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Sustainable Neighborhoods: West Bay, Business District of Doha (State of Qatar)

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Original Research Article

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Abstract: Over the past two decades in Qatar, designers and planners focused on design merits of high-rise buildings and the impact on the skyline and the city image, discarding the integration of the buildings with the ground level. This research study investigates the sustainability and livability of the public realm within high-rise districts, focusing on the business district of West Bay, Doha, State of Qatar, as a case study. In West Bay, tall buildings have security gates and parking spaces on the ground level that weaken the livability and vitality of the street. Therefore, to enhance livability, the built environment should provide a vibrant social urban ground level. Insufficient parking spaces along with the lack of public transportation choices frustrate people and intensify the traffic congestion in West Bay. The lack of services and amenities within the residential towers accompanied with poor pedestrian circulation make it hard to perform everyday activities. The spatial segregation in West Bay translates into a distinct functional spatialisation. Also, most buildings in West Bay are single-use occupancy, with clusters of retail, services and catering activities, their spatialisation does not provide for an overlap of movement between the working occupants and the recreational ones. The research study aims to study the relationship between built environment and livability on the street level of the existing spatial environments on the micro urban scale of West Bay. Therefore, this research project aims to fill the gap in the literature regarding design-based research that provides solutions to existing limitations in the physical environment. The strategy includes a summary of the literature, site analyses and resultant design vision for a sustainable livable development concept for the study area, the business district of West Bay

Keywords: Sustainable Urbanism, New Urbanism, Livability, Social Interaction.

INTRODUCTION

Doha, capital city of The State of Qatar, is a small Gulf city that grew as a port settlement on pearling and fishing activities. Since the mid-seventies, The State of Qatar has begun the process of accelerated growth based on the rising price of oil. Namely, the capital city witnessed a massive urban transformation in 2005 that continues to the present day. Doha is scheduled to host the FIFA World Cup 2022. Consequently, a number of significant projects and infrastructure works are being undertaken and will continue until the event's launch. Designers and planners usually focus on design merits of tall buildings and the impact on the skyline and the city image, discarding the integration of the building with the ground level [1-4].

In West Bay, tall buildings have security gates and parking spaces on the ground level that weaken the livability and vitality of the street. Therefore, to enhance livability, the built environment should provide a vibrant social urban ground. The study of the relationship between the built environment and livability on a street level has focused on existing spatial environments on the micro urban scale of West Bay. Therefore, this research study aims to fill the gap in the literature by undertaking design-based research that shall provide solutions to the existing limitations in the physical environment.

In this research study it is argued that the current spatial form of the built environment of West Bay does not work in parallel with the aspects of green, sustainable urbanism or livability. Also, it does not facilitate the development of social activities, which in return does not provide street-livability [5, 6]. The aim of the research study is to explore and explain the extent to which the urban grounds of tall buildings such as in West Bay can be enhanced to encourage social interactions, create a vibrant public realm and, therefore, contribute to creating a livable community. This research is design-based and shall transform West Bay to a sustainable livable district. The research shall employ a qualitative methodology based on designing questionnaires and observations tables to interview and observe users within West Bay.

The proposed sustainable West Bay district shall have a diverse profile for the metropolitan communities of Qatar. The new district's goal that is proposed based on the analysis of the existing site condition, and it is to

develop a compact urban morphology within the business district of Doha. The design solution based on the findings of the research data considers clusters of commercial buildings on the ground level of those tall buildings that shall be of local reach. The new proposed land uses along with the existing ones will enhance the public realm of West Bay; there will be a vibrant, livable urban ground level in between those tall buildings. The West Bay has its various commercial and office towers; therefore, residents of the business district of West Bay shall have access to work, housing, retail and public parks within a walking distance, wherever they are within the district. This will employ aspects of green and sustainable urbanism.

Background

The literature review explores the aspects of the research problem, which include the following four disciplinary contexts:

- Livability definitions, key-principles and their relevance;
- Sustainable urbanism;
- New urbanism;
- Livability between urban sustainability and quality of urban life.

Livability

The literature explores livability definitions and principles proposed by a number of authors, organizations and planning authorities worldwide, aiming to gather all possible elements and indicators of livability. The analysis suggests a set of livability elements that suit the context, culture and identity of Qatar. Also, the review tries to demystify the confusion between livability, urban sustainability and quality of urban life by understanding the scope and intent of each component.

The term "livability", broadly defined as sustainability of human living, became famous for two reasons: first, the shift of population from urban centers to suburban areas and second, annual surveys that rank the world's most livable cities [7-10].

