

DUBAI  
WORLD CENTRAL



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LOGISTICS CITY



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Dubai Logistics City

# Planning Regulations & Development Guidelines

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## PREFACE

The unprecedented growth of Dubai's economy and the concurrent increase of air traffic, both for passengers and cargo, prompted the Higher Authorities in Dubai and "Dubai Civil Aviation, D.C.A" to develop a strategy for the expansion of Dubai Airport facilities and services to cope with future demand.

As of mid 1990's, Dubai started a vast program to expand its existing Dubai International Airport (DXB) with the aim of increasing its capacity for passengers and cargo. During implementation it became clear that there were physical constraints that prevented a parallel expansion of cargo facilities. This fact, coupled with the results of several air traffic projections about ultimate passenger capacity of DXB, prompted the authorities to initiate in 2004, the studies for the development of a new international airport at Jebel Ali.

The selected site for the new airport is close to the Jebel Ali Free Zone (JAFZA), and presents several advantages for the immediate development of a cargo terminal and logistics city, which would benefit from a direct road link to the JAFZA, as such exploiting potential synergies.

The development of such a large international airport, with six runways, the largest contemplated at present worldwide, represented a major planning challenge. Al Maktoum International Airport (JXB), lately named as such, will be a major generator of employment. The planned airport would represent a significant pole of attraction for industrial, office and service employment. Such massive employment will result in an even larger demand for housing, community facilities and services.

Very quickly, it became clear that there was a need to plan the areas around the airport to absorb employment, housing and supporting services. And that is how the concept of an Airport City, developed around the airport platform, became an integral part of the Master Planning process. The new airport city, "Dubai World Central" or DWC, extends over an area of 80 km<sup>2</sup> around the airport platform, which itself occupies an area of 60 km<sup>2</sup>, bringing the total site area of Dubai World Central (DWC) to 140 km<sup>2</sup>.

The components of DWC are:

1. Al Maktoum International Airport;
2. Dubai Logistics City(DLC);
3. Residential City;
4. Aviation City;
5. Golf City;
6. Commercial City;
7. Exhibition City
8. East and West Entrances (not a city???)
9. Humanitarian City (DLC & Golf)

The amount and scale of development in DWC is enormous; comprising a site area of around 140 km<sup>2</sup>, a resident population of 950,000 and employment for some 750,000(including airport). This document is a general description of the Master Plan for Dubai World Central (DWC) and focusing

on the development guidelines and planning regulations of the Logistics City that has been master planned around the airport. The guidelines and regulations have been set to ensure that the development of the city will follow the envisaged master plan and concur to the common grounds of development heights, character, coverage (FAR), quality, etc... the basic components of a developing a city for the future.

As a final note, the principal methodological approach followed in preparing the Master Plan involves establishing the basic economic and planning parameters underlying the development of such regional and urban development project. At the commencement of the operation no definitive figures were available to determine the extent and rates of growth. These established themselves in response to research, benchmarking, stakeholder involvement, experimentation and empirical judgment. The concept is of a major airport with an upper capacity for passenger and freight movements generating employment demand, which is accommodated in surrounding metropolitan urban communities whose immediate proximity to the employment centers creates a 'balanced community' where travel to work is optimized to the benefit of conditions in the metropolitan area as a whole.

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## Glossary of Terms

“Authority” shall mean the Dubai Aviation Corporation (DAC) - Dubai World Central (DWC) or any other entity delegated by DWC.

“Building” denotes any walled and roofed structure erected inside a plot above the ground level, used for living, working, storing or fabricating, and which abide to the conditions of the Planning Regulations of the plot.

“Building Completion Certificate” is a certificate granted by the Authority acknowledging completion of construction and finishing and enabling connection to public utilities and occupation.

“Building Height” denotes the height of a building in meters measured from the finished sidewalk level to the top of the roof parapet or to the top of the coping tile of the pitched roof. The building height is measured along the midpoint of the building elevation facing the street that provides access to the plot. In cases where the plot is bounded by more than one street, the façade facing the main street, (or if not applicable, the façade having the longest frontage to the street) will be taken for reference.

“Building Line” denotes the vertical line that defines the outer face of the building façade. Decorative elements and cornices may project a maximum of 0.60m from the building line. Other projecting elements such as balconies must comply with current building regulations and specifications issued by Dubai Municipality.

“Building Permit” is the license that the Authority issues to allow construction work to proceed on a specific piece of plot, in accordance with approved plans, specifications and conditions.

“Consultant” means a locally registered consultant holding a valid consulting Engineers license from the Dubai Municipality.

“Contractor” means a registered contractor holding a valid contracting license from the Dubai Municipality and Dubai Chamber of Commerce for the type of works and classification therein.

“Developer” shall mean the lessee or his authorized Agent who submits an application to the Authority on behalf of the lessee.

