




Surface Transport Master Plan

A Vision for Connecting Abu Dhabi



“The Emirate of Abu Dhabi will continue to work towards its own comprehensive, multifaceted vision. That vision is to continue to create a confident, secure society and to build a sustainable, open and globally competitive economy.”



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



“Future generations will continue to enjoy and be inspired by ongoing access to the desert, sea, and natural assets that are integral to our national identity, while building a global capital with its own rich cultural heritage.”

His Highness Sheikh Mohammed bin Zayed Al Nahyan
Crown Prince of Abu Dhabi and
Deputy Supreme Commander of the UAE Armed Forces





About Abu Dhabi Department of Transport

The vision of Abu Dhabi Department of Transport (DoT) is to deliver an effective transport system that contributes to the economic growth, quality of life, and environmental sustainability of the Emirate of Abu Dhabi. The DoT's mission is to regulate, plan, and develop an efficient and well-integrated transport system that serves the public interest by enhancing mobility and

delivering safe, secure, and environmentally responsible Aviation, Maritime, Public Transport, and Highways sectors.

The DoT operates according to the core values of Excellence, Commitment, Integrity, Cooperation, Transparency, and Efficiency, which are woven into all aspects of how it conducts business on a day-to-day basis.



Foreword

In February 2008 the Surface Transport Master Plan was commissioned by the Department of Transport to develop a detailed Master Plan and implementation program for the city of Abu Dhabi and the rest of the Emirate.

The Master Plan represents fulfilment of the conceptual transport strategy outlined in Plan Abu Dhabi 2030: Urban Structure Framework Plan (Plan 2030). Plan 2030 was created to deliver the vision of His Highness Sheikh Khalifa bin Zayed Al Nahyan, President of the UAE and 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 destination.

The rapid rate of change in Abu Dhabi—combined with the high aspirations of the Emirates' leadership—has guided the creation of the world's most ambitious transport initiative. For the year 2030, the Surface Transport Master Plan calls for a multi-billion Dirham integrated system of transport services: regional rail, metro rail, trams, buses, taxis, park & ride, highways, and more. No city, no state in history has ever attempted to implement such a large-scale, comprehensive transport system in such a short period of time.

The Surface Transport Master Plan—as summarised and illustrated in this book—articulates the great challenges and opportunities that face Abu Dhabi. It also articulates the aspiration for transport to

be attractive to all people as it becomes a cornerstone for making Abu Dhabi a world class city.

Over the coming years, the Department of Transport will diligently monitor and refine the Surface Transport Master Plan to respond to the dynamic conditions of Abu Dhabi. This will be undertaken with the full understanding of the unlimited potential of Abu Dhabi and its people.

Many people and organisations have contributed to creating the Master Plan and their efforts are deeply appreciated. It is our great privilege to present the Surface Transport Master Plan: A Vision for Connecting Abu Dhabi.

Abu Dhabi Department of Transport



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By 2030, metropolitan Abu Dhabi is expected to triple its 2008 population, surpassing 3 million residents. The city will see a five-fold increase in daily trips by the same year.

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1. The Origin

Understanding Abu Dhabi's Transport Needs



The core objective of the Surface Transport Master Plan is to deliver a world class, sustainable transport system that supports Abu Dhabi's economic, social and cultural, and environmental goals.



Historic moment

Abu Dhabi has reached a momentous point in its history. For decades it has exhibited a notably restrained, deliberate pace of development and infrastructure investment. Today, the city of Abu Dhabi is stepping on to the global stage and positioning itself as a premier Arabian city. It is growing quickly to accommodate a diverse population of more than 3 million residents by the year 2030. The population of the Emirate as a whole will approach 5 million people by the same year. Abu Dhabi seeks to become an international destination that welcomes foreign visitors, businesses, and investors, while remaining

firmly rooted in its rich cultural history and protecting its valuable natural resources.

Abu Dhabi recognises that careful planning, particularly transport planning, is essential to realising this destiny. Transport infrastructure is key to a city's sense of place. It shapes the urban environment, determining where land will be developed in the future and providing cues to indicate what form that development might take. Transport infrastructure helps create a sense of community, facilitating mobility and interaction among residents and visitors alike. Diverse mobility options also stimulate

a robust and sustainable economy by facilitating the movement of goods, improving quality of life for commuters, and enhancing people's access to shops and services. Advanced transport technologies contribute to a cleaner, healthier urban environment with reduced traffic congestion, lower fuel emissions, and better air quality.

In aspiring to become one of the world's truly great places, Abu Dhabi has set out to create a truly great transport system. The Department of Transport, on behalf of His Highness Sheikh Khalifa bin Zayed Al Nahyan, President of the UAE and Ruler of

Abu Dhabi, has commissioned a document known as the Surface Transport Master Plan (Master Plan) to guide future transport investments. The Master Plan addresses the regional transport needs of the Emirate as a whole, while focusing particular attention on metropolitan Abu Dhabi. This book has been created to illustrate, explain, and celebrate many of the key components of the Master Plan that will help Abu Dhabi become a sustainable, globally-oriented, world class city.



The Surface Transport Master Plan represents an unprecedented opportunity. Until mid-2008 there was only very limited bus service within Abu Dhabi and everyone was effectively dependent on private cars or taxis. The Master Plan encompasses a multi-billion Dirham integrated network of highways/regional rail/metro/tram services with a complementary system of buses/taxis and park & ride facilities. No other place throughout history has planned or aspired to deliver such a massive transport system within such a short time horizon.

Imagining the future of transport

Imagine Abu Dhabi as a city where public transport is available 24 hours a day ... where the most advanced transport technologies allow you to travel swiftly to work, shopping, schools, entertainment, even to Al Ain or Dubai ... where high-tech electronic information systems tell you exactly when the next train, bus, or ferry is scheduled to arrive ... where the nearest public transport stop is less than a 5 minute walk from your home.

Imagine Abu Dhabi as a city that is designed for the enjoyment of pedestrians ... where awnings and trees offer shade from the sun ... where pavements are wide and city streets become a place to sit, socialise, or have coffee with your friends ... where housing, jobs, shopping, and entertainment destinations mingle close together and are easily accessible on foot.

Imagine Abu Dhabi as a city that is easy to drive around ... where a fine-grained, interconnected street system gives drivers

a variety of routes to choose from ... where short blocks, clear signage, and well-timed signals make navigation easy and travel times shorter ... where parking structures are located conveniently close to your destination ... where reduced congestion and better technologies lead to lower fuel emissions and cleaner air.

Imagine flying into Abu Dhabi for business or pleasure ... where you are greeted with a multitude of transport choices to complete your journey ... perhaps you will

take high speed rail to a meeting in the city centre ... or take the metro to your friend's house ... or a taxi to your hotel ... or rent a car to begin your desert safari.

This ambitious vision for the future of transport in Abu Dhabi is on its way to becoming a reality, and the primary tool to achieve it will be the Surface Transport Master Plan.



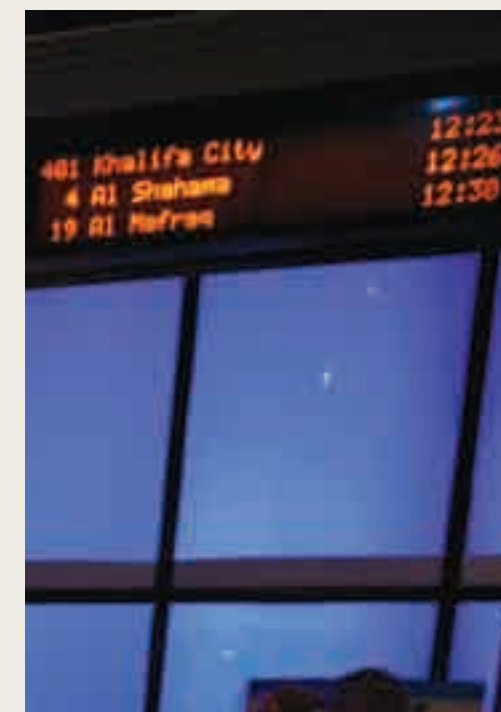
Imagine Abu Dhabi as a city where public transport is available 24 hours a day.

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Imagine flying into Abu Dhabi for business or pleasure.

Imagine Abu Dhabi as a city that is easy to drive around.



Imagine Abu Dhabi where high-tech information systems tell you exactly when your train, bus, or ferry is due to arrive.

The inspiration from Plan Abu Dhabi 2030

While the Surface Transport Master Plan is rooted in extensive technical analysis and research, the primary conceptual inspiration for the document is Plan Abu Dhabi 2030: Urban Structure Framework Plan (Plan 2030).

Plan 2030 was developed by Abu Dhabi Urban Planning Council (UPC) in 2007 to articulate a clear direction and description of future growth. Recognising that a complete comprehensive plan would require a complex, multi-year technical inquiry, the UPC sought to develop an Urban Structure Framework Plan to provide

an overarching, guiding structure for planning and development efforts over the next quarter of a century.

Plan 2030 offers a unified vision for Abu Dhabi's future and provides policy direction in a variety of areas, including the natural environment, land use, transport, open space, urban design, housing, and economics. It calls for the establishment of new Districts—including the Central Business District, the Capital District, the Grand Mosque District, and Lulu Island District—and lays out an urban design framework based on “building blocks” that

can be used to guide future development throughout the city.

The Surface Transport Master Plan develops Plan 2030's conceptual transport strategy into a detailed Master Plan and implementation program for metropolitan Abu Dhabi, Al Ain, Al Gharbia (the Western Region), and the rest of the Emirate. In accordance with the description on the facing page, the Master Plan recognises the essential relationship between transport and land use. It calls for comprehensive infrastructure investments—including highways, freight rail, regional rail, various

public transport components, and pedestrian amenities—along with policy recommendations designed to increase mobility options, reduce congestion, and support Abu Dhabi's vision for a sustainable, world class transport system.

The Master Plan also outlines an achievable delivery program, involving both the public and private sectors, to ensure that the timetable for transport investments and policies will coincide with the phased growth of the city.



“The best transportation plan is a good land use plan. The establishment of two city centres—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.”

Plan Abu Dhabi 2030:
Urban Structure Framework Plan



Plan Abu Dhabi 2030 presents a number of recommendations for land use and transport that are underscored and further developed by the Surface Transport Master Plan.

Transport recommendations from Plan Abu Dhabi 2030

Several recommendations from Plan 2030 specifically capture Abu Dhabi's transport aspirations:

Linked to development

To ensure that land use planning and development are fully integrated with the provision of multi-modal transport networks linked to the larger urban structure.

Variety of choices

To provide a variety of interconnected transport choices as alternatives to the automobile to avoid highway and freeway expansion. This layered interconnected public transport network should form a functional and efficient system.

Enhanced pedestrian realm

To design and retrofit the accessible public spaces in transport networks to prioritise and enhance the pedestrian realm.

Used by a variety of people

To design and configure public transport 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.

Managed roadway demand

To apply Transport Demand Management measures to reduce traffic pressure on key routes throughout the city.

The challenges

Every city faces transport challenges, and Abu Dhabi is no exception. By 2030, metropolitan Abu Dhabi is expected to triple its 2008 population, surpassing 3 million residents. The city will see a five-fold increase in daily trips by the same year. This increase in trips is the result of a variety of factors including economic growth (with 6 million additional square metres of office space), the physical expansion of the city

(with an expected 400 percent increase in Gross Floor Area), and a fourfold increase in the number of regional and international visitors.

Given these figures, it is becoming increasingly apparent that the current transport system—which focuses primarily on automobile travel—will be insufficient to meet Abu Dhabi's transport needs. Barring any significant investment in public and

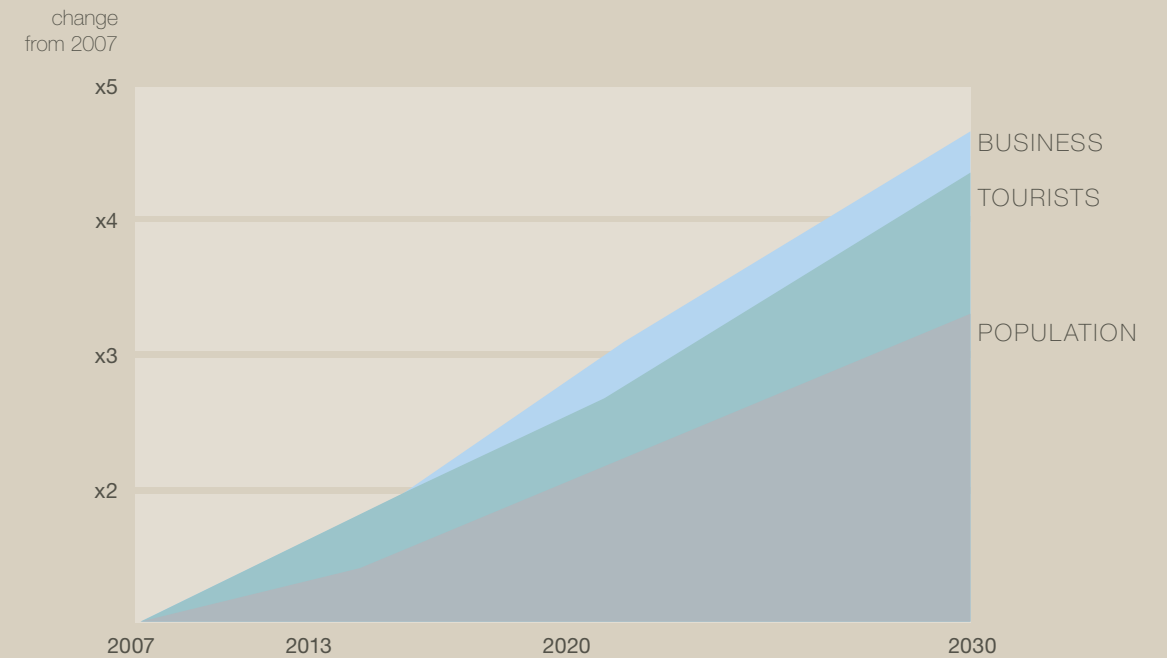
alternative transport options, congestion will become progressively more severe and the road network will be at full capacity before the year 2015. In fact, if the Surface Transport Master Plan is not implemented in accordance with planned phasing, the average morning commute in metropolitan Abu Dhabi in 2030 will be five times as long as it is today.

