permitted to unfold throughout the planning period or beyond.

This phasing is a probable scenario based on market projections - phasing may occur sooner if demand emerges faster than predicted.

■ To start early, probably before 2015

■ To start later, probably after 2015

▨ Continual Development

Note: These plans represent themes to be refined in further planning and design. Land uses, street patterns, and exact alignments in all areas are conceptual, and to be subjected to detailed evaluation and confirmation. Under no circumstances should these plans be construed as final directives for specific sites or areas.

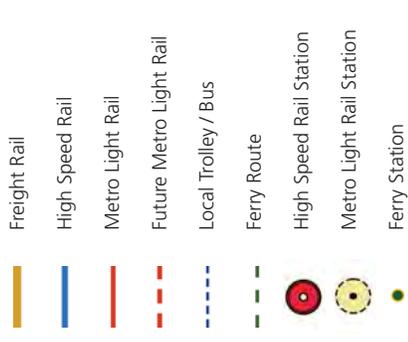
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5.3.2 TRANSIT PHASE ONE



Overall Patterns

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Urban Structure Framework Plan



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6.0 ZOOMING IN

Central Business District

Capital District

Grand Mosque District

Lulu Island District

6.1 ZOOMING IN: CENTRAL BUSINESS DISTRICT



Centered on Al Suwwah Island and taking in adjacent edges of Al Mina, Al Reem and Abu Dhabi Islands, the new CBD is the focus of the skyline profile and the summit of office density. Al Suwwah Island has been expanded to create a critical mass of development area and to facilitate comfortable pedestrian access. This Urban Structure Framework Plan provides a connection between Al Suwwah and Al Reem Islands and the city with ten or more modestly scaled bridges, each an extension of an existing city street. While meeting clearance standards for local ferries and modest pleasure craft, these bridges will cross the water without dramatic changes in elevation, tying Al Suwwah into the heart of the existing city fabric. This dispersed network will distribute traffic loads evenly, providing many options for congestion to dissipate.

Conceptual view of new CBD / Financial District with Suwa Island at centre and Al Reem Island at left

Surrounding the new CBD are residential neighborhoods that generally decrease in density with greater distance from Al Suwwah. The peripheral edges of Al Mina and Al Reem are all lower density residential areas that offer Emiratis the opportunity to live in their preferred housing forms within the inner city at the water's edge. New office space is distributed equitably between Al Suwwah, Al Reem, Al Mina and the

Zooming In

Plan Abu Dhabi 2030 Urban Structure Framework Plan

existing CBD, with each accounting for half a million square meters. Al Mina is cut through with canals, with the dredged areas used as fill along the coast. This emphasizes Al Mina's contact with the water, while at the same time increasing the livable area for the communities.

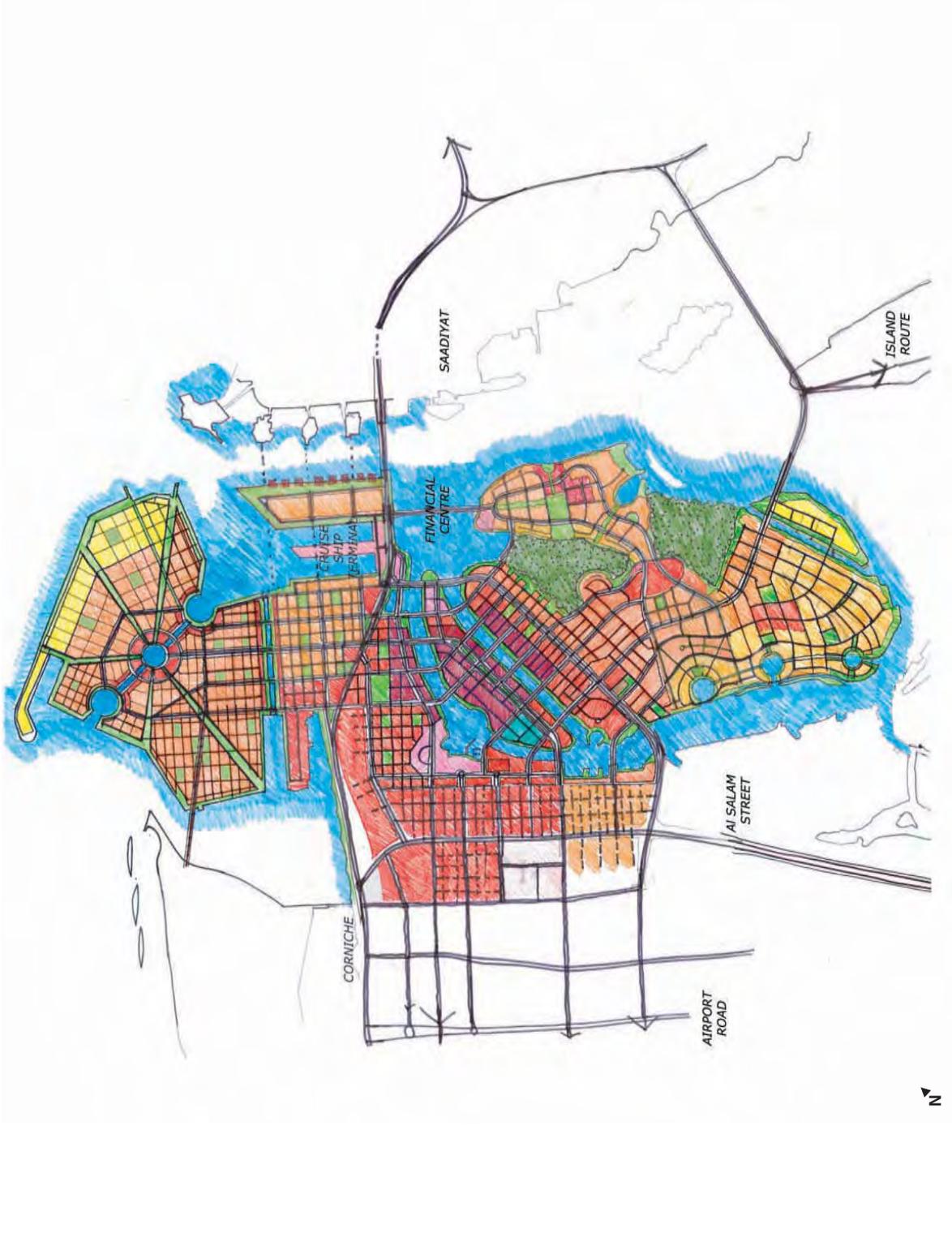
Several regional retail nodes are proposed in the CBD, but the retail distribution on Al Mina and Al Reem is meant to meet the needs of the immediate community only. Large regional malls in these hard to access areas will create difficult traffic problems and should be avoided. The appropriate place for regional malls is in central areas, surrounded by large populations and connected to the rapid transit lines. As such, the Central Market, Abu Dhabi Mall and Financial Centre are the prime candidates.

While the street patterns in nearby developing areas are conceptual, they illustrate the intent for a fine-grained network to provide a human scale, more public realm, and an incremental development form. Nonetheless, more detailed planning is needed for exact street and open space placement, exact cut-and-fill patterns along the shoreline, and exact preferred built form.

6.1.1.1 CBD: ILLUSTRATIVE CONCEPT

Zooming In

Plan Abu Dhabi 2030
Urban Structure Framework Plan



- Financial Centre (office / retail)
- Mixed Use (residential / retail)
- High Density Residential (60-100 units / gross Ha)
- Medium Density Residential (15-40 units / gross Ha)
- Low Density Residential (3-8 units / gross Ha)
- Hotel / Tourism
- Healthcare
- Park
- Mangrove Preserve

Note: These plans represent themes to be refined in further planning and design. Land uses, street patterns, and exact alignments in all areas are conceptual, and to be subjected to detailed evaluation and confirmation. Under no circumstances should these plans be construed as final directives for specific sites or areas.

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Zooming In

Plan Abu Dhabi 2030
Urban Structure Framework Plan

6.1.2 CBD: ILLUSTRATIVE CONCEPT FOR ROADS



- Limited Access Divided Highway
- Major Arterial
- Sub-Arterial
- Collector

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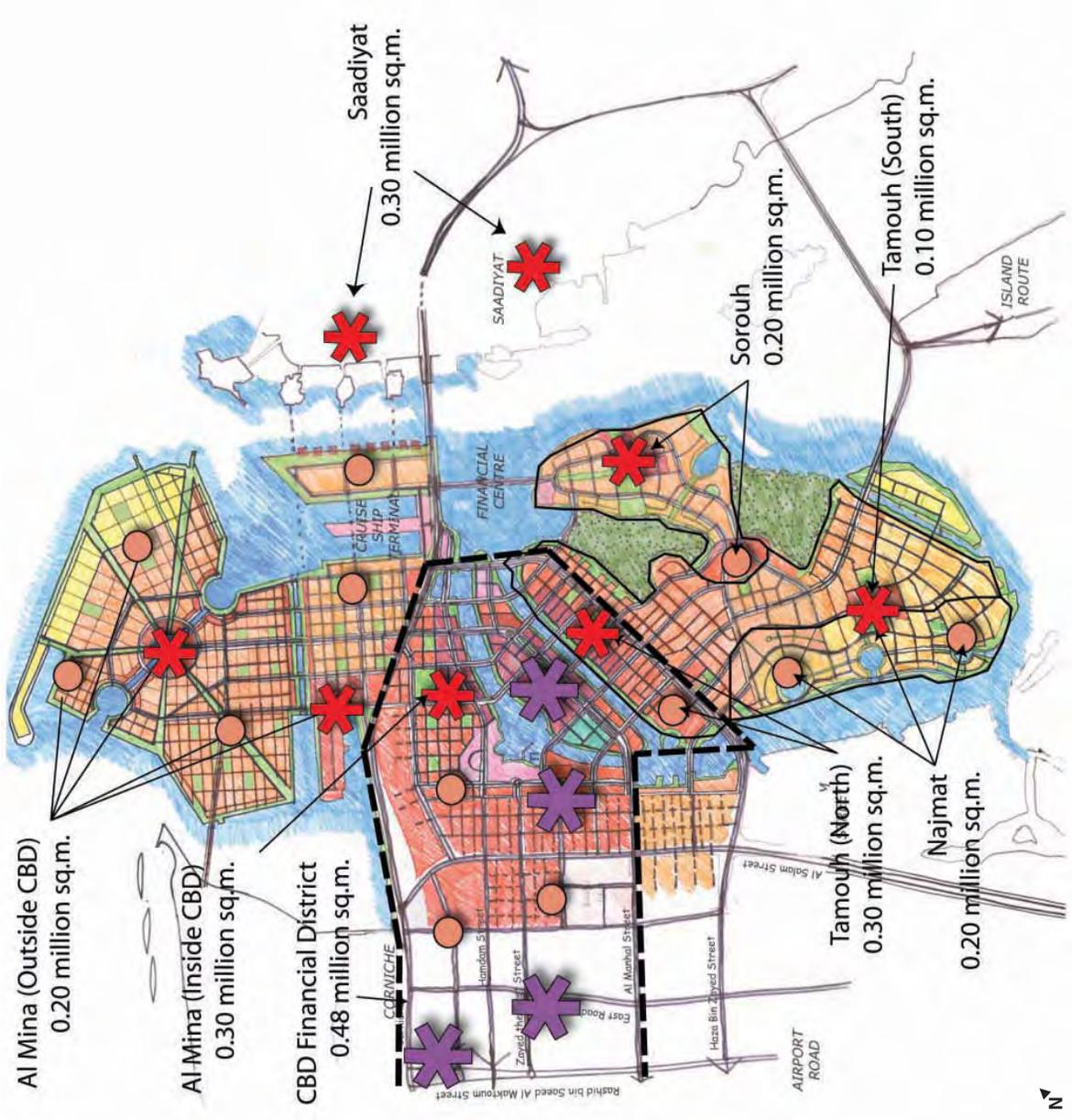
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6.1.3 CBD: ILLUSTRATIVE CONCEPT FOR OFFICE DISTRIBUTION



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6.1.4 CBD: ILLUSTRATIVE CONCEPT FOR RETAIL DISTRIBUTION



-  Regional Retail Area (metro catchment area)
-  District Retail Area (1-1.5km catchment area)
-  Neighbourhood Retail Area (400-600m catchment area)

(Regional, district, and neighbourhood retail areas are not shown as specific locations. Some retail space may be in a mall, while other retail space is street-oriented.)

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6.2 ZOOMING IN: CAPITAL DISTRICT

The Capital District is one of the major strategic initiatives of the “Plan Abu Dhabi 2030” Urban Structure Framework Plan. It is the answer to many questions: a vital component of an integrated traffic solution; a necessary element of the emerging capital city and its image; and a service center for Emirati neighborhoods on the mainland.

The Capital District provides a large amount of office space and employment opportunities but is differentiated from the CBD in terms of its focus. While the CBD is the prime location of big business, commerce and finance, the Capital District concentrates the government, academic and knowledge based sectors. New universities provide a great potential for synergies with the high-tech sector, and new major research hospitals multiply the synergies in the medical sector. The government area punctuates the Capital City Framework of Abu Dhabi, giving the city an iconic district to showcase its institutions. Adjacent to the government quarter, the embassy precinct reinforces the importance of the Capital District through iconic architecture and diplomatic presence.

By providing another focus of employment surrounded by residential neighborhoods, the Capital District radically alters the pattern of vehicle trips, easing pressure on the boulevards of Abu Dhabi Island. The Capital District is an ideal terminus for the metro lines, which will bring students to the university, patients to the hospital, and government employees to their offices. The retail density of the Capital District is primarily allocated to the Central Souq area, in close contact with the metro lines and high speed rail. The Central Souq is an opportunity to create a vibrant regional retail node in a typology more typical of the region's heritage.

