

# Al Rayyan and Al Shahhaniya Municipality Vision and Development Strategy



## Volume 1 of the Al Rayyan Municipality Spatial Development Plan



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***Al Rayyan Municipality  
Vision and  
Development Strategy***

## 1.0 General Requirements and Procedures

### 1.1 Al Rayyan Municipality Spatial Development Plan (MSDP)

The Al Rayyan MSDP seeks to achieve the orderly planning and development of land and infrastructure across Al Rayyan municipality in response to expected growth.

It sets out the form of future development within the municipality over the next 20 years and is made up of the following parts:

1. **Strategic Context** - The Vision and Development Strategy for the Municipality.
2. **Zones and Land Use Regulations** – land uses and development standards applying in each zone.
3. **Maps and Figures** - Zone maps showing the future land uses across the municipality.

In addition, Action Area Plans (AAP's) will be prepared from time to time and progressively added to the MSPD for specific locations within the municipality, in order to provide a more detailed level of planning.

The Al Rayyan MSDP will be reviewed every 5 years to ensure it responds appropriately to community changes at a local and National level.

### 1.2 Purpose and Effect of the MSDP

The purpose of the Al Rayyan MSDP is to provide the land use planning framework and regulations for the whole area of the Al Rayyan Municipality.

It sets out the strategic context for growth and change to 2032. The detailed land use zoning plans and the zoning regulations set out the rules against which development will be assessed.

Developments are also required to separately address the requirements of the Building Regulations.

The Al Rayyan MSDP has full legal force and effect in the assessment, decision-making and enforcement of land use development applications, and the manner in which land use development is undertaken within the municipality.

### 1.3 Management of Development

Al Rayyan Municipality has been divided into a series of Land Use Zones identifying the particular land which uses may be permitted in the zone. Development within each zone is controlled by way of a Zone Code containing:

- a Land Use Table showing the range of uses appropriate within the zone; and
- Zone Regulations which specify the development standards which apply within the zone.

Development within each zone may be classified as being either:

- Permitted - does not require a development application but must comply with the development standards in the relevant Zone Code;
- Conditional - requires a development application which will be assessed against the MSDP and the development standards in the relevant Zone Code, and which may be subject to additional conditions of approval; or
- Prohibited – uses considered inappropriate in the zone and where an application for development approval cannot be made.

Further details are contained in the Zone and Land Use Regulations in this MSDP.

- the Purposes and Objectives of the Zone;

## 1.4 QNDF Context

The Qatar National Development Framework (QNDF) is the overarching physical and spatial planning policy and strategy context for the state of Qatar to 2032.

It establishes a series of guiding principles and objectives that have been based on the Qatar National Vision 2030 (QNV2030). It also contains Structure Plans developed for each Municipality which provide a strategic planning context for each MSDP.

Based on the QNV 2030's Four Pillars of Sustainability, the following guiding principles have been established to inform the QNDF:

- **Quality of Life for All** – Improving the living, working, playing and learning environment and offering choice, affordability and access for all people.
- **Economic Growth and Diversification** – Fostering competitiveness, encouraging business investment and stimulating innovation.
- **Connectivity of People and Places** – Providing integration, mobility, accessibility and connectivity to improve social, cultural and economic interaction of people, institutions and businesses.

- **Ownership in Planning and Implementation** – Encouraging coordination and commitment among stakeholders in the QNDF's planning and implementation.
- **Environmental Values** – Supporting the preservation and rehabilitation of the natural and built environments.
- **Identity** - Acknowledging and respecting the Qatar national identity.

The translation of the National Vision and the sustainable guiding principles into a spatial and physical development dimension gave rise to a vision for the future urban development of the country which has guided the preparation of the QNDF and subsequent Municipality Spatial Development Plans (MSDPs).

The QNDF vision is to:

***“Create a role model for Sustainable Urban Living and Liveable Towns and Cities in the 21st Century.”***

The Al Rayyan MSDP has been prepared in accordance with the QNDF as a regulatory framework for managing development in a way that advances the purpose of the QNDF, the National Development Strategy and the Qatar QNV2030.



## 2.0 Al Rayyan Municipality

### 2.1 Municipality Introduction

Al Rayyan Municipality is geographically the largest of the seven municipalities in Qatar and covers approximately 50% of the country (5,792km<sup>2</sup>). It comprises two main components, Al Rayyan City which is the western part of the metropolitan Doha urban area, and rural Al Rayyan

The majority of urban development and approximately 85% of the population of the Municipality is concentrated within Al Rayyan City, as the major urban overspill area from Doha Municipality. The urban form outside Metropolitan Doha is mainly fragmented with dispersed low density residential development. Community facilities and Government services are scattered throughout the Municipality, which generates the need for additional car trips in the absence of suitable public transport services.

A number of mega projects (including Education City, Aspire Zone, and Al Waab City) are either under construction or have been recently completed.

Existing low density residential areas and Qatari neighbourhoods characterize much of the urban form of the Municipality. In 2008, 47% of the total Qatari population lived in Al Rayyan Municipality. Extensive Qatari housing areas planned or under construction, have led to expansion of the built-up area into previously open desert areas. The area has also been more recently

characterized by the construction of numerous villa compounds mainly occupied by expatriate residents.

Achieving the timely delivery of necessary urban infrastructure and related community facilities to support these new residential areas is a common problem. A more sustainable approach to land delivery, urban design, housing choice and community development is envisaged under the MSDP.

The rural part of Al Rayyan Municipality occupies approximately half of the rural desert land on the western side and central areas of Qatar and contains many small rural settlements, villages, and farms. Dukhan Industrial City and Concession Area which occupies 13% of Al Rayyan Municipality is the major urban settlement on the west coast. Dukhan City and the Qatar Petroleum's Concession Area on the western coastline of the country are strategically positioned to deliver on-shore and off-shore oil and gas production.



### 2.2 Population and Employment Growth Expectations – 2010 – 2032

Al Rayyan Municipality will experience a 206,000 increase in population between 2010 and 2017, and an additional 43,600 between 2017 and 2032. The total increase between 2010 and 2032 is expected to be mostly located in urban areas within the metropolitan area.

The rural part of Al Rayyan municipality will see a steady proportionate increase in population between 2008 and 2017 due to additional temporary worker accommodation compounds associated with major construction projects. However, this will be followed by a falloff in numbers between 2017 and 2032 as the number of workers in rural areas declines in the longer term as major urban development and urban renewal projects are completed and the demographic make-up of the city changes.

**Table 1 Al Rayyan Municipality: Population (2010-2032)**

	Population
2010	465,000
2017	668,766
2032	714,645

Employment numbers within the municipality in 2010 were approximately 176,500 working in over 8,700 workplace establishments. The largest proportion is made up of around 74,000 construction workers (42%).

Although a significant proportion of employed Al Rayyan residents presently work outside the municipality, its location within metropolitan Doha and the presence of a number of major institutional facilities in the municipality still means that up to 100,000 employees (not including construction related jobs) are working in various economic sectors located within the municipality. These include:

- Rural industries and farming (6,700)
- manufacturing (15,500)

- transportation and storage (7,900)
- accommodation and food services (5,800)
- financial, real estate, and professionals services (6,100)
- administration (7,200)
- education (7,800)
- health and social services, arts, entertainment and recreation and other services (4,500).

This reasonably well-diversified employment structure is expected to continue into the future across all employment sectors (other than construction), as the population of the municipality grows, the hierarchy of mixed-use centres is implemented, and the economy of the country diversifies. Many of these future jobs will be located within Centres and the future presence of the Green and Gold Metro Lines will assist in achieving this expected residential and employment growth within Al Rayyan.

### **2.3 Key Planning Issues**

Some of the key spatial land use issues affecting the Al Rayyan Municipality include:

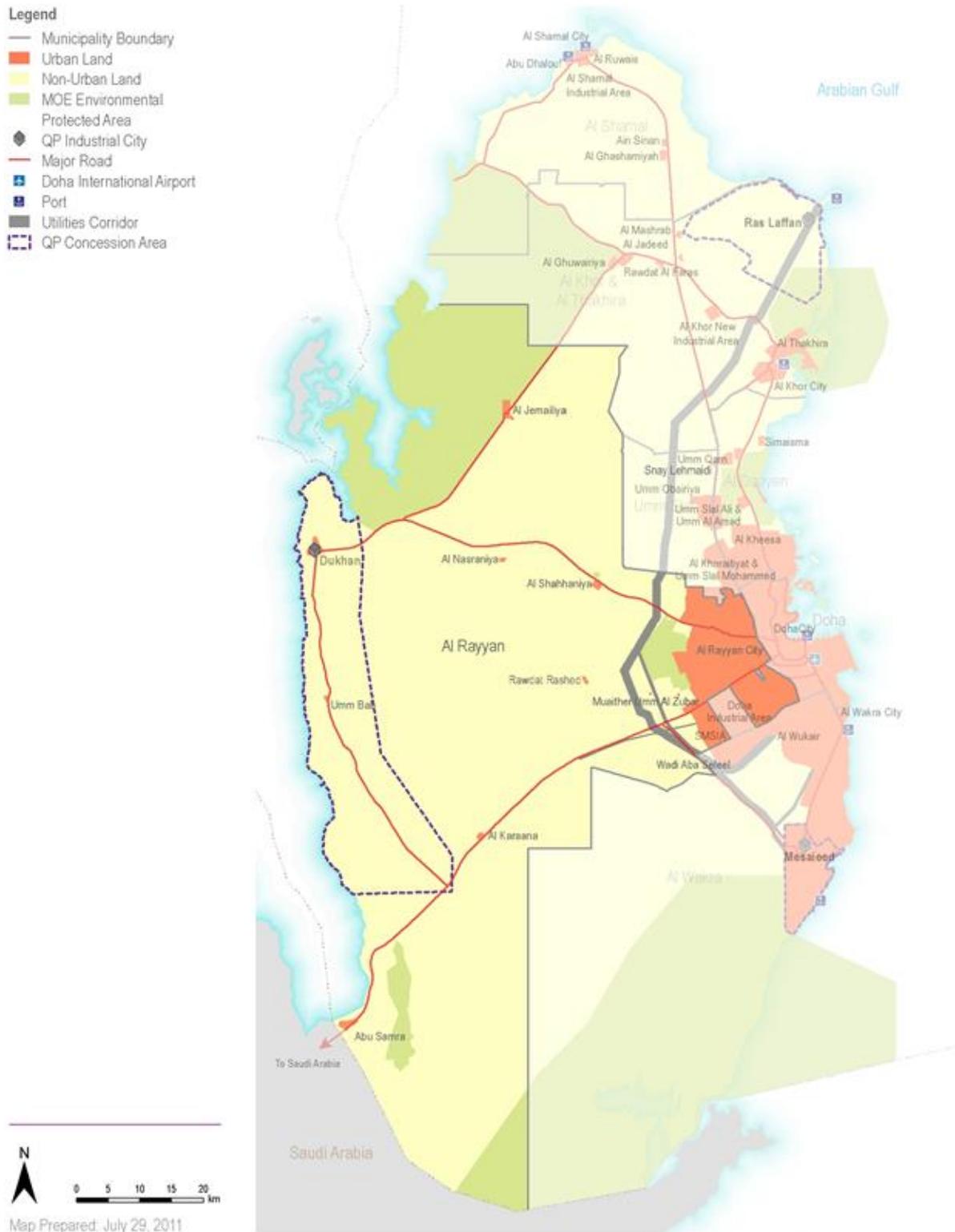
- The Municipality lacks a clear identity and character and is in danger of being swallowed up by continuing urban sprawl out from Metropolitan Doha.