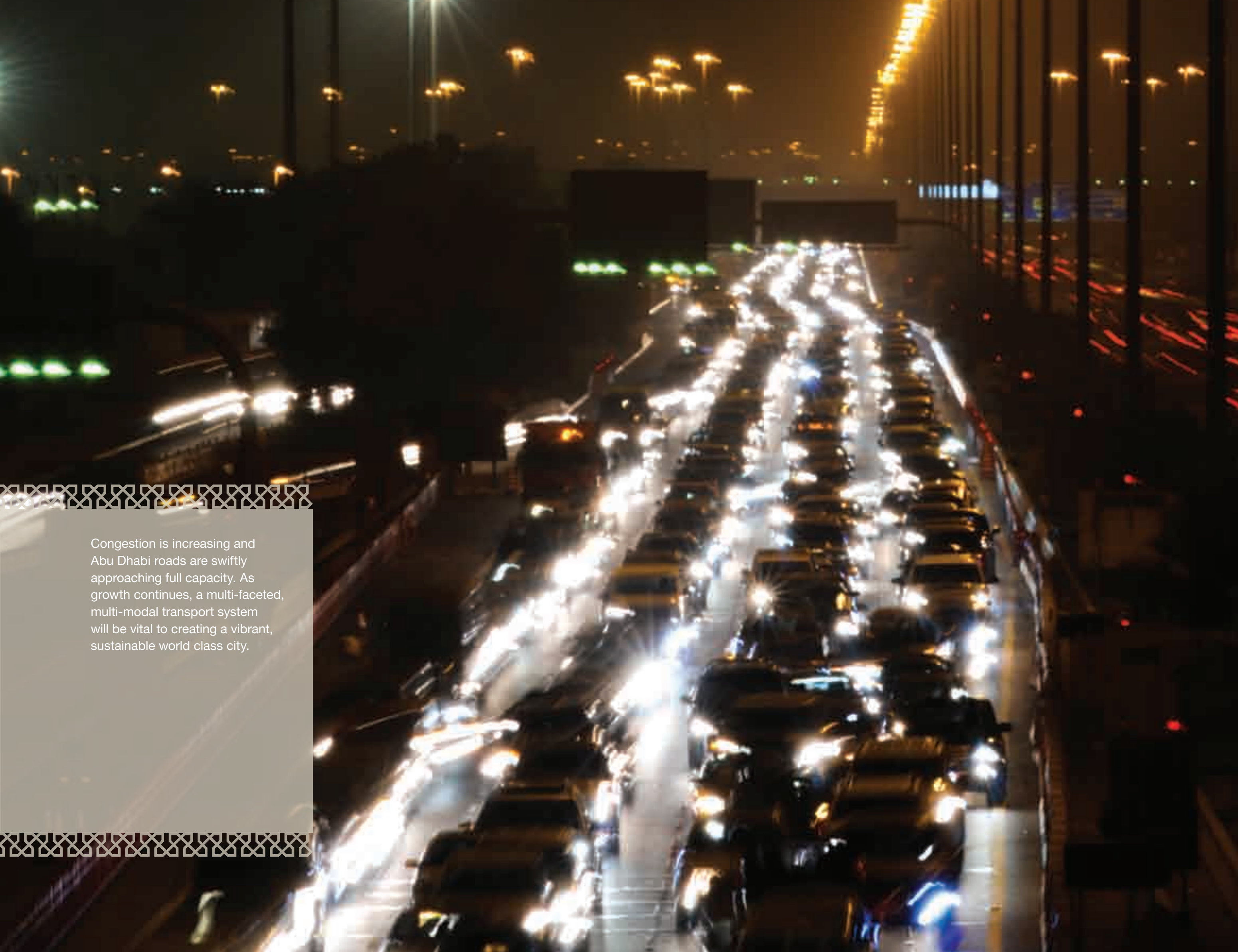
The 2030 challenge



	2008	2030
Population	0.9m	3.1m
Tourists	1.8m	7.9m
Office Area m ²	1.4m	7.5m
Personal Trips	1.2m/day	5.4m/day

m: million





Congestion is increasing and Abu Dhabi roads are swiftly approaching full capacity. As growth continues, a multi-faceted, multi-modal transport system will be vital to creating a vibrant, sustainable world class city.

Unique economic, social and cultural, and environmental considerations

While the need for transport investment is clear, the Surface Transport Master Plan recognises that the future transport system must be tailored to align with Abu Dhabi's economic, social and cultural, and environmental context. The following issues were identified during the development of the Master Plan, and have been integrated into the Plan's strategy approach.



Economic issues

- Without transport improvements, congestion will become more severe and commute times will increase dramatically.
- Abu Dhabi's rapid growth will result in a significant increase in freight movement, which will further contribute to congestion without new freight infrastructure investments.
- Congestion negatively impacts economic competitiveness, making Abu Dhabi less attractive for businesses and tourists.
- Reducing reliance on private cars will be key to tackling congestion and promoting economic vitality.
- Both the public and private sectors need to be effectively involved in transport provision.



Social and cultural issues

- Various types of connectivity—including international, regional, and metropolitan—must be addressed. Transport linkages among Abu Dhabi, Al Ain, and Al Gharbia are particularly important.
- Public transport is severely limited in Abu Dhabi, and most people rely heavily on private cars and taxis to move around.
- Abu Dhabi's city road network leads to major severance issues, cutting off neighbourhoods from each other.
- Abu Dhabi's transport system must provide access for all sectors of society and account for key cultural issues, such as the needs of women and children.
- Abu Dhabi is striving to improve transport safety and become one of the safest cities in the world.
- If Abu Dhabi is to become a truly world class city, it must improve the pedestrian realm to make walking safer and more attractive.

Environmental issues

- Abu Dhabi would like to achieve a low carbon future. Since automobile emissions are a major contributor to the city's CO2 emissions, this will require significant expansion of the public transport system.
- A modern transport system must maximise the use of alternative fuels and minimise CO2 emissions through incentives, pricing, and regulation. Public and alternative modes of transport must offer attractive alternatives to the private car.
- Abu Dhabi has unique ecological areas, including eastern mangrove and coastal mudflats, which need to be protected from the impacts of new transport infrastructure.
- The transport system must protect and enhance Abu Dhabi's built environment and cultural heritage.
- Travel behaviour is heavily influenced by the hot climate.

Abu Dhabi's vision for the future calls for nothing less than a world class, sustainable transport system—one that sets a global standard for efficient services, integrated technologies, and innovative policies.

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28 Environment goal & objectives

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37 Sustainable, low carbon future
38 Protected environmental resources



2. The Vision

Connecting Abu Dhabi in 2030



The Surface Transport Master Plan is designed to develop a world-leading transport system that meets the needs of residents, visitors, and businesses in the most efficient, safe, attractive, reliable, and environmentally sustainable way.



World class city, world class transport

Abu Dhabi's vision for the future calls for nothing less than a world class, sustainable transport system—one that sets a global standard for efficient services, integrated technologies, and innovative policies. This transport system is also envisioned to support Abu Dhabi's unique economic, social and cultural, and environmental needs through the following goals.

This chapter outlines the specific objectives and strategies underlying each of these goals, and highlights several of the desired outcomes that will be achieved once the vision for transport is realised.

Economic goal

Promoting economic competitiveness and vitality through efficient, high-quality transport services for passengers and freight.

Society and culture goal

Protecting and enriching people's lives by maximising safety and access to opportunities for all.

Environment goal

Delivering world-leading performance in environmental sustainability by using resources responsibly, minimising pollution, and preserving Abu Dhabi's unique environment.



The future of transport in Abu Dhabi will include highly integrated choices.



Economic

Goal: Promoting economic competitiveness and vitality through efficient, high-quality transport services for passengers and freight.



Economic objectives

Transport solutions supporting the efficient movement of people and freight will be key to maintaining Abu Dhabi's economic competitiveness. To meet specific economic objectives, the Surface Transport Master Plan identifies a number of strategies to minimise congestion and better manage the movement of freight.

- Minimise congestion
- Reduce reliance on the automobile
- Provide for sustainable and efficient freight distribution



Congestion strategies

- Institute an integrated, multi-modal public transport system to provide high-quality alternatives to the car
- Improve the pedestrian environment by making walking safer and more enjoyable
- Use Intelligent Transport Systems (ITS) to keep drivers informed about areas of severe congestion
- Encourage Transit-Oriented Developments that are compact, walkable, and easily accessible to public transport
- Develop strategic pricing policies that will enhance the attractiveness of public transport relative to driving

Freight management strategies

- Develop several key regional distribution centres to improve the overall efficiency of freight movement by consolidating processing and transfers
- Consider alternative freight movement opportunities via rail or waterways, rather than relying almost exclusively on roads
- Improve the movement of freight traffic on Abu Dhabi's roadways

Society and culture

Goal: Protecting and enriching people's lives by maximising safety and access to opportunities for all.



Society and culture objectives

The Surface Transport Master Plan recognises that a safe, accessible transport system is the foundation for an accessible city. Transport can improve the quality of life for residents and visitors alike. With more transport opportunities, people in Abu Dhabi have better access to jobs, shops, services, and local and regional destinations. The strategies to support social and cultural objectives fall into three main categories – accessibility, safety and security, and improvements to the pedestrian realm.

- Improve international connectivity
- Improve regional connectivity
- Improve connectivity within the metropolitan area
- Improve safety
- Enhance the pedestrian realm



Accessibility strategies

- Enhance international, regional, and metropolitan transport opportunities
- Develop comfortable, easy-to-navigate interchanges to facilitate the transfer between different modes of public transport
- Make public transport vehicles accessible to people with special needs

Safety and security strategies

- Better manage traffic speeds and strive for more rigorous enforcement of traffic laws
- Promote driver training and education
- Install pedestrian-controlled traffic signals to enable mid-block crossings along superblocks and at key locations such as schools, hospitals, and transport interchanges
- Conduct road safety audits to mitigate hazards
- Ensure the security of transport interchanges through appropriate lighting, closed circuit cameras, and other safety initiatives

Strategies for improving the pedestrian realm

- Create areas in the city centre, such as Hamdan Street, where pedestrians have priority over cars
- Improve design and planning of the public realm, and incorporate shading along key pedestrian routes
- Establish pedestrian walkways between transport interchanges and key facilities

Environment

Goal: Delivering world-leading performance in environmental sustainability by using resources responsibly, minimising pollution, and preserving Abu Dhabi's unique environment.



Environment objectives

Sustainability is a top priority for the Emirate. As it grows, Abu Dhabi is committed to reducing carbon emissions, protecting its environmental resources, and preserving its cultural heritage. Several strategies in the Surface Transport Master Plan address each of these areas.

- Develop a low carbon economy
- Preserve critical natural environment
- Protect and enhance cultural heritage, landmarks, symbols, and monuments



Low carbon strategies

- Develop low carbon guidelines in areas such as infrastructure design, construction, and operations
- Encourage the use of low emission vehicles
- Incorporate the latest low emission technologies into the vehicle fleets used for public transport

Natural environment strategies

- Avoid critical natural resource areas in the design of transport infrastructure, and strive to minimise and mitigate the impact if these areas cannot be avoided
- Restore degraded natural resource areas on existing transport sites
- Restrict access areas and vehicle speeds to prevent damage to environmentally sensitive marine and coastal areas

Built environment strategies

- Maintain, enhance, and expand public access to open space
- Incorporate traditional Arabian architectural features in transport infrastructure
- Protect the aesthetic appeal of significant landmarks and monuments

Desired outcomes: enhancing the physical environment

Recognising the essential relationship between transport and land use, it becomes apparent that transport infrastructure will be a cornerstone to enhancing the sustainability of Abu Dhabi's physical environment. Four desired outcomes of the Surface Transport Master Plan will lead to sustainable improvements in both urban and natural environments:

Reduced traffic congestion



Attractive urban environment



Sustainable, low carbon future



Protected environmental resources





Without significant modifications to the current transport infrastructure, roads will become progressively more congested and will reach full capacity by the year 2015.

Reduced traffic congestion

Due to population growth, economic expansion, and increased land development, the Emirate will see the number of trips per day grow from 2 million in 2008 to 10 million in 2030. Without significant modifications to the current transport infrastructure, roads will become progressively more congested and will reach full capacity by the year 2015. This scenario

would negatively impact the quality of the physical environment as well as the general quality of life. Residents and visitors would experience an increase in travel delays, and would likely face untenable commute times. Such congestion would also compromise environmental quality, and air and noise pollution would detract from Abu Dhabi's livability.

The Surface Transport Master Plan strives to respond to this scenario by diversifying available transport choices through an integrated, comprehensive transport system. World-leading technologies featuring real-time travel information will make public transport an attractive and expedient option for getting around. Demand management techniques such as road

pricing will further reduce the number of cars driving during peak travel times.

The maps provide a clear visual depiction of the impact. The first map shows a baseline scenario with untenable levels of congestion in 2030. The second map shows how travel will be improved with implementation of the Surface Transport Master Plan.

2030 Traffic Congestion, AM Peak – Without STMP Improvements



2030 Traffic Congestion, AM Peak – With STMP Improvements



Attractive urban environment

The vision outlined in Plan Abu Dhabi 2030 and underscored by the Surface Transport Master Plan calls for attractive urban environments that appeal to residents and visitors and strengthen Abu Dhabi's identity. Since transport infrastructure makes up a considerable proportion of the public realm, the character of roadways, intersections, pavements, and transport stations will play a significant role in achieving this vision.

Transport projects that are undertaken with a concern for aesthetic appeal heighten the quality of the public realm and improve the experience of all users. For example, pavements that incorporate streetscape design, shading, and places to sit and rest can turn a previously unwelcoming street into an enjoyable space for public gathering.

The Surface Transport Master Plan acknowledges the powerful impact of

transport investments on the form and character of Abu Dhabi. It recognises that transport infrastructure will help shape the structure of neighbourhoods, districts, open spaces, and mixed-use centres of various scales, and that components of the transport system must be designed in a manner that supports a vibrant, well-connected urban environment.