Mirroring the CBD, residential density is greatest in the central area of 20-25 storey towers, sloping down steeply from there. Priority has been given to maximizing the amount of low density Emirati housing, so as to house Emiratis near the primary center of the economic sectors they dominate. As outlined in the Building Blocks section, low density residential areas are always in proximity to higher density ‘high streets’ in order to ensure easy access to products and services.

The area's design and street pattern are conceptual. This area requires a comprehensive plan and urban design scheme, especially to fully realize not only its functional requirements but also the symbolic and commemorative needs of the National and emirate governments. It also requires further consideration of its name, and ultimately, all or a portion of the area will likely be designated in law as the official “National Government District”.

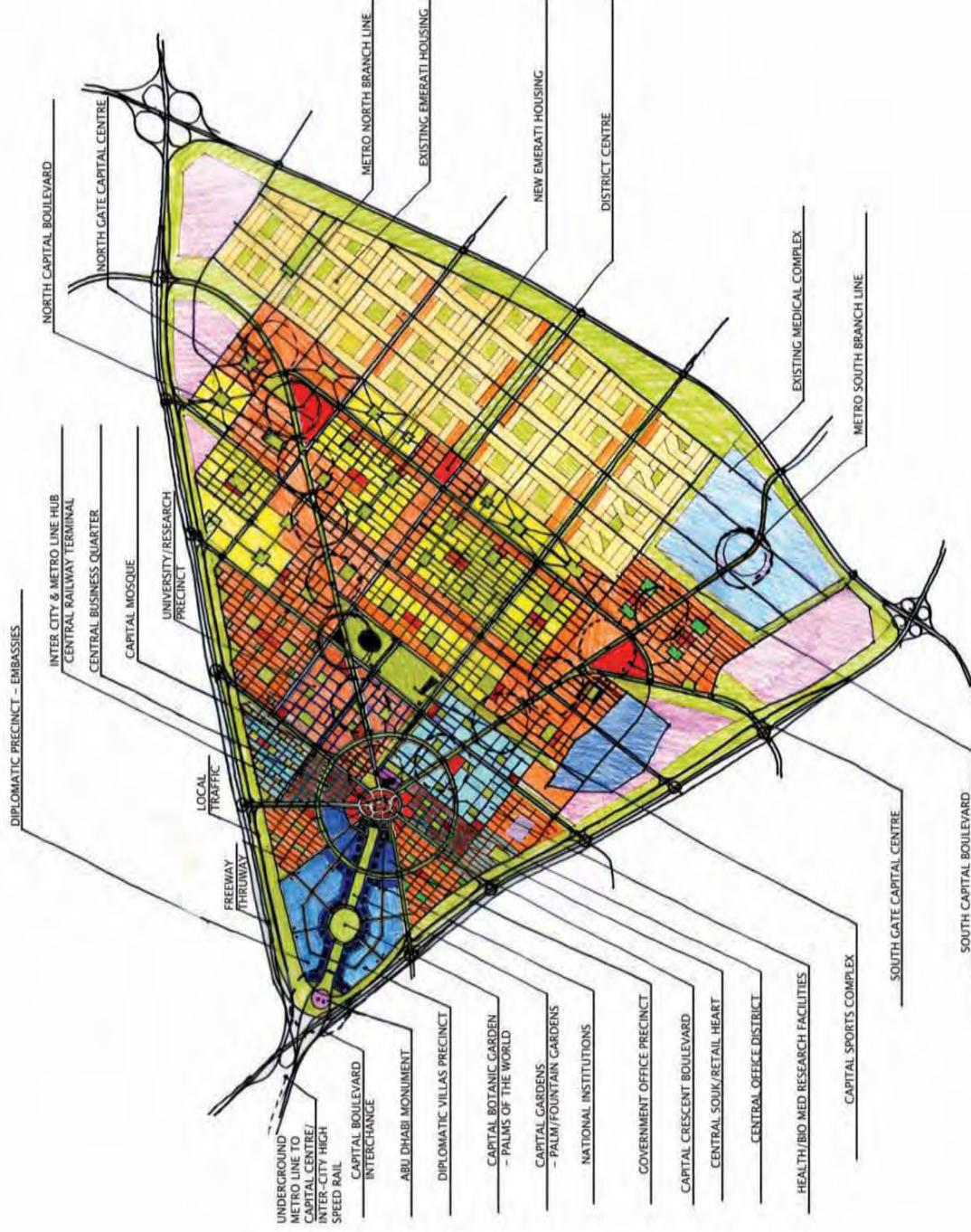
Zooming In

Plan Abu Dhabi 2030
Urban Structure Framework Plan

Conceptual design of the Capital District looking Southeast



6.2.1 CAPITAL DISTRICT: ILLUSTRATIVE CONCEPT

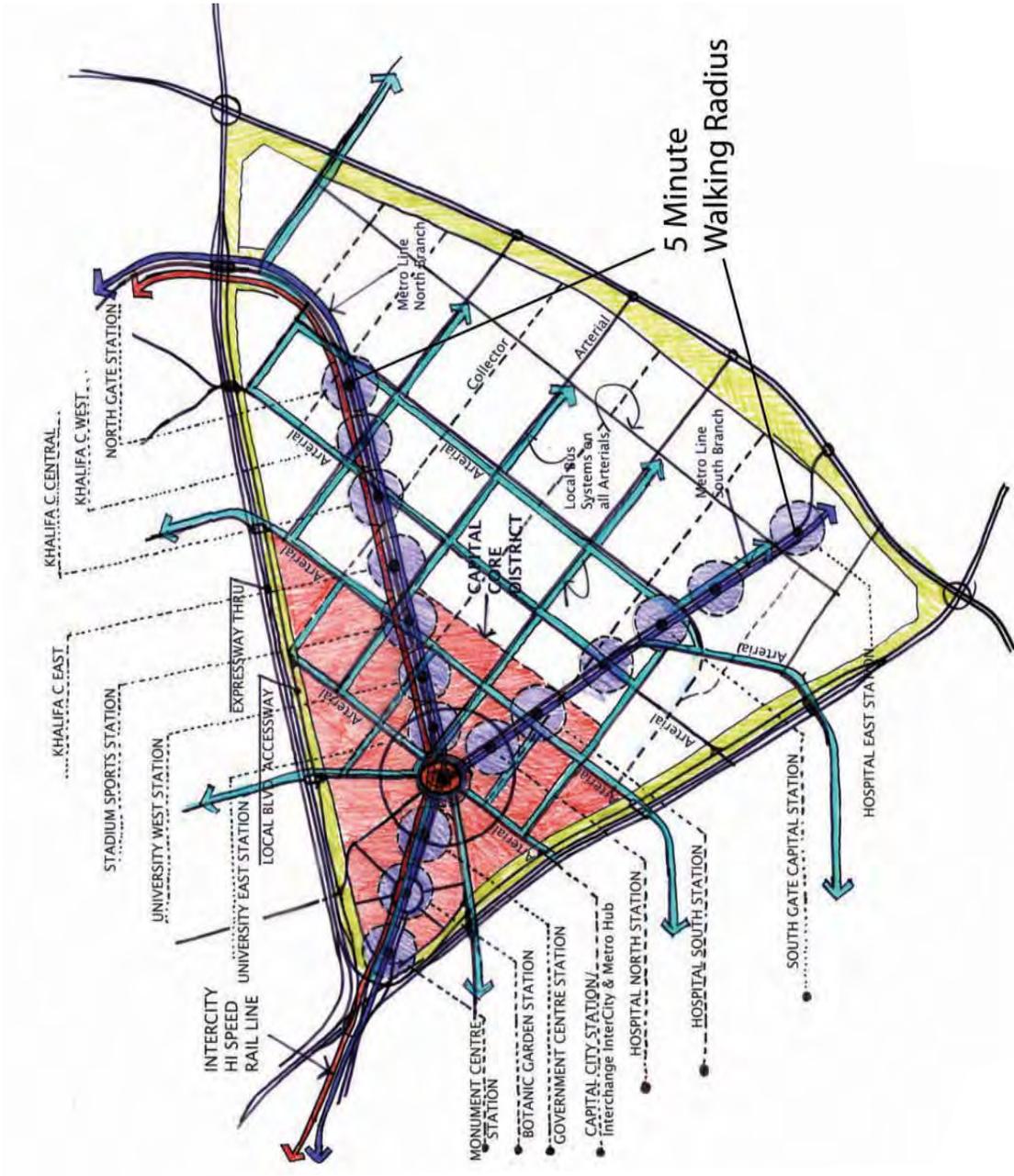


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6.2.2 CAPITAL DISTRICT: ILLUSTRATIVE CONCEPT FOR TRANSPORTATION

Zooming In

Plan Abu Dhabi 2030
Urban Structure Framework Plan



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6.3 ZOOMING IN: GRAND MOSQUE DISTRICT

Punctuated by the Grand Mosque, Officer's Club and Sports City, the Grand Mosque District is a destination with a lot of 'draw'. Equidistant from the two cores envisioned in the Plan and situated at the strategic entryway to Abu Dhabi Island, it is an important hinge point that requires a very fine grain of development. Particularly with Al Bateen Airport space being freed up, this area of the city is a prime candidate for major population densification.

This densification needs to be accompanied by a corresponding increase in retail and employment density to ensure the same access to essential services that residents in other parts of the city enjoy. Adding all of this new activity creates a critical mass of complementary uses, a viable transit node, and a vibrant street life.

Because of the iconic institutions in this precinct, building heights are carefully regulated here to ensure that the minarets of the Grand Mosque remain the most prominent feature. All important view corridors to the Grand Mosque are protected.

The urban fabric here is envisioned as a midrise streetwall typology with pockets designated as Emirati housing. At this early stage the street pattern is conceptual. This area, like others, requires a comprehensive plan and urban design scheme.

Zooming In

Plan Abu Dhabi 2030
Urban Structure Framework Plan

6.3.1 GRAND MOSQUE DISTRICT: ILLUSTRATIVE CONCEPT



- Mixed Use: Office Emphasis
- Mixed Use: Retail/Office Emphasis
- Medium Density Residential
- Low Density Residential
- Government
- Mixed Use: Hotel Emphasis
- Community Facilities
- Parks

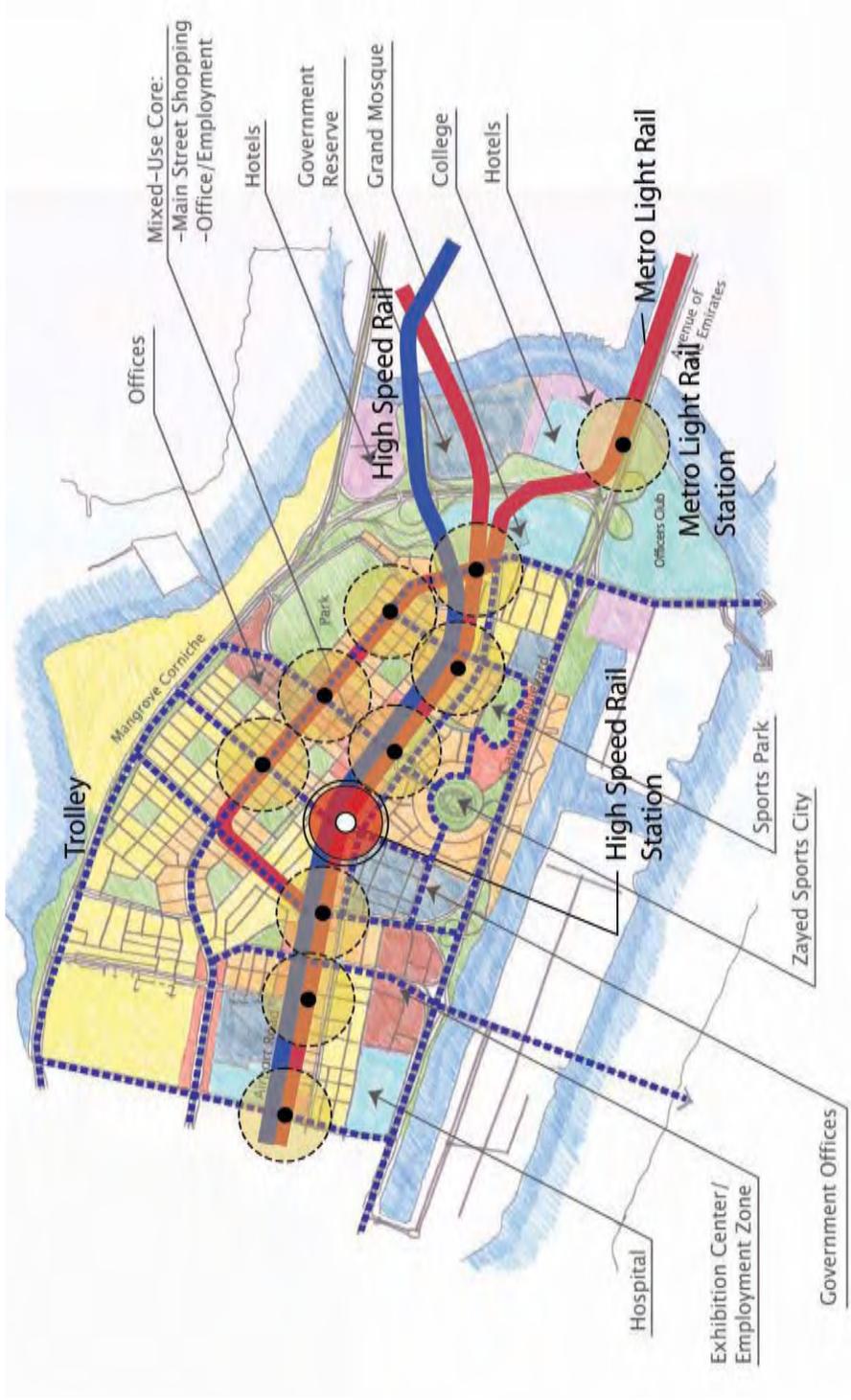
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Zooming In

Plan Abu Dhabi 2030
Urban Structure Framework Plan

6.3.2 GRAND MOSQUE DISTRICT: ILLUSTRATIVE CONCEPT FOR TRANSIT



- High Speed Rail
- High Speed Rail Station
- Metro Light Rail
- Metro Light Rail Station
- - - Trolley

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6.4 ZOOMING IN: LULU ISLAND DISTRICT

At the head of Abu Dhabi Island, protecting the Corniche from the Gulf's waves, is Lulu Island. Lulu means 'pearl' in Arabic, and the island is certainly a jewel in the composition of the city – providing a visual climax to every trip into the downtown. Abu Dhabi is very lucky to have this unblemished gem and it offers huge opportunity for differentiated development.