The livability of places refers to their degree of vitality. Vitality of spaces refers to safe, desirable and attractive spaces that can offer more choice of social activities. Livable spaces prioritize pedestrian movement over vehicular circulation. Lynch presents another definition of vital spaces. Lynch defines the vitality of spaces as one of the performance indicators of urban design [11, 12]. It can measure the degree to which the form of place supports the function and capabilities of human beings. Despite the fact that the term livability has been globally recognized for its impact on enhancing human well-being, the approach to more livable cities is still vague and unclear. The 90th Annual Meeting of the Transportation Research Board (TRB) highlighted the issue of the lack of measuring and implementing techniques for livability [13-15]. From the selected literature, livability can be defined as "*a sustainable human living*" that is characterized by the following:

- Mixed-use and pedestrian oriented developments;
- Safe, attractive, healthy and green public realm;
- Providing adequate choices of activities and transportation modes;
- Supporting diverse groups of people from the concluded definition.

In 1997 Lennard suggested that a livable environment is likely to have the following [16] (p.130):

- Attractive, pedestrian-oriented public realm;
- Slow traffic speed, volume and congestion;
- Affordable, decent and well-located housing;
- Schools, shops and services;
- Accessible parks and open space;
- A natural clean environment;
- Legible, diverse and educative built landscapes;
- Secure places that feel accepting to all users;
- Places of local culture, history, and ecology emphasis; and
- Environments that encourage nurturing the essence of human community and interaction.

Sustainable Urbanism: The Integration of the Built and Natural Environment

Researchers stated that the majority of planners and urban designers have viewed nature apart from the city, where the cities they design and plan have failed to use nature in forming healthy, economical and livable urban environments. Therefore, scholars and researchers focus on the significance of considering the potential of nature in the urban design of cities: the form and vision is greatly transformed by introducing vegetation and green areas. This would have a sustainability impact along with beautification benefits [17-19].

Nowadays the term "sustainability" is extensively used: the urban form is a key characteristic of achieving and implementing sustainability. This indicates that when planners and designers design for sustainability, they must not focus on the micro-scale of buildings: they must concentrate with the macro-scale, at the built environment of the city. Scholars and researchers are concerned with the current practices not being sustainable: they extensively urge the great need to improve such practices, to avoid critical ecological issues such as: climate change, social and economic consequences that might be faced in the next future. This intuition contributed to the occurrence of the sustainable urbanism movement. Sustainable urbanism relies on the knowledge of natural systems and human

beings to integrate walkable and transit-served urbanism with high-performance buildings and high-performance infrastructure. Sustainable urbanism symbolizes a change in the way human settlements are to be planned and built in the future generations. It promotes approaches and policies to develop the spatial form of the settlement, which in turn influences the lifestyle of the users [20-22]

The sustainable urbanism movement focuses on redesigning the built environment in a method that encourages a healthy and sustainable lifestyle. The core of the sustainable urbanism movement is drawn upon the human settlements with the contemporary environmentalism, and namely on the role of nature on human settlements. In the previous century, the cities neglected the improvement of urban settlements in their design [23-25]. Sustainable urbanism aims at recognizing the benefits of integrating built and natural environment systems; and over the past century there have been three main reform movements: (a) Smart Growth, (b) New Urbanism and (c) Green Buildings.

Sustainable urbanism's aim is to combine these three important movements into an inclusive design philosophy to create sustainable human environments [26, 15] (a) The Smart Growth Movement is based on the establishment of ten important principles for urban growth. The principles are the following:

- Create a range of housing opportunities and choices;
- Create a walkable neighborhood;
- Encourage community and stakeholder collaboration;
- Foster distinctive, attractive places with a strong sense of place;
- Make development decisions predictable, fair and cost-effective;
- Mix land uses;
- Preserve open space, farmland, natural beauty and critical environmental areas;
- Provide a variety of transportation choices;
- Strengthen and direct development toward existing communities;
- Take advantage of compact building design.

New Urbanism

The goal of the New Urbanism movement is to encourage traditional urbanism as an approach to minimalize urban sprawls. The movement emphasizes the formation of mixed-use communities and transit-oriented developments, introducing centers categorized by pedestrian networks and surrounded by heritage buildings [27, 28]. "*Sustainable development encounters the needs of the present without sacrificing the resources needed for the future generations. It encompasses the two key concepts: the concept of 'needs', especially, the essential needs of the poor; and the concept of limitations imposed by the state of technology and social organization on the environment's ability to meet present and future needs*" [29].