- A clear hierarchy of mixed use centres that promote vibrancy, vitality and community well-being does not exist.
- Current zoning and development practices promote the domination of single use shopping corridors/strips along with dispersed big box retail premises in several difficult to access locations, which preclude the introduction of mixed-use developments.
- Many areas of Al Rayyan City have become dormitory suburbs due to the imbalance between homes and jobs which extend journey times to work and adding to the nation's carbon footprint.
- Urban sprawl characterized by land-extensive and a low density settlement structure makes the provision of facilities and services expensive and difficult to access without the use of private vehicles, all of which increase the nation's carbon footprint.
- The Qatar National Housing Program has created extensive yet isolated Qatari neighbourhoods resulting in a fragmented urban form that makes provision of a full range of community facilities and local services expensive.
- Without the availability of a private car, many of the services and facilities in Al Rayyan are difficult to access.
- A significant percentage of vacant land remains undeveloped and unavailable for appropriate urban redevelopment inside the municipality despite continuing outward urban expansion of Metropolitan Doha.
- More effort is required to promote a wider range of housing choices and design options which are culturally and climatically suitable, and which

- achieve commonly accepted levels of environmental sustainability and liveability expectations.
- Mega urban development projects are land-extensive single use activities with limited public transport and they lack connectivity with adjacent uses and they dominate and dislocate the urban structure and townscape character.
  - Mega projects have been designed in isolation to their context and urban structure, and in some cases their scale and grain are incompatible with surrounding areas or the availability of necessary infrastructure services.
  - Transit-oriented development is not possible without an efficient and accessible public transport system.
  - The construction of the metro rail network together with other supporting public transit facilities in conjunction with a deliberate mixed-use and mixed density centres policy, presents an ideal opportunity to achieve better urban outcomes and living environment for Doha residents, people who work in the city, and for visitors.
  - A similar opportunity exists with proposed GCC heavy rail line and station facilities in relation to industrial estates and logistics centres.
  - Fragmented development has resulted in unconnected land uses that are eroding the physical and cultural heritage of the nation.
  - The traditional urban patterns (eg. pedestrian streets, sikkas) that reflect the Qatari past and Arabic culture have been lost to car dominated roads that are pedestrian impassable barriers that isolate residents from community services.
  - There is little consistency of architectural language in areas. The built form fails to promote a high quality street appeal that promotes street activity.
  - In the mixed use centres there is a poor interface between public and private spaces caused by poor ground level building design, lack of understanding site context and surrounds and a failure to promote activation at the ground floor.
  - The design and condition of the public realm is inadequate and even dangerous in many places. The public realm does not respond to the climate and promote micro climates and does not promote street activation through the creation of urban plazas and civic squares and in turn fails to promote a sense of community.
  - Useable open space for active or passive recreation is severely limited in the City.
  - In smaller rural settlements outside the City such as Al Shahhaniya, there is a lack of connectivity with existing built-up areas, transport services and utility networks.
  - Dukhan's sister city is isolated from the nearby communities.
  - The development of large scale gated communities, (i.e. Al Waab), has undermined the public realm, their large scale footprint has impacted on neighbourhood permeability as well as creating fragmented communities.

Al Rayyan Municipality Vision and Development Strategy

Figure 1 Al Rayyan Locality Plan



## 2.4 Municipality Planning Objectives

The planning objectives that apply to Al Rayyan Municipality are:

### Economic Prosperity

- Promote continued growth and diversification of the economy within Al Rayyan City by supporting existing competitive sectors and encouraging new specialisms through the provision of flexible and accessible commercial accommodation.
- Encourage the location of economic activities and employment in the Al Rayyan North and the Al Rayyan South Metropolitan Centres, and the other designated Town and District Centres throughout the municipality.
- Integrate sports facilities and related infrastructure associated with the FIFA World Cup 2022, with their surrounding neighbourhoods ensuring capture of their significant legacy benefits.
- Support Dukhan as a key industrial centre, promoting its importance in the Municipality by enhancing its liveability, transportation services and community facilities.
- Develop and enhance a series of internationally and nationally significant local cultural and arts facilities with appropriate spaces (both indoor and outdoor) for performances and festivals.
- Promote economic activity through main street programs designed at activating streets, returning the community to the centres and promoting communication and business knowledge transfer

through social interaction within a high quality urban environment.

### Living in the Community

- Deliver a greater range of housing types and affordability levels in order to retain existing residents and attract new ones, particularly families including smaller households
- Ensure the early provision and ready accessibility to necessary community services and facilities to support the daily living needs of residents in existing and future residential developments.
- Maximize the use of available vacant residential lands within the urban limit.
- Provide appropriate forms of housing for Qataris including housing types, lot layout and subdivision that address their lifestyle needs.
- Promote Qatari living within the centres and within regeneration neighbourhoods as an expansion of the traditional housing choice currently provided.
- Where Qatari housing is located and provided outside of centres, promote a strong Qatari community identity, through the built and natural environments as well as through the provision of services.
- Ensure housing options meet the needs of the changing expatriate population as part of sustainable land use change, promoting urban revitalization of neighbourhoods in inner Doha.
- Maximize the flexibility and adaptability of existing and future housing stock to cater for the changing expatriate population to allow conversion and adaptation.

### Natural Environment

- Protect and enhance the natural environment in the Al Reem, Al Mashabiya Al Reaq, Al Rufaa, Al Shahhaniya and Khor Al Adaid Environmental Protected Areas and the Metropolitan Green Belt for the benefit of education, scientific research and eco-tourism uses and ensure upstream development impacts on the environment are minimized
- Enhance the biodiversity of the municipality through the design of new green spaces and through creating open space corridors between destinations, particularly those that enhance the natural environment.
- Enhance and create a network of recreational and natural spaces which meet both community and wildlife needs, and which provide connections between the desert and the sea.
- Improve the allocation of quality public spaces and open space landscape networks by implementing a municipal- wide open space strategy
- Enhance the natural environment, air quality and liveability of the municipality by removing noxious and polluting industries from mixed-use and residential areas.
- Promote energy and transport efficient urban developments to reduce the impact on the environment.

### Built Environment

- Create a comprehensive and clear urban structure which promotes distinctive neighbourhoods and routes and provides quality public realm.

- Create a series of connected mixed use Metropolitan, Town, District and Local Centres that meet the needs of their respective communities, and achieve the principles of Transit Oriented Development.
- Develop a high quality mixed-use, medium density Metropolitan Center at Education City, focused around knowledge-based business that supports and complements Education City.
- Develop a high quality medium density mixed-use Metropolitan Center around the Aspire Park and Khalifa Stadium focusing development of existing regional entertainment and sports facilities. The centre will contain a greater mix of uses including a mix of residential accommodation and a business cluster based on the sports and recreation focus of the Center.
- Identify existing local centre opportunities for residential communities and along key corridors within the high density areas.
- Develop high quality mixed use urban centres at Al Shalhaniya, Al Jumailiya, Al Nasraniya, Rawdat Rashed, Al Karaana and Abu Samra, to provide their surrounding rural catchments with better employment opportunities and improved access to Government services, whilst retaining their historical identities.
- Within Al Rayyan City reinforce and strengthen Qatari cultural identity through sensitive and innovative proposals.
- Address urban development in a climatically-sensitive manner and consider opportunities for creating new micro-climates in highly pedestrianized areas as a means to promote street activity.

- Improve the quality of neighbourhoods in Al Rayyan through regeneration that promotes family living and community interaction through the provision of improved high quality open spaces, public realm and community facilities.
- Develop buildings that are sustainable, address QSAS standards, and respond to the climate taking inspiration from historic Islamic architecture to create a new architectural language for Doha.
- Provide a range of spaces from nationally significant parks through to pocket parks at the local level that meet the diverse needs of different cultures and age groups.
- Ensure open spaces promote and support key pedestrian routes.

#### **Movement**

- Promote Transit Oriented Development through the integration of land use and transport planning, especially around public transport hubs in Metropolitan, Town and District Centres
- Reduce the reliance on private cars by providing a range of alternative modes of public transport. Promote Al Waab Street, Salwa Road and Al Rayyan Road as corridors for rapid public transit solutions, improving the city's access to employment and community opportunities.
- Design streets for all, by providing safe, legible routes for pedestrians and cyclists
- Design streets as public spaces, creating a strong relationship between buildings, roads and landscaping.
- Enhance opportunities for pedestrian and cycle movement through the municipality, providing a

network of shaded routes that connect key facilities and transit stops to enhance thermal comfort of those on foot and cycle.

- Enhance the legibility of the city through the introduction of landscaping and public art along key corridors.
- Ensure that access to high quality public transport is available within easy walking distance to all residential communities.
- Maximize the role of the metro system and supporting public transport, and the existing road network in achieving sustainable transport outcomes.
- Ensure transport impacts are carefully considered and evaluated when new urban development proposals are being planned and approved.

#### **Utilities**

- Enhance the utility network to ensure that the future demands of residents, businesses, workers and visitors within the municipality are met
- Promote strategies for an efficient provision and distribution of utility networks which in turn lead to the overall reduction in the carbon footprint of the Country.
- Ensure proposed urban development proposals fully factor in the impacts on existing utility networks, and their demand on new infrastructure as part of the planning and approval process.