“Floor Area Ratio” (F.A.R.): coefficient that denotes the ratio of the total built up area of buildings and structures on a given plot over the total land area of the plot. When calculating the F.A.R., the areas of the following shall not be counted as part of the total built up area:

- i. Basement floors with no direct natural lighting, intended for use for parking, building services and storage.
- ii. Balconies, terraces, garden sheds (of up to 2.20m clear height) and non enclosed shade structures (i.e. completely open on 2 sides at least).
- iii. Mechanical floors with maximum clear height of 2.20m, elevator rooms, stairwells and areas reserved for water tanks and other mechanical equipment on the roof.
- iv. Roof Attics, or parts thereof, which are not used and cannot be converted for habitation.
- v. Mezzanine floor having direct access only from the ground floor and not from any common stair or lift lobby, and that has an area less than or equal to 50% of the gross Ground Floor area of the building.

“Green Building” is an environmentally responsible, profitable and healthy place to live and work.

“Ground Floor” denotes the floor directly accessed from the finished level fronting the main entrance to the building. It can be at the same level as the ground level, higher by a maximum of 1.2m, or lower by a maximum 1.0m from the finished site level.

“Habitable Room” means a room used for office, shop, workshop or other purpose involving occupation by human beings for continuous periods of time, but not including a W.C.

“Hazardous Goods” means:

- i. Any compressed, liquefied or dissolved gases.
- ii. Any substance which becomes dangerous by interaction with water or air.
- iii. Any liquid substance with a flash point below 75°C.
- iv. Any corrosive substance or a substance which emits poisonous concentrations of fumes when heated.
- v. Any substance liable to spontaneous combustion.
- vi. Any radioactive material and any substance which readily emits heat or other harmful radiations when it changes state or decomposes.
- vii. Sheds which contain vehicles loaded with hazardous materials.
- viii. Any other substance considered hazardous by the suppliers.

“Landscaping” is the treatment and maintenance of a plot area or property with predominant vegetation such as ground cover, plants, shrubs or trees. It includes paving, bricks, rock work and other natural or decorative features in an organized manner designed to create a specific appearance.

“Leadership in Energy and Environmental Design (LEED) Green Building Rating System” is the accepted benchmark for the design, construction and operation of high performance green buildings.

“Loading Space” is an area used for loading or unloading of vehicles, located entirely on private property with a minimum vertical clearance of 4 meters and provided with permanent independent access.

“Mezzanine Floor” denotes a floor that can be accessed from the ground floor only and which covers a maximum of 60% of the ground floor area excluding communal entrances, stairs and lift areas. The minimum height of the Mezzanine floor has to comply with applicable Dubai Municipality Building regulations and specifications.

“Operation Fitness Certificate” is a certificate granted by the Authority after a Building Completion Certificate is issued, acknowledging completion of installation and testing of machinery, and confirming the facility is safe for Operation.

“Permanent Building or Facilities” means buildings or structures designed and constructed in reinforced concrete, or steel with block or metal cladding, or with a combination of steel or pre-cast concrete or reinforced bearing block walls or brick, or other durable material.

“Plot” is a parcel of land defined by clear boundaries and coordinates.

“Plot Area” is the total area of a plot within the plot lines as measured on a horizontal plan.

“Plot Coverage” (PC): coefficient that denotes the ratio of the area of the building imprint (sum of the areas of the ground projections of the largest floor of all buildings on the plot) over the total land area of the plot. When calculating the plot coverage, the areas covered by roof projections and balconies shall be counted as part of the building imprint. The areas covered by non-enclosed shade structures shall not be counted (i.e. car parking, gazebos, etc).

“Plot Frontage” is the portion of the plot construed nearest to the street. All sides of a plot adjacent to streets shall be considered frontage.

“Plot line” is any line bounding a plot herein defined.

“Project” means the construction of a permanent building, any other civil work on a leased/sold property including any modifications or installations in pre-built facilities.

“Regulations” means the rules and statutes listed in this publication and other regulations issued by the “Authority” or any other rules issued in the future.

“Service Authority” shall mean the following entities:

- Water Authority - DEWA
- Electrical Authority - DEWA
- Waste Water Authority – DWC - DuServe
- Irrigation Authority – DWC - DuServe
- Storm water Authority – DWC – DuServe
- Fire Authority - Dubai Civil Defence
- Telecom Authority - DWC - IT&T
- District Cooling Authority – DWC - DuServe
- Voice / Data - DWC - IT&T
- Tetra Radio System - Dubai Police Frequency Regulator & DWC IT & T - Service
- Police and Security - Dubai Police
- Waste Collection – DWC- DuServe

“Setback”: denotes the distance separating the building line from the plot boundary line that must be left free of building. A setback may be specified as mandatory; in which case it will define a built to line that all buildings must adhere to. A setback may be specified as a minimum setback and in this case, the building line may adhere to it or be setback a distance larger than the specified minimum.

“Structure” denotes any constructed, erected material or combination of materials which requires being located on the ground or attached to something located on the ground.

“Temporary Building or Facilities” means a building used as a site office or to house construction equipment for the purpose of construction only.

“Typical Floor” is a floor that is similar to the floor that follows it or precedes it or both in area and structure.

“Ventilation Opening” includes any means of ventilation whether permanently open or closable and which opens directly on to the external air, such as parts of a window which can be opened, louvers, ventilators, and any door opening directly to the external air. Any openings associated with mechanical systems are excluded.

“Welfare” or “Welfare Facilities” shall mean ablution, washing and toilet provision standards for personnel working in buildings.