This means that nowadays there is a need to encourage practitioners to create a balance between natural and built systems: to create sustainable and livable communities and also reserve communities of historic and cultural values, by establishing partnerships; to develop streets network and a multi-modal transportation system, to create mixed-use developments offering options of mobility, walking, bicycling and networks easily accessed within the neighborhoods to reduce vehicle use and trips; and lastly to create interrelated public pleasant green spaces.

The West Bay business district as shown in analysis maps has a wide range of empty plots characterized by parking spaces, and these lots have got great potential of becoming public green spaces. It is reasoned that public open spaces are grounds in which people can socialize, learn and understand other people's culture and/or way of life and accept differences.

Livability: Urban Sustainability and Quality of Urban Life

Livability and sustainability are distinct concepts, although there is substantial overlap, and they may be occasionally used interchangeably. Both notions are multifaceted, dynamic, flexible and powerful. Better livability is an advantage of promoting urban sustainability and results in an overall better quality of life [30, 13, 31, 32]. For example, the agglomeration of inhabitants by high rises has the potential of providing a diversity of easily accessible services that may be located within walking distance from dwellings and in proximity to each other. This will increase walkability and bike-ability. Also, it means that more people could be housed or could work closely together, requiring shorter lengths of cables, pipes and sewers, bus routes, roads and also fewer but may be larger community facilities, such as shops, hospitals and schools [33, 21, 34, 35].

Providing amenities results in a more livable neighborhood that enhances the quality of life of the tall buildings' inhabitants, and eventually it enhances the overall sustainability of the development. Urban sustainability is a more generic field than livability. Livability is more attached to the place and physical form. Also, livability impacts primarily the social quality of life while sustainability has equal impacts on economic, environmental and social aspects. However, both livability and urban sustainability impact the quality of people's lives and well-being.

The Research Design

This research study utilizes a mixed method methodology as it combines both quantitative and

qualitative methods. The research will follow the two-phases approach strategy. The qualitative method will focus on observing the natural setting of the urban ground-livability and the public realm relation [36-39]. The quantitative method shall collect data from a focused group or people who live/ work in West Bay towers to reach a quantitative constructed answer for this research's question [40, 36, 41]. The framework of this research study is intersubjective as it considers the human elements which is the users of West Bay and their social interaction in West Bay's urban ground, and the design of these towers to meet the aspects of livable streets. The study aims to explore the following:

- The urban ground spatial form, accessibility, connectivity;
- The setting and the existence of open public space, social interaction, pockets for street dwellers, pedestrian-orientation, healthy public realms;
- The promotion of mixed-use development.

The collected data will be analyzed through five methods of investigation:

- Historic photographs and maps;
- Site observation of users' activities;
- On-site administrated interviews;
- Current maps;
- Photographs;
- Structured observations shall be conducted to verify the absence and presence of livability indicators using a checklist of indicators and assess the problems caused by tall buildings' impact on street level;
- A walkthrough shall be performed to cross-check the results of the observations and verify the analysis.

FINDINGS

This section is divided into two sub-sections: (A) the site analysis and (B) the masterplan-proposals. The proposals provide principles of livability that can and shall be applied in the West Bay business district. The principles are organized into four categories:

- Vertical and horizontal land-use;
- Public realm activation;
- Integrated transportation systems;
- Mobility.

Site analysis

Historical Background

Fig-1: Old Doha urban morphology and architectural typology

As shown on figure-1, Doha is a low-rise city; Doha's old districts followed the morphology of the historic Islamic cities. Within the contemporary planned neighbourhoods, more modern urban fabric can be observed. However, the buildings have maintained their moderate intensity with an average of 2-4 levels. According to the conducted interviews with the MMUP, West Bay has undergone the following four stages of evolution rizzo [42] (Figure-2):

Phase one: *The pre-planning phase*

- Due to a shallow part from the sea that was not washed by the water current, the central area of Doha had many problems that prevented further development, so a choice to dredge this area and develop it had to be taken.

Phase two: *this area was primarily planned to accommodate high-end waterfront villas.*

Phase three: *the area was developed as a new business district to the city of Doha with high-rise buildings.*

- The change of the land use has been changed without altering the layout of the area. This decision resulted in building tall buildings on fairly small plots with relatively narrow streets. The distribution of the land use, particularly on the buildings ground floor levels, did not inspire street-level movement or activities nor did it create a pedestrian-oriented livable public realm.