## 3.0 ***Vision and Development Strategy***

Al Rayyan Municipality Vision and Development Strategy

### ***“Al Rayyan... A Land of Opportunity within a Climate of Change”.***

#### **3.1 *Vision 2032 for Al Rayyan***

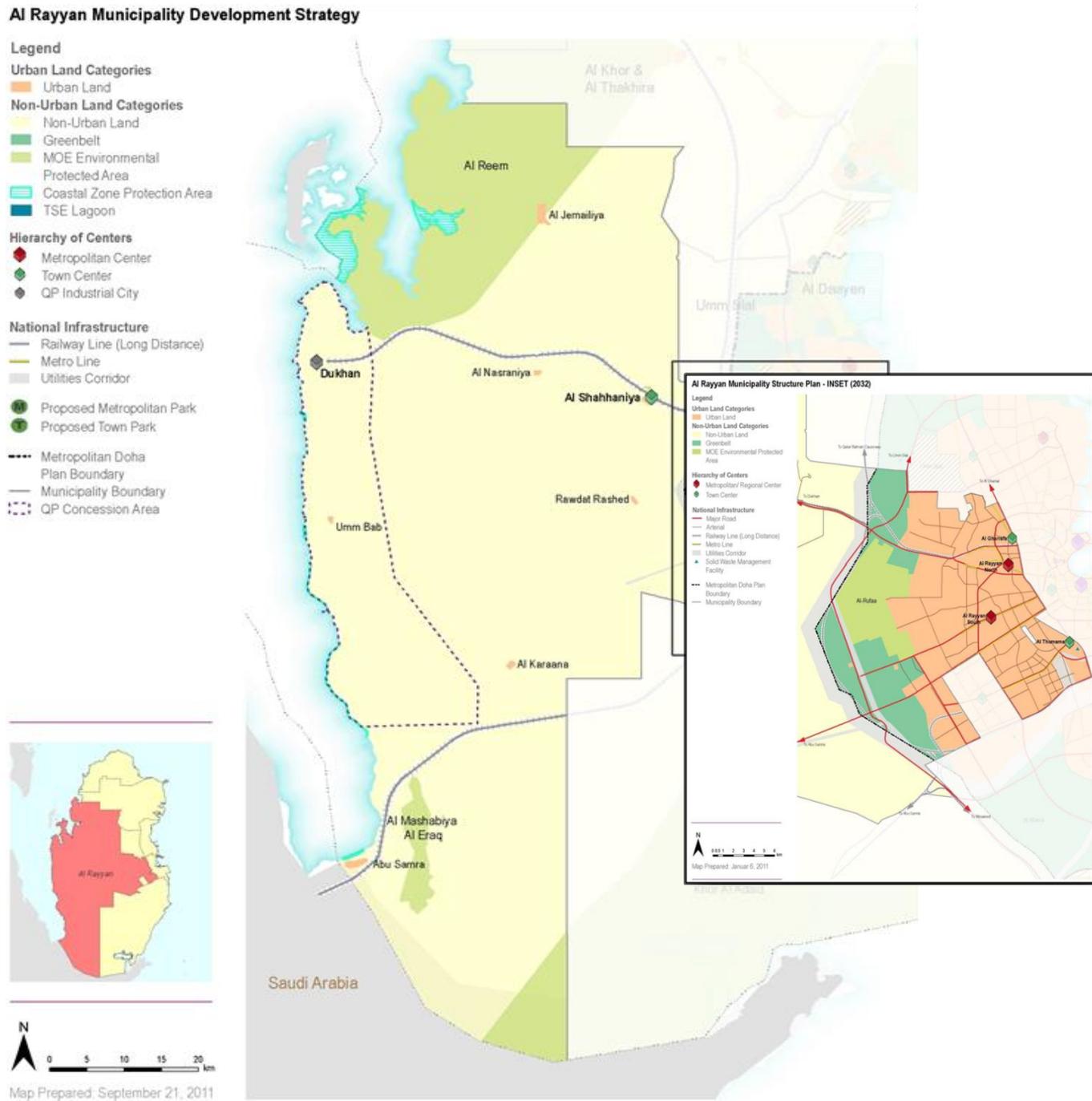
The vision for Al Rayyan focuses on protecting the traditional lifestyle and lower density residential character of the municipality while integrating contemporary planning approaches and a high level of self-containment through centres development, increased public transit, and promotion of new employment opportunities and world class leisure and sports events by:

- **Creating a municipality which responds to major population growth by offering an attractive residential character based on Qatari lifestyle and amenity expectations**
  - **Develop a high level of self-containment by expanding economic activity and local employment through a range of accessible, mixed use mixed density centres.**
  - **Ensure an equal and timely allocation of community facilities and services which meet the needs of residents in both urban and rural settlement.**
- **Build on the valuable assets that the municipality has creating a world class destination for world leisure and sports events and activities.**
  - **Respect for the ecological limits of the municipality by balancing environmental, cultural, social and economic prosperity for present and future generations.**
  - **Protect rural lands outside defined urban settlements from inappropriate development.**
  - **Benefit from the future establishment of enhanced public transit and metro rail services.**



Al Rayyan Municipality Vision and Development Strategy

Figure 2 Development Strategy



## 3.2 Development Strategy

The Development Strategy for Al Rayyan Municipality is summarized spatially in the Al Rayyan Municipality Structure Plan derived from the QNDF (Figure 2).

### 3.2.1 Future Growth Management

The expected population growth for Al Rayyan Municipality to 2032 is 2.3% per annum, with a total increase of more than 250,000. Most of the future population will be located within the urban part of the municipality and the Metropolitan Doha boundary. The future FIFA 2022 World Cup will involve the introduction of major new stadia and supporting structures and services, including transport systems, throughout the country in the years ahead. Many of these facilities will be located within the municipality.

Al Rayyan City will therefore be the major urban growth expansion area for Metropolitan Doha, based on the current spatial development patterns, the impact of mega projects, future construction of the metro rail system, and the implementation of an integrated Centres hierarchy for more efficient and effective management of urban growth.

For Al Rayyan City, the continuation of past dispersed development trends will, if unchecked, have significant negative impacts including continued car dependency, expensive and inefficient physical and community infrastructure provision, greater demands on resources, and limited neighbourhood diversity.

It is of major strategic importance to concentrate future population growth within key centres particularly within proposed Metropolitan Centres and Town Centres. This approach would seek to establish critical mass within the city to ensure a greater level of self-containment, more economically viable public transport, and opportunities associated with public transport are maximized.

In addition, concentrating future population growth within key centres will reduce the overall requirement for land to 2032. This in turn will limit future urban expansion and allow flexibility within the city to meet other needs including community facilities and services, green open space requirements and future economic development needs.

The future development scenario for Al Rayyan Municipality will see major urban growth contained within Al Rayyan City which will be integrated within Metropolitan Doha through expansion of public transport facilities (Green and Gold Metro lines, and Bus Rapid Transit) and utility networks. The focus for major new commercial developments will be around transport hubs within distinctive Metropolitan and Town Centres, which will also include a mix of housing types and affordability.

Elsewhere in the city, new developments will be restricted to smaller local scale retail, office and leisure schemes around District and Local centres which will provide a range of densities supported by co-located community facilities to meet rising demand. Existing and committed mega projects will be integrated with their surrounding neighbourhoods containing high quality, low density

residential areas which respect local characteristics and the lifestyle expectations of residents.

To deliver sustainable housing growth that meets the needs of the municipality the following housing strategy will be implemented:

- Develop vacant residential land, applying a sequential approach that favours the development of vacant land in Al Rayyan City prior to the release of land in outlying areas.
- Promote the early regeneration of older neighbourhood areas, enabling comprehensive redevelopment through the production of a series of Action Area Plans.
- Identify character areas within the inner City where community-oriented Qatari neighbourhoods can be re-introduced.
- Promote the accelerated supply of housing through the mega-projects in negotiation with landowners and developers.
- Restrict major new employment growth to the mixed use centres and identified employment corridors
- Promote knowledge-based industry within mixed-use centres.
- Restrict future expansion or growth of major commercial developments outside Al Rayyan City.

Outside the city, existing settlements will be consolidated through the introduction of a range of housing types and community facilities on vacant plots within the built-up area and designated Town and District Centres. Beyond town and village limits in rural areas, most forms of new urban development will not normally be permitted.

In order to promote balanced and sustainable growth across the rural hinterland, development of designated Town Centres and District Centres will be promoted with clustering of community facilities and other local support services around transport nodes.

To sustain long term growth, Dukhan Industrial City complex will be provided with a greater range of community and Government services to serve the western part of the country and over time become better integrated with adjacent urban settlements.

Al Shahhaniya will be developed as a Town Center and the main settlement in central Qatar. It will provide a range of community facilities and services to this large rural area. Activities associated with camel racing, Oryx breeding and the Qura'anic botanical garden will also be promoted, to assist integration with the existing settlement.

Al Rayyan is rich in natural resources which need to be protected from further urbanization pressures. These include the Environmental Protected Areas, desert landscapes, and sandy beaches near Dukhan, which have potential to be developed for eco-tourism and local recreation.

The Urban Growth Boundary created by the Greenbelt Zone and the Utilities Corridor marks the western edge of the Al Rayyan City urban area. The Greenbelt policy will be strictly enforced to protect the natural assets, and create a definitive edge between key urban areas and the rural desert lands beyond. Only rural activities such as

farming and the National Food Security Program projects together with recreational and open space activities will be permitted in the Greenbelt Zone.

### 3.2.2 Creating the Urban Spatial Structure

Compact city models such as transit-oriented development, traditional neighbourhoods and liveable cities are better tools to manage urban growth, foster social and community infrastructure, provide economic vitality and establish a high quality of living.

The spatial strategy for Al Rayyan City responds to the specific characteristics and opportunities associated with the urban part of the municipality.

Key actions to achieve the future development of the spatial strategy for Al Rayyan City include:

- Focusing commercial growth in a hierarchy of mixed use mixed density centres that will be highly-accessible by a variety of public transit modes.
- Developing high quality Metropolitan Centres at Al Rayyan North (adjoining and complementing Education City) and Al Rayyan South (Aspire Zone).
- Promoting higher density residential growth within the Metropolitan Centres and Town Centres.
- Intensifying existing urban areas by utilizing vacant residential land and promoting neighbourhood regeneration, in particular inner suburban neighbourhoods around proposed centres such as Al Gharrafa and the Wholesale Market.

- Integrating mega projects and related large scale infrastructure facilities and networks with centres and existing and planned urban developments.
- Maintaining the northern, western and southern rural edges of the city.
- Improving the provision and distribution of community facilities throughout the city.
- Enhancing access to open space through the introduction of new spaces and the creation of green networks connecting spaces within the core of the city to provide a range of recreational opportunities.
- Elsewhere, new developments will normally be restricted to housing schemes for Qataris and expatriates, as well as infilling on vacant plots, with priority for sites well served by existing or committed transport and utilities networks.
- Ensuring ease of accessibility to existing or planned community facilities and employment opportunities will also be important criteria in determining the acceptability of new development proposals.
- Ensuring radial routes act primarily as transit corridors, whilst promoting orbital road routes to enable a balanced urban growth structure.
- Facilitating a modal transfer to a high quality public transport system.
- Clustering community facilities and other uses at TOD urban centres.
- Retaining the cultural identity of communities and support enterprises that enhance the sustainability and liveability of these communities.
- Introducing a new density approach and building typologies in urban areas to promote a wide range of accommodation types.

- Protecting and enhancing the natural environment in the Environmental Protected Areas.
- Maintaining and enhancing natural resources for the benefit of education, scientific research and limited (eco-) tourism uses.

In addition the Development Strategy comprises several components each of which influence and work together to realize the Vision for the municipality.

1. Hierarchy of Centres
2. Key Employment nodes outside centres
3. Residential Areas
4. Community Facilities
5. Open Space
6. The Natural Environment
7. Movement
8. Utilities
9. Corridors

The contribution of each of these spatial elements and their significance for the future form and development of Al Rayyan Municipality is outlined below.

### 3.3 Hierarchy of Centres

The most important component of the spatial structure for Al Rayyan Municipality is the QNDF hierarchy of centres.

Centres are the main locations of employment, community services, retail and commercial activity, and transport services. The hierarchy consists of a network of mixed-use and mixed-density centres each with a specific role, function and scale serving a surrounding population catchment. A high level of self-containment is sought. The hierarchy as it relates to Al Rayyan is discussed below.