## 1. INTRODUCTION

### 1.1 Context

Dubai Logistic City is located beside Al Maktoum International Airport, adjacent to one of the largest container handlers, Jabel Ali Port and Free Zone. DLC is the state-of-the-art multimodal Logistic hub with direct access to the airport, seaport and regional road network. The DLC is mainly comprised of Forwarders Area, Light Industrial Units, Air Cargo Terminals, and Contract Logistic & Industry Area along with other ancillary facilities.

### 1.2 DWC and Site Context

The Dubai World Central (DWC) is located on the southern part of Dubai, near to the Jabel Ali port free zone.

The Dubai Logistics City (DLC) is planned to be strategically situated to the south-west of Al-Maktoum International Airport adjacent to the southern runway, taxiways and aprons. As illustrated in Figure 2, the DLC, covering an area of 1,885 hectares, stretches to the south and west up to Emirates Road as a bonded and free zone which will be linked to JAFZA with no gates separating the two zones.

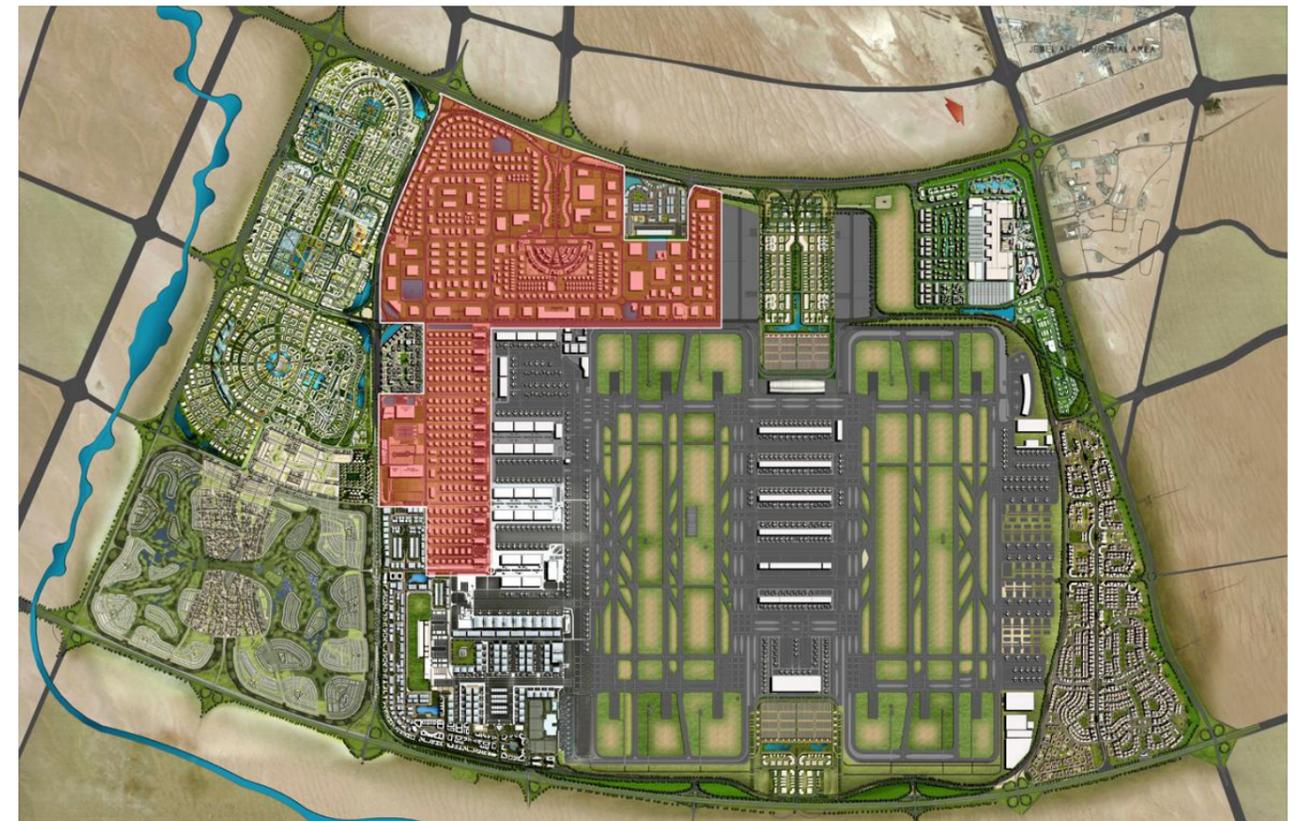
Figure 1: DWC Site Location



### 1.3 Development Context

The site lies within the new Dubai World Central development. As one of the largest new development zones in Dubai, Dubai World Central shall be anchored around the new Al Maktoum International Airport and shall comprise, in addition to Dubai Logistics City a number of significant new projects:

Figure 2: DLC Location within DWC



#### 1.3.1 Al Maktoum International Airport

- It shall be 10 times the size of the current Dubai International Airport and Dubai Cargo Village combined
- Passenger capacity close to 120 million passengers a year (Atlanta, currently the world's busiest airport, had 83.5 million passengers in 2004)
- Six parallel runways all of 4.5 km in length
- 92 meters control tower, the highest in the Middle East

- 3 dedicated terminals - the Emirates Group, other regional and international carriers and low cost charter airlines
- Dedicated facilities shall be earmarked for executive jet operators.
- Hotels and shopping malls, support facilities and state-of-the-art maintenance facilities, which shall create a regional maintenance hub capable to handle all aircraft types, including the A380
- Linked to the existing Dubai International Airport via an express rail system and shall ultimately be serviced by the Dubai Metro
- Work is already underway on the first all weather runway (CAT III), which allows for automatic landing
- Some 100,000 car parking spaces shall be available for airport parking and car rental services.