The Plan envisions modestly scaled development, significant public open space, and two major streams of programming for Lulu: cultural tourism and National commemoration. Access to the Island would be provided by bridges at each end, but there would also be an emphasis on ferries and other water-based access.

The north side of the island, facing out into the Gulf, will be focused on tourism, recreation, and housing, in a context of open spaces and public beaches for both foreign visitors and locals alike. Key developments include eco-resorts, restaurants, and public places along with the potential for traditional village settlements and culture-based attractions. While the intensity of development can be fairly high, the footprint and scale must be kept very concentrated and low in order to preserve the delightful, spacious quality of the island.

The south side of the island, facing the Corniche and city, is generally identified for National institutions, cultural attractions, and commemoration, but could include some development nodes, including perhaps one iconic tower. Again, open spaces and public beaches would be a defining feature. Commemoration is one of the most important functions of a National capital city, and capitals around the world struggle to find the space for it. Abu Dhabi is extremely lucky to have a reserve of prime land in a visually prime situation in front of the city in which to manifest this crucial role. Examples of National institutions that could possibly be updated are: an aquarium, an amphitheatre, botanical gardens, historic reconstructions, and museums.

Building heights on the island are carefully regulated to preserve the profile of the existing palm plantation and sand dunes and the rarefied atmosphere needed for commemoration and cultural or historic attractions. One tower, carefully located, could provide a beacon and identifier for the Island, although its height and use require careful consideration.

The illustrations for Lulu Island's development are very conceptual. A full master plan and strategic program must be completed, with an emphasis on landscape architecture and environmental protection.

6.4.1 LULU ISLAND DISTRICT: ILLUSTRATIVE CONCEPT

Zooming In

Plan Abu Dhabi 2030
Urban Structure Framework Plan



- Mixed Use: Retail/Office Emphasis
- Mixed Use: Hotel/Resort Emphasis
- Mixed Use: Office Emphasis
- Cultural
- Residential
- Park

Note: These plans represent themes to be refined in further planning and design. Land uses, street patterns, and exact alignments in all areas are conceptual, and to be subjected to detailed evaluation and confirmation. Under no circumstances should these plans be construed as final directives for specific sites or areas.



7.0 BUILDING BLOCKS

Building Blocks: DNA of the City

Emirati Communities

Urban Neighbourhoods

Desert Eco-Villages

Island Eco-Villages

Central Business District
Revitalization

Streetscape Revitalization:
Existing Streets

Streetscape Revitalization:
New Streets

7.1 BUILDING BLOCKS: DNA OF THE CITY



The Urban Structure Framework Plan defines the broad strokes, but the fine grain is provided by the 'Building Blocks' of Emirati settlement and urban regeneration. This is the DNA of the Plan, the molecules out of which vibrant neighborhoods and districts are created. Based on a study of the needs of Emirati communities of varying sizes, an optimal size for a district has been set at eight to ten thousand people – the catchment area of two single-sex primary schools. The residential, retail, infrastructure and amenity needs of the community are developed into a pattern that is subsequently iterated through the various scenarios created by the land use plan: urban neighborhoods within the existing city, desert eco-villages and island eco-villages. In all cases, the studies presented here are prototypes – examples of how the pattern can be applied to guide further planning and architecture. These are not plans for specific areas.

Building Blocks

Plan Abu Dhabi 2030
Urban Structure Framework Plan

7.2 EMIRATI COMMUNITIES

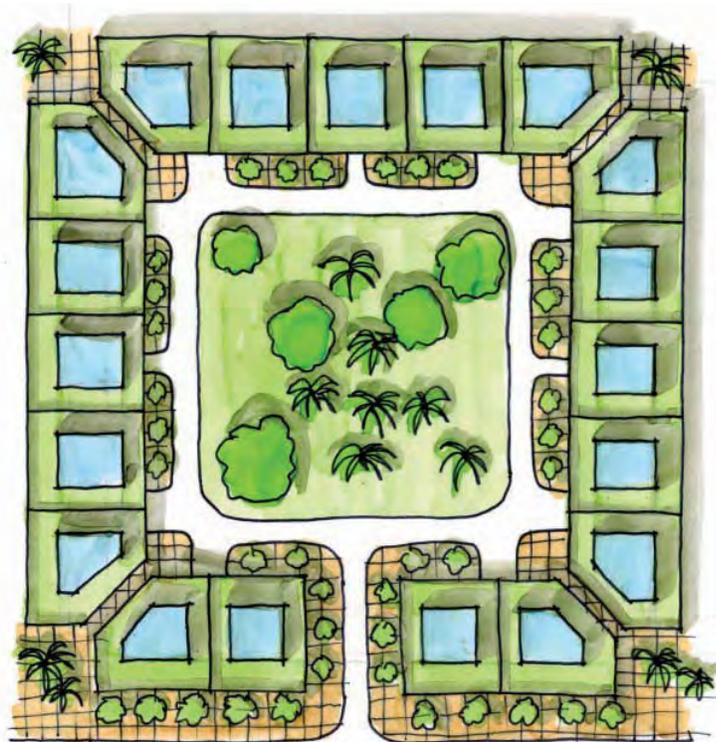
The smallest unit of Emirati communities is the 'Fareej' (below) – a group of homes large enough to accommodate an extended Emirati family clustered around a courtyard or park. This pattern is based on the traditional organization of Emirati settlements and reflects the very high importance of family relationships. Plots can be allocated so that extended families share the central courtyard, giving them the proximity to one another that they need. Privacy is ensured by the cul-de-sac entrance, that keeps out through traffic. Narrow, shaded 'sikka' (walking paths) allow pedestrians, especially children, to move easily and safely from one courtyard to the next.

Fareejs are grouped together into 'Local Clusters' (right) arrayed around a small central park complex. The catchment area is sufficient to support a kindergarten or child care facility, an outdoor playspace and a local mosque. All of the streets surrounding a cluster are local streets with traffic calming.

Local clusters are aggregated together into 'Neighborhoods' (right, below) with a population of eight to ten thousand people. This is the catchment area for two single-sex primary schools, a Friday mosque, a park, and a women's center. Local shops and higher density housing round out the needs of the Neighborhood.

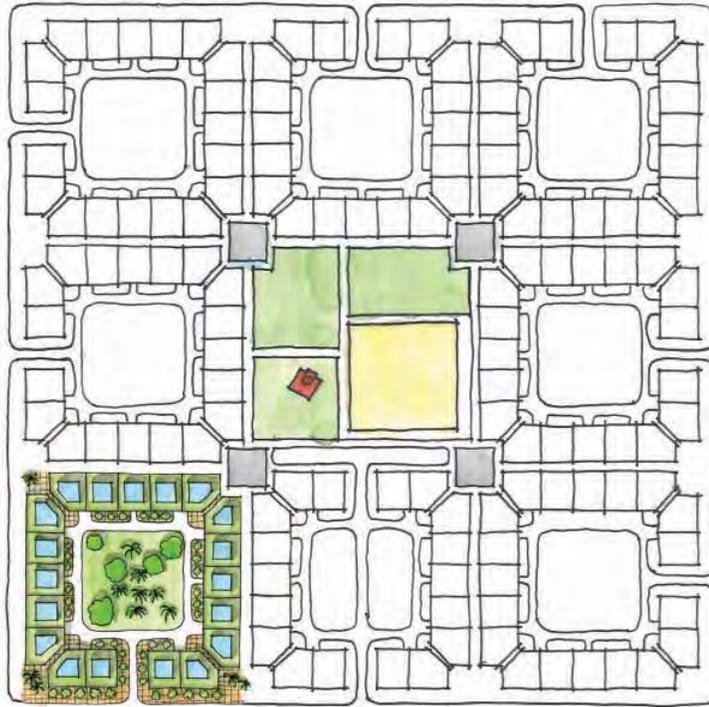
Fareej **(240m x 240m)**

125 population
5.76 Ha
3.3 units / Ha
19 units



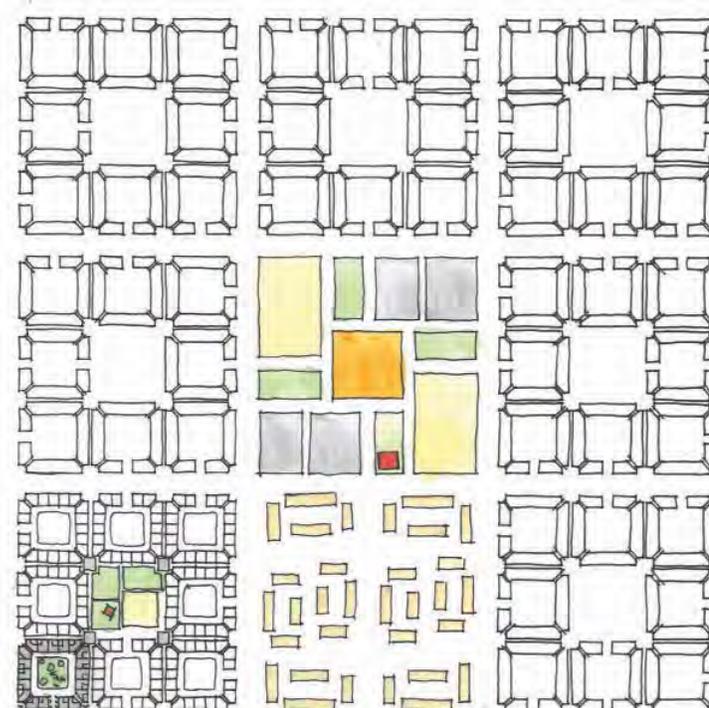
Building Blocks

Plan Abu Dhabi 2030
Urban Structure Framework Plan



Local Cluster (720m x 720m)

1,000 population
50 Ha
3.0 units / Ha
150 units
8.2 person / unit



Neighbourhood (2.1km x 2.1km)

8,000 - 10,000 population
450 Ha
4.5 units / Ha
2050 units
Local family: 8.2 person / unit
Expatriate family: 4.0 person / unit
70% Local
30% Expatriate

Building Blocks

Plan Abu Dhabi 2030
Urban Structure Framework Plan

7.3 URBAN NEIGHBOURHOODS

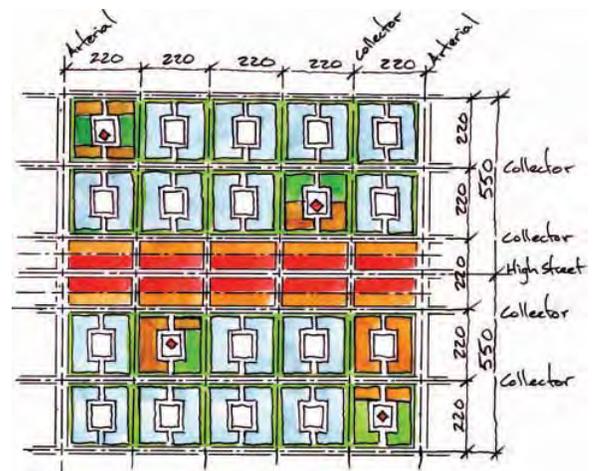
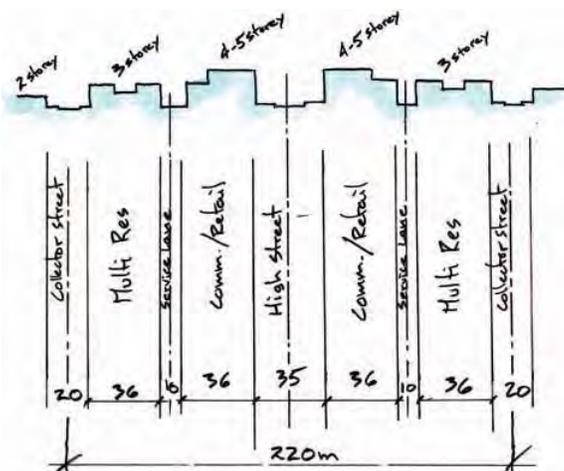


In urban areas, the basic community pattern is applied to the regular grid of streets and boulevards crisscrossing the city. The 'local clusters' of low-density housing fill in the centers of the superblocks ringed by the boulevards. The local shops and higher-density housing are combined into a streetwall typology and arrayed along the boulevards to form a 'High Street'. The 'High Street' ensures that there are shops within easy walking distance of all residents, while the higher density housing ensures a vibrant street life and a critical mass of transit ridership.

The boulevards become the focus of activity – traffic, transit, retail – preserving serenity in the low-density interiors of the blocks. Neighborhood amenities, such as the schools and women's center can be integrated into the quieter areas of the block, away from the hustle and bustle of the 'High Street'.