Plan 2030 identifies several underlying principles for urban structure that are reflected in the objectives and strategies of the Surface Transport Master Plan.

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

Many human-scaled, interconnected streets will optimise 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, growth will be accommodated with transport.



Transport projects that are undertaken with a concern for aesthetic appeal heighten the quality of the public realm and improve the experience of all users.



The Surface Transport Master Plan incorporates a full spectrum of low carbon and sustainability measures, including:

- Extensive public transport infrastructure powered by world leading renewable energy technology and alternative fuels
- Innovative systems such as Personal Rapid Transit (PRT) that utilise the nation's abundant sunshine for solar power
- A commitment to lower CO2 emissions in all aspects of transport from design, to construction, to operation
- A commitment to encouraging walking, cycling, and respect for the natural environment

Sustainable, low carbon future

Climate change and global warming are pressing concerns for the planet. Many communities around the world are pursuing transport technologies that will reduce their carbon emissions and ameliorate their impact on climate change. As it undertakes the development of the most ambitious transport system in the world, Abu Dhabi is emerging as a global leader for integrating low carbon technologies with transport infrastructure.

Ideally, all electricity used by the Abu Dhabi transport system will be obtained from low carbon sources of renewable energy, such as high-tech solar cells. The Department of Transport (DoT) can collaborate with the Abu Dhabi

Future Energy Company (sponsor of Masdar City) to become an advocate for researching and expanding renewable energy availability throughout the Emirate. Through implementation of the Surface Transport Master Plan, the DoT can develop documents and tools to ensure that all private and public organisations that are involved in the design, procurement, construction, and operation of transport projects are bound to select the most sustainable solutions available. This commitment to pursuing a low carbon economy will have a multiplier effect as the Department of Transport encourages more and more partners to invest in low carbon technologies.



Abu Dhabi's transport system will operate on renewable energy sources and reduce reliance on automobiles, which will lower carbon emissions.

Protected environmental resources

Abu Dhabi's islands, sand dunes, sea, coastlines, and native wildlife all blend together to create an intricate, sensitive, and unique natural environment. Spectacular sand dunes cover 85 percent of the Emirate. Mangroves along the coast provide a habitat for migratory birds and contribute to a large portion of the biodiversity in the country. Endangered species such as turtles and dugongs make their homes in Abu Dhabi's offshore seagrass beds.

In accordance with Plan 2030's commitment to ecological stewardship, the Surface Transport Master Plan has established a framework for avoiding damage to critical natural resource areas. In planning and designing specific components of the Master Plan, the Department of Transport will make every effort to avoid environmental protection zones. Where transport needs conflict with environmental concerns, the Department

of Transport can work with environmental experts to minimise or offset environmental impacts. As practicable, the construction of new transport infrastructure will preserve existing trees and native vegetation. Since many of Abu Dhabi's most sensitive ecological areas can be found along the coast, particular attention will be paid to ensuring the ecologically sensitive management of water-going vessels such as ferries.



Abu Dhabi enjoys diverse and beautiful natural resources.





The Department of Transport will work with environmental experts to minimise impacts to Abu Dhabi's sensitive natural environment.

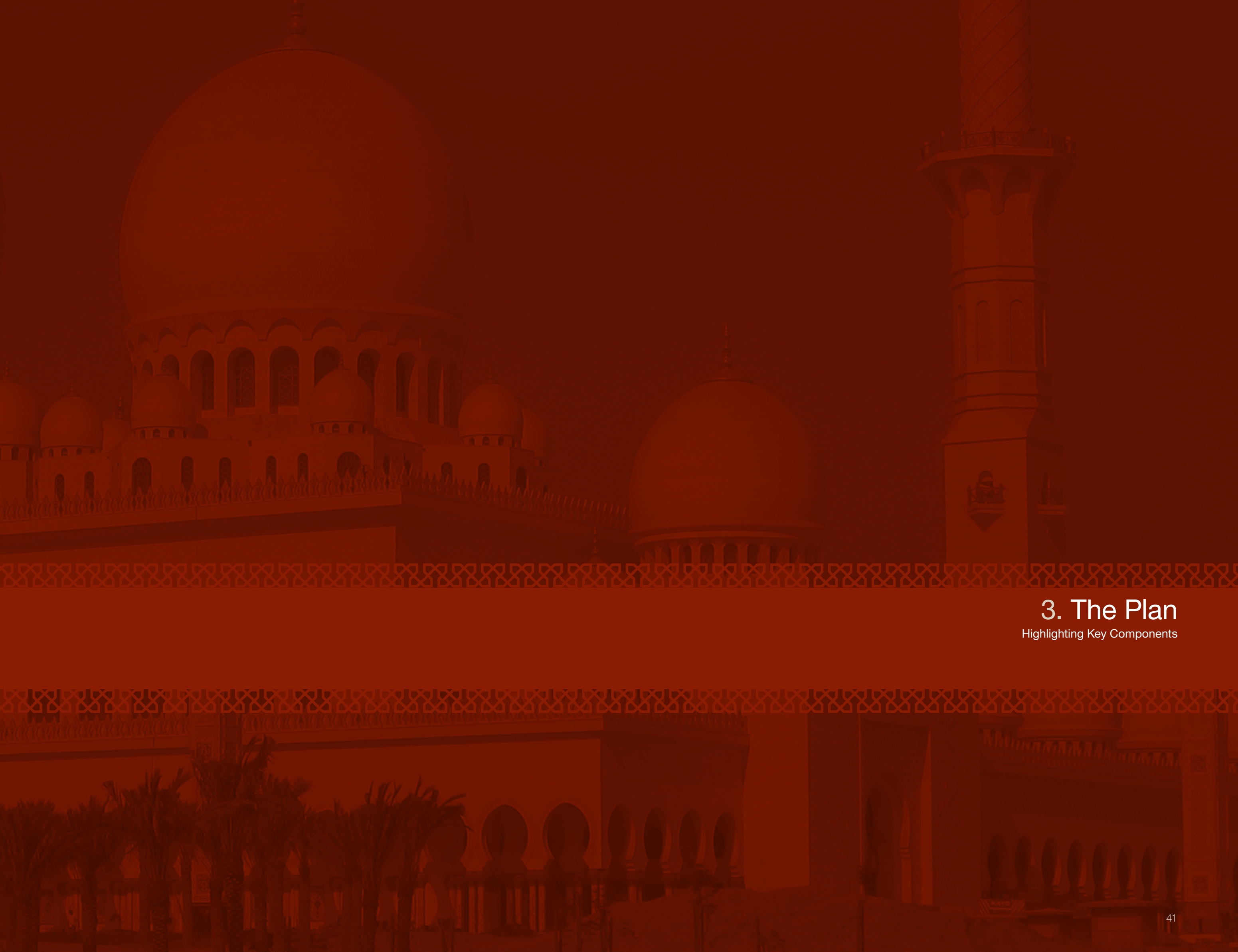
The Surface Transport Master Plan approaches transport planning comprehensively, ensuring that the sum of its individual parts equals a highly coordinated and integrated multi-modal transport solution.

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3. The Plan

Highlighting Key Components

**Year 2030
Planned Improvements**

- Metro
- Tram
- Regional Rail
- Freight Rail
- Existing Major Roads
- Road Improvements
- - - Ferries
- Metro Stops
- P Park & Ride locations

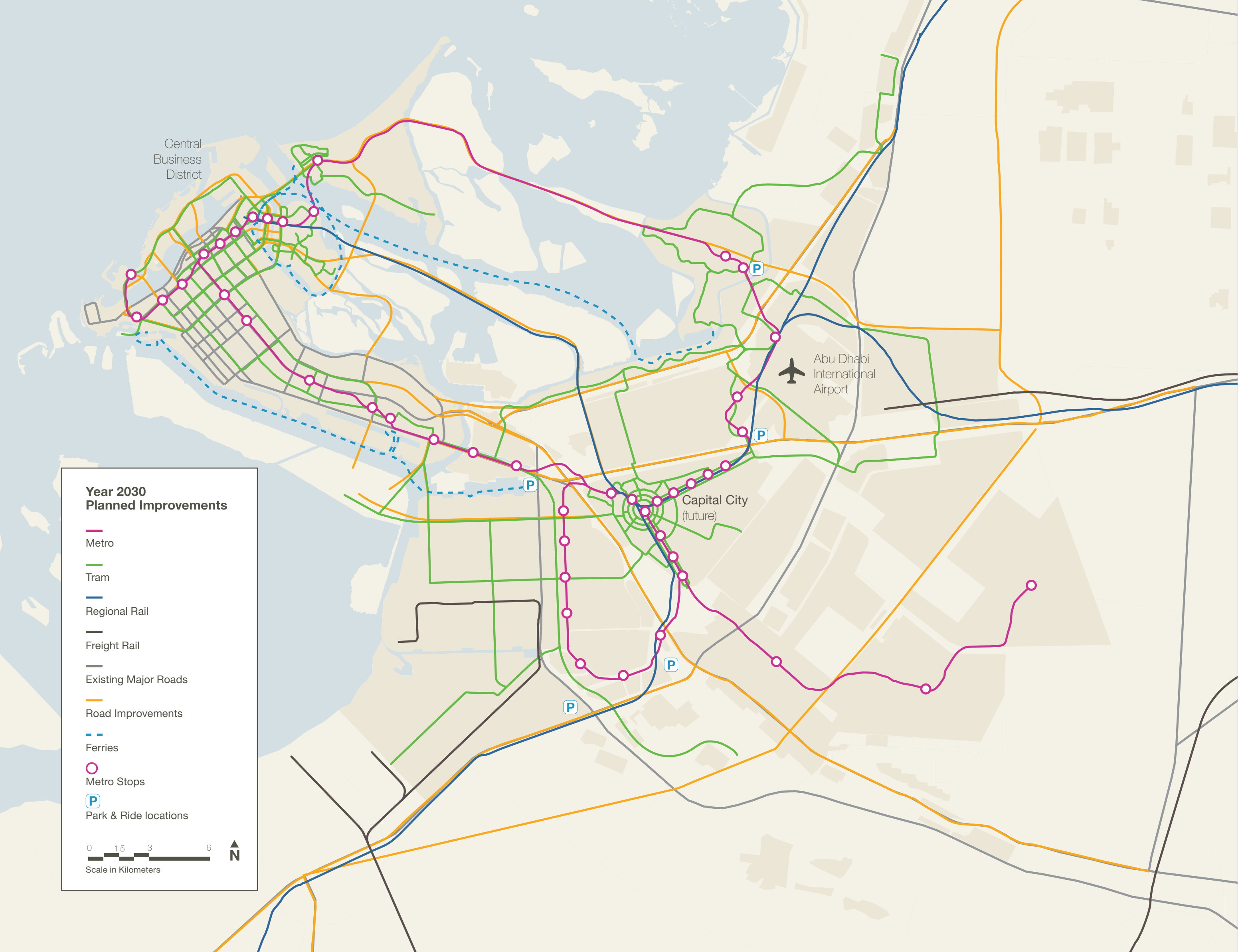
0 1.5 3 6
Scale in Kilometers

N

Central
Business
District

Abu Dhabi
International
Airport

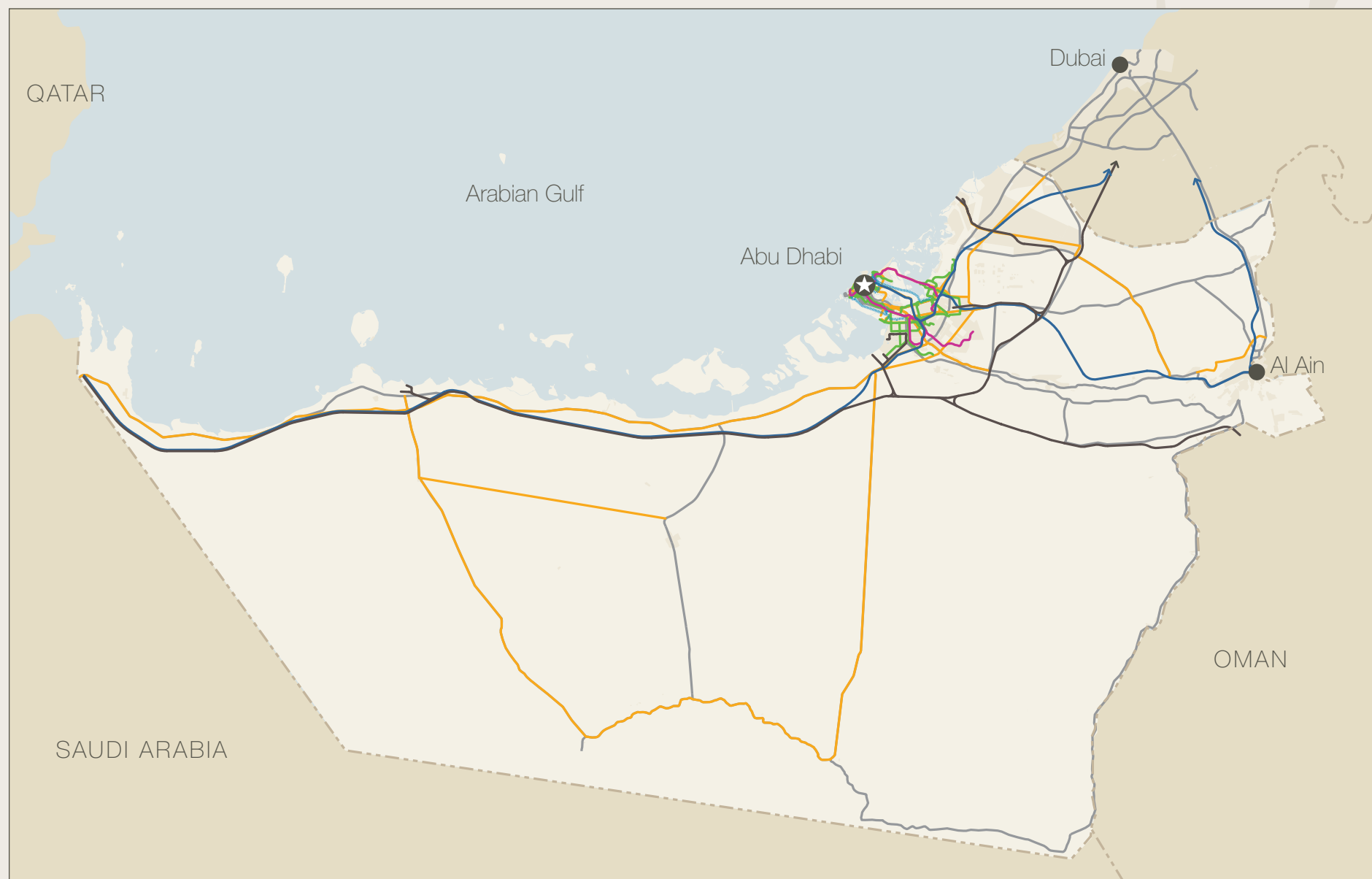
Capital City
(future)



Overview: The map, projects and policies

Several components of the Surface Transport Master Plan are illustrated on this page. As shown in the insert map, freight rail (black) and regional rail (blue) cover the entire terrain of the Emirate, connecting Abu Dhabi with Al Ain and the Western Region, and moving beyond the Emirate borders to link with Dubai.