Phase four: *after the implementation of the QNMP (Qatar National Master Plan).*

- It is assumed that the current QNMP has the intensions to enliven this area and convert it to a

livable community of a 24-hour active public realm.

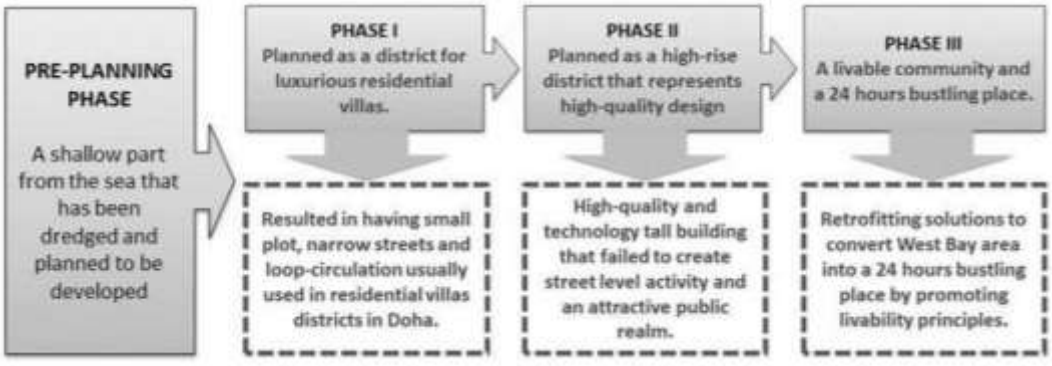

Fig-2: Phases of Planning of West Bay. Source: MMUPD.

The high-rise district of the West Bay area was primarily planned to be the new business district of Doha and accommodate the ministries buildings too [43, 26, 44, 45]. A recognizable urban transformation of the area was witnessed from 2003 to 2006 and remains until the present. This urban transformation has rapidly transformed the image of the city.

Context

Fig-3: Location of the study area between major sites and projects
Source: Author

West Bay is one of the capital centers in Doha city, located between major sites and projects. West Bay is in the middle of the city and has almost equal remoteness to most of the major sites in Doha. Also, it has a 1.5 km waterfront length that was not properly utilized in the past years of development. The waterfront has been previously used to accommodate embassies and diplomatic organizations; however recently a decision was taken by the government to properly utilize this impressive waterfront for beach-based activities and to accordingly reallocate the embassies (figure-3).

Existing Land Use

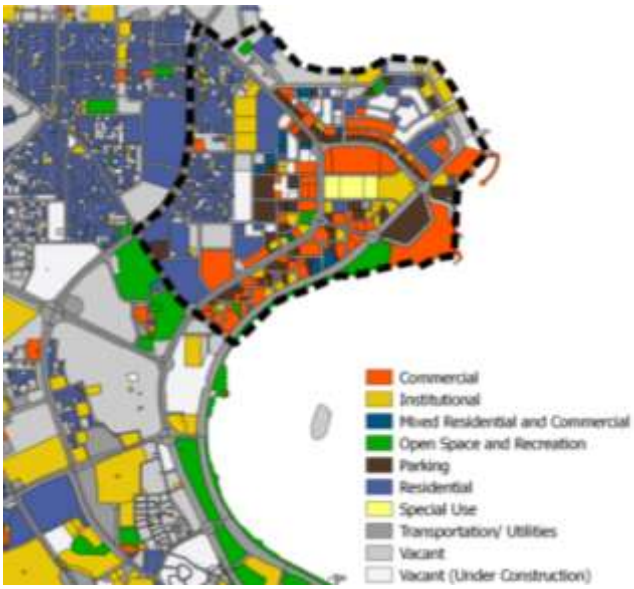

Fig-4: CBD limits and land use distribution. Source: MME

Thus, strong devotion to create a commercial image for the city put pressure on the West Bay to quickly deliver a business district of high-rises that would accommodate mostly financial institutions, government entities and high-service sector companies, along with five-star hotels and high-end shopping centers. The objective was being fulfilled quickly, and data show that by the 1990's, only few government agencies and banks occupied the city centre, while other commercial activities and most major businesses moved to the West Bay within the D-ring road and E-ring road in the South District (figure-4).