Building Blocks

Plan Abu Dhabi 2030
Urban Structure Framework Plan



- Medium- to High-Density Housing and Retail
- Low-Density Emirati Housing
- Retail
- Neighbourhood Park

Building Blocks

Plan Abu Dhabi 2030
Urban Structure Framework Plan

7.4 DESERT ECO-VILLAGES

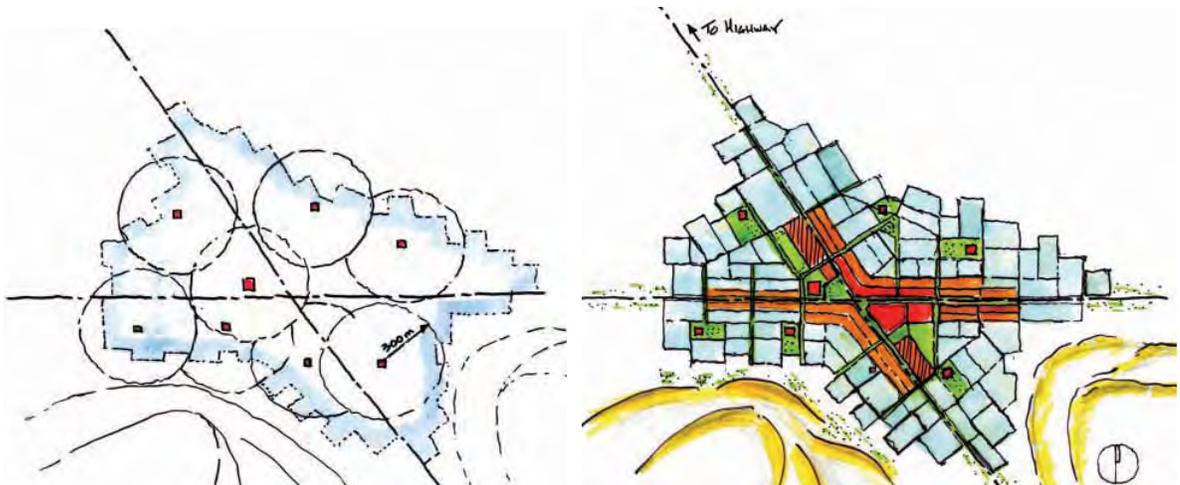
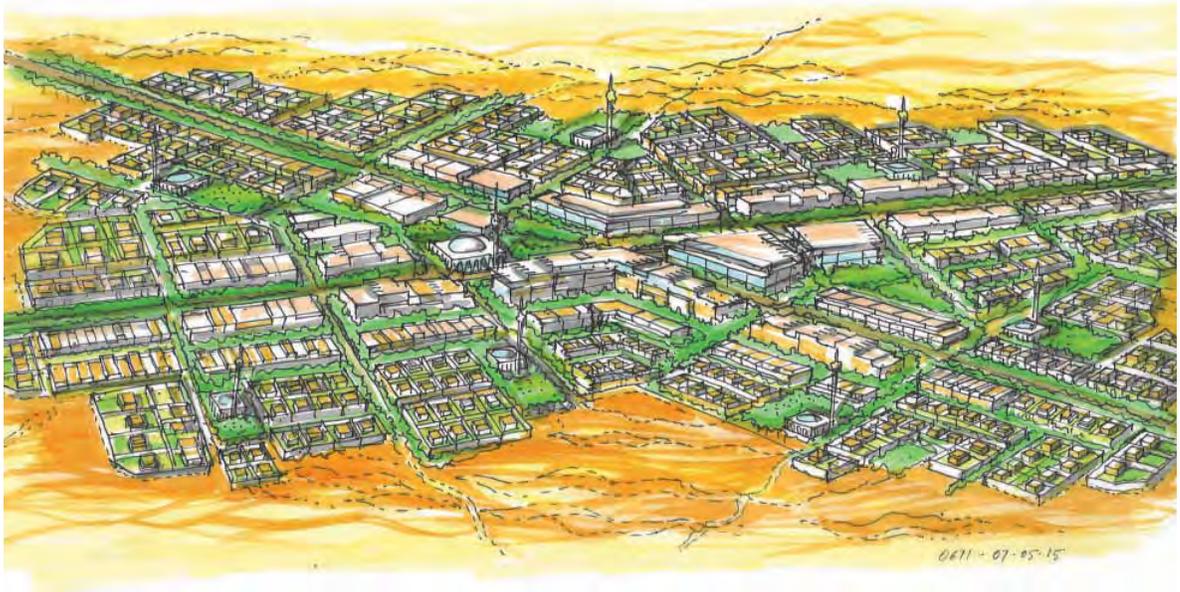


Outside of urban areas, the pattern can be applied to create new 'Desert Eco-Villages' designed to ensure the lowest possible impact on the delicate ecology. The 'local clusters' again are organized around a 'High Street', or occasionally a central square, of higher-density housing and local retail. The Desert Eco-Villages are arranged along the axis to Al Ain, with the 'High Streets' as turn offs from the highway. Instead of the regular grid of the city, the local topography plays a dominant role in shaping the macro-pattern of the settlement.

Traditional courtyard housing forms can provide required privacy and climate amelioration. All physical and social infrastructure is provided locally.

Building Blocks

Plan Abu Dhabi 2030 Urban Structure Framework Plan

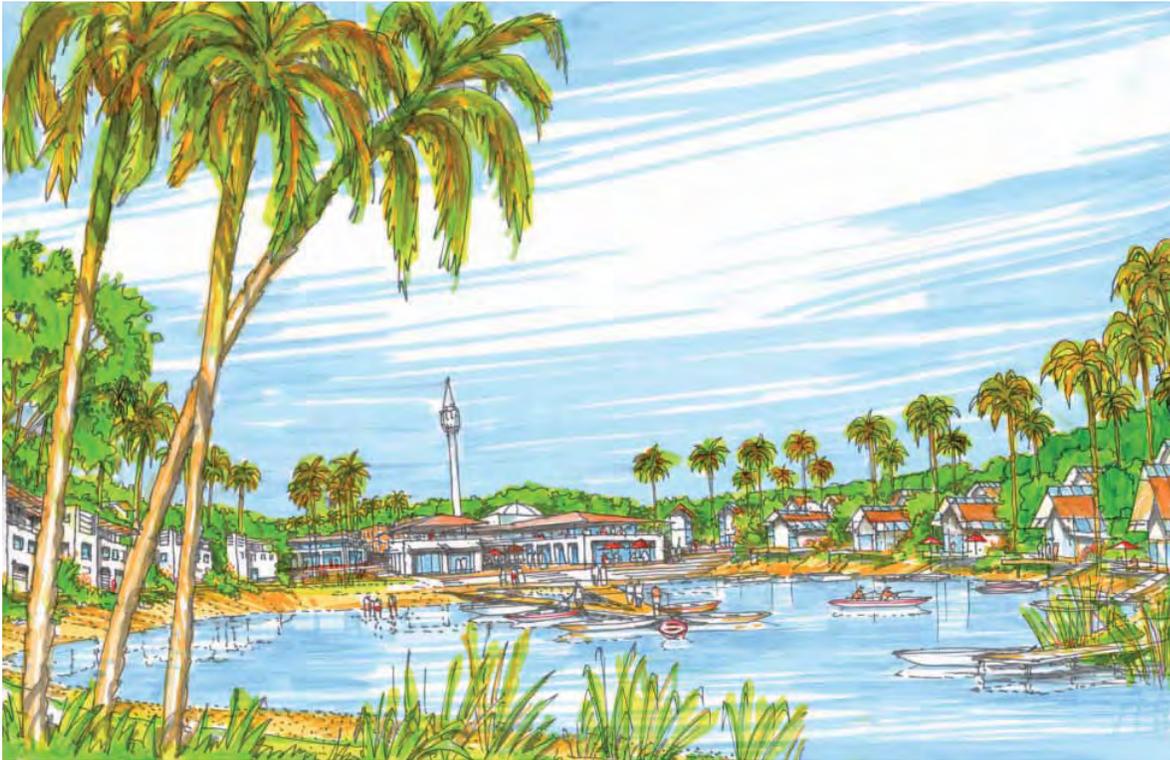


- Medium- to High-Density Housing and Retail
- Low-Density Emirati Housing
- Mosque
- Neighbourhood Park

Building Blocks

Plan Abu Dhabi 2030
Urban Structure Framework Plan

7.5 ISLAND ECO-VILLAGES



The second major village type created in the plan is the 'Island Eco-Village'. As the islands have the most sensitive ecology in the entire country, the lightest possible footprint is the priority. Off-grid infrastructure is a must, and can be readily provided through solar, wind and biomass energy. Most 'Island Eco-Villages' do not have bridge access, meaning ferries and boats are the dominant form of transportation. Vehicle access needs to be carefully controlled and indexed to the sensitivity of the island.

Low density housing complexes are arrayed along the coast, providing ample opportunity for waterfront living. As the majority of access is by boat, the marina and ferry dock take on a very high significance and form the nucleus of the community. Instead of a 'High Street', higher density housing, retail and amenity are usually grouped around this central area or square, easily accessible by all residents.

Building Blocks

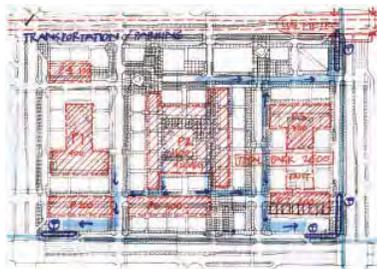
Plan Abu Dhabi 2030
Urban Structure Framework Plan



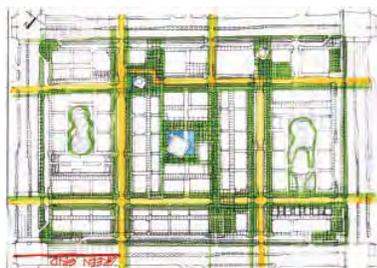
Building Blocks

Plan Abu Dhabi 2030
Urban Structure Framework Plan

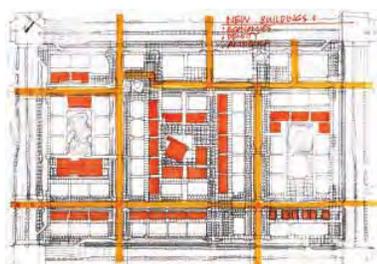
7.6 CENTRAL BUSINESS DISTRICT REVITALIZATION



Underground or Structured Parking



New Streets and Green Grid



Infill Buildings

Buildings cover about 20% of the surface of a typical block with surface parking taking up the rest. 50% building coverage is much more typical of Central Business Districts around the world. None of the internal streets of the superblock are through-roads which denies traffic congestion from the boulevards the chance to dissipate. There are few trees in most blocks. Surface parking is wasteful of space and is bad for the microclimate: cars are big metal objects that get very hot in the sun and heat up their surroundings. Six actions solve these problems:

1. put all the parking underground or in structures
2. make some through-roads to help relieve traffic pressure from the boulevards
3. develop an interconnected public open space network
4. identify new infill building possibilities
5. add needed services and amenities to ensure vibrant inhabitation
6. design a coherent public realm

Putting the parking underground or in parking structures frees up space on the surface to create a pleasant pedestrian environment. New infill buildings are an opportunity to introduce a variety of housing types to the urban core, ensuring there is no place in the city where Emiratis would not wish to live. It is also an opportunity to provide schools, a new Friday mosque, and district cooling infrastructure to meet the community's needs. These facilities, especially the mosque, provide a visual and activity emphasis for the super block. New infill buildings will create shaded sikka (alleys) and will also pay for the parking structures. The rest of the pedestrian realm should be updated to the same standards as the new developments: with planting, shaded walkways, and thermal mass to keep the microclimate cool. Especially important are street trees, closely planted, on the streets within the block and along the perimeter boulevards.

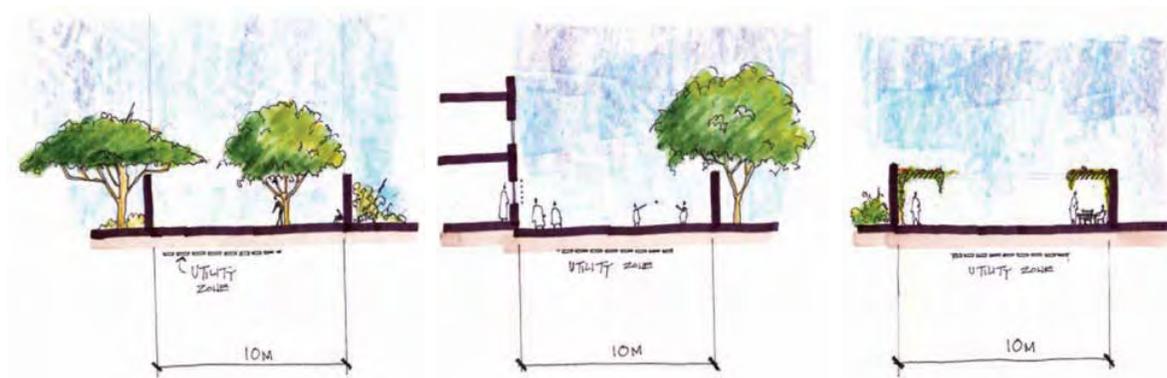
Building Blocks

Plan Abu Dhabi 2030
Urban Structure Framework Plan

7.7 STREETScape REVITALIZATION: EXISTING STREETS

Improving the comfort of the pedestrian realm is a key priority in enhancing the livability and enjoyment of the city of Abu Dhabi. The most basic step is widening the pedestrian right of way and comprehensively shading it. Shading can take a variety of forms – plantings, arcades, even tent structures can all produce a large effect on the micro-climate. Plantings should be focused on the pedestrian zones,

not the street medians. On larger streets, dedicated transit lanes should be introduced, whether they be for buses, street cars, or high-occupancy vehicles. While the total number of car lanes is decreased, traffic flow can be made more efficient with the introduction of express lanes, while transit ridership will remove cars from the road.