#### 3.3.1 Metropolitan Centres

Second in the hierarchy of centres, are Metropolitan Centres which serve catchments of city-wide significance (150,000 – 300,000 people). They provide major economic and employment activities as well as higher order commercial offices, comparison retail, professional and municipal level government services such as health, education, and government service centres. They also include cultural, leisure and entertainment facilities.

Residential communities within and adjoining Metropolitan Centres are high to medium density in



nature. Metropolitan Centres are also significant trip generators located close to arterial routes and contain major metropolitan public transport facilities such as bus and rail interchange stations. They are strategically located with the intention that these centres will benefit from the high volume of public transit through transit oriented developments (TOD's).

Metropolitan Centres will generally seek to create a pedestrian-oriented public realm and provide a full range of community facilities and services. Civic open spaces will be promoted and activated through retail activities at the ground floor of towers for uses such as shops, cafés and restaurants.

There are two Metropolitan Centres in Al Rayyan City:

- Al Rayyan North Metropolitan Center
- Al Rayyan South Metropolitan Center

They have been strategically located in relation to existing activity and transportation nodes, and metro lines near Education City and the Aspire Zone.

#### Al Rayyan North Metropolitan Center

Al Rayyan North Metropolitan Center is a Greenfield development site, located within the masterplan area of Education City. The site is located on the northern side of Dukhan Road to the west of the convention centre and will be served by the Metro Green Line. The new centre is not far from the entrance to Doha on the Dukhan Highway and will create a distinctive gateway and landmark centre for Al Rayyan City's northern population.

The main purpose of the centre is to serve as the civic focus for the growing population in the northern reaches of Al Rayyan and to capitalize on its proximity to Education City and the Qatar Science and Technology Park as the premier knowledge based employment hub within Doha. The centre will strengthen Education City and the surrounding residential community with the provision of further consumer services and community facilities. It will be set within a highly landscaped environment and provide a high quality public realm other facilities such as youth centres, libraries, community centres and primary health care centres will be provided, in addition to emergency response facilities in accordance with the QNDF.

The Center will support a range of business start-ups, particularly small and medium sized businesses reinforcing the Government's drive towards a diversified and knowledge-based economy. These activities will also compliment Sidra Hospital, and the convention centre.

### Al Rayyan South Metropolitan Center

Al Rayyan South Metropolitan Center is located within the established Aspire Zone and includes Khalifa Stadium, Villaggio Mall and Hyatt Plaza, Aspire Park, the Doha Zoo as the major land use anchors and landmarks. It also includes land on the southern side of Al Waab Street. The Center will be served by the Metro Rail Gold Line which will be completed as part of the first phase of the metro network development.

The Center will aim to attract and sustain major employment activities and to serve as the civic heart for

Al Rayyan City's southern population. The vision is for it to become a centre of excellence and a World-Class international sports and entertainment district, supported by a vibrant mixed use community of office, retail and residential developments which are compatible with the existing uses within Aspire Zone.



Existing entertainment and sporting functions will be consolidated by targeting improvements to the present Khalifa stadium facilities in preparation for the FIFA 2022 World Cup, the inclusion of complimentary leisure, entertainment and recreational uses, and improvements in public transport and pedestrian connections. The existing facilities for elite sports training, sports medicine, research and other sports-related activities which define the unique identity and function for the Center, will be further expanded.

Additional commercial office and mixed use infill buildings will be encouraged and further hotel accommodation is targeted in response to predicted demand which is

predicted to rise substantially over the long term to meet the growth in businesses and leisure travel.

An important part of the future development of the centre is to incorporate model urban residential neighbourhoods that will provide a range of housing typologies

Recreation, leisure and open space facilities in addition to essential community services will be provided. The Connections and accessibility between the core centre area and the main retail, recreation and open space anchors of Khalifa Stadium, Aspire Park, Villaggio and Hyatt Plaza malls and the existing site of the Doha Zoo, will be improved.

### 3.3.2 Town Centres

Town Centres are the third level of the centres hierarchy and are designed to cater for the weekly and day-to-day needs of surrounding suburban residential catchments of 50,000-100,000 people within Metropolitan Doha.

There are three Town Centres designated in Al Rayyan Municipality:

- Al Gharrafa Town Center (shared with Doha Municipality)
- Al Shalhaniya Town Center
- Dukhan Town Center

Their purpose within Al Rayyan Municipality is to cater for more local-level mixed density mixed-use business, convenience retail, small commercial premises and branch offices of government, banking and community

services, and local employment. They may also contain lower-order cultural, entertainment, health, and education facilities. High quality, medium to low density residential neighbourhoods will be integrated with these centres.

Town centres are generally developed around a well-defined central core of public and private facilities, and have good access to public transit services such as a metro station. Residential densities are higher within and around the immediate town centre core, but graduate down to medium - low density residential development in the surrounding suburbs.

An Action Area Plan (AAP) for each Town Center will be developed to ensure a mixed-use, mixed density approach that meets the needs and expectations of the residential catchment served.

### **Al Gharrafa Town Center**

Al Gharrafa Town Center straddles the boundary of Al Rayyan Municipality and Doha Municipality and is located at the crossroad of Al Shamal Road and Al Markhiya Street. The Center is proposed to serve north-west Doha, the northern part of Al Rayyan and the southern area of Umm Sial Municipality. The centre will be serviced by a metro station on the Green Metro Line post 2017.

The Center is already a well-established retail destination with major mall and retail premises provided by the Landmark Mall, Ezdan Mall, Galaxy Mall, and the Lulu Hypermarket serving the regional needs of the northern portion of the city. Other future developments adjoining

the centre include a boutique hotel with medium density residential housing.

The overall form of development envisaged is medium density in scale, with heights ranging from 2 to 4 storeys in height. The zoning is Mixed Use with an emphasis on a mixture of retail, commercial, offices, hotels and community facilities to provide diversity and precinct activation. A high level of connectivity and accessibility throughout the precinct is envisaged. Provision will also be made for single family housing, some extended multi-family accommodation on suitable sites, and a centrally located park within the town centre precinct.

Residential development surrounding the town centre will be predominantly low with some low to medium density (R1-R3) in character mainly comprising detached and semi-detached family homes.

There are a number of opportunities to diversify the current employment and residential activities within and adjoining the town centre precinct through comprehensive regeneration of older office accommodation and strip commercial areas along the southern extents by introducing mixed use development with retail and office at street level and medium rise apartments and townhouses above.

The development of the centre will need to focus on improving pedestrian access between uses and public open spaces. The aim will be to achieve better links and connections across Al Shamal and Al Markhiya Roads, integrated with open space and landscaping creating a

contemporary gateway destination and entrance to Doha from the north.

### **Al Shalhaniya Town Center**

Al Shalhaniya is at the heart of rural Qatar located between Doha and Dukhan along the Dukhan Highway.

The centre offers a centralized location for many of the rural Al Rayyan settlements to access urban community facilities, services and consumer retail products. It is also the closest urban centre to Qatar's largest camel racing track and stock yards for camel training (Lebsayyer), thus giving Al Shalhaniya a distinctly traditional sporting niche.

The role of the centre is to continue to be a focus for the provision of government and support services and new commercial, business and retail opportunities, to support the needs of residents and also the smaller town settlements and farming communities spread throughout the rural and desert areas. It will also provide town centre level services to a number of surrounding local centres: Al Khuraib, Al Samriya, Rawdat Rashed and Lebsayyer.

The Al Shalhaniya Town Center aims to consolidate the small number of disjointed and single use focused commercial zones that have developed over time.

Development of new leisure and recreational activities related to the attractions of camel-racing, oryx-breeding and the national botanical gardens are to be encouraged and integrated into the urban structure of the settlement.

## Dukhan Town Center

The Town Center is located within the secure and largely self-contained community compound for Qatar Petroleum employees and families. It is the main urban settlement on the western coast of Qatar and is sited in Qatar Petroleum's Dukhan concession area. The QP community compound is administered by Qatar Petroleum, and is forecast to experience residential growth and expansion in the immediate future as the role of Dukhan continues to centre on the extraction of gas and petroleum products.

Dukhan also has a sister city which has been established outside the concession area under the jurisdiction of the Ministry of Municipality and Urban Planning. This sister city contains a number of public facilities such as the Cuban Hospital, government schools and a small industrial estate outside the QP concession area. The present population however is small and is unlikely to experience any growth before 2017.

The future integration of the Dukhan town centre and the complementary development of the sister city, is a priority for the future of the entire Dukhan urban settlement.

### 3.3.3 District Centres

District Centres are the fourth level within the centres hierarchy and are designed to cater for the weekly and day-to-day needs of surrounding suburban and local area residential catchments of 30,000-50,00 people for those located within Metropolitan Doha.

Within Al Rayyan Municipality, District Centres include well defined clusters of local-level mixed convenience retail, local supermarkets, small scale local services, food outlets, and a range local community facilities such as primary schools and kindergartens, and public health centres. These mixed use centres are located predominantly within low to medium density residential neighbourhoods, and are generally developed around a central core of public and private facilities. They have good access to public transit services such metro or bus stations.

The following District Centres have been identified within Al Rayyan Municipality and more detailed Action Area Plans will be prepared for each of them:

- Wholesale Market District Center
- Barwa District Center
- Al Soudan District Center
- Al Salaam District Center
- Al Jemaliya District Center
- Al Karaana District Center

### 3.3.4 Local Centres

The role of a local centre is an integral structural element in Al Rayyan City and its main roles as a largely residential-oriented urban area. Local centres provide for the daily convenience retail and community needs within the immediate surrounding population catchment. They are located on well-defined sites, are small-scale in size, and contain a limited number of small shops

It is important for the location of a Local Center to be within a convenient walking distance for residents

(generally 400m) where they can be a place in the local neighbourhood for people to meet and socialize. The focal point is normally a location with a metro transit station or bus stop, a daily mosque, and complemented by a local park and kindergarten. Local convenience shops providing daily and weekly needs are encouraged especially near existing or proposed community facilities.

Numerous Local Centres presently exist within Al Rayyan City and new Local Centres will develop over the plan period to ensure that all residential areas are well serviced. They will be identified during the development assessment process.

Within the rural part of Al Rayyan Municipality, a number of larger existing settlements have been identified as Local Centres. They include:

- Rawdat Rasheed Local Center
- Al Nasraniya Local Center
- Dukhan Support Services Area (DSSA) Local Center
- Umm Baab Local Center (QP Industrial City)
- Abu Samra Local Center
- Al Khuraib Local Center
- Al Samriya Local Center
- Al Otouriya Local Center

### 3.4 Key Employment Nodes outside Centres

There are various centres of employment outside the designated hierarchy of mixed-use centres which are recognised spatially to allow for their continued function and development, and to ensure they are adequately integrated into the overall spatial structure of Al Rayyan Municipality. These nodes complement the QNDF centres and contribute to the overall economic vitality of the Municipality, by providing major employment opportunities, and the delivery of higher order public services. It is therefore important for their existing contributions to be protected, maintained and wherever possible enhanced.