The current insufficiencies of the West Bay area are not due to its uniquely high rents and deficiency of smaller fitted office spaces, but due to the constrains imposed by its morphology and land use. The existing land use map shows that West Bay is dominated by commercial use and parking lots. Commercial uses are classified as office buildings, public organizations buildings and two shopping malls. West Bay also contains projected potential areas of pockets of green areas and public plazas, but unfortunately, they are not well connected to each other. West Bay is served by only two shopping facilities, City Center Mall, and The Gate Mall. Because of this unfortunate distribution of commercial facilities in the business district, the area surrounding the shopping malls observers traffic congestion during rush hours. Consequently, the West Bay lots are deserted and empty especially during night time.

Public Realm

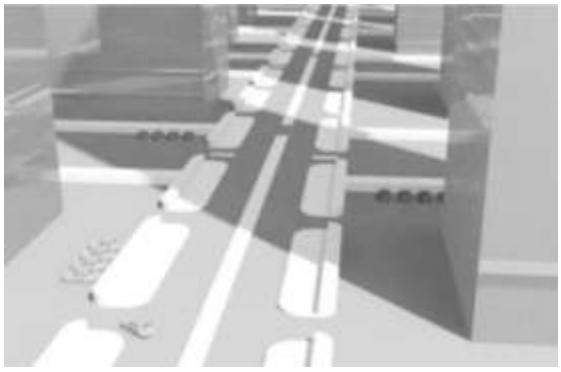

Fig-5: The resulting public realm from the existing regulations in the West Bay area.

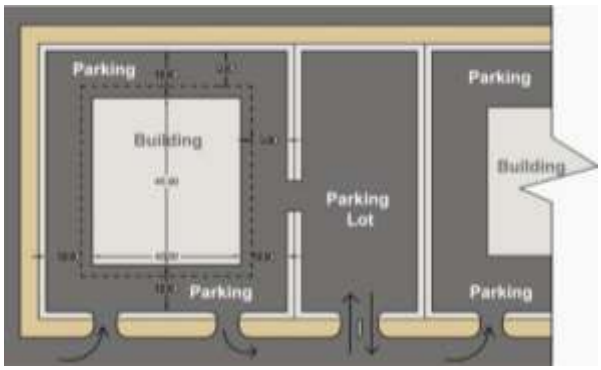

Fig-6: Typical organization of tall buildings in the study area with respect to the regulation's source: MME

The public realm typically contains streets, alleys, sidewalks, parks and plazas. The building and its surrounding area is the primary organizing element of any space that consequently affects the public realm. In West Bay, according to the codes and regulations set by the MMUP, the footprint of the building should use 30% for the upper floor areas and 50% of the total area for the ground floor, as shown in Figure 5. The codes also specify minimum setback from all sides of the building plot, but the codes do not specify the function of the ground floor. Because of the vague regulations, a non-consistent street wall has been created because of buildings keeping the minimum setbacks and being placed freely in their plots. The dedicated large areas of parking lots have also contributed to the present situation. Alleys between buildings are not shaded or inviting. The absence of human scaled alleys and sidewalks produces a sense of an unsafe public realm. Fences, parking lots and non-shaded walkways prevent people from walking or using the space adequately. Alleys and sidewalks should be activated with retail uses to guarantee their safety and utilization. Public spaces are not connected and provided as numerical values and subtractions of land plots that form bits and pieces of green spaces with no benefit to the public realm. Usually, these spaces are used for private parking where building owners use fences to separate their properties from the outdoor environment.

Transportation

Currently, there are no public transportation modes in the West Bay area, except the Karwa and the West Bay bus. Karwa buses have a well distributed route all over Doha, but there are no other public transportation modes to support the bus services. Recently the traffic and transportation department decided to run another bus, which is the West Bay bus, to connect inner parts of the area to the external Karwa stations.

Furthermore, the Doha Metro is an integral part of the Qatar Rail Development Program (QRDP). Including four lines, the Metro network shall cover Doha and shall have connections to town centers and vital commercial and residential areas throughout the city. In central Doha, the Metro will be underground, while at the outskirts, it will mainly be at ground level or elevated [46].