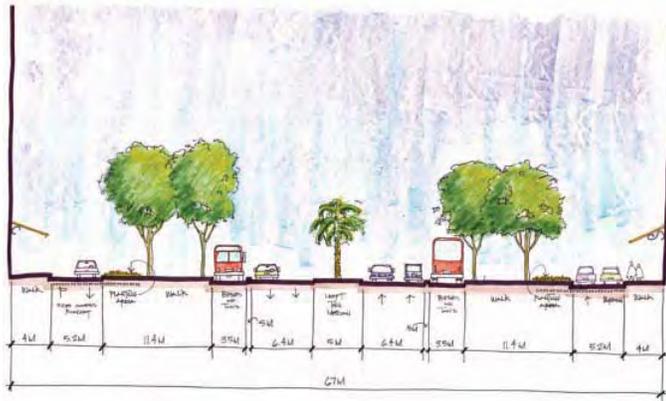
Pedestrian lanes in low-density neighbourhood



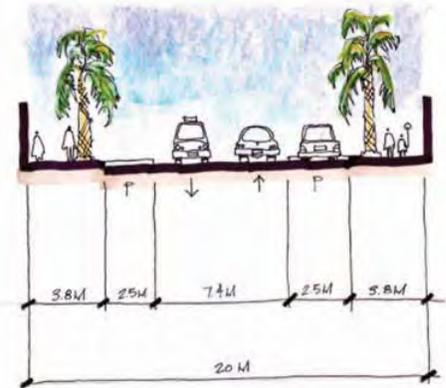
High volume downtown streets

Major downtown streets

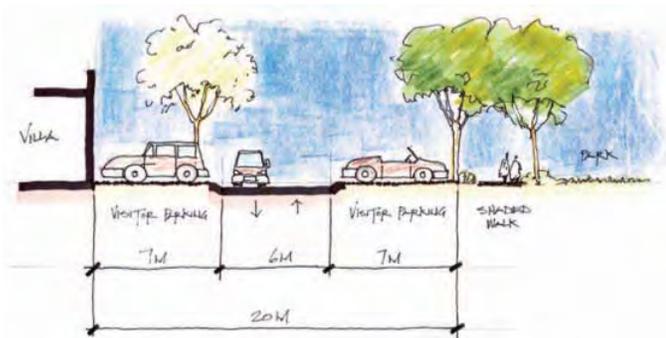
7.8 STREETScape REVITALIZATION: NEW STREETS



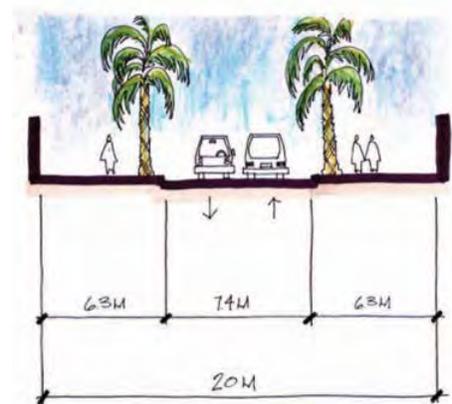
Major boulevard



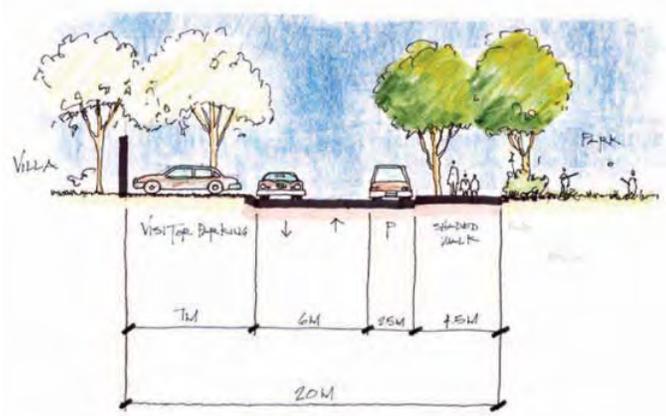
Minor arterial street with parking



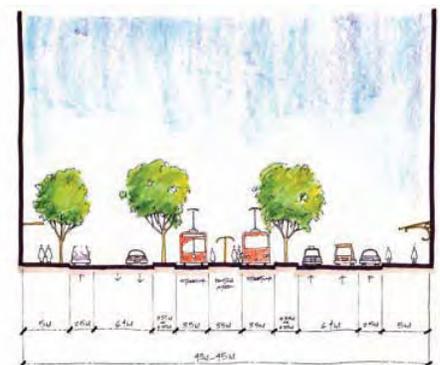
Minor arterial street in low-density residential area



Minor arterial street without parking



Major arterial street in low-density residential area



Major arterial street in high-density neighbourhood



8.0 POLICY STATEMENTS

Introduction to Policies

Environmental Framework Policies

Land Use Framework Policies

Transportation Framework Policies

Public Open Space Framework Policies

Capital City Framework Policies

Urban Design Policies

Building Block Policies

Social Policies

Economic Development Policies

Continuous Planning Policies

8.1 INTRODUCTION TO POLICIES



Principles guide the formulation of the Urban Structure Framework Plan. Drawings express and test the elements of it and provide a geographic illustration of the principles applied. Policies focus intentions for implementation of both the principles and the elements of the Plan. Each policy is a directive to guide actions. There are many different kinds of directives. Some directives set guidelines or recommend standards to be adopted based on international best practices. Other directives outline further actions that need to be undertaken, including additional studies and reporting and the establishment of regulatory bodies or protocols. Some directives outline specific actions and practices to achieve aspects of the Plan.

The following policies are intended to be as comprehensive as possible, although they are by no means exhaustive. They cover all aspects of the Plan, including (but not limited to):

Environment, Land Use, Transportation, Public Open Space, Capital Expression, Urban Design, Building Blocks, Social Standards, Economic Development, and Continuous Planning.

As an initial vision setting the direction and conceptual framework for a full Comprehensive Plan for Abu Dhabi, the Urban Structure Framework Plan is meant to set an agenda for further planning. These policies provide that agenda in addition to actions that can be taken immediately.

8.2 ENVIRONMENTAL FRAMEWORK POLICIES

- E-1** Establish the protection, enhancement and repair of the natural environment as a fundamental premise of Abu Dhabi's planning and development.
- E-2** Undertake a full assessment to establish environmental parameters and carrying capacity of the islands, coastal zones, and desert to accommodate new growth. From this assessment determine:
- protected marine and terrestrial environments;
 - urban development boundaries; and
 - modest development zones.
- E-3** Through an Integrated Coastal Environment Management Plan create environmental performance standards with clearly developed implementation strategies based on scientific research and current and evolving technologies to restore, protect, and enhance the environment. Develop a set of Sustainability Principles to be applied to all future development.
- E-4** Plan the city's island and coastal zones based on a Green Gradient of environmental protection and low impact development that conserves the most sensitive ecological areas while providing appropriate levels of access and settlement. Complete an environmental evaluation to define the specific priorities, noting that the Green Gradient defines the permitted level of development based on the limits of the islands' ecology (see Section 4.2: Environmental Framework Plan for geography of areas):
- Park Core Islands: a National park, fully preserved in the natural state with very low-impact uses and infrastructure (e.g. picnicking, nature trails) and access limited to non-motorized boats and a limited pervious trail network (prohibit impervious trails).
 - Park Edge Islands: a National park, approximately 95% preserved open space with low impact supervised uses and infrastructure (e.g. camping, bird watching) and access limited to small motorized craft and pervious trail networks.
 - Park Buffer Islands: a National park, approximately 75% preserved open space with low impact supervised recreational uses and infrastructure (e.g. eco-lodges, research facilities, stables) with access and transportation limited to ferries, small motorized craft, horseback riding, and golf carts.
 - City Buffer Islands: ecologically sustainable uses, approximately 60% open space with limited and design regulated development of Eco-Villages (no more than two to three per

island; see Section 7.5: Island Eco-Villages), and environmental education centres and recreational facilities (e.g. resort-village hotels, marina, golf course) with ferry and boat access or, in several cases, bridge access for cars, but in every case, a limited island road network.

- City Edge Islands: design regulated uses and development, approximately 35% preserved open space with green mixed use development and infrastructure with access via bridges, ferries and boats.
- City Islands: urban areas with sustainable new and retrofit development, approximately 20% open space including public parks, urban wilds and archaeology sites.

- E-5** Plan the city's expansion into the desert based on a Green Gradient of environmental protection that preserves the most sensitive ecological areas while providing the appropriate level of access to the natural setting and the appropriate level of settlement. Complete an environmental evaluation to define the specific parameters for the Green Gradient in the desert context.
- E-6** Pursue green building standards for design and construction that responds to the local climate and is based on sustainable building practices (e.g. solar orientation, xeriscaping, life cycle materials) and create an Abu Dhabi Green Building Council to this end, in cooperation with the Environmental Agency.
- E-7** Pursue sustainable infrastructure technologies for managing energy, waste, and water. Develop a Sustainable Waste and Resources Strategy.
- E-8** Pursue green practices in all industrial activities.
- E-9** Promote Abu Dhabi as a model environmentally responsible community, including its research, application of evolving best practices, eco-tourism, eco-business and education, and to this end, support and expand the Masdar Initiative.
- E-10** Create and enforce a Smog Certification program for all boat traffic traveling in waterways around Abu Dhabi Islands and the National Park System.
- E-11** Establish a network of environmental education programs and facilities throughout Abu Dhabi (e.g. education centers, school programs, island and desert eco-adventure activities, sustainable building and living demonstrations, incentives for green living choices such as public transit or photovoltaic installation).

8.3 LAND USE FRAMEWORK POLICIES

- L-1** Shape and direct growth to create two primary nodes of high intensity/density – the City Center District and the Capital District – while supporting a series of smaller, secondary nodes of various sizes related to expected rapid transit stations and catchment areas for typical community services.
- L-2** While satisfying the lower density neighborhood pattern preferred by many Emirati Nationals, foster compact growth.
- L-3** With the exception of the Island or Desert Eco-Villages, before proceeding with the expansion at the urban edge, complete development of infill urban sites; and do not expand the urban edge beyond the new Emirates Desert Highway extension except where plot allocations have already been made to Emirati nationals, so as to preserve fingers of desert into the city and easy access to the desert.
- L-4** Manage new development to extend incrementally out from existing settlement areas or designated new nodes in line with market demands, rather than occurring randomly in the region.
- L-5** Structure the city into coherent, identifiable neighborhoods or districts with varying scale, character and clearly identified foci.
- L-6** For every neighborhood or district, provide a neighborhood center of facilities, amenities and services that fosters a balance of jobs to housing and community support facilities.
- L-7** Complete a Comprehensive Development Plan for each new Emirati neighborhood and allocate housing plots to enhance the preferred extended family and religious-oriented lifestyle of Emirati households (see Building Blocks: Model Emirati Neighborhood).
- L-8** Complete Area Plans for existing neighborhoods on Abu Dhabi Island with the intent to:
 - hold these areas stable and avoid intrusive new developments that are different in scale and architectural character, or that would compromise the vitality and fabric of existing neighborhoods;
 - foster rehabilitation of existing housing stock concurrent with development of new stock, so a pattern of disinvestment of existing neighborhoods does not take place; and
 - Insert or foster development of missing but essential support services and facilities in existing neighborhoods (See Building Blocks: Model Neighborhood Center).

- L-9** Complete a Comprehensive Development Plan for the Capital District as soon as possible and begin immediately to direct all further government facilities as well as university and hospital facilities, where appropriate, to the Capital District.
- L-10** Complete a Comprehensive Development Plan for the Grand Mosque District as soon as possible. Integrate the old airport lands, the emerging plans for Zayed Sports City and the further development around the Exhibition Center as well as the area around the new Grand Mosque, while maximizing links between east-west streets.
- L-11** Undertake an Area Revitalization Plan for the existing areas of the City Center District and proceed with one or more block revitalization pilot projects (see Section 7.6: Central Business District Revitalization).
- L-12** Undertake an integrated Comprehensive Development Plan for the new expansion areas of the City Center District in the vicinity of and on Suwwah Island, Al Reem Island and the Al Mina Peninsula, with the following parameters:
- there will be one inter-connected commercial core focused on Suwwah Island (with the Stock Exchange and Financial District), the westerly edge of Al Reem Island, the southern edge of the Al Mina Peninsula, and the eastern edge of Abu Dhabi Island;
 - with the exception of locally serving commercial and daily goods and services and existing commercial projects already underway, limit commercial development on Al Reem Island and the Al Mina Peninsula so as to avoid creating multiple district or regional commercial cores; and
 - prevent destination retail uses/malls that will increase transportation demands on Al Reem Island, Suwwah Island, and on the Al Mina Peninsula;
- L-13** In the existing city, until new Area Plans and Comprehensive Development Plans are completed or until the new citywide Comprehensive Plan is completed, existing use designations and densities shall generally prevail, unless special dispensation has been secured prior to beginning site planning. Development will generally be linked to availability of transit.