The major employment nodes within Al Rayyan Municipality include the following:

#### 3.4.1 Education City

Education City is an initiative of Qatar Foundation for Education, Science and Community Development. It covers an area of 14km<sup>2</sup> and houses educational facilities from school age to research level with branch campuses of some of the world's leading universities. Education City aims to be the centre of educational excellence in the region, instructing students in fields of critical importance to the Gulf Cooperation Council region. It is also conceived of as a forum where universities share research and forge relationships with businesses and institutions in public and private sectors.

Education City includes:

- A number of universities and schools including Georgetown University, Virginia Commonwealth University, University College London Qatar Academy, Carnegie Mellon University, University of Calgary and Texas A & M University
- Sidra Medical and Research Center
- a new National Library
- Qatar National Convention Center
- Al Shaqab Equestrian Center
- a major Football stadium
- A proposed golf course
- Qatar Science and Technology Park

Qatar Science and Technology Park (QSTP), a state-of-the-art facility comprising 45,000m<sup>2</sup> of office and laboratory space, aims to drive Qatar's knowledge economy by encouraging companies from around the world to develop and commercialize their technology in Qatar, and by helping entrepreneurs to launch start-up technology businesses.



The Qatar Foundation National Library is due to open in 2015. The main role of the library will be to facilitate the development of skills that will enable residents to

participate in the global knowledge economy. It will offer a broad range of educational and instructional programs which will include teaching information and research skills, help in using digital resources, digital and print literacy development.



Qatar National Convention Center (QNCC) is one of the most sophisticated convention and exhibition centres in the world. QNCC provides a venue of choice for regional and international conventions, exhibitions, gala events, concerts, theatrical productions and banquets. The venue has 40,000m<sup>2</sup> exhibition space and conference hall for 4,000 delegates.



Al Shaqab is new equestrian venue featuring world-class facilities and comprehensive educational resources.

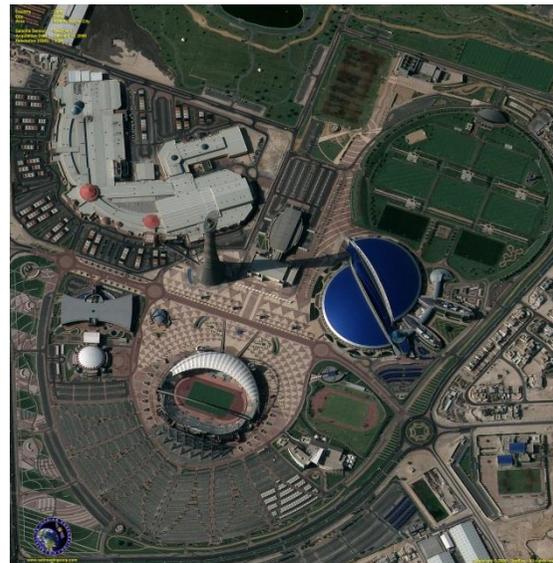


The Sidra Medical and Research Center aspires to be among the top academic medical service, training and research centres in the world. It will provide patients with world class healthcare services in an innovative and ultramodern facilities in collaboration with the premier medical school in Education City, leading research institutions worldwide, and Qatar's health sector, Sidra will also deliver a diversity of training for medical students and highly skilled clinicians, and will be a pioneer in clinical and translational biomedical research of value to the population of Qatar and the world.



### 3.4.2 Aspire Sports Academy and Aspetar

One of the world's leading Sports Academies is located immediately north of the Al Rayyan South Metropolitan Center. The Academy attracts gifted athletic children and also international sports teams from around the world for training. Aspetar Hospital forms part of the Aspire Zone sports facilities and provides specialist medical services for the rehabilitation of elite athletes, and medical research.



### 3.4.3 Dukhan City

The various operations and activities in the Dukhan oil field, which extends over an area of approximately

640km<sup>2</sup>, are managed and conducted by Qatar Petroleum. Dukhan is 84km from Doha on the west coast of Qatar.

Dukhan has witnessed gradual development to accommodate oil and gas operation facilities in addition to housing, medical, recreational and educational institutions and services. Dukhan is being further developed and modernized to better meet Qatar Petroleum's oil and gas operations and the communities' requirements.

### 3.4.4 Salwa Road

Salwa Road is a commercial avenue that serves a strategic purpose within Metropolitan Doha that cannot be replicated elsewhere within the city. Salwa Road provides for showrooms and big box retail including specialty stores and industry outlets.

### 3.4.5 Wholesale Market

Wholesale Market is one of Doha's oldest and more traditional market places. Originally located near the site of the current Souq Waqif inside Doha Municipality, it was relocated as Doha's urban fringe expanded. Once again engulfed by Doha's sprawling residential fringe the market place has remained to date and includes a fresh fruit and vegetable market and animal market, and plant nursery.

### 3.4.6 Barwa Commercial Avenue

Barwa Commercial Avenue which runs along Industrial Area Road is a substantial commercial corridor which

includes significant levels of office and retail land uses. This substantial corridor will become a car and van-dominated development. In the longer term the land use mix of this development should be refocused to include a greater share of residential and community uses and a reduction in office and retail floor space.



#### 3.4.7 SMSIA

The Small and Medium sized Industrial Area (SMSIA) administered by the Ministry of Energy and Industry is located south west of the Doha Industrial Area. It was established to strengthen and activate the role of private sector in the processes of industrial development and increasing its participation in the Total National Product as well as increasing the value of industrial exports. The SMSIA was developed to ensure that all facilities and utilities needed by industry including access to gas.

#### 3.4.8 Other Projects

Other major employment projects within the Municipality include:

- Al Waab City located on Wholesale Market Street between Salwa Road Al Waab Street,
- Karwa City, and its neighbouring Labour City, located off Industrial Area Road near DIA, and
- Al Rayyan Gate shopping mall located within the Green Belt near Al Rayyan Stadium.

#### 3.4.9 Industrial and Logistics Development

The potential for future industrial and logistics centres to be established within the municipality in response to the FIFA 2022 Works Cup and related infrastructure construction will require careful planning and site selection.

### 3.5 Residential Areas

Al Rayyan Municipality comprises of two distinct parts, the urbanized areas of Al Rayyan City (part of municipality within Metropolitan Doha), and rural Al Rayyan (land outside the Urban Growth Boundary and Greenbelt). Both parts of the municipality have significant residential areas and in particular those which cater for Qatari families.



Based on expected population growth forecasts for Metropolitan Al Rayyan (Al Rayyan City) there are a number of existing vacant areas considered to have sufficient land supply to accommodate the future level of expected residential development up to and beyond to 2032.

Within the rural part of Al Rayyan (outside the greenbelt) the existing urban settlements and rural villages have adequate capacity for residential growth.

Intervention in residential areas is prioritised towards where and how development takes place and its form and function. It seeks to ensure that staged use of available land is promoted to avoid fragmentation and inefficient supply of infrastructure. A particular challenge is to encourage the release of vacant private lands which remain undeveloped and unused.

#### 3.5.1 Amenity outcomes common to all densities

Some amenity outcomes are common to all residential areas, and are the chief determinant of character. Specific planning and urban design outcomes which need to be addressed in achieving liveable residential neighbourhoods are:

- Enhance street amenity by improving the relationship between buildings and public realm to create a network of walkable streets.
- Develop one level pedestrian environment where pedestrian access to buildings is at ground floor level and pedestrian movement happens at street level.
- Retain the historic street pattern as much as possible.
- Introduce a series of small public spaces at key locations such as mosques as natural gathering points for the community.

- Provide private amenity spaces in developments.
- Support a mix of property types to cater for differing accommodation requirements
- Promote housing types that address the microclimate through providing shade and soft landscaping.

#### 3.5.2 High Density Mixed Use

- Achieve a vertical mix of uses at key activity nodes around Town, District and Local Centres.
- Ensure towers have an active ground floor, utilizing podium space and minimizing setbacks.
- Buildings should be designed to face the street to provide visual and sensory experience to passers-by at street level with window and door openings enlivening pedestrian spaces.
- Create a series of outside spaces in the ground floors and entrances of towers for uses such as cafés and restaurants.
- Relax parking controls inside TOD centres (District and above) to encourage use of public transport and to channel future growth into centres.
- Promote lot consolidation to achieve more efficient urban development and better amenity outcomes.
- Promote lot consolidation to achieve more efficient urban development and better amenity outcomes.

### 3.5.3 Medium and Low Density Residential

- Neighbourhoods should be based around the concept of the fareej with Arabic townscape elements such as sikka, baraha (small semi private spaces) and meyadeen (larger public spaces) incorporated into the design.
- The traditional courtyard dwelling should be promoted through appropriate regulations.

### 3.5.4 Qatari Neighbourhoods

The development of Al Rayyan has seen the emergence a transfer of Qatari families to the outer urban areas of Metropolitan Doha. The development of future Qatari housing areas needs to address the aspirations of Qatari families in terms of plot size, access to retail and community facilities, particularly mosques and Majlis, within each neighbourhood. It is also important that the new neighbourhoods reflect the traditional housing and townscape in their design and layout, but also consider a variety of housing types and densities.

A trend that has contributed to the urban sprawl of Metropolitan Doha has been the increased segregation between Qatari and non-Qatari neighbourhoods. Partly driven by a desire for traditional courtyard typologies but with modern spacious buildings and conveniences, the trend has resulted in large but low density suburbs, and longer travel times to places of work and for leisure activities.

Whilst some neighbourhoods will remain largely Qatari as a result of the National Housing Program, opportunities for a mix of housing types in more central

neighbourhoods including TOD should be promoted over the plan period to meet changes in the social and cultural aspirations of Qataris.

Complementing the provision of greater choice there is a need to ensure that the predominantly Qatari neighbourhoods increase the range of retail and services in local and neighbourhood centres, including local parks for families and ladies only.

### 3.5.5 Worker Accommodation

By 2017 the amount of worker accommodation within Al Rayyan is expected to be 173,550 but will reduce to 31,500 by 2032 with the completion of many of the mega scale projects.

Unskilled (non-construction) workers live in a variety of households across the country such as employer supplied housing, in shared housing, or in individual residences. Construction workers may also live in onsite project accommodation, in purpose-built accommodation, or in urban housing stock in (large and small) gatherings.

Currently there is a severe undersupply of suitably located and constructed housing and purpose-built accommodation for construction workers. The result is overcrowding of existing accommodation, poor living conditions, the proliferation of large gatherings and the marginalization of these workers by denying them access to basic community and recreational facilities.

With the awarding of the FIFA World Cup 2022 to Qatar, pressure to employ more construction workers has increased significantly with the commencement of key infrastructure programs such as new stadiums, the Metropolitan Rail network, major road upgrades and

increased urban development activities. As a result, the demand for worker housing has also increased significantly.

Worker City is a committed project that is expected to have capacity for approximately 80,000 workers. This is located at the south western end of Industrial Area Road near the DIA.