Site analysis of the site's livability and modes of movement

Fig-7: Vehicular Map

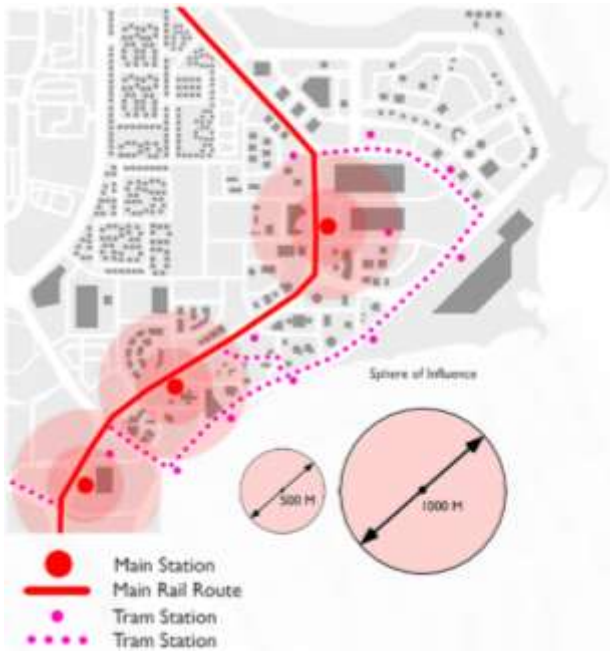

Fig-8: Residential Map

Fig-9: Residential Map

Fig-10: Hotels and Residential Map

Fig-11: public space Map

Fig-12: Government Map

Masterplan-Proposal: Enhancing West Bay Livability

The established framework is based on the data analysis and the data collected from observation.

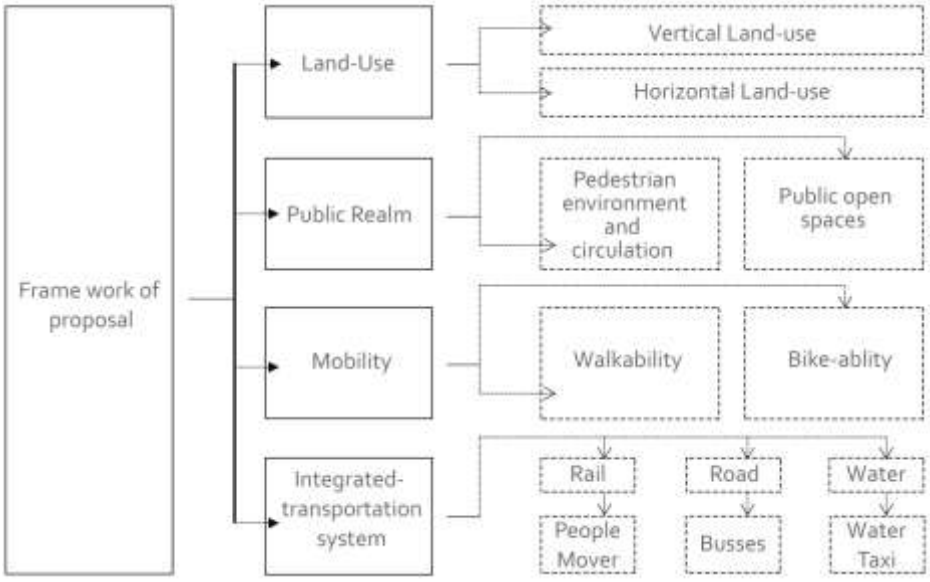

Diagram-1: Regulatory framework of proposal

Land use Framework

Diagram-2: Regulatory framework of land-use proposal

Fig-14: West Bay's Figure Ground

Fig-15: Proposed horizontal land-uses in west bay.

(The Vision) West Bay shall be a 24-hours active city center in Doha. The district functions as a business center that offers a wide range of job opportunities along with its supporting services. Also, it accommodates luxurious residential units located close to services and amenities. West Bay is a place where people can and shall walk, bike, shop, work and live conveniently.

(Objective) Integrating horizontal uses with the existing vertical ones shall transform the existing district into a dynamic place. This will provide dining facilities and cafes with an outdoor shaded area to encourage social communication and offer commercial markets on the ground levels, where people can have access to their basic needs at a walking distance from their workplace or their houses.

Public Realm Framework

Diagram-3: Regulatory framework of Public Realm proposal

Fig-16: proposed public space and frontages scenario.

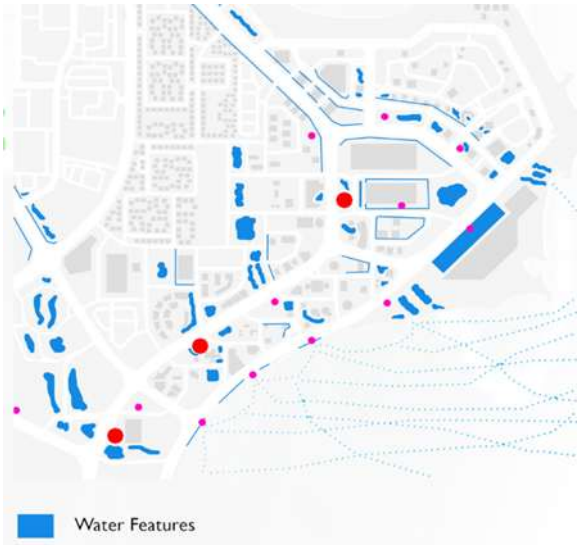

Fig-17: proposed water features to enhance the quality of public networking spaces