### 1.3.2 Residential City

- 7.67 million square metre site.
- Freehold land plots shall be offered to developers on the open market who shall then build in accordance with master plan guidelines.
- It is expected to accommodate up to 240,000 residents and a workforce of 20,000.
- The Dubai Metro shall serve Residential City which shall also have a dedicated and integrated road network.
- Several hotels (5-star, 4-star and 3-star properties) and shopping malls will be developed
- Houses shall be a mix of 2 storey villas and luxury apartments in blocks up to 24 storeys in height.
- A full range of civic amenities, including schools, shall be provided.

### 1.3.3 Aviation City

- The Aviation City (405 ha excluding the airside)
- It is divided into the land side non-bonded zone and the airside zone
- Major Land-uses Light Industrial Units, Warehousing (bonded zone), Academic and Training, Office Park and Commercial and Mixed Use (non-bonded zone)
- The city targets primarily airport operations and its sub-activities

### 1.3.4 Golf City

- The Golf city is spread over 148 ha.
- It is expected to accommodate a population of 140,000
- Two 18-hole golf courses (possibly three) shall be designed
- The golf experience shall include extensive practice facilities, driving ranges and putting greens as well as a luxury clubhouse with restaurants and a pro-shop.
- 2,500 freehold homes, ranging from 2 storey villas to 24 storey apartment blocks will overlook the golf courses
- High-end boutique hotels complete with a spa resorts

### 1.3.5 Commercial City

- Spreads over a 1400 ha site
- Designed as Dubai World Central's business and finance hub
- Will feature more than 850 towers, reaching 45 storeys in height
- Expected to employ around 225,000 people
- It shall include a cluster of luxury villas
- 25 hotels, ranging from 3 to 5 star deluxe
- Land plots shall be sold to leading developers, who shall build in accordance with the approved Dubai World Central master plan and design requirements.

### 1.3.6 Exhibition City

- To be developed over an approximately 405 ha site
- Designed around a world class exhibition precinct (200,000m<sup>2</sup>) with expected transient visitors 12,000 at peak events
- The city will have a large land area dedicated to Residential and Mixed Use development
- There are 3 major precincts around the exhibition area: the Office Park/Light Industry precinct, the commercial precinct and the Hotels/Service Apartments Precinct.

### 1.3.7 EAST/WEST Entrances

- Al Maktoum International airport has two main entrances at the East and the West
- Both sites are currently under design to provide state of the art development at the access points of an international hub
- Major Land Uses are offices, commercial and hotels creating the façade of the entrances while the back blocks might be dedicated to other facilities.
- Major landscaping and art work will be dedicated to house the wide entrances and roads leading to the airport terminals.

### 1.3.8 Humanitarian City

- Master Planned to be the first true humanitarian hub
- The city is spread on two sites; total site area is 141ha (97ha + 44ha)
- The first is strategically located at within the DLC and close to airport and seaport operations and the second within the Golf City
- The first site is designed as operational platform for humanitarian non-profit organizations (60% of site) as well as commercial (35% of site)
- The second site is a mix of residential and commercial developments, which is expected to generate revenue that will partially support humanitarian activities

## 1.4 Dubai Logistics City

The Dubai Logistics City (DLC) is planned to be strategically situated to the south-west of Al-Maktoum International Airport adjacent to the southern runway, taxiways and aprons. As illustrated in Figure 3, the DLC, covering an area of 1,885 hectares, stretches to the south and west up to Emirates Road as a bonded and free zone which will be linked to JAFZA.

In addition, the Dubai Logistics City offers a site to the south of the Forwarders' Area of approximately 61 hectares allocated for a "Staff Village". The village is intended to provide accommodation to around 50,000 of DWC staff.

### 1.4.1 Constraints

Due to its close proximity to the airport, DLC Master Plan and land-use distribution took into consideration all physical and non-physical constraints:

- Airport Height Constraints and Obstacle Limitation Surfaces
- Airport Noise Contours
- Airport Flight Path and Safety Zones
- Acknowledge and respond to all Customs and Security related concerns
- Layout Structure and Utility Reservations
- DLC Access Points
- Acknowledge and respond to all social limitations between all accommodations categories and design accordingly.

These above mentioned constraints are considered to have the major impact in the flexibility of the adopted planning approach.

### 1.4.2 Design Approach and Principals

Dubai Logistics City is a key city of Dubai World Central.

- A purpose built facility adjacent to the new airport with every aspect of the business of logistics planned for completion over a number of phases. A fully integrated Free Zone, seamless sea to air cargo, freight forwarding, Business Park, warehousing and other amenities make DLC the first facility of its kind in the world. In addition, there will be an area dedicated to the aviation industry.