The Qatar Worker Accommodation Regulation has been prepared to guide the location and minimum standards for worker accommodation. In particular the Regulation and the accompanying urban design guideline seek to achieve the following outcomes:

- Worker Accommodation residents have ready access to appropriate minimum levels of standards for living, dining, recreation, community facilities and health facilities.
- Worker accommodation is appropriately located in respect to areas of employment, access to major transportation networks and community facilities whilst minimizing negative impacts on low density residential areas.
- Applications for Worker Accommodation meet the minimum requirements in terms of building standards, amenities, community services and recreational facilities.
- Operators of Worker Accommodation facilities are aware of the minimum requirements of providing, managing and operating Worker Accommodation.
- A specific time period applies to approved temporary Worker Accommodation compounds.

### 3.6 Community Facilities

The adequate and timely provision of and access to community facilities by matching to their expected catchment population requirements, is a key component of the Development Strategy. Access is most efficient when community facilities are located within centres. This is facilitated primarily by locating required facilities within those centres through the Action Area Planning Process.

Existing community facilities outside of centres are still recognised through the zoning regulations to allow for their efficient continued operation and expansion, but the regulations strongly urge new facilities be focused into centres.

#### 3.6.1 Education

The supply of education facilities in the Al Rayyan municipality is reasonably well-balanced in relation to demand. Many of the Private and Independent schools previously within the Doha Municipality relocated to Al Rayyan as the result of lower operating costs, and being closer to their pupil catchments. The introduction of new school site and building standards for government schools has also had an impact.

By 2017 it is expected that there will be only a slight under supply of schools in the municipality including both private and government funded schools

Future public education facilities will be located within centres throughout urban communities and where possible will share public and community open space, recreation areas and ferjan playing fields.

Existing schools and education facilities located outside centres will continue to operate as existing uses in response to local demand and accessibility for students living locally. Wherever possible, vacant school sites should be refurbished and reopened where land is scarce and demand exists. This is particularly the case for private schools which often have difficulty in acquiring suitably located sites within existing neighbourhoods.

Within high density urban areas, consideration should be given to applying a modified set of building and site area standards, exploring the opportunity for higher density schools to be smaller scale, multi-level, and with the potential to share some facilities between schools.



For rural settlements, higher density schooling approach which includes schooling for pupils from Preparatory, Early Years and primary locating within one facility should

be considered where resources and demand do not warrant separate facilities.

#### 3.6.2 Health

The provision of health care facilities in Al Rayyan has improved over recent years with the proposed Sidra Hospital now under construction in Education City.

At a strategic level Al Rayyan City is well provided for in terms of hospitals because of the proximity to Doha Municipality, though there is no general hospital in Al Rayyan City. Aspetar specialist sports medicine and rehabilitation hospital has been established in the Aspire zone. There is a need to additional hospital facilities in the future.



In addition to the Sidra Hospital at Education City, there is a research hospital for Maternal and Child Health and the Cuban Hospital at Dukhan is now open providing general hospital services for the Al Rayyan rural area in the western part of the municipality.

At present hospitals generally receive patients referred from PHC centres. However, PHC centres generally do not accept non-Qatari single male workers (SMW) and

the provision of SMW PHC facilities is an important priority particularly as the number of workers in the municipality will increase significantly during the peak construction period. Walk-in clinics are the only primary health care facility within the Government health care system available to these workers. A Secondary (SMW) hospital and SMW PHC currently under construction and Abu Nakhlah will provide for the health needs of SMW.

Additional PHC are required throughout the municipality to meet future demand. These should be located in the centres.

### 3.6.3 Religious Facilities

Mosques should be located at the heart of communities and be co-located with local retail and pocket parks in residential areas and local centres. Daily and Juma Mosques form a key part of the design of District and Town Centres. Mosque minarets can help add legibility to neighbourhoods, and give a focal point around which to develop non-residential uses.



As part of any major redevelopment proposal, developers are required to work with MAIA to identifying sites for future mosques based on the required standards for Community Facilities. Major public spaces such as Aspire Park and within the Al Rayyan South Metro Center should contain mosques locating them close to roads and future public transit to maximize utilization.

Some existing Juma Mosques will be downgraded to daily mosques while other daily mosques will be upgraded Juma mosques.

### 3.6.4 Emergency Response Services

Emergency Response Services, such as Emergency Medical Service (EMS Ambulance) and Civil Defence (Fire Service) are essential services that all areas of the Al Rayyan Municipality need. The strategy for the future provision of emergency response services will seek to secure additional station sites in strategic locations.

These will be based on population catchments and emerging road networks so that coverage can be extended to meet required target response times, and permit coordination with area-wide traffic management and control systems as they are introduced.

### 3.6.5 Other Facilities

Other Government service facilities, such as MOI service centres, Post Offices, Youth Centres, Libraries and Community Social Centres are important local service facilities and form key components of mixed-use centres. Currently there is uneven distribution of such facilities

therefore distribution needs to be improved to ensure equitable access by all residents to services.

In order to expand Government services to cover the whole City, sites will need to be safeguarded within existing and planned mixed-use centres where a range of Government facilities can be co-located.

Table 2: Community Facilities Provision 2017 – 2032

Community Facility		Aver. Standards	Existing		Demand (2017/2032)		Required (2017/2032)		Required Area (m <sup>2</sup> )	
Education	Independent Schools	KG	Boys	Girls	Boys	Girls	Boys	Girls		
		4000	13	13	38	38	25	25	3,500	
	Prim. Sch.	2 Sch. \ 15,000	15	13	8	8	-	-	18,000	
	Prep Sch.	2 Sch. \ 30,000	7	6	8/4	8/4	1/-3	2/-2	20,000	
	Sec Sch.	2 Sch. \ 40,000	7	5	4	4	-3	-1	25,000	
	Private Schools	1 SCH \ 40,000	8		52		44		25,000	
Health	PHC	30,000	6+2		20		10		20,000	
	PHC –C	50,000	2						25,000	
	PHC - SML	75,000	1		1		-		15,000	
Religious	Daily mosque	1200	191		317		126		2000	
	Joma mosque	3000	91		159		68		5000	
	Grand Joma	40,000	-		16		-		10,000	
	Eid prayer	50,000	4		13		9		50,000	
Social /Cultural Facility	Post Office	local	50,000		8		18		-	1,500
	MOI Ser.	Type C	50,000		-		12		12	3,000
		Counter ser.	30,000		-		8		8	200
	Library	Town	50,000		-		1		1	500
		District	20,000		1		24		23	500
	Youth Center	General (S)	50,000		-		8		8	2,000 –3,000
Social Center	SC	30,000		-		20		20	2,000 –5,000	
Emergency	Civil defense	Local Station	30,000		13		-		13	3,000
	Mid.Emergency	Local Station	30,000		13		-		13	-
	Police Res.	Local Station	30,000		13		-		13	4,000

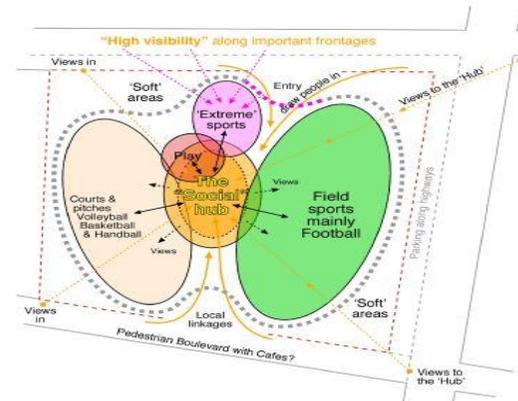
### 3.7 Open Space and Sports Facilities

The adequate provision of open space facilities and networks within the municipality is an important function within the spatial structure of Al Rayyan. Open Spaces and parks are an important contributor to the liveability, biodiversity, amenity and health of the city. Parks can play an integral role in helping to define neighborhoods, reduce the effects of micro climates, and providing daily recreational opportunities to residents as well as specialized facilities for local families and for women only.

An Open Space and Recreation Facilities Strategy and Master Plan will be developed to help identify potential future sites for parks and community recreation areas.

The open spaces hierarchy has been established and includes open spaces that range from national level to local level parks plus smaller neighborhood spaces like pocket parks.

Overall, the City lacks a comprehensive green network connecting open spaces and it is clear that current provision of parks is insufficient to meet the needs of existing and future residents. All zones within the City demonstrate an under provision of different types of parks.



#### 3.7.1 National and Metropolitan Park

Metropolitan Centres shall have provision for a metropolitan level or municipality level park or area of community open space. At present the proposed centre at Al Rayyan South will promote connections to Aspire Park and will also include more strategic connections to the new Doha Zoo and its perimeter pedestrian network.

In the longer term there is a requirement for a new municipality park within the city. This park should provide a multi-functional role for its catchment. Subject to further studies, the park could be located in the vicinity of the potential wetland of the proposed integrated water drainage master plan where it would effectively serve residents in Al Rayyan.

#### 3.7.2 Town Park

Density plays an important part in the demand for parks. There is likely to be an increase in demand for Town Parks throughout the City as population increases over the plan period and more compact forms of development and density are encouraged. The broad distribution of town and district parks will be identified in the Open Space and Recreation Facilities Master Plan.

In addition to the existing town level parks, three town parks are proposed throughout the city to address the shortfall of the major parks.

Within the major parks, discrete areas with facilities for families and for ladies only should be introduced, in response to local needs and customs.

The proposed Open Space and Recreation Facilities Strategy and Master Plan will need to consider how demand and spatial provision for parks and open spaces in higher density areas is to be successfully addressed. Within mixed-use centres consideration should be given to utilizing areas for dual purposes or activities.

#### 3.7.3 District Parks

A District Park provides more localized recreational opportunities and/or facilities that are not provided at the local and neighbourhood park level. It is the objective to provide a family park, and ladies only park, within each district level park.



District Parks are also in short supply across much of Al Rayyan; as a result a number of district parks have been proposed and identified in the open space and recreation facilities master plan.

### 3.7.4 Green Network

In addition to the provision of parks it is desirable to achieve a network of spaces that are linked by green corridors. This has benefits from both biodiversity and recreation perspectives. Al Rayyan is characterized by a series of sinks or Rawdah and relatively steep slopes: these should be protected and assessed for their ecological potential and for establishing water features or water management facilities.

In particular, a major green link between Al Rayyan South Metropolitan Center and the Mesillia Park (Western Doha Municipality) should be promoted and reinforced. An additional major green link should be promoted between Al Rayyan North and Al Rayyan South Metropolitan Centres.

Investments in public realm should seek to improve the pedestrian experience and the attractiveness of the built form. Road and utility corridors should also be utilized as

green corridors, to provide leisure and recreation options as well as for securing biodiversity opportunities.

### 3.7.4 Implementation

The Open Space and Recreation Facilities master plan will need to include an implementation strategy. Implementing the strategy will require land acquisition or land swaps and the utilization of available Government land to provide new facilities that meet the standards.

Developer contributions will be sought for the provision of open spaces with conditions and incentives for the provision of smaller spaces and urban plazas introduced as part of the planning regulations.



### 3.7.5 Sports Venues

Al Rayyan City benefits from some key open space resources and has a particular strength in providing professional sports venues such as Aspire Zone and Al Sadd Sports Club, Al Gharafa sports club, Racing and Equestrian Club as well as Al Rayyan Sports club that is located within the Greenbelt.