(The vision) West Bay shall be a livable place that attracts people and engages them in day and night activities. The public realm shall be well defined accommodating a network of public spaces where people's movement shall be easily facilitated from one place to another. Sidewalks shall be planted with interesting commercial frontages and motivate people to walk instead of relying on car usage. Public spaces shall also be integrated with water features that shall increase the quality and value of the business district.

(The Mission) Creating a well-oriented pedestrian environment in the district is consistent with the vision of enhancing West Bay's livability. Frontages, sidewalks and public spaces should be a significant component of the public realm along with enhancing connectivity by relying on public transportation and walking over car usage in urban streets.

Connectivity Framework

Diagram-4: Regulatory framework of connectivity proposal

Fig-18: proposed cycling lanes

Fig-19: proposed pedestrian circulation by maintaining vehicular circulation to the main roads only.

Fig-20: proposed water taxi movement and stations

Fig-21: Main roads are limited to the primary roads to maintain the pedestrian movement in all sub-plots.

(The vision) West Bay shall be a 24-hour active city center in Doha; therefore, people shall have the ability to move and commute easily for West Bay to become a place where people can walk, bike, shop, work and live conveniently. West Bay shall provide a variety of well-connected modes of transportation to make people's daily activities an enjoyable experience in West Bay; accordingly, this shall save time and reduce the congestion in the area.

(The mission) The mission is to connect primary modes of transportation as metro, buses and water buses that run on major roads with secondary modes of transportation as the tramcar, mini-buses and water taxis that run on interior parts of the city. This network of integrated modes of public transportation should facilitate the mobility within the city, providing convenient and safe pedestrian paths specially between sites of major interest as public plazas, parks and malls where pedestrian movement is highly expected. Connecting the study area with adjacent Cornish bicycle lane and introducing the "park & ride" concept along with providing bike-parking spots in West Bay.

Integrated Transportation System Framework

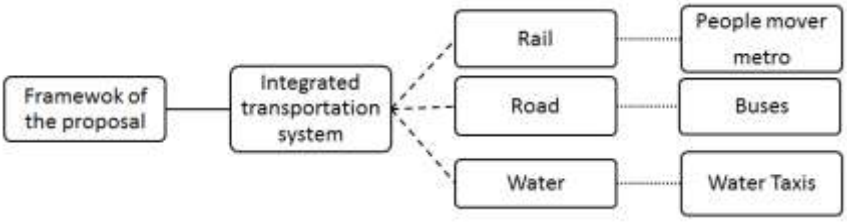

Diagram-5: Regulatory frame work of Integrated transportation system proposal

This section introduces an integrated public transportation system that serves the whole city and prioritizes public transportation, walking and biking over using cars. This system should meet the changes in transit needs acquired by the city's ongoing transformation and upcoming mega events. This integrated system is classified to rail, road and water modes of transportation. For rail modes, metro lines should connect the districts of the city while tramlines connect inner parts of the district. On the road, buses with different capacities should connect the whole city with all its districts and inner parts. It is important to mention that Doha city already has a well-connected and well-distributed bus network that runs all over the city and needs minor modifications.

Also, the integrated system introduces a new mode of transportation that utilizes the exposure of the country to water from the north, east and west by using water taxis and buses to connect districts adjacent to the waterfront and even Doha to adjacent cities in Qatar.

CONCLUSION AND DISCUSSION

The conclusion summarizes the proposed design frameworks to solving the urban problems, which were acknowledged in West Bay area and offers recommendations to be implemented. The proposal consists of four main parts; the concept and the design. The concept factor explains the vision and the mission for guiding livability principles that frame the proposed guidelines. The design factor is composed of a regulatory framework that proposes guidelines for the land use, public realm, mobility and integrated transportation system for West Bay.

The suggested proposal should enhance the livability conditions in West Bay and convert it into a revitalized urban space. The site analysis shows that West Bay lacks the existence of activities and land uses that enliven the public realm. Tall buildings in West Bay have a street level filled with parking lots and unwelcoming security gates. Streets are narrow, which de-facilitates accessibility to site areas. Sidewalks, alleys and public spaces are not pedestrian-oriented. West Bay and the entire city relies on one mode of public transportation, which is the bus system. The lack of public transportation choices deprives people from choosing any other convenient mode of transportation that could possibly suits their daily lifestyles.