The five basic principles used in DWC – DLC master planning are:

1. Acknowledge contextual constraints and address site limitations
2. Acknowledge and respond to all Customs and Security related concerns
3. Provide centralized amenities
4. Maximize Land utilization
5. Organize functional zoning plan served by an efficient road network

DLC Staff Village took a similar planning approach; however, understanding the contextual aspect of the city and its components in reference to other residential categories directed the design orientation and assisted in placing down the different village land use layers.

The strong visual and pedestrian green corridors are envisaged as the core element in this proposal as they will facilitate easy accessibility from all residential categories to and from the central plaza. And as discussed before the central core “Central Plaza” is the primary design element in the city, and space around it will become the meeting grounds and outlet activities for all the residents.

#### 1.4.3 Design and Planning Objectives

DLC Master Plan was subject to various design constraints which needed a holistic planning and design vision in order to create and generate and deliver a logical and functional master plan.

The objective is not tied or limited to one planning aspect i.e. creating a Logistics city that cater to specific type of logistic such as aviation. On the contrary the vision was extended to cover all essential logistic related facilities (Offices, and Mixed Use) which also includes; general cargo import, export and consolidation, sea-air transit; perishables or valuable goods transportation; and warehousing, distribution and assembly services.

The Staff Village main purpose, on the other hand, is to offer decent, livable accommodation facilities in a well maintained living environment that respects essential living requirements.

The adopted design and planning objectives were addressed to:

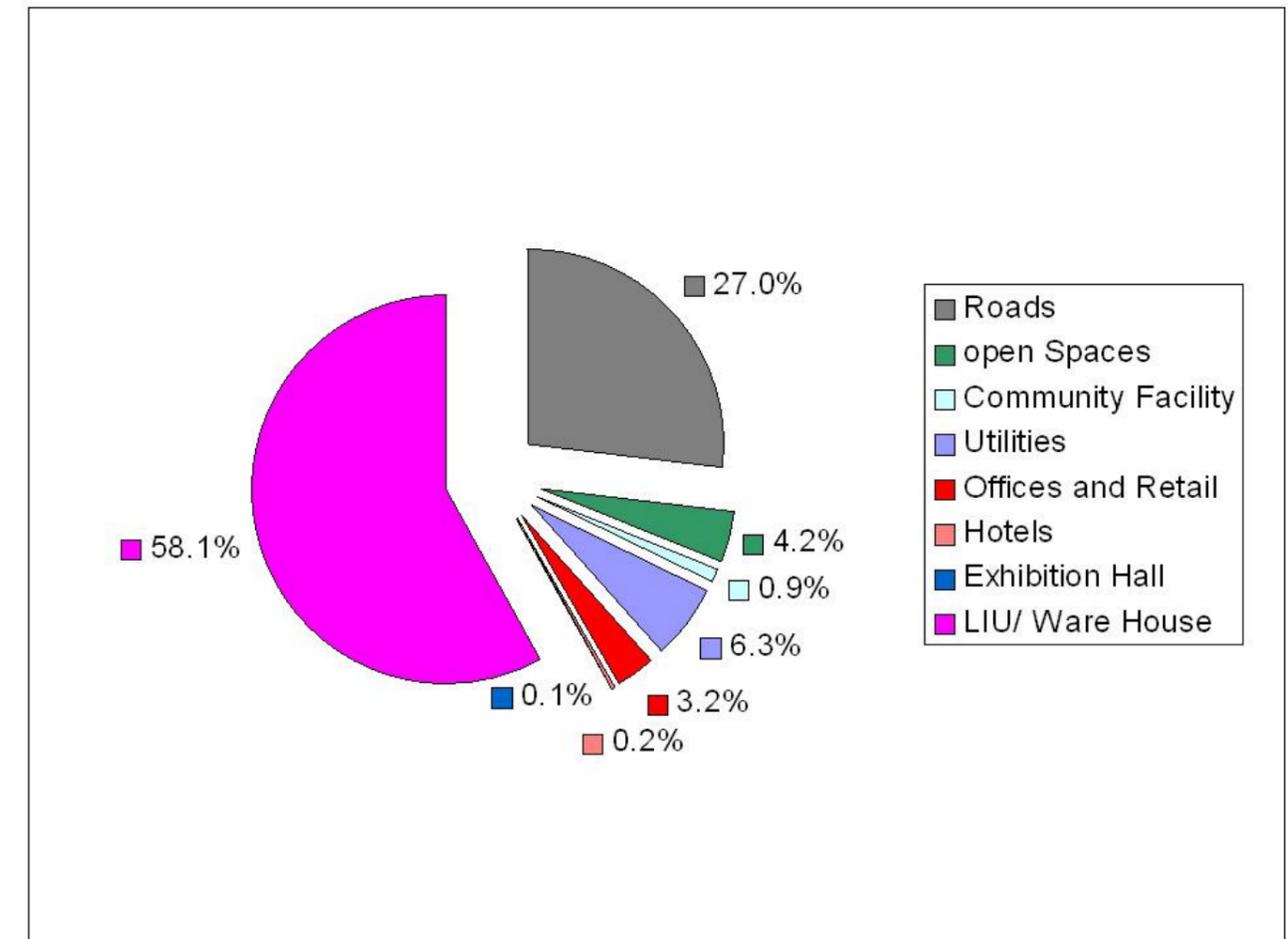
1. Create a multi-functional city structure with an organized land-use program that respects all airside and landside concerns
2. Provide high-end facilities and services
3. Create an ideal hub for aviation and other light industries
4. Promote green energy and environment friendly industries
5. Create an efficient low-cost transit system that link the city to DWC cities.
6. Create a comprehensive and integrated road network that offers various modes of transport to ensure easy accessibility between various areas within the city
7. The design and planning objectives are vision oriented objectives, which will require planning and design regulations to control and define this multi-functional role.