The larger map features additional modes of transport including metro (pink), tram (green), and ferries (dotted blue), which are concentrated primarily in the metropolitan area. Bus lines are not shown because they are too extensive to be depicted at this scale.





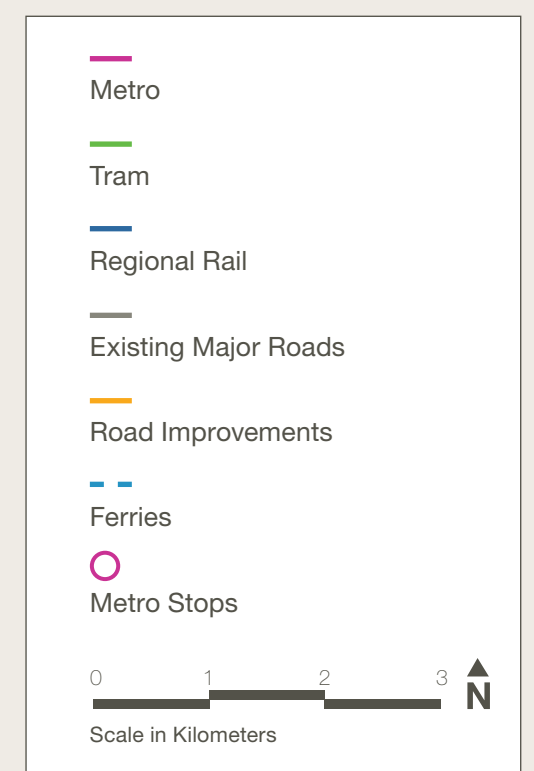
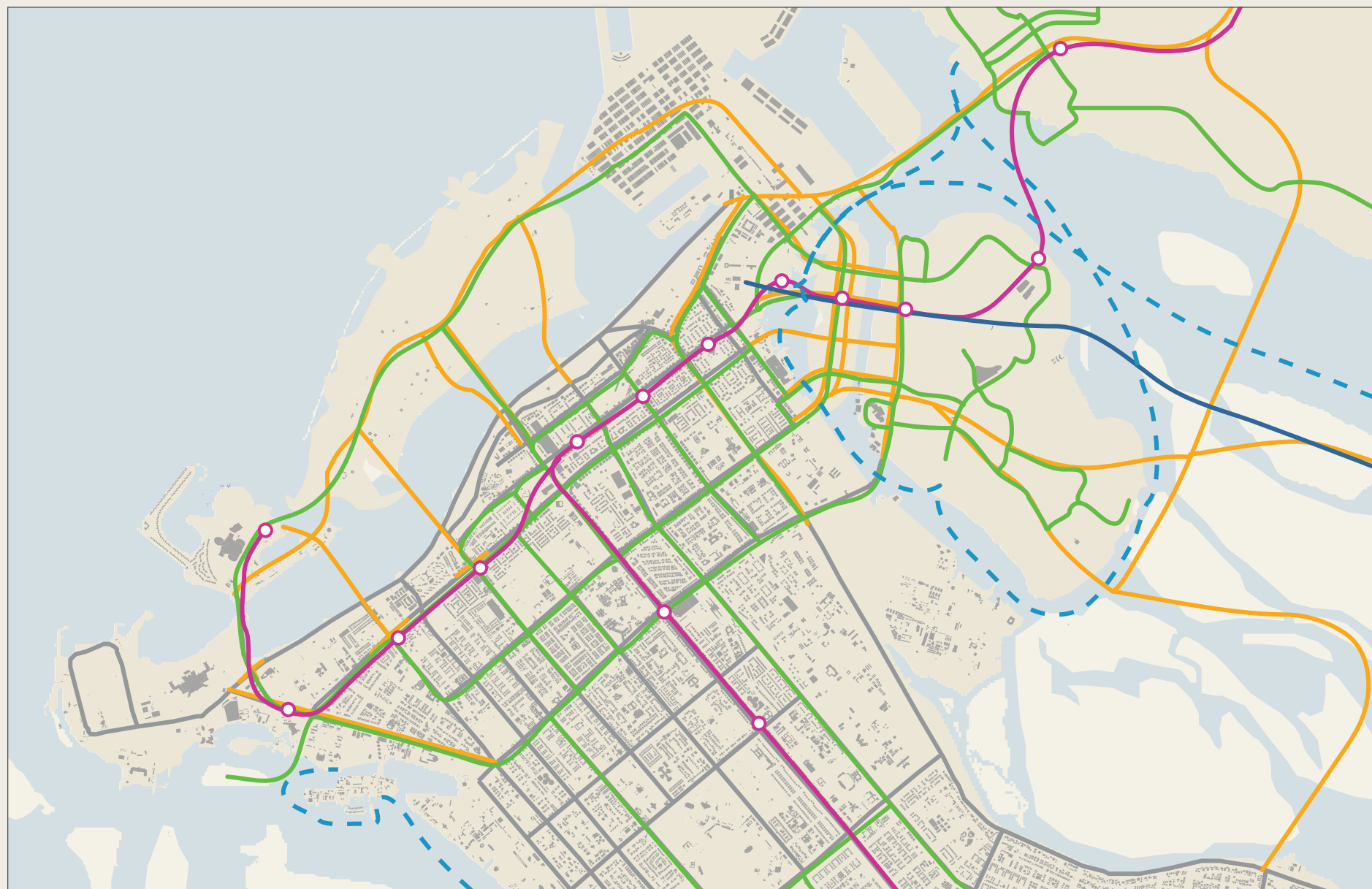
The Central Business District will support the highest concentration of office space in Abu Dhabi and will be served by a range of public transport modes, including metro, tram, bus, and ferry.

Taking a closer look: the Central Business District

Centred on Al Suwwah Island and incorporating adjacent edges of Al Mina, Al Reem, and Abu Dhabi Islands, the Central Business District will support the highest concentration of office space in Abu Dhabi. Modestly scaled bridges will be used to connect the islands and will

serve as extensions of existing city streets. Lower density residential areas will surround the Central Business District, so that many workers may be able to live in close proximity to their place of work. While no major shopping malls are anticipated for the area, smaller retail nodes will serve the daily

needs of residents and workers. Since the Central Business District is situated on a series of islands, road transport and parking options will be quite constrained. Public transport modes including metro, tram, bus, and ferry will offer ideal solutions for commuters travelling to and from the District.





Capital City will focus on housing government offices, academic institutions, high-tech industries, and the medical sector. The innovative conceptual design and street design will support broad public transport choices.



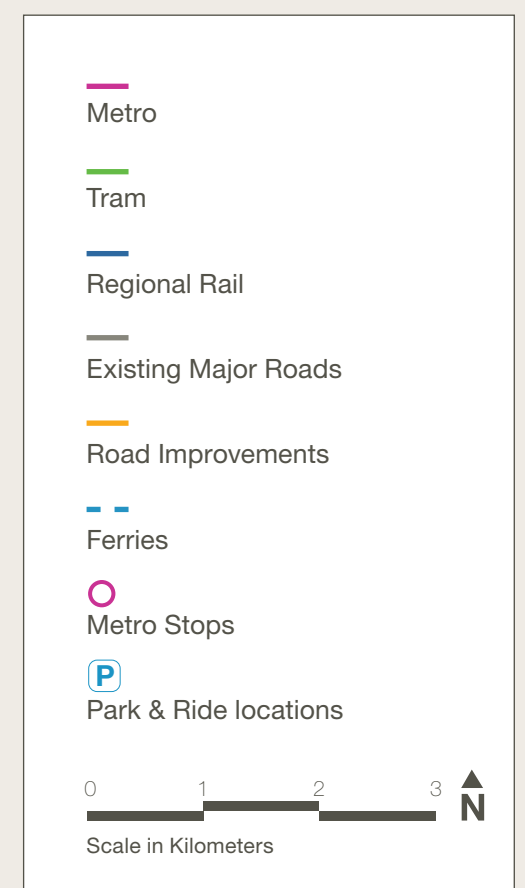
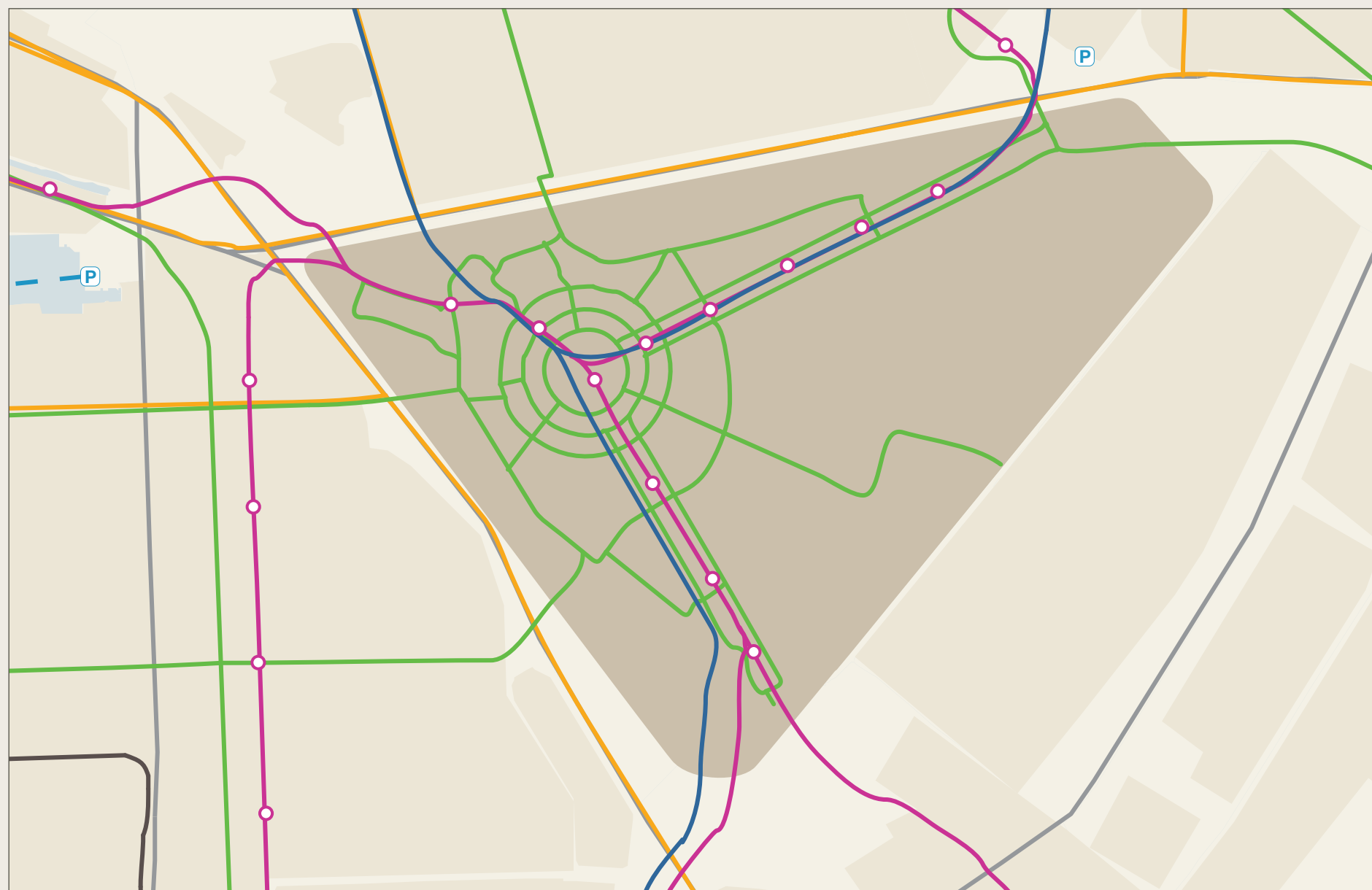
Taking a closer look: Capital City

Capital City (also known as the Capital District) will also provide a large amount of office space and employment opportunities, but its focus will be different. While the Central Business District is poised to attract big business, including commerce and financial sectors, Capital City will be oriented to house government offices, academic

institutions, high-tech industries, and the medical sector. This new district will serve as an iconic location to showcase many of Abu Dhabi's major institutions.

Like the Central Business District, Capital City will be surrounded by residential areas. Capital City will feature one primary regional retail node in the form of a Central Souq

that is accessible via metro lines as well as regional rail. As indicated by the green circular tram routes, Capital City features an innovative conceptual design and street pattern. It will serve as an ideal interchange for a variety of transport modes, bringing students to university, patients to hospital, and government employees to their offices.



An integrated, multi-modal system

The future of transport in Abu Dhabi transcends individual modes of travel. Many journeys will utilise a number of transport modes, with each mode functioning effectively not only in isolation, but in concert with the other modes. For example, a traveller's journey could begin in a suburban residential neighbourhood, where he/she might take a bus to the nearest metro station, transfer to a train that rapidly transports him/her to Capital City, and finally switch to a tram that deposits him/her one short block from the door of his/her desired destination.