The ten guiding livability principles were extracted from several literature sources and revised to fit with the context and needs of West Bay. The livability principles and associated indicators were used throughout the research for different purposes, such as the observation checklist, the guiding principles of the proposal. The use of the same livability principles throughout the research proves their originality.

The proposed land use plan organization depends on the distribution of land uses horizontally, by integrating the existing vertical land uses with commercial and public facilities that can create a dynamic movement on the ground level and provide people who work and live in West Bay with access to services within a walking distance.

The proposed public realm depends on creating a place that attracts people and engage them in day and night activities. The public realm shall be well defined accommodating a network of public spaces where people's movement shall be easily facilitated from place to another.

The proposed connectivity depends on connecting primary modes of transportation as metro, buses and water buses that run on major roads with secondary modes of transportation as the tramcar, mini-buses and water taxis that run on interior parts of the city. This network of integrated modes of public transportation should facilitate the mobility within the area and the city.

When it comes to tall buildings, the conclusion was that the construction of such typology of buildings will remain for many reasons associated with globalization, urbanization, fast-growing population and concentration of business. Tall buildings typology is a complex category of developments that needs special planning regulations to control the surrounding urban environment and ensure a healthy living. Published research that proposes building codes as a way of controlling the associated public realm with tall buildings is very rare.

Contribution to Knowledge

This research study began with an introduction stating the research problem, research questions and factors that led to the existing situation, which have generated a set of keywords: sustainable urbanism, new urbanism, livability and social interaction. The generated keywords helped in framing the literature review required for the research study. The literature review made the research problem very clear and brief. Another outcome of the literature review was identifying methods of data collection in the selected resources and their intents and goals and comparing it with the research goals to figure out the most suitable tools for gathering the information. At this stage, the research has concisely identified the problem, figured out ways to solve it and gathered information about the setting of West Bay. The next step was using the findings from each section and applying them to the study area and formulating a framework that shall solve the existing problems in the West Bay of Doha.

Acknowledgements

Dina Saleh holds a bachelor's degree in Architecture from Qatar University. Currently, she is undertaking a master's degree in Urban Design and Planning at Qatar University and employed as Design Architect at GHD Group in Doha (State of Qatar), Architecture and Design Department.

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Appendix

Data collected through the observation tables:

1. Community participation in visioning, planning, implementation and monitoring	Promoting mixed-use developments	x	Never been implemented in Doha
	Ability to evaluate existing facilities and address public needs	×	No existing system to collect the feedback of users
2. Creating a public realm that encourage social interaction and embrace diversity	a. Offering choices of activities that encourage social interaction	x	No adequate amount of choices as it is limited to indoor activities in shopping malls
	b. All people are welcomed to use the space	-	Provided activities target a particular type of people as shopping facilities are limited to above-average outlets
3. Providing pockets of respite for city dwellers	a. Parks and green spaces located in urban areas	x	The study area does not consist of green areas that are dedicated for public use and easily accessed from the ground floor
4. Promoting mixed-use developments	a. Mixed uses (commercial- retail- housing- public) distributed horizontally	-	A combination of two or more uses may exist but not well-distributed
	b. Other amenities (schools- culture- sports)	x	No such uses in the study area
	c. Affordable housing	x	Range from high to very high rental value with a minimum of 8,000 QAR/month
5. Pedestrian-oriented, attractive, healthy and safe public realm.	Enough alleys and vehicular-free path	x	Rarely Exists
	c. Human scale street-level interface	x	Towers meet the ground level with fences, parking lots and security gates that separate the pedestrian movement totally from buildings
6. Connectivity.	Connected pedestrian paths	x	Not considered
	Connected bicycle lanes	x	Not considered
	Networked public spaces	x	Not considered
	Connected public transportation network	-	Only the free West Bay bus service that circulates the West Bay only is and connected to the Karwa bus network
7. Providing transportation alternatives.	Walkability	-	Need further planning and design to be used as an alternative of transportation as it is not safe or convenient
	Bike-ability	x	Does not exist
	Buses	✓	An integrated, reliable and well distributed bus network
	Metro	x	Proposed
	Water taxis	x	Does not exist
	Taxis	✓	Available

× Does not exist - Intermediate level of existence ✓ Exists

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