Aspire Zone is Qatar's premier sports facility location. It contains some of the world's finest sport stadia and a unique supply of sport and training facilities, the Aspetar

sports medicine and rehabilitation hospital, and research and education facilities for the international sports industry in the form of the ASPIRE Academy for Sports Excellence offering comprehensive sports education program for young elite athletes. Although this is not a public institution it does open its playing fields and sports venues to many public events and matches.

Additional sporting facilities are being developed including the Al Sadd Multipurpose Sports Hall. The municipality is also home to other large scale sporting facilities such as the Al Shahhaniya Camel Racing Track, Al Shaqab Equestrian Center and the Racing and Equestrian Track. These facilities contribute significantly to the active cultural and recreation needs of the country.



### 3.7.6 Community –oriented Sports Facilities

#### Al Farjan (Sports Playgrounds)

There are a number of Al Farjan sports playgrounds that currently exist in Al Rayyan Municipality, some of these facilities are sub standards because they are less than 1.5ha in size.

New Al Farjans should be located at district centres and in some cases in maybe appropriate to locate these within parks or in close proximity to one another.



In the open space and recreation facilities master plan, Al Farjan sports playgrounds should be proposed in all district centres utilizing appropriate size lots that can accommodate the advanced services and variety of sports fields currently required.

### 3.7.7 Ladies Clubs (Indoor Ladies Only sports Playgrounds)

The ladies clubs is dedicated to women and their children. Their private surroundings enables discreet and private sport activity. For many women this lack of privacy has been an obstacle for their contribution to passive and active community sports activities.

A distribution of ladies clubs have been proposed within the district centres to provide indoor sports playgrounds and ancillary services.



**Table 3** Al Rayyan Public Parks Program

Park Type	Existing Parks		Standards & Guidelines			2017			2032		
	No	Area (ha)	Proposed Area Ranges	Average Area	Catchment Pop.	Total Demand No. 2017	2017 Gap No.	Required Area(ha)	Total Demand No. 2032	2032 Gap No.	Required Area
Neighborhood Park	26	6.6	0.1 - 0.25	0.2	1200	395	369	63	530	504	85.63
Local Park	36	29	0.4 to 2	1.2	3000	158	122	146.39	212	176	211.06
District Park	0	0	2 to 5	3.5	30,000 – 50,000	8	8	28.0 0	8	8	28.00
Town Park	1	10	5 to15	10	50,000 - 100,000	4	3	30.00	4	3	30.00
Metropolitan / Municipality Park	0	0	60 to 200	130	200000	2	2	308.09	3	3	413.18
National Park	0	0	N/A	N/A	2 million +	N/A	N/A	N/A	N/A	N/A	N/A

**Table 4** Community Oriented Sports Facilities Program (District Level)

Facility Type	Facility Classification	Size		Facility Per User Group				Total No. of Facilities	
		Pitch Dimension	Sqm Plot	Mixed		Female		Quantity	sqm plot
				Quantity	sqm plot	Quantity	sqm plot		
Indoor Sports Field	Sports hall	30*36m	3,200	20	64,000	7	22,400	27	86,400
Outdoor Sports Field (Shaded)	Shaded tartan sports field	15*30m	1,350	6	8,100	0	0	6	8,100
	Artificial grass - FIFA standard	68*105m	10,550	1	10,550	0	0	1	10,550
	Double FIFA Standard/ Cricket Combined (artificial grass)	120*156m	23,075	4	92,300	0	0	4	92,300
	Artificial grass - 5 aside	25*35m	1,550	12	18,600	0	0	12	18,600
	Artificial grass - 7 aside	35*50m	3,000	6	18,000	0	0	6	18,000
Swimming Pool	Training	15*25m	4,000	5	20,000	3	12,000	7	32,000
	Standard	25*50m	10,000	1	10,000	0	0	1	10,000
<b>Total No. of Additional Facilities</b>				<b>55</b>	<b>241,550</b>	<b>10</b>	<b>34,400</b>	<b>64</b>	<b>275,950</b>

**Table 5** Community Oriented Sports Facilities Program (Town Level)

Facility Type	Facility Classification	Plot Size (Sqm per facility)	Facility Per User Group				Total No. of Facilities	
			Mixed		Female		Quantity	sqm plot
			Quantity	sqm plot	Quantity	sqm plot		
Tennis	Tennis Court	1,300	67	87100	17	22100	84	109200
Squash	Squash Court	350	6	2100	0	0	6	2100
Beach Volleyball	Beach Volleyball Field	1,500	5	7500	0	0	5	7500
Athletics	Track and Field	22,000	2	44000	0	0	2	44000
<b>Total (sqm)</b>			<b>80</b>	<b>140,700</b>	<b>17</b>	<b>22,100</b>	<b>97</b>	<b>162,800</b>

### 3.8 The Natural Environment

Within Al Rayyan City much of the natural environment has been lost to urban development. Rapid urbanization, low density subdivision, and motorization within Al Rayyan municipality has also led to a high level of car usage with high CO<sub>2</sub> emissions and reduced air quality.

A number of undeveloped areas which contain farms, natural spaces and open areas, however remain. These provide important habitats for flora and fauna. Added to these areas, urban parks provide some areas of natural landscape although not necessarily containing the type of environment required to effectively support a good level of biodiversity.



In addition to the Al-Rufaa Environmental Protected Area (EPA) within Al Rayyan City, there are another four EPAs located in the rural area of the Municipality as follows:

- Al Reem Man and Biosphere Reserve (part)
- Khor Al Adaid (part)

- Al Mashabiya al Eraq
- Al Shahhaniya

The environmental importance of the EPAs is of national significance. They also perform an important planning function as part of the Metropolitan Greenbelt. As a result development will be restricted in these areas.

Al Rayyan City also contains a number of features such as wadis and rawdah around which many of the old farms were originally established. Some of these farms still exist and provide green areas within the city.

#### 3.8.1 Biodiversity

There is a need to recognize the value of biodiversity in Al Rayyan City. Enhancement of biodiversity can be achieved through maximizing the value of wildlife corridors, open spaces and parks, as well as landscaped road corridors and private gardens. Two strategic green networks are proposed which can enhance biodiversity.

The flora, fauna, habitats, natural landscapes and vegetation located outside the protected areas are equally as important as those found within them. Due to the absence of formal designations they too need to be safeguarded from development pressures under the development regulations and zones.



Developers will need to demonstrate that new proposals will not lead to a net loss of wildlife habitat however small. The loss of trees will be strongly resisted. In the case of redevelopment proposals, opportunities will be sought to re-use existing private gardens for open spaces. This is particularly important in the built-up parts of the City where there is a shortage of green open space.

The creation of new open spaces and networks creates the opportunity to enhance the biodiversity value of the municipality. These local features should be incorporated into the design of new developments to create habitats suitable for local fauna and flora to survive

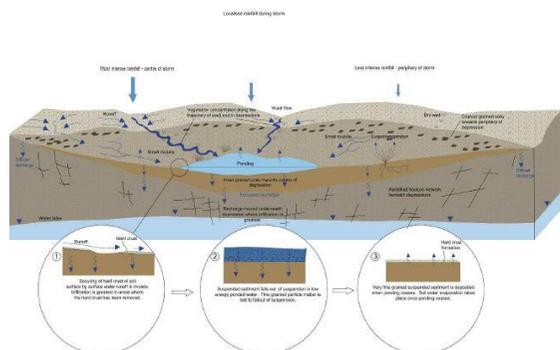
In the rural edges of the City, development proposals can blend the rural landscape with the urban form softening the boundary and creating green corridors that extend to the wider open desert. These corridors should extend across municipality boundaries and contribute to the achievement of open space requirements as part of the Metropolitan-wide landscape and open space network.

Applications for development outside of the Coastal Zone Protection Areas will need to demonstrate awareness of any natural resources in and around the application site and provide strategies for their protection and retention as part of the development application, and how they will be protected when the development has been completed.

### 3.8.2 Groundwater

Groundwater quality has been decreasing due to increases in demand and abstraction, seepage of household wastewater and infiltration of wastes from construction sites.

It is especially important that groundwater is protected from contamination from industrial activities, particularly those concentrated around SMSIA and the edges of the Doha Industrial Area (DIA), where piped sewerage systems are yet to be completed.



The prioritizing of Ashghal's expansion and completion of the drainage and sewerage systems to cover the whole

of the DIA/SMSIA industrial cluster through a phased implementation program with priorities for the new Town Center and the Model Industrial Park in the short term up to 2017 is very important. In addition the strategy is focused on initiating or supporting the following key actions:

- A comprehensive groundwater level study (by the Ministry of Environment).
- Groundwater quality monitoring at the existing pumping stations, wells, and at construction sites (by Ashghal and developers).
- Assessment of the existing water supply and wastewater treatment (pipe) facilities (by Kahramaa and Ashghal).
- Strict engineering inspection of wet facilities construction work (by MMUP and Ashghal).

### 3.8.3 Coastline

Al Rayyan Municipality has over 220km of coastline which makes up its entire western boundary. Approximately 85km of the western coastline is the concession area allocated to Qatar Petroleum. Qatar Petroleum is responsible for the management of the coastline in the areas designated as concession.

A further 130km of coastline lies within an environmental protection area. As such planning needs to ensure that development appropriately reflects its sensitivities and that its contribution to environmental amenity is maximized.



An Integrated Coastal Zone Management Plan is currently under preparation which will have direct impacts on identifying, managing and monitoring valuable coastal assets in Al Daayen. Development in or near the designated Coastal Zone Protection Area will not be permitted.

### 3.8.4 Climate Change Risk Management

Sea level rise caused by climate change is one of the main threats to the coastline of Al Rayyan. To better understand the potential impacts of sea level rise on the municipality's coastline a Coastal Flood Risk Assessment should be carried out to inform future mitigation measures. Essential infrastructure, particularly utilities and emergency services should not be located in risk areas. Developers should apply the precautionary approach to development adjacent to the coastline.

### 3.8.5 Waste Management

There is a need for an increase in recycling across Al Rayyan City which can be achieved through the

introduction of recycling facilities in accessible locations in apartment complexes and compounds, in mixed-use centres and in industrial areas, as well as through recycling awareness programs and incentivized schemes.

### 3.9 Movement

Movement is the component that binds all other elements together in forming the structure of Al Rayyan Municipality. The Metro network is the most important as it is the focus of new higher order (District and above) centres and a major contributor to achieving transit-oriented development outcomes.

#### 3.9.1 Integrated Transport Strategy

A transition needs to occur from a private car dominant society to a pedestrian and family- friendly society with high quality public transport systems. While this will not occur immediately every effort should be made towards the achievement of such a society commencing as soon as possible.



This transition will depend on two major factors, namely provision of quality public transport services integrated with changes in the spatial distribution of land uses. Residential population and socio-economic activity densities in designated centres should be increased, while accessibility and mobility between centres should be improved by public modes of transport such as Metro and the proposed BRT.