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L-14 Support development of the following special districts:

- the Saadiyat Cultural District and tourism area;
- a tourism and entertainment area at the traditional fishing harbor on the Al Mina peninsula for which an Area Plan should be completed before nearby development occurs;
- a new Lulu Island District with tourism, open space, public beaches, and housing of no more than three stories (perhaps with one exception for an identifier tower) on the north side and in small pockets on the south side, and government institutions and recreational areas in expansive open spaces on the south side, for which a Comprehensive Development Plan should be completed as soon as possible;
- an entertainment and tourism area on Yas Island; and
- a Corniche Special District for government institutions and commemoration as well as local recreation. Prevent private development within the Corniche (i.e.: private development to occur south of the south edge of the Corniche, except restaurants and public concessions ancillary to this Park). Generally there should be no more than two-storey building heights except for several top stature monuments and institutions where building or structure heights in each case shall be considered on merit.

L-15 Undertake an industrial study to confirm appropriate relocation to the new Port area, provision of adequate land capacity for close in city-serving industries and warehousing for goods storage and transfer in industrial areas and in small pockets within residential areas, and other industrial and infrastructure installations germane to the development of Abu Dhabi.

L-16 Complete a Comprehensive Development Plan for the districts around Abu Dhabi International Airport, and manage development until the plan is complete, so that:

- new uses will be airport-supporting or -supported (industry and commerce);
- uses that would be impacted by the airport, particularly regarding noise, will be avoided, such as residential;
- lower building heights will prevail and towers along the flight path will generally not be allowed; and
- uses that generate disruptions to traffic for airport access will be avoided.

L-17 Undertake a Comprehensive Retail Study to confirm retail alloca-

tion by city sector. Until the study is completed, consider retail proposals with regards to the following parameters:

- provide adequate daily goods and services for each city district so that day-to-day shopping can be done with minimal travel;
- provide higher-order/destination shopping in a minimum number of region-serving retail malls located at appropriate intervals and spaced geographically in a balanced pattern across the region, with priority given to serving the City Center District, the Capital District, the Grand Mosque District, and transit-accessible locations;
- avoid the random placement of regional-serving retail malls and minimize the addition of malls in areas with limited access;
- except in regional malls, the Financial District, and as animating ancillary uses in mixed use developments, avoid separated networks of retail, opting instead to orient retail toward streets and public ways; and
- provide traditional souks for fish, vegetables, meats, flowers, and crafts.

L-18 As a priority, channel new university and hospital development to the Capital District, particularly if they have a significant research component, to maximize synergies with high-tech activities that will also be concentrated in this district. Nonetheless, hospitals and universities are generally compatible with most other uses and may be considered at any location, through a case-by-case evaluation.

L-19 Coordinate land use designations with Special Investment Zones created by government from time to time.

8.4 TRANSPORTATION FRAMEWORK POLICIES

- T-1** Ensure that land use planning and development are fully integrated with the provision of multi-modal transportation networks linked to the larger urban structure.
- T-2** Complete a City-Wide Comprehensive Transportation Plan as soon as possible for multiple modes, full arrangements for goods movement, and roads with a finely distributed pattern of streets and automobile access.
- T-3** Provide a variety of inter-connected transportation choices as alternatives to the automobile (transit, ferries, buses, bicycle and pedestrian pathways). This layered system should form a functional and efficient network measured by the total number of person trips.
- T-4** Design, and retrofit, the accessible public spaces in transportation networks to prioritize and enhance the pedestrian realm (e.g. short blocks, wide and shaded sidewalks, medians, shaded seating at bus stops, active streets).
- T-5** Avoid highway and freeway expansion by providing an inter-connected, multiple route transportation network, including:
- many smaller streets permitting more traffic, transit, and pedestrians than larger streets and larger blocks;
 - permitted turning movements and pedestrian crossings to reduce travel distance and congestion;
 - in higher-density areas, provide multiple mode connections at key transfer points to maximize inter-connectedness; and
 - avoid, wherever possible, grade-separated ramps, slip lanes, and other high speed links.
- T-6** Provide a layered, inter-connected public transportation network consisting of:
- fast train links between Abu Dhabi city, Abu Dhabi International Airport, and Dubai;
 - rapid transit linking the primary and secondary nodes of intensive development;
 - localized bus and streetcar systems within the Central Business District and the Capital District;
 - local bus systems connecting neighborhoods to service areas and suburban areas to Desert Eco-Villages (see Section 7.4: Desert Eco-Villages);
 - ferry routes among Island Eco-Villages and to the Central Business District and mainland; and

- generally open up new development opportunities with expanded transit/ferry accessibility.
- T-7** Design and configure transit so it will be attractive to and therefore used by a great variety of people, including high and middle income earners, business people, and women, as well as lower income earners – and not just as the mode of last resort
- T-8** Apply Transportation Demand Management measures to reduce traffic pressure on key routes throughout the city.
- T-9** Complete Comprehensive Parking Requirements and/or a market parking arrangement for the entire city with required parking to be provided within each development site or plot, underground or in structures in higher-density areas, and covered where practical in lower-density areas, with street-side surface parking reserved for short term public use.
- T-10** Complete a Comprehensive Parking Plan for the Central Business District and Capital District, and manage parking to ensure adequate availability and limit congestion (e.g. metering, varying parking standards, limits of stay, and other market measures). Replace general surface private parking with underground or structured private parking in intensively developed areas, and provide covered private parking elsewhere.
- T-11** Confirm suggested goods movement (auto and rail) routes and manage roadway/railway network demand to minimize rush hour and neighborhood impacts.

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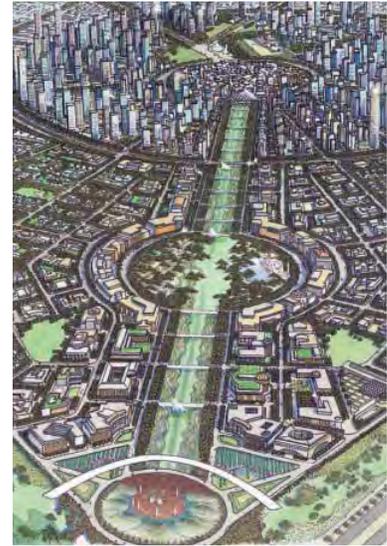
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8.5 PUBLIC OPEN SPACE FRAMEWORK POLICIES

- P-1** Complete a City-Wide Comprehensive Plan for parks and open-space with an inter-connected hierarchy of spaces, including:
- reserves of ecologically sensitive areas;
 - National and regional parks;
 - commemorative places of National interest;
 - protected archaeological sites;
 - landscaped parkways and boulevards;
 - neighborhood parks;
 - public beaches and coastal parks;
 - fareej-scaled meeting and play spaces; and
 - green street links between parks.
- P-2** As the basis for the plan, develop a set of parks and open space standards that respond to the Emirati lifestyle and Abu Dhabi region. The standards should define the hierarchy, service area, facilities, and size of all public parks in accordance with international best practices. This should include regional, district, community, neighborhood and pocket park standards all inter-connected via a public green streets program.
- P-3** Secure official park spaces from private development in perpetuity, including city parks in the care and custody of the Municipality and designation of National Parks.
- P-4** Whenever a practical opportunity arises, secure public access to the water's edge (e.g. public beaches and harborside parks) in the inner city, especially on Lulu Island, and avoid further precluding public access to the water's edge throughout the city.
- P-5** Design public open spaces and parks for active public use with hospitable provisions, including shade, use of water, xeriscaping, and public amenities such as places for prayers and public washrooms. Where possible, associate public open spaces with people-generating uses such as cafés and shops.
- P-6** Integrate street rights-of-way as a key component of the open space network, and utilize them to link park spaces (see Sections 7.7 and 7.8: Streetscape Revitalization).
- P-7** In private development design guidelines and approval requirements, include provisions for a landscaping interface between the private and public realm and its ongoing maintenance, as well as an allocation of private open spaces for every unit.
- P-8** Include golf courses, where appropriate, as an integral part of private developments.

8.6 CAPITAL CITY FRAMEWORK POLICIES

- C-1** Focus government institutions and facilities, as well as foreign government embassies and facilities, in the new Capital District.
- C-2** Organize the Capital District so that National government facilities are clustered such that a “National Government District” can be legally designated within the larger Capital District area, and ensure that this area has capacity for National government growth for the foreseeable future.
- C-3** Establish a National Capital Commission to create, manage, and be the custodian of features, monuments, places, and facilities of the nation and to mount celebrations, exhibitions of National life, and events, and convene in Abu Dhabi a symposium to identify best practices in other capital cities.
- C-4** Complete a conceptual plan of sites for National and Emirate commemoration by type and stature of commemoration, and formally reserve an array of such opportunities for the foreseeable future, including:
- a significant pattern of installations and sites in the Capital District, in the Saadiyat Island Cultural District, and along the Corniche;
 - a campus of installations and sites on Lulu Island, especially on the south side facing the city and in alignment with city streets; and
 - use of preserved historic sites, especially to educate people about Abu Dhabi history, provide interesting attractions, and emphasize National culture.
- C-5** Identify several key streets that link Capital City facilities, designate these streets as National boulevards, and complete urban design schemes for these streetscapes to express the National identity and culture; these streets to include: Al Khaleej Al Arabi Road (linking the palace area with the new Capital District), the Corniche, Al Saada Street, and the Mangrove Corniche.
- C-6** Initiate and fund programs of works for expressing the National and Emirate identity through monuments, commemorative places, streetscapes, historic sites (e.g. old fort), interpretive facilities, and public art.
- C-7** Establish a National Parks Designation Program and management institution and, as soon as possible, identify and designate National Parks, to be held from private development and managed as a public resource in perpetuity.



8.7 URBAN DESIGN POLICIES

I Heights

- U-1** Complete a City-Wide Comprehensive Plan for building heights, and refine this plan on an ongoing basis with specific building heights confirmed as Comprehensive Development Plans and Area Plans are completed. Until such plans are in place, evaluate development proposals with reference to the Building Heights Framework Plan in Section 5.1, or existing prevailing heights if those are lower than described in the Framework Plan. All building heights are discretionary and will be evaluated on a case-by-case basis and heights above 25 storeys may garner special requirements and should be endorsed for consideration prior to detailed site planning. Generally heights above 75 storeys will not be entertained.
- U-2** When completing a City-Wide Comprehensive Plan for building heights, consider the following:
- confirmation and reinforcement of the uniquely flat 20- to 25-storey skyline of the inner-city as a character-defining aspect of Abu Dhabi, but with several nodes of higher buildings for emphasis of important places and creation of landmark orientation;
 - avoidance of a random pattern of tall buildings, whether individually or in clusters, in the prevailing lower-scaled majority of Abu Dhabi;
 - utilization of building heights as a marker and signifier of key nodes, in contrast to the predominantly modest surrounding building heights;
 - reinforcement of the expressive profile of palace and mosque domes and minarets as dominating features in the lower-scaled areas;
 - a special height limitation policy in the vicinity of, and along key view sheds to, the Grand Mosque and the Emirates Palace Hotel;
 - no buildings more than two storeys north of the south edge of the Corniche Park between the Al Mina peninsula and the Marina Mall peninsula except for several of the top-stature public institutions, commemorative monuments, facilities and mosques;
 - no building more than three storeys on Lulu Island except for public institutions, commemorative monuments, facilities, mosques, and perhaps one identifier tower;
 - limitation of private building heights in the Saadiyat Island

Cultural District so the key cultural facilities dominate the area profile;

- stepping down of buildings in the vicinity of the Al Mina Fisherman's Harbor so as not to impact this important attraction; and
- review of overall building heights in regard to clearance parameters for the Abu Dhabi International Airport.

II Views

U-3 Complete an inventory of key public views (from viewpoints to be established) of the natural setting, landmarks, National symbols and monuments and special places and henceforth manage development to preserve these public views in perpetuity.

U-4 When completing an inventory of key public views, include the following view protection:

- northerly streetend views from the developed inner-city to Lulu Island;
- important views of the city skyline;
- important view sheds of mangrove forests; and
- important views of the Grand Mosque.

U-5 Complete a protocol for private view protection, and henceforth, manage development to preserve priority private views or portions of views.

III Response to Climate

U-6 Complete a protocol for maximizing cool shadowing and minimizing hot paving of public places and byways, and henceforth, manage development to optimize sun and shadows and minimize reflected glare for best micro-climatic effect.

U-7 Evaluate techniques, complete guidelines, and prepare a program to actively facilitate maximum natural cooling and dehumidification of public places through better public and private efforts; and convene in Abu Dhabi a symposium to identify and explore best practices worldwide.

U-8 Complete guidelines for maximum natural cooling and dehumidification of buildings to augment and reduce pressure on mechanical systems.

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IV Streetscapes

- U-9** Complete guidelines and undertake a program for urban design and embellishment of a hierarchy of streetscapes related to traffic management, pedestrian comfort, open space linkages, capital city expression, ceremonial purposes, and visual coherence, extending the positive tradition of streetscaping already being practiced.
- U-10** Pursue a fine-grained and fine-scaled pattern of public ways for optimal pedestrian and automobile access within the larger grid of commuter routes, and include pedestrian-only routes where practical.
- U-11** Minimize travel and parking lane widths, offer clearly marked pedestrian crossings, and where possible, use corner bulges to minimize pedestrian crossing distances and calm traffic.
- U-12** Identify high-volume traffic routes on which to designate the right-hand lane for local transit (buses, streetcars) and taxis and, where possible, separate this lane with a curb or median.
- U-13** Maximize provisions for pedestrian comfort including sidewalks on all streets (except limited access roads), attractive and consistent street furniture and pavings, level and safe surfaces, seating, shade provisions (e.g. trees, arcades, awnings, free-standing structures, transit shelters), animating adjacent at-grade uses, universal accessibility, light-colored surfaces to minimize heat absorption, and pedestrian-scale lighting.
- U-14** Plant trees as follows:
- with a consistent block layout and species but varying patterns among areas for distinctiveness and species diversity;
 - with preference for planting along sidewalks rather than center medians;
 - with close spacing for maximum shade;
 - within a healthy growing environment (generous tree wells or a continuous planting strip of properly prepared soil); and
 - with multiple alignments along a street where possible.
- U-15** In new developments, and wherever possible through renovation of existing areas, minimize utility reservations to levels of common efficiency and locate utility easements/corridors so as not to unduly impact pedestrian realms with the intent to maximize sidewalk furnishing and planting provisions.