The Surface Transport Master Plan is designed to ensure that this journey is as efficient and pleasant as possible. It calls for two key ingredients to ensure a successful network-wide travel experience:

1. **A comprehensive, “macro” level approach.** The Surface Transport Master Plan approaches transport planning comprehensively, ensuring that the sum of its individual parts equals a highly coordinated and integrated multi-modal transport solution—a solution that will provide travellers with seamless, enjoyable travel throughout the network. Each mode of transport is designed to not only work logically and reliably on its own, but to do so in relation to connecting modes of travel.
2. **The inclusion of world-class technology to aid coordination.** Best practices in Intelligent Transport Systems (ITS) from across the world are

combined to ensure that the citizens of the Emirate of Abu Dhabi benefit from the best that technology can deliver. Travel modes are coordinated through integrated travel network management and control systems. Easy-to-use ticketing, travel planning, and real-time travel updates make each journey pleasant and free of logistical barriers. Travellers will be able to make informed travel choices based on journey travel times, journey cost, environmental impact (estimated carbon footprint of the selected modes), and reliability (taking into account the impact of weather conditions, travel network maintenance, special events, and unplanned incidents).

The remainder of this chapter describes each of the major travel modes that comprise the Surface Transport Master Plan, including:

- Roadways
- High-speed regional train
- Metro network
- Tram network
- Bus service (including Bus Rapid Transit)
- Ferry and water taxi service

The chapter concludes with a look into exciting possibilities for future transport technology and an overview of key transport policies that will complement and maximise the transport system and proposed infrastructure recommendations.



The Surface Transport Master Plan approaches transport planning comprehensively, ensuring that the sum of the parts equals a highly coordinated and integrated multi-modal transport system. Separate modes of travel must function effectively in isolation, as well as in relation to connecting modes of transport.



A programme of highway improvements is an essential component of the Surface Transport Master Plan. Improved urban and rural highways will serve as critical connections between locations not served by public transport.

Roadways

The highway will continue to play a vital role in the future transport network, enabling the traveller to bridge the gap between locations not served by public transport travel modes.

Highway improvements

A programme of highway improvements, both urban and inter-urban, will continue to be rolled-out with an emphasis on safe, reliable, and informed road-based travel.

Advanced technology

Technology infrastructure will be deployed, providing the driver with route guidance and travel information (pre-trip, in-vehicle, and wayside), as well as safe speed

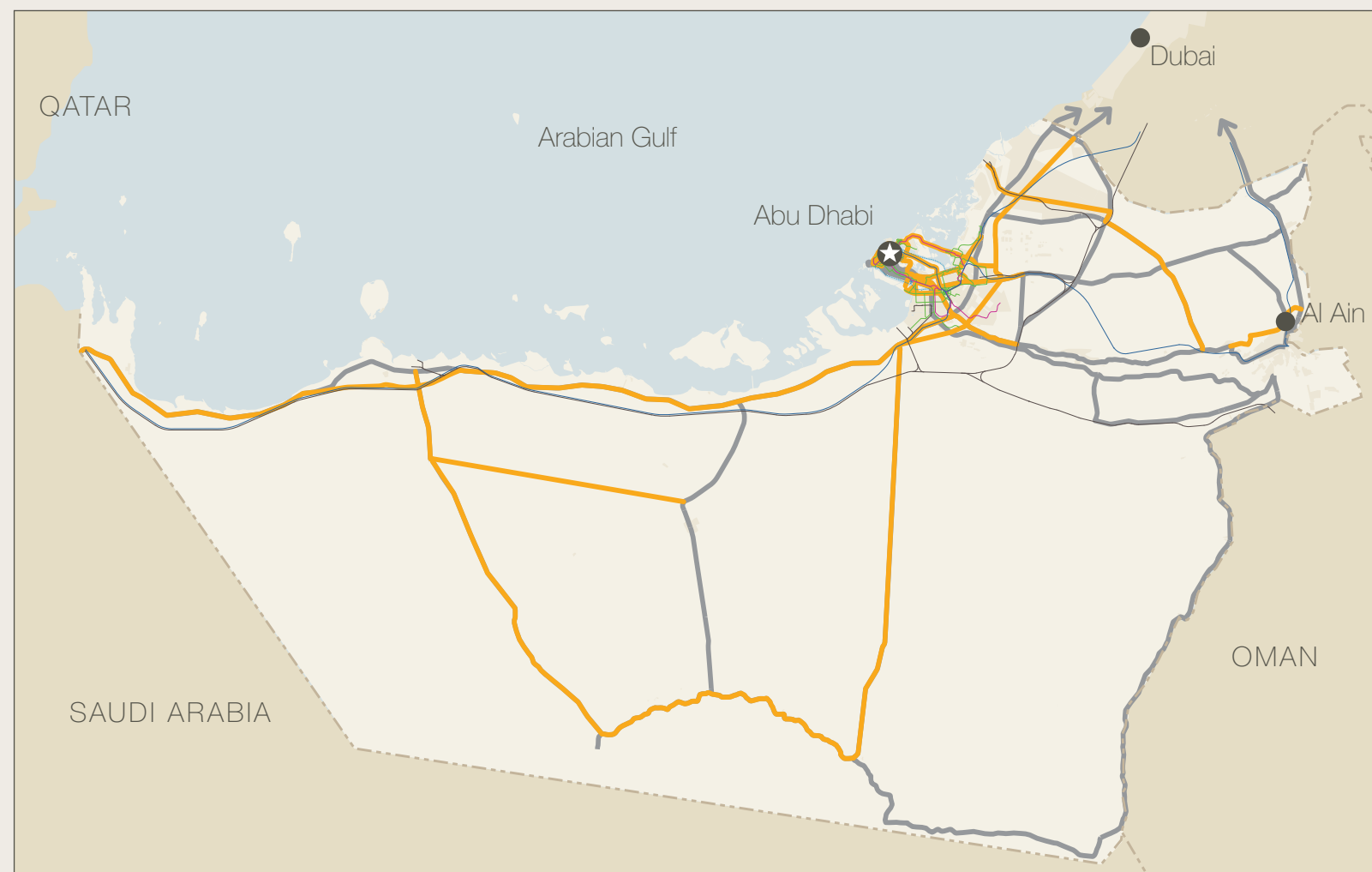
management that incorporates weather and road conditions (including the accommodation of both planned events and unplanned incidents).

Traffic solutions

In urban areas, advanced and fully coordinated traffic signal control solutions will be deployed across the network, complemented by a comprehensive car park guidance provision that maximises traffic flow and reduces the need for cars to circulate in search of a parking space. These systems will facilitate an appropriate balance among the demands of pedestrians, public transport vehicles, and private cars.

Enhanced connections

The highway will also feature amenities that enable travellers to engage more quickly and efficiently with the public transport network. The transfer from private car to public transport will be hassle-free with high-quality, comfortable, and efficient interchanges between the highway and public transport network, supported by advanced travel information. Park & ride sites will be established where drivers can leave their cars in a safe and secure environment while transitioning to the public transport network and continuing the journey.





The high-speed rail network will feature the world's fastest trains to provide high-quality intercity service that is competitive with air travel and far faster and more convenient than car travel. High-speed rail service will connect to interchange facilities that provide efficient links to metro, tram, bus, and taxi services.

High speed regional train

A high-speed regional rail network is planned as a critical component of enhancing regional accessibility to and from Abu Dhabi.

The high-speed rail network

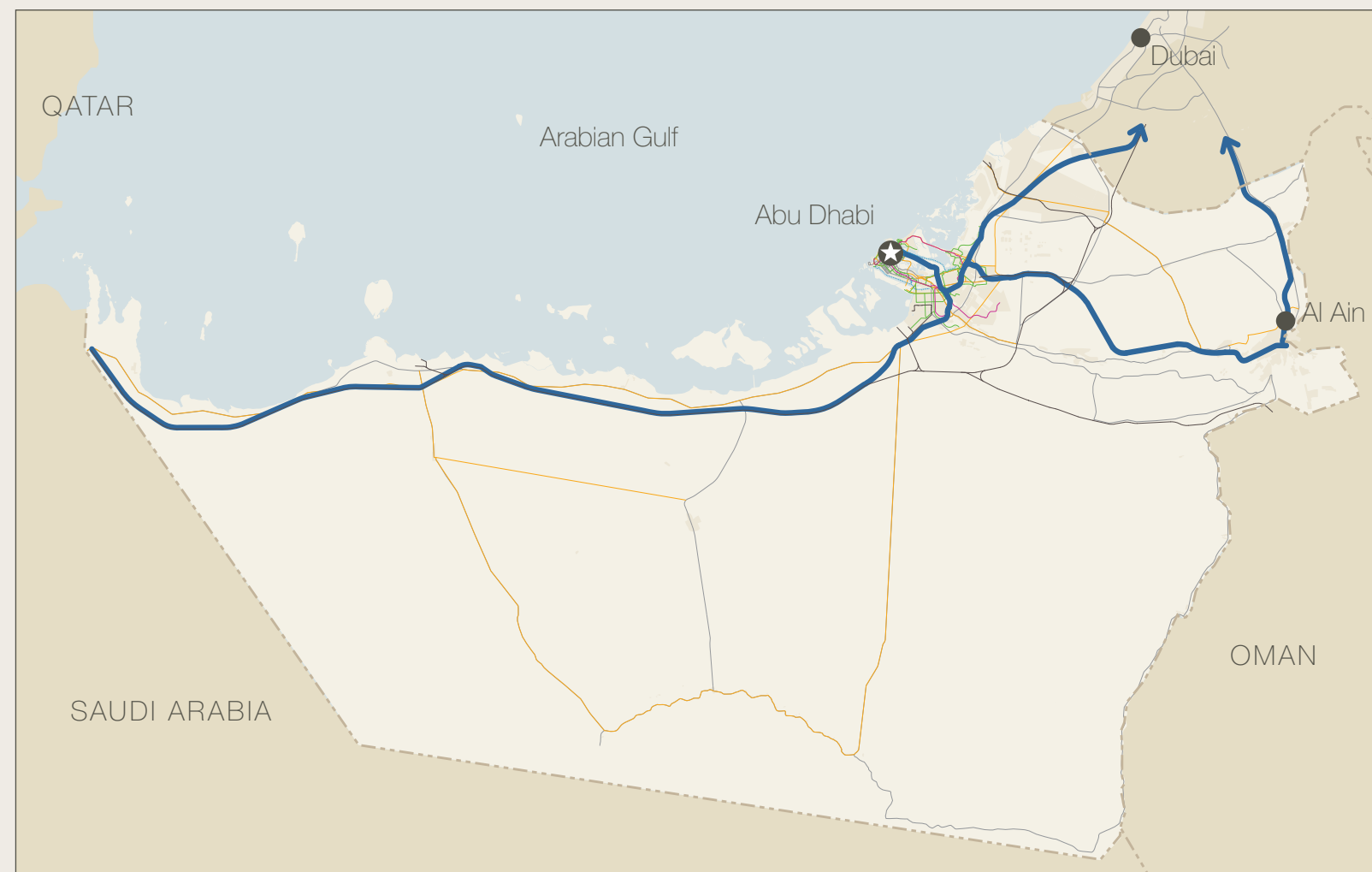
This high-speed rail network will connect metropolitan Abu Dhabi to the outlying areas of the Emirate, connect to Dubai and the northern Emirates, and enhance linkages with neighbouring countries. It will provide high-speed access connecting the Central Business District, Capital City, and Abu Dhabi International Airport. Potentially, Abu Dhabi, Al Ain, and Al Gharbia will be connected.

Abu Dhabi's grand gateway

A major terminus will be developed at the Abu Dhabi Central Business District as the gateway to Abu Dhabi and an icon for rail travel in the 21st century. A second iconic station will be provided at Capital City to serve the federal capital and seat of government. These stations, along with the Abu Dhabi International Airport station, will provide comprehensive interchange facilities with metro/tram/bus and taxi services, provisions for park & ride, and areas for drop-offs and pick-ups by private car.

World class trains and service

The high-speed rail network will feature the world's fastest trains, travelling up to 400 km/hr, to provide high quality intercity service that is competitive with air travel and far faster and more convenient than car travel. These long-distance services will be complemented by suburban commuter trains serving additional stations and catering to those outside Abu Dhabi who travel to work in the commercial and government heart of the Emirate.



Metro network

In order to provide competitive journey times for longer distance trips within the metropolitan area, an extensive and comprehensive metro train system is being planned.