#### 1.4.4 Master Plan Land-Uses

DLC is designed as the ideal location for forwarders and logistic services providers to meet their local and regional business needs. Air cargo from the existing Dubai International Airport will be linked to DLC via a bonded and professionally operated road and rail corridor. This scheduled resource will operate round-the-clock, several times an hour, delivering cargo directly to the heart of the DLC business community.

As per the planning parameters estimates, the whole DLC will ultimately offer 150,000 employment opportunities.

Figure 3: Land Use Pattern



The land use budget within DLC is mainly comprised of about 60% of Light Industrial Units (LIU) and warehousing and 8% of mixed uses (Open space, Office/ Retail and community facilities). The remaining 32% area distributed between roads, exhibition hall, hotel and utilities etc. (see figure 3)

The DLC is comprised of the following main components: (see figure 5)

1. DLC Headquarters and Office Park (Zone O)
2. Forwarders Area (Zone F)
3. Light Industrial and Warehousing Area (Zone W)
4. Staff Village (Zone B)

DLC layout is structured fully utilizing the grid layout system. Major part of the DLC consists of light industrial and warehousing. Zone "O" consists of DLC Headquarter office park and office strip. It covers an approximate area of 133ha. The Headquarter building area is designed in a crescent form with 18 office buildings and a site dedicated for a convention centre in addition to two hotels and number of smaller sites for banks and insurance companies.

The largest area of DLC is dedicated to the Zone "W" which, comprises of an area of approximately 1,250ha. The layout is based on "super blocks" which is further subdivided into variable number of plots to cope with the varying future demand of LIUs and warehousing. Zone "W" will have an estimated employment of 60,000.

The last zone of DLC is occupied by Zone "F" which covers an approximate area of 385ha. This zone consists of shared agents' buildings and independent plots dedicated for forwarders.

Zone B, the DLC Staff Village provides a unique and desirable living environment with all necessary community facilities such as Juma Mosque and two local mosques and amenities including civil defence plot and sizeable open spaces (1.5 hectares). The Community Centres (dining halls, TV lounges) provided with each building of Labour and junior housing, and one for every two buildings of senior housing.

The Central Plaza (plot area of approx. 3.7ha) forms the heart of the village with a variety of functions such as post office, health care centre Restaurants, Movie

Theatre, Grocery Shops, Barbershop, Staff village management offices, shops, financial and internet services.

DLC components will have Free Zone and bonded area status. The majority of the site falls in the bonded area, which includes the Forwarders Area, Light Industrial Units and Warehousing area and truck parking and Maintenance Zone.

## 2. DEVELOPMENT CONTROL PROCEDURES

The Development Guidelines and Planning Regulations and Standards contained in this booklet are intended for use by approved Developers seeking to construct industrial or warehousing units with ancillary office facilities, on serviced sites rented in the Dubai World Central (DWC) - Dubai Logistics City. They should be applied in conjunction with the local and international standards and codes of building construction.

The regulations contained in this document shall be considered to be the minimum requirements. Developers shall comply with these regulations and with all relevant legislative requirements of the Authority.

The Authority reserves the right to change any of these regulations and it shall be the duty of the consultants, contractors and developers to ensure that they possess the latest updates.

These regulations include:

- a. Procedures for development, covering building permits, construction procedures, alterations to rebuilt units, building completion certificates, power of the Authority and responsibilities and disputes.
- b. General planning Regulations governing plot coverage, building set backs and heights, provision of parking, loading and unloading facilities, fencing and site landscaping and the external appearance of buildings.
- c. Performance standards governing:
  - The provision of utility services, rainwater drainage and refuse disposal.
  - The design of buildings including structure, materials and finishes, mechanical, electrical, and telephone installations.

### 2.1 General

- 2.1.1 A Developer wishing to rent a serviced plot in the Dubai Logistics City must apply to the Authority, stating his intended operations and his land requirements.
- 2.1.2 Following the signature of his rental agreement with the Authority, the Developer must appoint a qualified Architectural / Engineering Consultant, registered in Dubai, and approved by the Authority, to carry out the design tasks connected to

his project, and to act on his behalf regarding all technical matters related to the design, construction and completion of his project.