U-16 Utilize differing street cross-sections and design standards to differentiate streets and to facilitate transit and pedestrian use, including:

- multi-way boulevards on major streets to reconcile local and thru traffic while maximizing pedestrian areas;
- distinctive furniture and paving on commercial or primary streets; and
- narrow ways for pedestrian only alignments.

V Character

U-17 Identify key existing or potential character areas throughout the city and develop urban design and architectural guidelines to maximize such character and henceforth manage development to provide character enhancement.

U-18 When identifying key character areas, include:

- Lulu Island;
- the Corniche Special District;
- the Grand Mosque District;
- Al Mina Fisherman's Harbor Area;
- Saadiyat Island Cultural District;
- the Palace Row on Abu Dhabi Island; and
- the new Capital District.

U-19 Complete a set of general architectural guidelines to facilitate building and landscape design that reflects the unique expressions of Abu Dhabi Arab culture and the special climate and setting of Abu Dhabi. Include consideration of building top profile for taller buildings.

U-20 Complete a set of guidelines and operational protocols to consolidate a positive city image for Abu Dhabi in regard to:

- utility installations;
- garbage arrangements and tidy collection procedures;
- building maintenance; and
- the physical aspects of public realm civility.

VI Heritage

U-21 Complete an inventory of historical and archaeological sites in Abu Dhabi, in coordination with the work already being overseen by the Abu Dhabi Authority for Culture and Heritage.



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U-22 Maintain the Emirate's commitment to the designation and protection of key historic and archaeological sites in line with world standards and practices, in coordination with the work already being overseen by the Abu Dhabi Authority for Culture and Heritage.

VII Crime Prevention

U-23 Complete a set of guidelines for crime prevention through building and landscape design and henceforth manage development to facilitate the safest of environments and maintain Abu Dhabi's excellent record on crime.

VIII Public Art

U-24 Establish and require a consistent standard of public art to be provided in every new development, over a pre-set value.

VIX Signage and Addressing

U-25 Complete a set of general guidelines for signage, including the need for significant signage to be approved. Henceforth, manage development to moderate the impact of signage with priority given to identification and way finding.

U-26 Adopt a simple street addressing system.

8.8 BUILDING BLOCK POLICIES

B-1 In the process of completing Comprehensive Development Plans and Area Plans for various areas of the city, apply the following Building Blocks as a basis for development:

- Model Emirati Urban Neighborhood and Model Neighborhood Center, for new neighborhoods and when reconfiguring or revitalizing existing neighborhoods;
- Model Desert Eco-Village;
- Model Island Eco-Village; and
- Model Inner-City Core Block Revitalization

I Emirati Neighborhoods

B-2 Apply the following general configurations to new Emirati neighborhood subdivisions and, where possible, to a redesign of existing, newly subdivided but not yet occupied Emirati neighborhoods and revitalization of existing occupied neighborhoods:

- a basic unit, or fareej, composed of a small cluster of housing and a common meeting and play space;
- a clustering of the fareej so as to support a local mosque and associated commercial and meeting space; and
- a further clustering of the fareej clusters so as to support a neighborhood center of services and facilities.

B-3 Allocate Emirati plots so as to facilitate co-location of extended family households.

B-4 Allow for Emirati housing plots to accommodate more than one housing unit while preserving family privacy, and permit a variety of housing types (e.g. multiple villas, courtyard houses, row houses, and infill units).

B-5 Include in Emirati neighborhoods a component of multi-family housing, particularly along commercial streets, and provide a range of housing options with a target residential mix of 30% multi-family and 70% single-family.

B-6 Develop guidelines for multi-family housing in Emirati neighborhoods that maximize privacy, security, natural lighting, ventilation, and reduction of solar heat gain, and that limit building heights to reduce impacts on lower-scaled Emirati housing.

B-7 Develop guidelines for Emirati neighborhoods for a hospitable interface between housing and the public realm, including landscaping, parking, and fence configuration.

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- B-8** In Emirati neighborhoods, create a network of village greens including a mosque, playground, and kindergarten, ideally within walking distance (400m) for residents, connected by pedestrian pathways, and always including an exterior gathering place for men to socialize, associated with each mosque.
- B-9** In Emirati neighborhoods provide a network of pedestrian-priority routes – sikka – to community services with traffic calming, safe crossings, and shade.

II Desert Eco-Villages

- B-10** Apply the Emirati Neighborhood policies in Desert Eco-Village design, subject to compatibility with the environmental aspects of the desert setting.
- B-11** Develop Desert Eco-Villages as separate urban units but linked to the main city fabric by major arterial routes, with the intention that they could be linked by rail.
- B-12** Plan Desert Eco-Villages along a high street which serves as the village center, with higher mixed use development that transitions down to multi-family and single-family neighborhoods as follows:
 - maximum four- to five-storey street wall buildings along the high street;
 - Maximum three-storey multi-family residential on the surrounding collector street; and
 - one- to two-storey Emirati cluster neighborhoods of fareej arrangements.
- B-13** Allow Desert Eco-Villages to grow incrementally and organically outwards from the center, shaped by the topography and natural features (e.g. dunes, an oasis) and road and pedestrian networks.
- B-14** Scale Desert Eco-Villages to a target population of no more than 8 to 10,000 people, and locate these villages in a network to provide support for higher order services such as institutions, emergency services and high schools.
- B-15** Develop guidelines for multi-family housing in the mixed use context of Desert Eco-Villages that maximize privacy, security, natural lighting, ventilation, and reduction of solar heat gain, and that step down building heights to reduce impacts on lower-scaled housing.

III Island Eco-Villages

- B-16** Select and shape model Island Eco-village sites based on environmental factors including protection of ecologically sensitive areas, limiting access and travel distance, and the surrounding terrain.
- B-17** Limit the siting and number of Island Eco-villages to the ecological capacity of their host island with no more than 2 to 3 villages per island, each to a maximum size of 1000 people or approximately 150 homes supported by a local mosque, shops and services.
- B-18** Apply in Island Eco-Villages design the Model Emirati Neighborhood policies, scaled to each island, subject to the compatibility with the environmental aspects of the island setting.
- B-19** Since most islands should not and will not be accessible by car, develop an inter-island ferry system to link Island Eco-Villages to the main city.
- B-20** In Island Eco-Villages, develop the Emirati 'fareej arrangements' and 'clusters' in an organic manner in response to the natural setting, climate and orientation.
- B-21** Define clear Island Eco-village boundaries to protect the adjacent natural areas and provide public open space within the village boundary.
- B-22** Link island access, Island Eco-villages and other local uses and sites with a limited road network and provide centralized private parking within the village boundaries.
- B-23** Develop guidelines for traditional, low-scale housing forms that respond to the environmental setting (e.g. water's edge, island dunes, views).
- B-24** Provide sustainable infrastructure for Island Eco-villages such as decentralized wastewater treatment, grey water treatment, and solar and wind power.
- B-25** Create a Conservation & Preservation Trust that supports education programs, restoration and monitoring activities, and maintenance of trails, signage, and open space on inhabited islands.
- B-26** Locate environmental education center(s) where appropriate to coordinate environmental information and activities for island residents as well as tourists.

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IV Neighborhood Centers

B-27 As part of the upcoming Comprehensive Plan, confirm standards for community supports related to population and catchment areas for:

- mosques;
- open spaces, play spaces, parks;
- schools and child care;
- community centers, cultural centers, women’s centers, youth centers, and special services;
- libraries; and
- post offices, fire, civil defense and police stations.

Until then, use the general specifications included herein (see Building Blocks: Emirati Communities).

B-28 In new neighborhoods, and in existing neighborhoods where possible, develop mixed use Neighborhood Centres, typically along an arterial high street and with gathering and people-generating uses and services based on population needs and the surrounding catchment area, to serve children, youth, and women in particular to emphasize the family orientation of the centers.

B-29 Develop higher densities and height of three to five storeys in a street wall configuration along the high street, with retail and major building entrances at grade. Step development down through three-storey multi-family housing areas along secondary streets to single-family housing.

B-30 Provide a range of multi-family housing options around the commercial core, and develop design guidelines to ensure the compatibility of a variety of housing forms with the adjacent single-family housing.

B-31 In addition to retail, accommodate traffic-generating institutional uses (e.g. clinics, high schools, libraries) and entertainment and recreational facilities on, or close to, the high street.

B-32 Provide separate and, where practical, underground or structured parking for individual developments as well as on-street metered parking and centralized lots to serve small businesses and retail.

V Central Business District Revitalization

B-33 Initiate a program of block revitalization in the existing inner-city, undertaking one or several pilot projects to inform the detailed development of this program and pursue the following measures:

- relocate existing surface parking to underground or above-grade structures and ensure future development puts parking on-site and in structures;
- establish an inner-block local access street and open space pattern;
- redevelop former surface parking with new infill buildings for more diversity;
- identify missing public facilities; and
- complete new streetscapes for pedestrian comfort and shade.

Start by developing an understanding of facilities present and missing in each block by undertaking a Neighborhood Completeness Survey.

B-34 When revitalizing core area blocks, relocate the majority of surface parking, with the exception of metered street parking to serve local retail and visitors, to grade-separated parking structures.

B-35 When revitalizing core area blocks, break down the size of the existing large block pattern by developing an additional street grid for local access which need not be contiguous and is based on the local development and open space pattern.

B-36 When revitalizing core area blocks, establish a network of two to three primary open and community spaces per block with high quality landscaping (e.g. adjacent to mosques or over new parking structures) and linkages to street and pedestrian routes.

B-37 Develop infill buildings over underground parking in revitalized core area blocks in a variety of forms (e.g. commercial and retail street wall podiums, mixed use low rise and high rise structures) to suit the individual sites, with an emphasis on providing retail continuity, providing a diversity of form and use, and animating the street.

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- B-38** When revitalizing core area blocks, complete an inner block network of new streetscapes and pedestrian routes linked to open spaces and landscaped secondary spaces along streets, that are shaded, fully accessible, enlivened by local retail (e.g. markets, restaurants, cafes) where possible, and efficiently accessed by transit.
- B-39** Ensure all future development in revitalized core area blocks provides on-site grade-separated parking and provides and maintains a high quality of landscaping.
- B-40** In revitalized core area blocks utilize redevelopment opportunities to provide community facilities needed in the area.

8.9 SOCIAL POLICIES

I Affordable housing

- S-1** Develop a range of housing types and an adequate supply of affordable housing to meet the needs of Abu Dhabi's diverse population and lifestyles.

II Social Services

- S-2** Where not already in place, complete a Comprehensive Plan and implementation program for community services (e.g. schools, health care, child care, seniors' services) including service standards and catchment areas in close coordination with relevant Government entities.

III Expatriate Worker Housing

- S-3** Develop comprehensive policies for the location and size of expatriate worker accommodation taking into account workers' and employers' needs, and immediate and long-term economic trends in the service, construction and manufacturing industries.
- S-4** In its Labor and Human Resource policy, the Government of Abu Dhabi has outlined the development of dedicated low-cost worker residences that meet or exceed international benchmarks for worker accommodation, including living and communal space, leisure facilities, hygiene and safety. The Government's expatriate worker housing policy, when applied to this Urban Structure Framework Plan, produces the following guidelines:
- Where possible, locate housing for permanent service workers (e.g. hotel, retail, business) close to where they work.
 - Avoid housing a large number of temporary or permanent construction and manufacturing workers in a limited number of settlements by establishing a maximum worker settlement population of 10,000 people.
 - Where possible, locate temporary construction worker housing on, or near, large construction sites with appropriate services and facilities;
 - Provide small localized nodes of permanent worker housing on, or near, industrial and manufacturing sites with appropriate services and facilities and with access to larger service areas and transportation;
 - In intensive job-generating areas, or to accommodate workers from remote construction sites or service industries, develop worker settlements of up to a generally preferred

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- maximum of 5,000 people with a local service center with religious, health, recreational and entertainment facilities;
- If larger worker settlements are developed, they should be located close to long-term job sites or on transportation routes and provide a full range of services and amenities (places of worship, health care, shops, entertainment, recreational facilities and emergency services).

8.10 ECONOMIC DEVELOPMENT POLICIES

- D-1** In releasing land for development and in approving development, calibrate growth with ongoing projections of market requirements for general market stability.
- D-2** In approving development, base all decisions on end-user projections and requirements, and tie infrastructure requirements and community amenity contributions to end-user demands. Phase development approvals with delivery of infrastructure and amenities so that services generally arrive just before people. Prepare a Land Release Strategy and ensure it is well-coordinated with an Infrastructure Strategy.
- D-3** In releasing land for development and in approving development, give priority to key growth sectors identified as essential for Abu Dhabi's economic vitality, including the health and education sectors and value-added manufacturing.
- D-4** Support growth of the Abu Dhabi International Airport and review existing expansion plans as soon as possible to confirm the appropriate area for airport expansion, including for direct airport needs and for airport servicing or airport-serving functions, and to minimize airport impacts such as noise and pollution.