The metro rail network

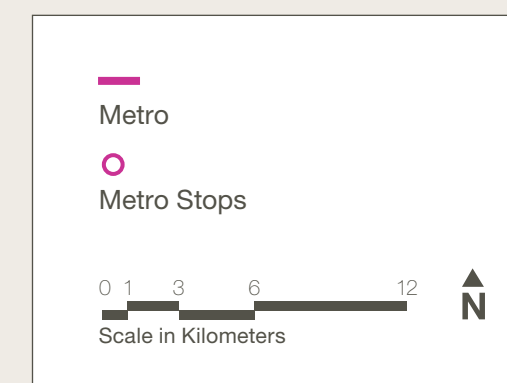
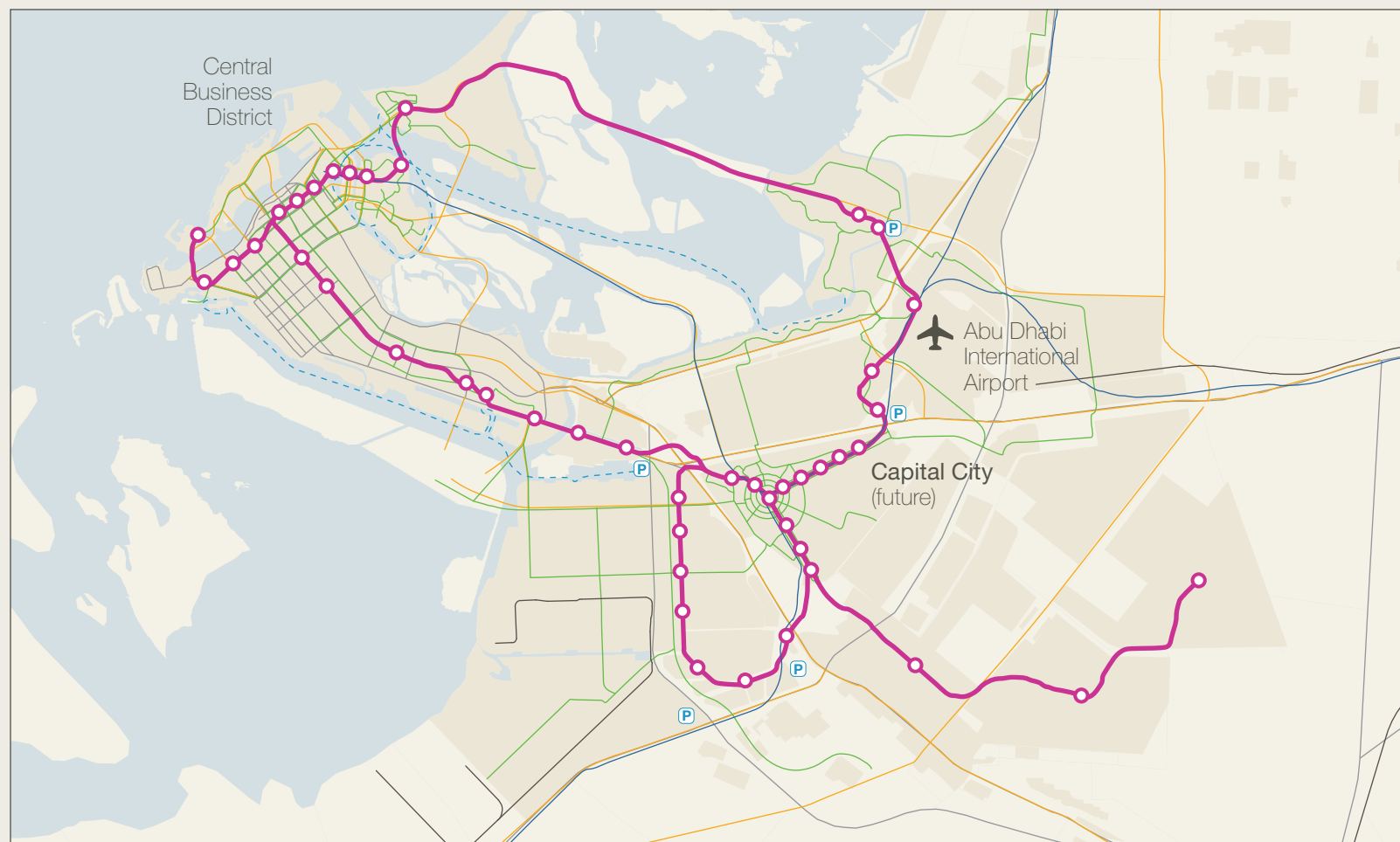
The metro network will consist of approximately 130 kilometres of two-way track and frequent stations throughout four sections:


1. A main loop will connect the Central Business District with Suwa, Reem, Saadiyat, Yas, Abu Dhabi International Airport, Masdar, Capital City, Emerald Gateway, and Zayed Sports City/ADNEC. The section of metro from Abu Dhabi International Airport via Capital City (along Airport Road and Hamdan Street to the Central Business District station) and on to Saadiyat via Suwa and Reem is planned for completion by 2015 to accommodate the current high travel demand.
2. A spur from Airport Road and/or Hamdan Street will serve the Ras Al Akhdar, Al Bateen and Marina Mall areas.
3. A second loop will serve Mohammed bin Zayed City and Capital City and include cross-platform interchanges with the main loop.
4. A spur will connect Shamkha to the Mohammed bin Zayed City loop and serve as a direct link to Capital City. Pending further investigation, it may

be feasible to extend services from Shamkha as far as Marina Mall or even the Central Business District.

Attractive journey times and services

In order to ensure competitive overall journey times, stations will be at least three to five kilometres apart, except in the densest areas along Hamdan Street and Capital City. A dedicated airport express metro service will run directly from the Central Business District station, featuring in-town check-in and special train cars for checked luggage.



A blurred high-speed train in a station platform. The train is white with a prominent red stripe and is moving from right to left. The platform has a yellow tactile strip along the edge. The background is a station interior with lights and structural elements.

The metro network will consist of approximately 130 kilometres of two-way tracks and frequent stations. Metro will provide competitive journey times for longer distances in the metropolitan area.



The high-density development areas will be served by a large-scale tram network that will provide a wide area of transport coverage. Tram stops will be generally located so that most people can reach a stop with no more than a 300 metre walk.



Tram network

A large-scale tram network is planned to support the local transport needs of high-density development areas. The first sections of tramway are estimated to be completed by 2013.

Wide-ranging coverage

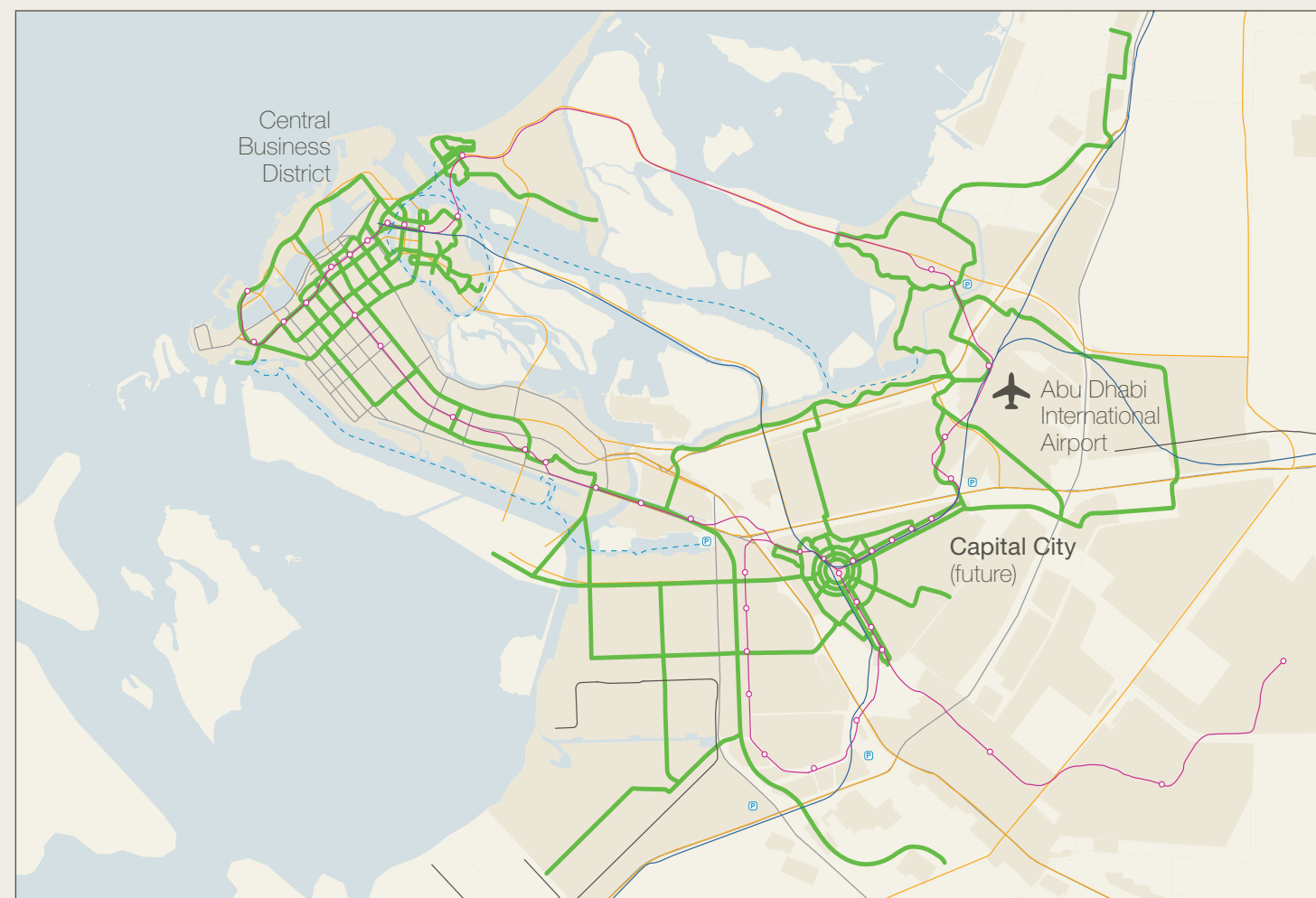
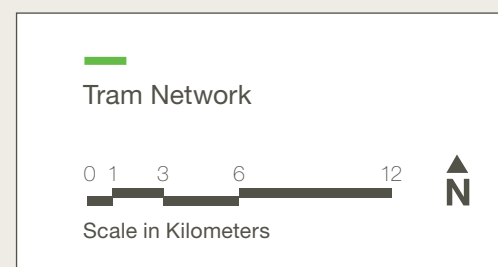
The full tram network—an estimated 340 kilometres of two-way track—will provide a wide area of transport coverage, especially

within the Central Business District (including Suwa, Reem and Saadiyat), Capital City and the area around Raha, Yas, and the airport.

Convenient and coordinated stops

Tram stops will be generally located every 500 metres so that most people can reach a stop with no more than a 300 metre walk. Well-integrated interchanges with the metro are provided so travellers can

seamlessly transfer to the metro for longer distance journeys. Similarly, at key tram stops, interchanges with bus and taxi will also be provided to permit easy transfers to the tram. All tram stops will be provided with waiting shelters, either air-conditioned or passively cooled, and will be fully integrated with the pedestrian network serving the local area.



Bus service

The bus system provides an ideal extension to the public transport network in locations where travel needs do not demand the capacity provided by trams or metro.

Dependable and easy to use

The future bus network planned for metropolitan Abu Dhabi will provide frequent and regular services enabling travellers to seamlessly reach those locations not served by other forms of public transport. In-vehicle and at-stop (wayside) real-time

travel information will be provided to ease travellers' logistical concerns.

An enjoyable experience

High-quality, air-conditioned vehicles will offer travellers a relaxed, safe, and comfortable environment. On-street bus stops will be equipped with passively cooled shelters providing a comfortable waiting environment with real-time bus service and inter-modal connection information provided by built-in displays.



High-quality, air-conditioned buses will offer travellers a relaxed, safe, and comfortable public transport experience.



Ferry and water taxi service

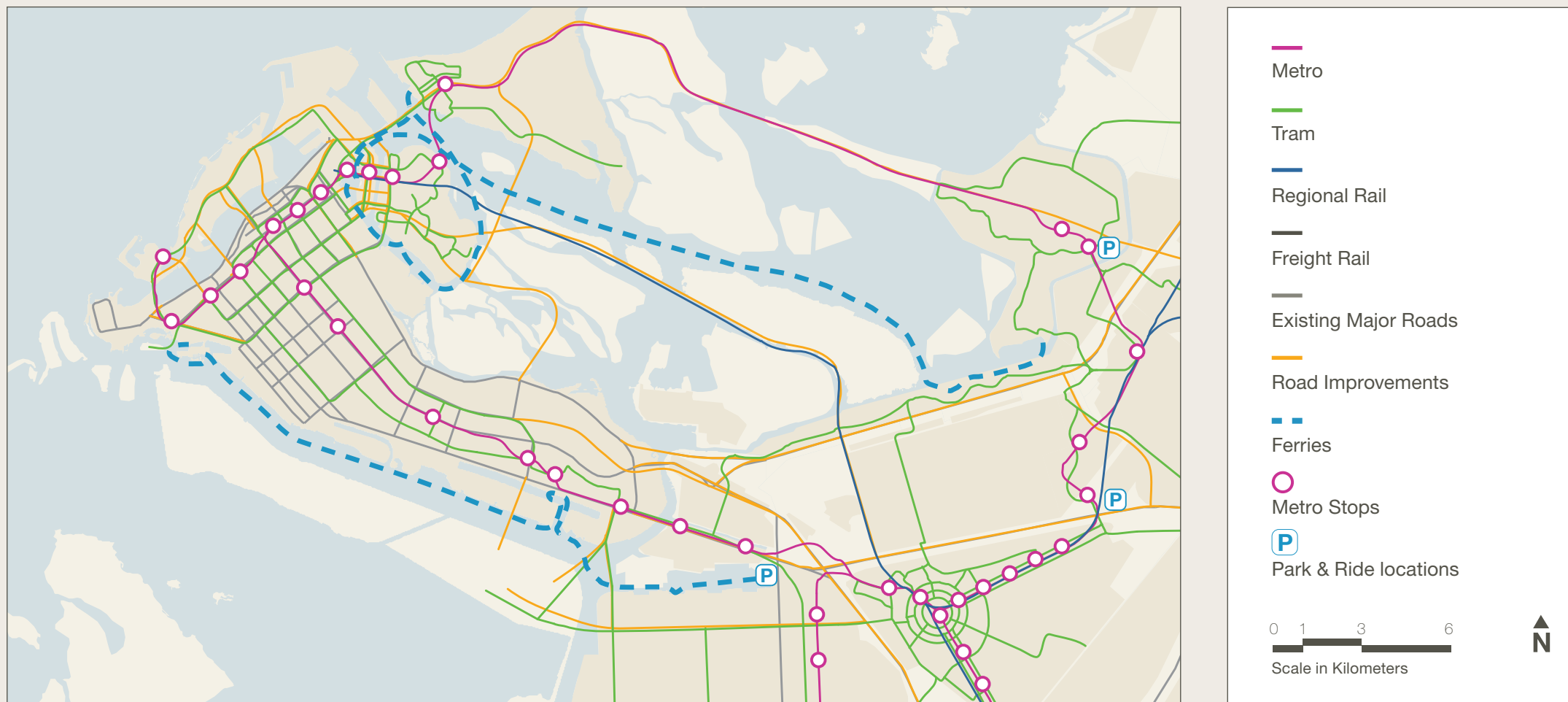
The planned land-based transport network will be supplemented by passenger ferries and water taxis serving both sides of Abu Dhabi Island as well as off-shore business, residential, leisure, and tourism destinations. These water-borne services will be fully integrated with the planned land-based transport network.