Prior to the introduction of metro services, it is imperative to ensure maximum use of existing road based infrastructure and unused spaces (vacant building lots) for support facilities. It is also important to be prepared for the operation of the metro in a proactive manner. This can be progressed by the following actions:

- Continued improvement of the existing public bus and taxi services by operators, with the municipality and developers providing supporting facilities such as bus shelters.
- Identification of key inter-modal stations and preparation of action area plans for the implementation of inter-modal (station plaza) facilities.
- Early introduction of Bus Rapid Transit (BRT) systems on key corridors to increase the passenger carrying capacity.
- Area focused intensive improvement: provision of high quality transit systems in major centres such as Education City, Al Rayyan North and South.
- Promoting the use of high quality bus based public transport to connect the residential neighbourhoods with the mixed use centres and rest of Metro Doha.

- Identification of candidate sites for Park and Ride near future transit centres and BRT/Metro stations with feeder systems.
- Preparing conceptual plans for such inter-modal facilities once such Metro stations locations are identified. Those stations should be fully integrated into the proposed mixed-use centres.
- Revision of the highway / street design standards to meet TOD requirements.
- Designating key pedestrian routes and cyclist networks together with a public realm improvement plan including a green open space network, as part of metro and bus station design and operation.
- Early establishment of integrated logistics strategy to accommodate the anticipated rapid increase in freight movement on Salwa Road towards FIFA2022.
- Promoting east west connections for public and private transport.

#### 3.9.2 Metro

The proposed metropolitan railway network connects the Capital City Centres and Metropolitan Centres of Doha to Al Wakra in the south, Al Rayyan Municipality in the west (Green and Gold Lines) and Um Slal and Al Dayyan in the north via four alignments which dissect the city. The main station will be Msheireb located within Downtown Doha where three alignments (Red, Gold and Green Lines) along with a Bus Rapid Transit System will connect.

There are two main phases for the metro rail in Al Rayyan Municipality:

- Phase 1 (2019): Includes the Gold Line from the Airport to Al Rayyan South along Al Waab Street, and the Green line from Msheireb to Education City along Al Rayyan Road.
- Phase 2 (Post 2022): Includes the extension of Gold and Green Lines to Industrial Area. A substantial section of the proposed GCC long distance heavy rail line and stations/logistics terminals will also be located within the municipality.

From a vertical alignment perspective all the rail alignments inside of D Ring Road will be underground. Outside of D Ring Road the majority of the alignments will be elevated with some sections at grade.

### 3.9.3 Public Transport

Transport in Al Rayyan Municipality is currently dominated by the use of private vehicles. It is expected that this trend will continue until the proposed metropolitan transit systems and associated bus feeder and support facilities are in place and are fully operational.



Improving public transport by providing convenient and comfortable bus stops and bus shelters, increasing service coverage, frequency and reliability, providing real-time information and an integrated ticketing system to make the transfer between the different modes of public transport easier and more convenient, will greatly assist this culture change. Combined bus/metro stations, in particular for the designated Town and District centres will encourage people to use public transport. This in turn will lead to a reduction in the number of cars on the highway network and help alleviate future congestion problems.

The existing public transport services (except school bus and private-hire) do not currently service the needs of the majority of the community, and as such are used by only a small percentage of people living within the Municipality. This, in addition to infrequent and unreliable headways, has contributed to the majority of trips being made by private vehicles. In turn this has increased traffic congestion during peak hours, and due to inadequate or unsuitable parking allocations and controls, illegal on-street parking.

The transport environment for public transport users within the municipality is generally poor. There are limited facilities for passengers at either road side or at the central station, therefore making public transport difficult and uncomfortable.

Provision of Bus Rapid Transit (BRT) services has been considered along Salwa Road, the service running along Salwa Road into the Msheireb Intern Model Transit Station. The BRT services are to be provided during the plan period, prior to delivery of the Metro Rail system.

During the plan period, the Mowasalat public transport services will be enhanced with particular focus on high frequency bus routes connecting key destinations:

- Dukhan Highway/Khalifa Street,
- Al Rayyan Road,
- Furousiya Street/Huwar Street/Al Gharaffa Street,
- Barwa Commercial Avenue/Al Muntazah Street
- D Ring Road.

### 3.9.4 Park and Ride

The provision of Park and Ride sites near inter-city bus terminals and the future metro stations will play an important role in reducing traffic congestion and parking problems in Al Rayyan Municipality. In the short term, sites along the major transit routes which target future stations and areas of demand should be identified.

When the BRT and Metro system are fully operational, Park and Ride sites can be further expanded. For maximum benefits, these Park and Ride sites should be located at Local and Town Centres where feeder services by local public transport systems are located.

Park and ride sites should be designed to integrate with existing and proposed mixed-use centres, enabling the dual use of car parking spaces throughout the day. Parking spaces need to be covered with shading structures with safe and covered pedestrian routes connecting the parking area to the metro station entrances and bus terminals.

### 3.9.5 Pedestrian and Cycling

Throughout Al Rayyan there are a number of major barriers to pedestrian movement. An increase in the number of grade separated pedestrian crossings is required with priority given to locations around mixed-use centres, commercial corridors such as Salwa Road and within walking distance of key community facilities such as Friday mosques, schools and health centres.

Within mixed use centres, streets should be designed to promote pedestrian priority. Measures include traffic calming techniques such as widening sidewalks, narrowing lane width, reducing the number of lanes, lowering speed limit and street lighting.

The National Bicycle Master Plan provides the overarching strategy for enhancing routes and facilities for cyclists in Qatar. Priority should be given to those routes that connect the mixed use centres, with routes forming part of the integrated public realm design in activity nodes. As part of the national strategy the prioritization of key long distance leisure and commuter routes is required, for example:

- Al Rayyan North to Al Rayyan South Metropolitan Centres
- Dukhan Highway
- Al Waab Street into Al Saad



Developers will be required to provide facilities for cyclists in the form of cycle parking in centres and other destinations such as workplaces and public transport stations as they are developed. Cycle storage and shower facilities should also be provided in workplaces to enable long distance cycling to work.

### 3.9.6 Parking

Currently there are major issues with regard to the on-street and off-street parking across the mixed use centres and large parts of the city Downtown. The shortage of parking is driven by both the lack of public transportation and failure to enforce the planning regulations. Poor land use planning and inappropriate development can also result in parking shortages.

Temporary structure parking (including vacant land) can be used to accommodate the parking demand. If such

spaces are inside the TOD centre areas, those will be converted to other land use such as public parks after completion of the metro lines. Over the long term permanent public car parking in mixed-use centres should be located underground with public open space above.

Ultimately however parking requirements will be reduced inside centres, to encourage development within them and to recognise the ability of public transport to meet the needs of residents and people visiting or working in the centres.

All new development will be required to adhere to all the relevant parking regulations (Parking Code), including regulations dealing with the design and positioning of car parking. In high density areas the impact of parking will be reduced by underground car parking or at the rear of properties. Exposed car parking at the ground floor of building frontages will not be permitted.

Surface car parking on leased vacant government owned land should be gradually reduced with an emphasis on enhancing the quality of the setting of key buildings and the use of these lots for public realm purposes.

All proposals in parking will be consistent with the national Parking Master Plan (currently under preparation) which will provide an integrated strategy as a package of measures including demand management and wider use of public transport services. Rigorous enforcement of illegal parking will be an essential of this parking strategy.

### 3.10 Utilities

With the significant urban growth expected for Al Rayyan, expanded utilities services is required to serve the future urban development.

Significant infrastructure development will occur over the next few years with the provision of utility services. Major utilities developments include sewage connections to the Doha North Sewage Treatment Works, the Local Roads and Drainage Program, the rollout of the broadband network and the implementation of the Integrated Drainage Master Plan.

#### 3.10.1 Water

A few limited areas of Metropolitan Doha (including Al Rayyan City) are not covered by the existing Reservoir and Pumping Station RPS. There are some major changes proposed in terms of RPS coverage in Metropolitan Doha in future including a new Salwa RPS, Doha South RPS and associated Pipelines. In addition 4 new reservoirs of 6 MIGD capacity each plus one new pump station with 4 pumps and a new desalination facility in Ras Abu Fontas are planned. No critical water supply or storage issues are anticipated for Al Rayyan municipality if the planned infrastructure program proceeds as planned.

#### 3.10.2 Wastewater

Sewerage systems are being expanded by Ashghal. These include a new Sewage Treatment Plant at Doha North is being constructed and capacity increases

planned at Doha West, Doha South and Doha Industrial Area are being implemented to service the metropolitan area. The majority of the urban areas of the municipality will therefore be served by the foul sewer network when these works are completed.

#### 3.10.3 Treated Sewage Effluent (TSE)

No issues are anticipated if the planned infrastructure program proceeds. Other new major public open spaces should be considered as potential locations for TSE balancing ponds.

#### 3.10.4 Storm water and shallow groundwater drainage

There are opportunities to enhance shallow groundwater quality and limit the impact of rainfall storm events on urban areas and the transportation network through the introduction of sustainable drainage techniques. There is the potential to use the remaining wadi's and rodah in Al Rayyan for managing storm water as natural storage areas thereby reducing the need for expensive infrastructure and further promoting the ecological value of such features.

Shallow groundwater quality requires protection through better monitoring of the development industry and enforcement of development and environmental permit approval conditions. Assessment of the impact of development on the water table will be used to inform future means for protecting this resource. If the quality of shallow groundwater in metropolitan Doha is assured, this can be used for landscaping purposes and potentially for district cooling.

#### 3.10.5 Electricity

There are potential shortfalls in electricity supply across areas of growth in metropolitan Doha. These include the new town metropolitan centres and Education City. The provision of new infrastructure should be aligned with new development areas and the increased demands of the growing population.

Additional primary sub-stations will be needed in those areas.



#### 3.10.6 Telecommunications

There appear to be major gaps in the provision of telecommunication infrastructure across Al Rayyan. New mobile phone infrastructure should be integrated into new developments minimizing its visual impact and concentrating on co-location and a reduction in the visual impacts of towers.

The Qatar National Broadband Network will be delivering an open access fibre network over the next 5 years. This will support the development of the broadband service to consumers in the municipality from the existing telecommunications providers, Vodafone and Ooredoo.

New broadband infrastructure is expensive to install and should therefore be phased as part of new development to avoid the realignment or removal of this expensive infrastructure.



New mobile phone infrastructure should also be integrated to new developments minimizing its visual impact.

### **3.11 Commercial Corridors**

The creation of new strategically located corridors and the protection of other existing retail and commercial corridors is promoted through the commercial corridors overlay with the role and function of these corridors aimed to spatially distribute the supply of lower order commercial and retail offer and off set the demand on centres.

A limited retention of some significant existing corridors is accepted in recognition of the large amount of investment they represent and the small likelihood the activities they contain will be channelled into centres within the plan period.

Two corridors are proposed to be retained:

- Salwa Road
- Barwa Commercial Avenue

To serve these corridors, improvements to public transport facilities including provision of bus laybys and screened shelters, as well as upgrading the reliability and frequency of services will need to be prioritized.