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8.11 CONTINUOUS PLANNING POLICIES

- F-1** Complete a Comprehensive Plan for Abu Dhabi, consistent with this Urban Structure Framework Plan, as soon as possible over the next 18 months that can be used to firmly ascertain infrastructure requirements, amenity needs and transportation demands.
- F-2** Develop and implement a pervasive Urban Development Regulation Decree as soon as possible, consistent with this Urban Structure Framework Plan and the soon-to-emerge Comprehensive Plan, and develop appropriate guidelines to shape development within the regulations.
- F-3** Develop a Comprehensive Infrastructure Strategy and funding program as soon as possible, utilizing public and private resources in an integrated way, consistent with the scale and pattern envisioned in this Urban Structure Framework Plan and the soon-to-emerge Comprehensive Plan.
- F-4** Make all plans, guidelines, and regulations accessible in both hard copy and over the internet, including related background information and explanatory commentary.



9.0 FURTHER COMMENTARY

Infrastructure Implications

Practical Application of the Urban Structure
Framework Plan

9.1 INFRASTRUCTURE IMPLICATIONS

Infrastructure is one of the areas that demands especially careful attention as Abu Dhabi grows rapidly over the next quarter of a century. While this Urban Structure Framework Plan has not included detailed infrastructure planning within its scope, a consciousness about infrastructure conditions and needs has informed the Plan. The purpose of this section is to summarize the upcoming challenge of infrastructure as this Plan is pursued.

Advanced, reliable infrastructures are absolutely fundamental to fostering rapid economic development. Since infrastructures manage the flows of energy, water and waste in the urban system, they are also absolutely fundamental to sustaining the delicate ecology of the city's environs. The current infrastructure capacity will not meet the forecasted demand and the resulting development envisioned in this Urban Structure Framework Plan. Clearly, new supply options must be determined, designed, funded and implemented as soon as possible.

There are also many measures that can be taken on the demand side that can make supply more effective. District cooling and resource recovery both have enormous potential to reduce peak load, as does encouraging conservation by consumers via numerous available strategies.

Infrastructure, like transit, can be used to focus and guide development. In many cases, it is a precondition to development. It is essential to ensure that Abu Dhabi's demand for infrastructure remains within reach of supply

A Sustainable Approach to the Future

Reducing energy and water consumption is essential. The following should be considered to achieve this:

- Building regulations and development codes that promote or legislate for greater resource-use efficiency in new developments;
- The use of TSE for toilet flushing and for the cooling tower make-up water in district cooling systems;
- Reduced irrigation water demands;
- Solve hot water heating and photovoltaic electricity generation at the domestic level, where practical, to reduce main electricity demand, especially peak demand;
- Reduced cooling loads from developments;
- Use of gas-fired, rather than electrically powered district cooling;

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- The promotion of sustainable development principles in all future developments; and,
- Reduced or abolished subsidy of the water and electricity tariffs.

It is suggested that Abu Dhabi develop a set of Sustainability Principles that apply to all future development. These principles should ensure the following in future development (not an exhaustive list):

- Reduced car travel per capita through more localized provision of services including schools, workplaces, and shopping.
- Reduced resource use per capita through greater efficiency of use, not through a reduction in level of service.
- Maximized use of microclimatic effects to enhance external thermal comfort.
- Maximized water efficiency and reduced water consumption across a development.
- Maximized energy efficiency and reduced carbon emissions across a development.
- New areas of high quality public realm to attract pedestrian use.
- Minimized impacts on existing businesses and residents of the area who will be displaced as a result of a development.
- Social inclusion and provision of a range of tenures within a development to accommodate employees of businesses in the new district.
- Sustainable waste management through the implementation of a Waste and Resources Strategy in a development.
- A procurement policy that specifies products and materials with high-sustainability performance from local sources wherever feasible.

Abu Dhabi, like most cities, is experiencing a “heat island effect”. Microclimate design can be very helpful. Climatically-responsive design can increase the amount of time that it is comfortable for pedestrians to be outside – specifically extending the winter and transitional seasons. A number of benefits would result:

- Additional short journeys on foot would reduce the number of cars used, reducing the heat generated on site and subsequently improving comfort further;

- Increased public transit ridership would result by improving the environment between public transit nodes and destinations;
- A competitive advantage for restaurants and cafes located near high traffic pedestrian paths, especially benefiting those venues with outdoor seating;
- Appropriate use of materials and shade will reduce heat absorption on site and reduce energy consumption for cooling.

The aim should be to achieve a 'cool island effect', which might well be a world first.

Future development should be required to appropriately respond to the climate of Abu Dhabi. Site layout and building orientation should maximize shade and channel sea breezes using continuous north/south orientated streets and air movement where possible. Additionally, connectivity with the sea will provide localized cooling effects. Shade can be provided through:

- extensive planting;
- colonnades and building overhangs;
- passageways through buildings; and,
- shade structures and screens.

Air movements can be further encouraged on site by varying building heights and incorporating localized devices such as wind towers. Enclosed areas can be improved by creating 'pools' of cooled air from internal spaces and water features. The best microclimates will be in narrow pedestrianized shady streets or enclosed courtyards where heat generation is low. The use of water sprays and/or misting is not generally favored. It is suggested that a series of new building regulations and statutory design codes need to be prepared to guide developers to adopt these sustainable design measures.

Utility Easements

The ability to create pleasant microclimates relies in part on the ability of the designer/developer to bring buildings closer together. This is not currently common in Abu Dhabi due to the following reasons:

- A focus on motorized transport has resulted in a large proportion of the ground area given over to roadways and parking.
- Road and street corridors are extremely wide due to utility easements.

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Usually, the utility companies will not permit any utility services beneath the street carriageway, preferring them to be located in utility easements located on one or both sides of the street. This creates utility easements between 8m and 13 m wide on either side of all streets.

Currently, trees cannot be planted within the utilities corridor since tree roots can damage the services. As a result, trees are planted in a separate easement allowance and are installed with root barriers.

The obvious alternative location for utilities, other than in the current separate utility corridors on either side of highways, would be to locate them beneath the highway carriageway. This is currently not permitted nor favored in the UAE. A study is recommended to identify new standards for infrastructure placement in streets to balance infrastructure service provider costs with potential wider urban benefits.

The Masdar Initiative

The Emirate of Abu Dhabi has set up the Abu Dhabi Future Energy Company (ADFEC) and committed itself to the Masdar Initiative which, among other aims, seeks to identify alternative energy sources, promote sustainable development, and to develop an 'exemplar' project at a site to the southwest of the Abu Dhabi International Airport. The following is taken from the request for proposals (RFP) issued to consultants:

"The Masdar Development Project, tied to the concept of 'source', must be conceptualized as a new and vital component to the Abu Dhabi urban fabric that results in a reduced ecological footprint for the city as a whole. It must be a source; a net producer of carbon neutral energy and nutrients (both industrial and natural) in a development style characterized by its promotion of both human and non-human life-promoting interventions. At the same time, this development must not contribute to the addition of toxic materials, locally or otherwise, nor the accumulation of persistent synthetic compounds in the biosphere. It should strive towards a net sequestration of atmospheric carbon rather than a net release."

This initiative offers a great opportunity for Abu Dhabi to become a world leader in promoting sustainable, low-energy design.

9.2 PRACTICAL APPLICATION OF THE URBAN STRUCTURE FRAMEWORK PLAN

The “Plan Abu Dhabi 2030” Urban Structure Framework Plan is intended to provide a clear vision for the overall development of the city of Abu Dhabi. It takes the broad view and the long view and it is a conceptual plan. It includes few specifics and, as such, by itself, it does not provide a simple specification for the development of any individual site. Until a city-wide Comprehensive Plan and development regulations, as well as area guidelines, are in place, specific development review must combine a logical interpretation of the intentions of this Urban Structure Framework Plan with evaluation of specific site conditions and direction from best urban design and planning practices in other urbanistically progressive cities.

When considering proposals, three key questions should guide the evaluation process:

1. Standalone Analysis - Is the concept for development logical, livable and aesthetically appropriate in and of itself?
2. Impact on Setting - Is the development compatible with its setting and are the negative impacts on the setting minimal and positive impacts maximized?
3. Market Demand - Is the development in line with projected market demand?

Standalone Analysis

This involves judging the compatibility of mixed uses, the suitability of architecture and the humanistic relationship between the development and the public realm of streets and other open spaces around it.

Impact on Setting

The minimization of negative impacts, and maximization of positive impacts of a development on its setting, is an area of consideration requiring review of area patterns and their extension on a site; evaluation of sun, shade, reflected light, wind effects and views; suitability of form, especially coherence of heights and, suitability of materials, color and landscaping. This also involves confirmation that there is infrastructure in place to service the development. It involves questions of environmental fit and augmentation; as well as social fit, contribution to community social objectives, including reinforcement of the extended family orientation of Abu Dhabi, and the development’s ability to provide social functionality and harmony.

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Market Demand

This requires ensuring that proposed developments are in line with true retail (not wholesale) market demand. Moreover, once projected demand for a single type of development has been adequately met, additional developments that would create excessive capacity within the same category should be prevented. Ongoing calibration of supply and demand is essential for the successful evolution of Abu Dhabi as a livable city.

All submissions for development approval need to be detailed, containing enough relevant information so that judgments on all three aspects described above can be evaluated. This includes comprehensive development plans and models; commentary on infrastructure involving utility companies consultation and traffic studies, with the onus on the applicant to prove how infrastructure and traffic management are to be provided; surrounding development, environmental and community impact analyses; and end-user market assessment. Specific submission requirements will be issued.

Within government, interpretation of the intent of this Urban Structure Framework Plan and its principles, policies and geographic content, must be available as schemes for development are initially put together. Once submitted, peer review of proposals is vital because urban design is as much an art as it is a science. Real estate assessment is key and government will update its market targets and expectations on an ongoing basis to provide up-to-date responses to proposals. Review by all relevant government departments is important and must be coordinated. A two-stage approval process may be necessary: conceptual or preliminary approval, and final approval at a more detailed level.

Early interaction between development proponents and government is prudent so that schemes are conceived and designed from the outset with the Urban Structure Framework Plan as a primary guide to what government will entertain for a site.

Finally, for areas of key interest in realizing the vision for Abu Dhabi in the Urban Structure Framework Plan, but where there are multiple landowners and developers, a collective collaborative process must be facilitated to create a coherent outcome. This involves infrastructure and the transportation systems and it must also involve the sharing of use allocations and practical, attractive urban design patterns. Development proposals in these cases must be coordinated as far as is possible; and this responsibility rests foremost with the involved developers, with facilitation by government when necessary.

مجلس أبوظبي للتخطيط العمراني
ABU DHABI URBAN PLANNING COUNCIL



PLAN ABU DHABI 2030

Approved Institutional and
Regulatory Framework

APPROVED INSTITUTIONAL AND REGULATORY FRAMEWORK

The Abu Dhabi Urban Planning Council (UPC) is the agency responsible for the future of Abu Dhabi's urban environments, and the expert authority behind the visionary Plan Abu Dhabi 2030 Urban Structure Framework Plan published September 2007. Chaired by His Highness Sheikh Mohamed Bin Zayed Al Nahyan, Crown Prince of Abu Dhabi and Chairman of the Abu Dhabi Executive Council, the Abu Dhabi Urban Planning Council defines the shape of the Emirate, ensuring factors such as sustainability, infrastructure capacity, community planning and quality of life, by overseeing development across the city and the Emirate as a whole. The Abu Dhabi Urban Planning Council ensures best practice in planning for both new and existing urban areas.

The Abu Dhabi Urban Planning Council's primary purpose is to deliver upon the vision of His Highness Sheikh Khalifa bin Zayed Al Nahyan, President of the UAE, Ruler of Abu Dhabi for the continued fulfilment of the grand design envisaged by the late Sheikh Zayed bin Sultan Al Nahyan and the ongoing evolution of Abu Dhabi as a global capital city. By drawing on urban planning expertise locally, throughout the GCC and around the world, the UPC strives to be a global authority on the future of urban planning and design.

In more detail, the UPC holds the following responsibilities:

- **Urban planning**, using "Plan Abu Dhabi 2030", the Urban Structure Framework Plan, as a foundation from which will be completed for Abu Dhabi:
 - A city-wide Comprehensive Plan and Comprehensive Transportation Plan
 - Area Plans for revitalization or completion of existing areas
 - Comprehensive Development Plans for new areas
 - Guidelines for all areas or character precincts within areas, and
 - Pervasive development regulations.
- **Development review.** The UPC will manage development evaluation and framing of recommendations regarding development applications which are large, are contrary to prevailing allowances, involve multiple plots, are for new development areas or are controversial. Routine development approvals will continue to be handled by the Municipality. There will be close liaison and coordination between the UPC and Municipality, including joint publication of submission parameters to guide where applications go between the two agencies. Initially, "Plan Abu Dhabi 2030", the Urban Structure Framework Plan, will be the principal document for codified reference of government intentions for development but, ultimately, more detailed and complete plans and policies, as they are completed, will provide augmented guidance.

- **Facilitating government activities** in pursuance of implementation of the “Plan Abu Dhabi 2030” Urban Structure Framework Plan, reinforcing the private development efforts underway in Abu Dhabi. This will involve close liaison and collaboration with all departments, agencies and authorities of government as well as initiatives within the UPC. Of special note are the potential value of pilot projects to model new ways of developing in Abu Dhabi or providing models for revitalization and upgrading of public places. Also recommended, are joint ventures with a new Capital City Commission to realize the Urban Structure Framework Plan’s intentions for Abu Dhabi as a National capital and seat of government as well as the home of the late Sheikh Zayed, Father of the Nation.

That the urban planning Council will be the custodian of the “Plan Abu Dhabi 2030” Urban Structure Framework Plan and the source for all interpretations of its principles, policies and geographic plans. Pronouncements by the UPC regarding this Plan should prevail and be final.