High-quality environments

Ferries and water taxis will provide a high-quality, comfortable environment complete with real-time travel information that accounts for sea and weather conditions. At key locations the embarkation and disembarkation jetties will link to land-based public transport services via interchange facilities that offer multi-modal real-time travel information.

Frequent, flexible service

Ferries will follow pre-planned routes with a published schedule, while water taxis will be licensed for area operation. This dual system will ensure the ultimate flexibility for the traveller requiring water-borne transport.





Ferry and water taxi service will supplement the land-based transport network components. Ferries will follow pre-planned routes with fixed schedules, while the taxis will be licensed for area operation.

Freight transport

Freight transport is an important support element to the Surface Transport Master Plan.

Multi-modal distribution centres

Key Regional Distribution Centres (RDC) will be developed in Khalid Port Industrial Zone, Musaffah/ICAD, Abu Dhabi International

Airport, Al Ain, and Mina Zayed. These distribution centres promote a gradual shift from road based haulage to alternative rail and shipping services on key routes.

Smaller delivery units will be encouraged in order to lower carbon emissions, improve noise and air quality, and support highway and urban parking management initiatives.

Minimised impacts

Freight movements can generate negative impacts related to noise, air quality, safety, and the natural environment. The freight management strategies outlined in the Surface Transport Master Plan will improve the efficiency of the freight system and minimise impacts on the environment.





The Surface Transport Master Plan recognises the important role of freight transport for the prosperity of Abu Dhabi. Key Regional Distribution Centres will be developed to gradually shift freight movement from roadways.



Future transport technology

New transport technologies will inevitably evolve over the 20 year implementation period for the Surface Transport Master Plan. Rather than remaining on a static course of action, the plan is designed to evolve with these technological advancements. Transport innovations will be fully considered to ensure that the citizens of Abu Dhabi benefit from the most effective and appropriate new technologies that advance the broad goals of the planned transport network.

One current innovation that is being monitored is Abu Dhabi's Masdar initiative, a project that provides opportunities to explore new ways of thinking about sustainable travel and transport, particularly in the urban environment. This initiative is exploring and implementing the Personal Rapid Transit (PRT) concept. PRT features small, 2- to 4-person pod-like vehicles that run on powered guideways. PRT is now being considered as a cost-effective, energy-efficient method of future urban transport.





Masdar City will deploy a fleet of solar-powered programmable vehicles that keep streets congestion-free. This Personal Rapid Transit system will run beneath the city and free the primary ground-plane to be a pedestrian-only environment.

Supporting policies

Roadways and traffic movement

The Surface Transport Master Plan introduces traffic management policies that make more efficient use of the existing highway network. For example, it introduces advanced real-time driver information systems to inform drivers of up-to-date traffic conditions and recommend alternatives to congested routes. Measures will be adopted to suit the different traffic demand levels of the road network hierarchy, with stricter measures to limit traffic on residential streets and various measures to provide high capacity for moving travellers on major traffic routes.

The Master Plan also introduces several road safety policies. General driver education will be improved, and children will be educated about how to cross the road safely. Road safety audits and improved design and operation of the highway network will lead to increased safety benefits. Enhanced enforcement of traffic regulations will help resolve safety concerns related to driving behaviour, parking, speeding, and adherence to limits on driving hours and breaks for commercial drivers.



Public transport

The integrated public transport system will be supported by a number of policies designed to create a seamless travel experience. Innovative fare systems will enable users to buy one ticket that they can use on multiple modes of transport. For example, an integrated smart card ticket will allow for electronic ticketing throughout the public transport network. Well-designed interchanges will incorporate excellent pedestrian access from adjacent developments, taxi stands, and waiting shelters that are either shaded and passively cooled (tram and bus stops), or fully air-conditioned (high-speed rail and metro stations). A real-time multi-modal travel information system will keep users informed of current and anticipated travel conditions so that they can adjust their travel behaviour accordingly.

Many policies in the Surface Transport Master Plan are intended to frame public transport as the preferred travel choice, rather than the private car.

- Parking management and parking charges within the Central Business District and Capital City are designed to better match the supply and demand of parking spaces at various times of day. For example, parking during the peak morning commute hour will be much more costly and will create an incentive for users to choose an alternative mode of transport.
- Park & ride facilities at key public transport interchanges outside of the central city will help travellers park easily and continue their journey via rail, metro, bus, or ferry.

- Policies to support the removal of fuel subsidies or the introduction of fuel taxes will help reduce the perceived economic advantage of private car use. The resulting funding stream can be used to support the provision of high-quality public transport services.
- Congestion pricing will be instituted to charge cars for driving on to Abu Dhabi Island. This charge will inspire many users to select public transport, and will ensure relatively uncongested travel conditions for those who are willing to pay.

The integrated transport network described in the Surface Transport Master Plan will result in a newfound ease of travelling, improving day-to-day life by shortening commute times, simplifying errands, and connecting friends, family, and business associates located throughout the city and the region.

CHAPTER CONTENTS	71	Mobility elements	79	Provisions for pedestrians
	73	Service to all destinations	81	Transit-oriented developments
	74	Transport for all	82	Safety improvements
	76	Public transport as an attractive choice		



4. The Impact

Meeting People's Mobility Needs



One of the greatest benefits of the Surface Transport Master Plan will be the expansion of mobility options for all residents of and visitors to Abu Dhabi.

Mobility elements

The integrated transport network described in the Surface Transport Master Plan will result in a newfound ease of travelling, improving day-to-day life by shortening commute times, simplifying errands, and connecting friends, family, and business associates located throughout the city and the region. This chapter highlights several areas in which the Master Plan will enhance everyday personal mobility.

- Service to all destinations
- Transport for all
- Public transport as an attractive choice
- Provisions for pedestrians
- Transit-oriented developments
- Safety improvements





The expansive transport system will provide convenient service throughout the metropolitan area and offer connections to popular regional destinations.

Service to all destinations

The expansive system envisioned in the Surface Transport Master Plan aspires to optimise accessibility to destinations throughout the metropolitan area and beyond. As planned, the transport system will service 100 percent of the metropolitan area with access to a public transport facility within a 5 minute walk (about 300 metres). In practice, this means that any resident can leave home and reach a bus stop in a matter of moments. Many residents will also

be walking distance from rail-based systems including tram, metro, and commuter rail.

The Surface Transport Master Plan is intended to create a strong link between the geographic distribution of transport services and population density. Areas with the highest population densities and highest travel demand will be serviced by high-speed, high-capacity modes with limited stops (such as high-speed rail and metro). Areas with lower population densities

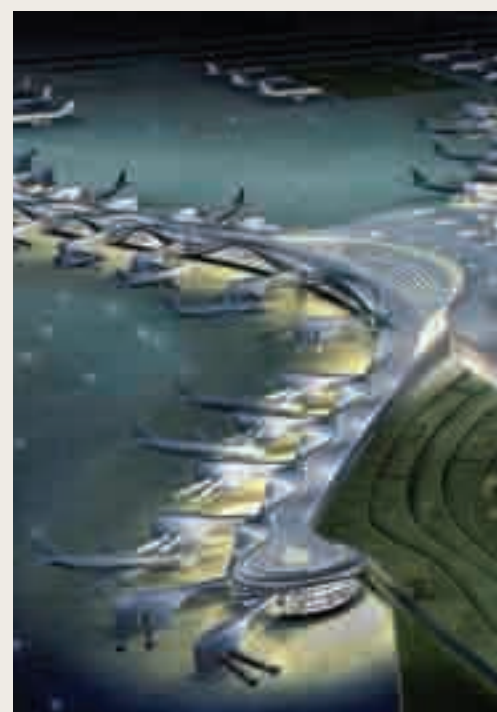
and lower travel demand will be serviced by lower-capacity modes (such as buses) that have a greater frequency of stops and provide easy connections to the rail systems. The graphic on this page shows the hierarchy of modes in terms of speed, capacity, and frequency of stops. The map on the facing page indicates how the proposed network configuration anticipates high- and low-density areas.

Where we play



Where we work

Where we arrive



Where we worship

Where we live



Transport for all

Plan Abu Dhabi 2030 makes clear reference to investing in infrastructure that serves all people in the Emirate. For example, Plan 2030 states that there should be a range of housing and services targeting all family sizes and income levels. From a transport perspective, this means that public transport systems should be accessible and attractive to a wide variety of people, including high, middle, and low income earners, business people and tourists, women and children, and the elderly and disabled. Economic accessibility will be assured through a

pricing structure that is affordable for all, whether this involves a low-priced flat fare structure or a multi-tiered structure.

Special services will be designed to accommodate the transport needs of various groups of people. For high earning commuters who live in the suburbs, this may mean instituting luxury commuter rail or direct bus service to the Central Business District. For workers living in labour camps this will mean ensuring that, like other residents, they too have access to a nearby bus stop. For women and children

this may mean receiving priority access to certain seats. And for the elderly and disabled this may mean equipping transport vehicles with low floors, wheelchair lifts, and other enhancements to promote physical accessibility.

Under the philosophy of "transport for all", public transport will never be seen as the mode of last resort. Instead, the Surface Transport Master Plan presents a system where public transport becomes a preferred, accessible means of travel that meets the needs of all groups.



The Surface Transport Master Plan will produce a system that is economically, culturally, and physically accessible, and attractive to all socio-economic groups.



Al Wahda Mall

14:22

Next tram arrives in 0 mins

The integrated public transport system will feature a uniform brand and symbol. When users see the symbol, they will know they have reached an entry point of access to the entire system.

Public transport as an attractive choice

The Surface Transport Master Plan incorporates numerous approaches to making the public transport system as user-friendly and easy to navigate as possible. All public transport modes are closely integrated and will feature a uniform brand and symbol. When users see the symbol, they will know they have reached an entry point of access to the entire system.

The integrated transport system will feature comfortable, well-designed interchanges that allow users to transfer seamlessly from one mode to another. Electronic smart card ticketing will allow

users to conveniently pay fares that cover all of their transport needs for a given period of time. Displays featuring real-time connection information will provide users with up-to-the-minute travel details about when the next train, tram, bus, or ferry will arrive.

Experience in other communities indicates that as public transport systems are introduced, targeted marketing efforts can contribute to a significant increase in ridership. People who have never used public transport before may require basic instruction in order to feel comfortable buying a ticket, reading a route map,

or transferring between modes. As new transport lines are opened, media campaigns can help introduce residents to the new system. Television and radio ads can encourage use, and leaflets and timetables can be distributed to residents and businesses along the new routes. Special celebrations and promotions can even be planned. For example, offering free rides for one week can generate public enthusiasm, media exposure, and user familiarity with the new system.



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

Plan Abu Dhabi 2030





Provisions for pedestrians

All trips begin and end with a walk. Creating a safe and pleasant walking experience throughout Abu Dhabi—from residential neighbourhoods to dense urban centres—is critical to encouraging the use of public transport and reducing the number of car trips. The vision for the future, as described in both Plan Abu Dhabi 2030 and the Surface Transport Master Plan, emphasises the importance of creating an attractive and comfortable pedestrian realm.

Improved walking routes are essential in locations where there are high volumes of pedestrian movement or where there are links between transport interchanges

and key facilities. Pedestrian amenities must create a perception of safety and security, so that those who walk feel protected from nearby traffic. A visually attractive environment will also encourage walking by making it interesting to move from destination to destination. Taking into consideration the summer climate of Abu Dhabi, it will be necessary to offer protection from the heat and create a reasonable comfort level along walking routes. Amenities such as trees, screens, and covered arcades can offer pedestrians shading and places for rest.

Support for cycling

For much of the year the temperatures in Abu Dhabi are conducive to cycling as a reasonable mode of transport. The Surface Transport Master Plan calls for a network of safe, clearly marked bicycle routes to connect existing and new developments. Short-term cycle hire will be available near major transport interchanges and areas of concentrated activity such as business and shopping centres. Attractive and convenient bicycle parking and storage facilities will also be provided to encourage cycling as an alternative to motorised transport.

Transit-oriented developments

Transport investment and land use development patterns are very closely related. The Master Plan makes the case for maximising the potential to achieve many transport, development, economic, and environmental objectives through coordinated land use and transport planning.

Transit-oriented development (also known as TOD) is a primary approach to creating quality places that offer a variety of transport choices. TODs commonly feature a broad range of uses—including residential,

commercial, and community uses—at relatively high densities and with maximum access to public transport. TODs typically centre on a public transport interchange, such as a station for regional rail, metro, tram, and/or buses. Densities tend to be highest in the centre, and gradually decrease when moving further away from the centre. By offering a convenient mix of uses and an appealing, high-quality walking environment, TODs provide a dynamic place for people to live, work, shop, and play in an environment that does not require car trips for the basic activities of daily life.

As a development configuration, the TOD offers many benefits. TODs provide high-quality places to live and work. They increase transit ridership and reduce reliance on cars, and therefore have limited impacts on traffic congestion. They allow for healthier lifestyles with more walking, less stress (due to the reduced effort required to complete daily errands), and less pollution (due to the reduced reliance on car trips). Since TODs are compact and use less land, they also offer lower development costs as compared to more sprawling development patterns.

Transit-oriented developments commonly feature a broad range of uses—including residential, commercial, and community uses—at relatively high densities and with maximum access to public transport.



Safety improvements

The Master Plan recommends a multi-pronged approach to improving transport safety. The Department of Transport will institute vehicle safety checks, establish maximum loads for commercial vehicles, and introduce regulations that limit the number of hours that an individual can drive a commercial vehicle without resting. Traffic laws will be rigorously enforced, driver training will be encouraged, and certain restrictions (such as a two-year probationary period) will be placed on new drivers. Road safety audits will be conducted to mitigate existing safety hazards.