- 2.1.3 The development shall adopt and house "Green Building Design Techniques" that are scaled by acquiring a minimum level of "LEED certified" following the US Green Building Council LEED rating system or equivalent certification level from nationally recognized rating system. The developer shall contact Emirates Green Building Council to inquire about the appropriate Green Rating System that applies to the project. The developer shall comply with all the Design and Construction requirements of the Rating System and shall submit proof of certification towards the end of construction.
- 2.1.4 The Contractor must apply, prior to commencing any construction works for the following:
  - a. A building permit from the Authority.
  - b. No objection certificates (N.O.C) from the Authority and/or from the Service Authorities in charge.
  - c. Demarcation and Demarcation Certificate.
- 2.1.5 The Developer must appoint an approved Contractor to carry out construction works related to his project. The appointed Contractor must observe the procedures for construction set out in this booklet and any other locally applicable Regulations.
- 2.1.6 No buildings or facilities may be occupied after construction prior to obtaining a Building Completion Certificate from the Authority.
- 2.1.7 No facilities may be operated unless an Operation Fitness Certificate is issued by the Authority.
- 2.1.8 All Developers should approach the Authority with the initial design documentation, in order to obtain the approval on the building volume, built up area, external character and skin finishing material specification.

## 2.2 Procedures and Requirements for a Building Permit

### 2.2.1 A building permit will be issued subject to:

- a. Obtaining the No objection certificate from the Service Authorities for water, electricity and telephone.
- b. Fulfilling the submission requirements of the Dubai Civil Aviation Authority.
- c. Building Permit Fees and any other fees as stipulated in the Planning Permission Charges Document issued along with affection plan.

2.2.2 The building permit will remain valid for the period of a year. The validity of the permit may be extended for a further 6 months if acceptable reasons are provided. However, construction on site must start within 3 months after obtaining the building permit.

2.2.3 Any amendments to approved drawings or deviations from the conditions stipulated in the building permit will not be allowed unless explicit and written consent of the Authority is granted. In case of violation, the Authority reserves itself the right to demolish any illegal addition to the buildings or part thereof. The cost of demolition will be borne by the developer.

2.2.4 Documents to be submitted to the Authority for obtaining a building permit must include:

- a. Letter of appointment of the Consultant and a copy of the consultancy agreement.
- b. Letter of appointment of the contractor from the Consultants.
- c. Affection plan showing the coordinates of the plot.
- d. No objection certificates from the Service Authorities.
- e. A written statement outlining the project profile, the intended uses and a list of the drawings including:
  - Coloured perspective
  - Architectural drawings & schedule of finishes 2 sets
  - Structural drawings 2 sets
  - Plumbing, irrigation and drainage layout drawings 2 sets
  - Electrical layout drawings and Load details (present & Future) 2 sets
  - Mechanical drawings 2 sets

- Fire protection and fire alarm layout drawings 2 sets
- Fire Zoning Plan 2 sets
- Process detail 2 sets
- Plant layout drawings 2 sets
- Egress Plan 2 sets
- Technical Specifications 2 sets
- HSE Plan 2 sets
- Water & Sewage management Plan 2 sets
- Waste Management Plan 2 sets

All of the afore-mentioned drawings shall be submitted at the scale of 1/100 along with one soft copy for each.

## 2.3 Construction Procedures

2.3.1 The Developer will appoint a Contractor for the execution of his project. The Consultant shall supervise all construction works and shall liaise with the Authority regarding any problems encountered during execution. No direct communication concerning the management of the construction process will be established between the Authority and the Contractor.

2.3.2 The Contractor will demarcate the site in accordance with the setting out plan. This work will be checked by the Consultant and approved by the Authority prior to any encasing or fencing works.

2.3.3 The Contractor shall obtain approval from the authority after submitting his mobilization plan showing layouts and details of his temporary offices, fencing, sign boards, storage facility, etc.

2.3.4 The Contractor shall execute the project in accordance with the approved working drawings and specifications. The Contractor will be allowed to erect temporary offices or porta-cabins during the construction stage provided that he undertakes in writing to remove them at the completion of construction.

2.3.5 The Contractor shall apply to the Authority and pay all charges associated with temporary electrical, water, drainage including dewatering, safety procedures, fencing, storage and telephone installations and connections during the construction period. All temporary installations and connections must comply with

the Service Authorities standards and must be terminated following the completion of construction with suitable local isolation switches.

2.3.6 Prior to initiating any construction work, the Contractor shall pay a refundable deposit or unconditional bank guarantee. The amount of this deposit or bank guarantee will be fixed by the Authority in local currency based on the plot area. The deposit will be refunded upon completion of the works and upon the satisfaction of the Authority that the Contractor has completed the clearance of all debris from the site.

2.3.7 The Contractor shall collect the HSE Guideline and the Construction Environmental Management Guidelines (CEMG) from the Authority. The Contractor is responsible to comply with the requirements of these guidelines.

2.3.8 The Contractor must present the following documents to the Authority in order to commence construction:

- a. Letter of appointment signed by both the Developer and his Consultant.
- b. A notice of intent to carry out the works.
- c. An invoice for the payment of the refundable deposit.
- d. 3 sets of revised shop drawings which incorporate any previous amendments or comments by the Authority on previous submissions.

## 2.4 Completion Procedures

2.4.1 A Building Completion Certificate must be applied for by the Consultant upon completion of building works with external finishes and basic electrical, mechanical and fire installations.

2.4.2 The Authority will authorize the following services and utilities to be connected to the building only after the issue of the Building Completion Certificate:

- a. Water supply
- b. Power supply
- c. Chilled water
- d. Fire protection
- e. Sewerage discharge
- f. Irrigation

- g. Gas
- h. Telephone
- i. Data lines (fibre optics)

2.4.3 The Building Completion Certificate will be issued following a satisfactory inspection visit by the Authority. If the inspection of the buildings reveals that further work has to be carried out, the Building Completion Certificate will be delayed until those works are completed.