Initiatives will be pursued to reduce traffic speeds, particularly near schools and in higher density areas with significant pedestrian activity. Pedestrian-controlled traffic signals will allow people to cross safely at intersections and certain mid-block crossings. 'Pedestrian only' phases could be instituted at the busiest intersections, such as those near major transport interchanges.

In order to attract more users to public transport, travellers must have confidence that their journeys will be safe and secure. The Surface Transport Master Plan

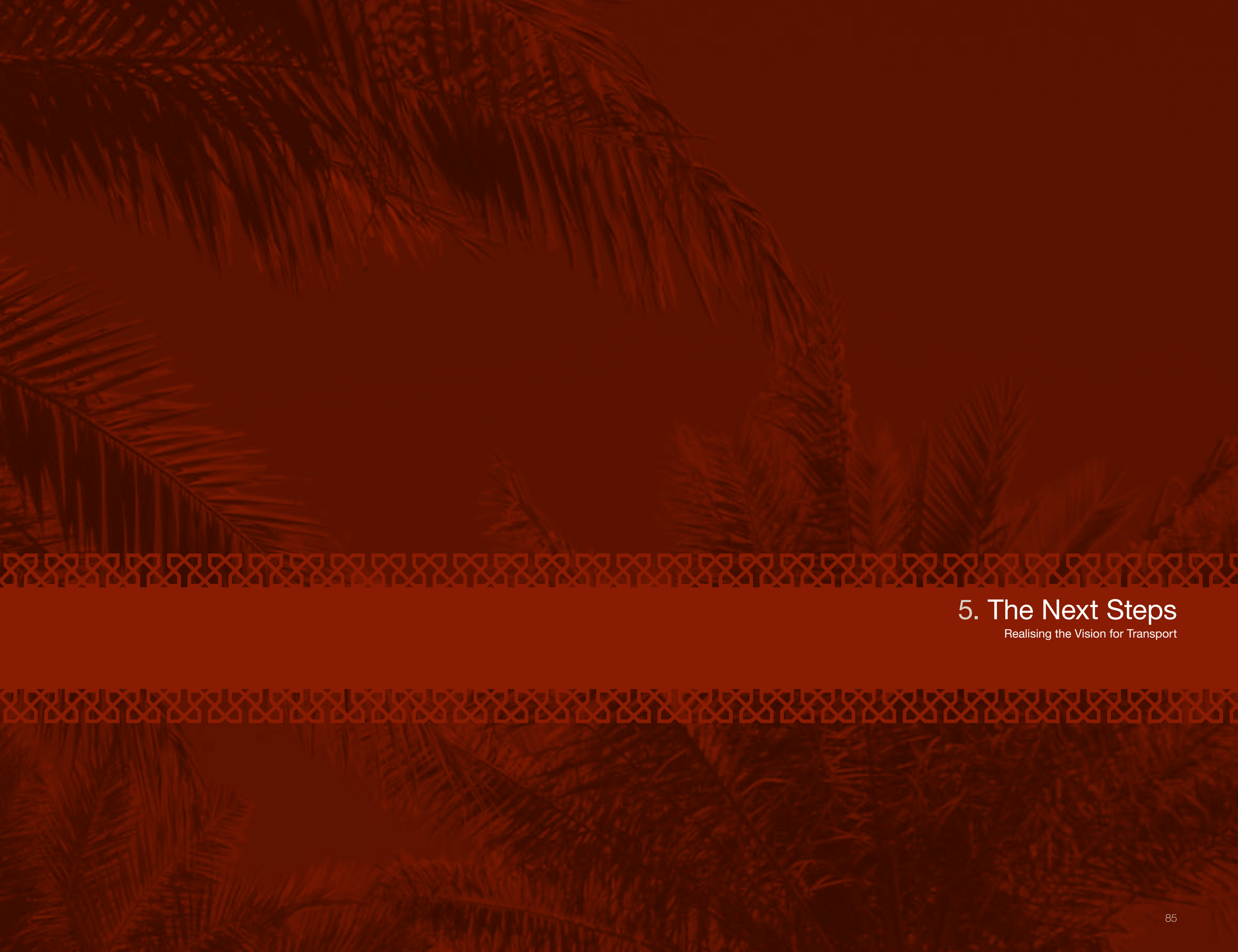
recommends a variety of safety measures. Public transport stations will be well-lit and well-designed to ensure that waiting areas are not secluded. Closed circuit television cameras placed at strategic points will facilitate safety monitoring from a central control system. Public transport communication systems and public transport employees will be able to convey simple, clear directions in case of emergency.

Using a multi-pronged approach, the Department of Transport will make roads, pavements, and public transport facilities safe for all users.



The Surface Transport Master Plan calls for an institutional framework that can mobilise and deliver a construction programme of unprecedented scope, while retaining flexibility to react to a changing environment.

CHAPTER	87	Implementation challenges
CONTENTS	88	Institutional framework
	89	Phasing



5. The Next Steps

Realising the Vision for Transport



The effective flow of information will allow for speedy decision-making and give the DoT flexibility to adapt the transport programme in response to external changes.



Implementation challenges

As discussed in earlier chapters, Abu Dhabi's Surface Transport Master Plan represents the most ambitious transport programme in world history. Development of the new transport system over the next 20 years will be an unrivalled challenge for the Emirate. Implementation must proceed in a manner that addresses a number of challenges, including:

- Creating an institutional framework that can mobilise and deliver a construction programme of unprecedented scope, while retaining flexibility to react to a changing environment

- Ensuring that the transport system's capacity expands in step with new growth and development
- Convincing residents to change behaviour patterns and choose public transport for many of their daily trips

This chapter provides insight into the institutional resources and phasing approach that will facilitate implementation of the Surface Transport Master Plan and help Abu Dhabi realise its vision for the future of transport.



Institutional framework

There is no question that implementation of the Surface Transport Master Plan outlined in this book will require significant institutional resources and management structure. While the Department of Transport will be the sole authority for implementing the plan, it will consider creating a number of special agencies to focus on particular aspects of the transport system.

The private sector will be closely engaged in developing the transport

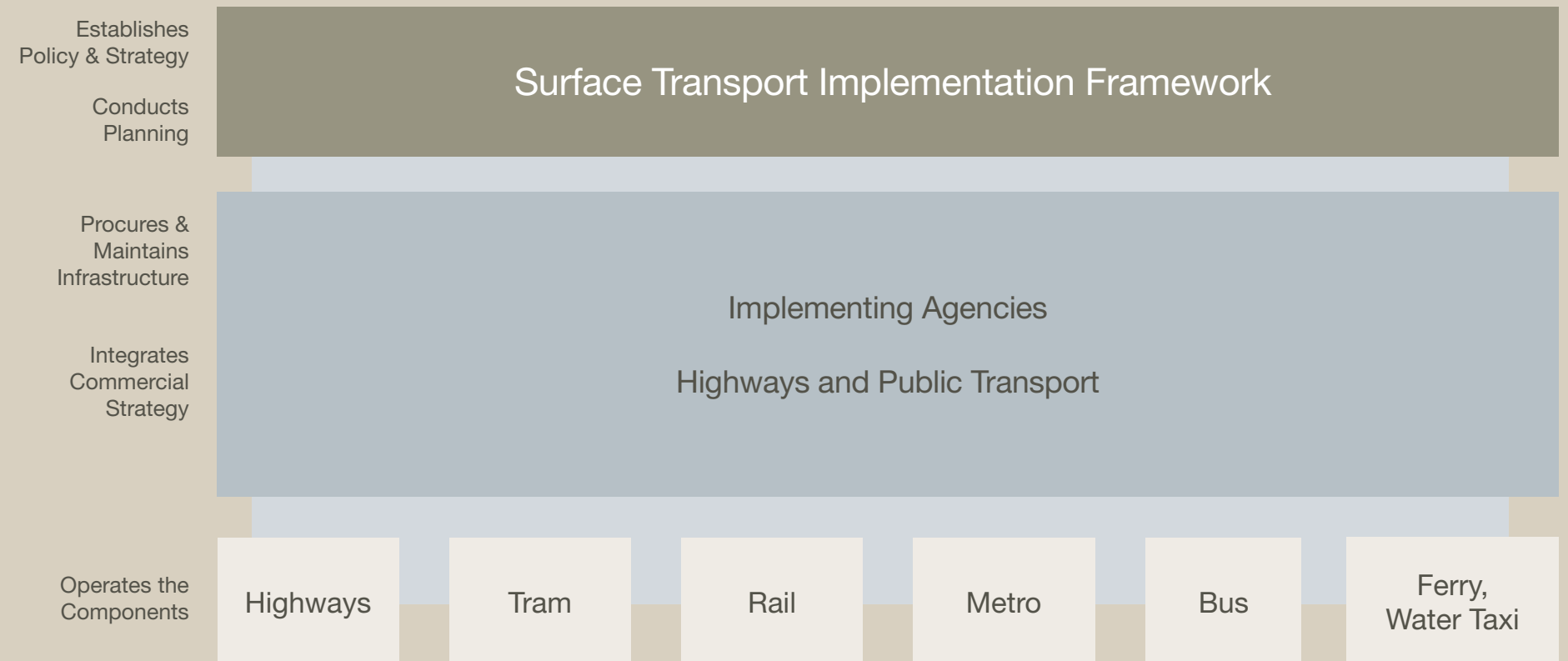
system. Each special agency will develop partnerships with a variety of locally- and internationally-based firms to tap private sector capacity and expertise. The best contractors, manufacturers, and operators will be enlisted to help Abu Dhabi design, build, and operate the major components of its Surface Transport Master Plan.

To manage this ambitious undertaking, the Department of Transport will seek to strengthen its human resources. It will

pursue recruitment and training strategies that attract strong leadership and help employees expand their skills. The Department of Transport and its associated special agencies will also establish processes and systems to support the effective flow of information and allow for speedy decision-making. This approach will give the Department of Transport flexibility to adapt the transport programme in response to external changes.

Finally, the Department of Transport will work with the Abu Dhabi Urban Planning Council and the municipalities to ensure that future land use and transport developments are closely linked. By having greater influence over the pace, location, and land uses found in future developments, the Department of Transport can ensure that the new transport system effectively meets the needs of Abu Dhabi's rapidly growing population.

This diagram illustrates the conceptual institutional framework for implementing the Surface Transport Master Plan.



Phasing

A project of the magnitude envisioned by the Surface Transport Master Plan will take considerable time to be realised. Implementation of the Master Plan will be strategically phased. Certain components, such as bus service, are being implemented almost immediately. More capital-intensive projects like metro, tram, and regional rail will be phased to enhance mobility around existing population centres first, and then gradually expand to reach future growth areas. In conjunction with the Surface Transport Master Plan, the Department of Transport is developing a phasing approach

in five-year increments that offers a guiding schedule for transport investments, while allowing for flexibility to respond to external factors.

The schedule will be comprehensive and will include the following components: roadways; high speed regional train; metro network; tram network; bus service (including Bus Rapid Transit); ferry and water taxi service; and freight transport. The Department of Transport will continually prepare, implement, and refine policies to meet the overall implementation schedule of the Surface Transport Master Plan.





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The Surface Transport Master Plan higher committee

H.E. Abdulla Rashed Al Otaiba
Chairman, Department of Transport

H.E. Falah Mohammed Al Ahbabi
General Manager, Urban Planning Council

H.E. Ahmad M. Shareef
Undersecretary, Department of Municipal Affairs

H.E. Khalifa Mohamed Al Mazrouie
Director General, Abu Dhabi Municipality

H.E. Awad Al Darmaky
Director General, Al Ain Municipality

H.E. Hmode Al Mansouri
Director General, Al Gharbia Municipality

Mr. Khalid Mohamed Hashim
*Director, Land Transport
Department of Transport*

Key individuals on the Surface Transport Master Plan technical committee

Department of Transport

H.E. Mohamed Hareb Al Yousef
Khalid Mohammed Hashim
Faisal Al Suwaidi
Bader Al Qamzi
Abdelgader El Shabani
Ahmad Al-Akhras
John Lee
Saleh Mumayiz
Jumana Nabti
Khaled Shammout
Abdulla Al Mehairbi
Khaled El Qutob
Aizaz Ahmed
Richard Rawnsley

Urban Planning Council

Jamal Al Hosani
Alan Perkins
Bill Lashbrook
Ibrahim Al Hmoudi
Peter Wong

Abu Dhabi Municipality

Swedan Al Kitby
Ali Al Darmaky

Al Gharbia (Western Region) Municipality

Omar Abdulaziz Almubarak
Mohamed Salim Bamedhaf

Other key individuals

Department of Transport

Amal Al Nuaimi
Mahmoud Ahmed El Asheri
Sara Al Ghonaim

Mott MacDonald

Andrew Clarke
Colin Sherwood
Dennis de Cala
Anthony Feigl
Rob Hardy
Martin Shenfield
Chris Swiderski
Mike Barron
Stephen Luke
Jenny Smith

Steer Davies Gleave

Pilo Willumsen
Hugh Ashton
Martin Tillman
Simon Nielsen



International experts

Salem Al Shafiei
*Managing Director, Dubai Real Estate
 Institute, Dubai, UAE*

Michael J. Blaylock
*Jacksonville Transportation Authority,
 Jacksonville, Florida, USA*

Choi Chik Cheong
Land Transport Authority, Singapore

Hartmut Keller
*Munich University of Technology, Munich,
 Germany*

Cheryl L. King
*Transit Planning Board, Atlanta, Georgia,
 USA*

Douglas B. Moore
*Central Ohio Transit Authority, Columbus,
 Ohio, USA*

Nick Newton
MVA Consultancy, London, United Kingdom

Phaik Hwa Saw
*President & CEO, SMRT Corporation Ltd,
 Singapore*

Derek Scrafton
*University of South Australia Adelaide, SA,
 Australia*

Wang Kai Yeng
Urban Redevelopment Authority, Singapore

Government departments and other organisations

Abu Dhabi Airports Company
 Abu Dhabi Future Energy Company — Masdar
 Abu Dhabi Municipality
 Abu Dhabi Port Company
 Al Ain Municipality
 Al Gharbia Municipality
 Aldar Properties PJSC
 Economic Development Department
 Environment Agency of Abu Dhabi
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