2.4.4 The application for a Building Completion Certificate must be accompanied by the following documents:

- a. Letter from the Consultant stating the completion of the building in accordance with approved drawings.
- b. Two sets of the following as built drawings accompanied by an electronic copy of the same:
  - i- Site layout showing the location of service installations.
  - ii- Floor plans, elevations and sections.
  - iii- Electrical layouts.
  - iv- Mechanical Layouts
  - v- Fire protection layouts.
- c. Fire and perils insurance for the building.
- d. Inspection certificate for mechanical and lifting equipment from an approved third party.
- e. Equipment certifications (for factories).

2.4.5 For electric supply, the Contractor shall be required to submit to the Service Authority (Electrical) "Inspection Certificates" in accordance with the prescribed forms. All installations and equipment installed therein shall be subject to the Service Authority (Electrical) inspection, testing and final approval before connecting the power supply. All relevant documents shall be submitted to the Authority after the Service Authority (Electrical) final approval.

## 2.5 Building Operations

2.5.1 All building operations must be confined within the boundary fence or wall of the plot. Construction sites are required to be enclosed with temporary hoarding during the period of construction to avoid any hazard to public thoroughfares or adjacent buildings.

2.5.2 The Developer must obtain the approval of the Authority for the siting of temporary buildings and sheds required during construction and must ensure that adequate provisions for safety and the prevention of health hazards related to sanitation, dusting and drainage disposal are taken.

2.5.3 All necessary safety precautions shall be taken to protect existing buildings and fences from damage due to excavations, earthworks or any other building operation. The Developer and his agent are entirely responsible in case of damage.

2.5.4 The Authority shall have free and uninterrupted access to the construction site at any time.

2.5.5 The Developer or his agent must give the Authority no less than 7 days notice following the completion of the building for inspection and prior to obtaining a building completion certificate.

2.5.6 All construction works must be adequately supervised, and a signed copy of the approved drawings and building permit must be kept on site during construction.

2.5.7 Any deviation from the approved drawings, or commencement of a construction operation without approval shall result in a fine. The payment of this fine will not absolve the Developer from correcting the deviation.

2.5.8 Labour accommodation is not permitted within the site premises.

## 2.6 Alterations to Rebuilt Units

2.6.1 Any alterations to rebuilt factory or warehousing units shall be subject to the issue of a no objection certificate (N.O.C.) by the Authority. To obtain an N.O.C for alteration works, the Developer must present the same set of drawings required for a building permit, covering the areas of proposed alterations.

2.6.2 Prior to occupation, the Developer must obtain a Building Completion Certificate to the satisfaction of the Authority.

2.6.3 Any extensions or alterations to the electrical installations shall require the Service Authority (Electrical) approvals.

2.6.4 Any extension/alteration to the sewage installation shall require service authority approvals

## 2.7 Powers of the Authorities

2.7.1 At the discretion of the Authority the Building Permit may be cancelled if:

- a. Work was carried out in contravention of the conditions of the Building Permit or any regulations issued by the Authority.
- b. It is subsequently revealed that the Building Permit was issued on the basis of erroneous information supplied by the developer or his agent.

2.7.2 Building Permit will not be withheld unreasonably, but the Authority shall have the discretionary power, when issuing a Building Permit, to attach such special conditions thereto as related to all or any of the following matters:

- a. Filling or Excavation within the plot.
- b. Construction of boundary walls or fences.
- c. Construction of the external appearance of the building, in relation to fitness to its intended purpose and location.
- d. Disposal of soil, waste and rain water.
- e. Health and safety of personnel and environmental conditions of the workplace and surroundings.
- f. The engineering standards to which any process installation is constructed

2.7.3 The Authority is empowered to change, amend, replace and/or update the regulations without prior notice. It is the developer's responsibility to obtain updated regulations and ensure compliance.

2.7.4 It is the responsibility of the developer to apply up-to-date regulations, the Authority notices, etc. that may supersede ones mentioned in these regulations.

- 2.7.5 The Authority reserves the right to reject the appointment of consultants or contractors for particular jobs if they are not deemed competent enough to fulfill the related responsibilities
- 2.7.6 The Authority reserves the right to suspend a consultant or a contractor for non compliance with the regulations.
- 2.8 Responsibilities and Disputes
- 2.8.1 Neither the checking of the drawings, nor the checking of the structural calculations, nor inspection of the work during the progress of construction, shall be construed in any way to impose responsibility and/or liability on the Authority or their agents. The developer and his agents shall remain responsible for all errors in the design and execution of the project and for the stability of construction during the progress of the works and after completion.
- 2.8.2 All complaints and disputes concerning Building Permits and the erection of buildings shall be referred to the Authority. Any financial disputes shall be referred to Dubai courts.
- 2.8.3 Authority shall carryout HSE inspections periodically during and post construction. However developer and his agents shall be responsible for any accidents and/or damages arising out of any lapses to their own property and/or adjoining property for any consequential physical and/or financial damages and liabilities.

### 3. GENERAL PLANNING REGULATIONS

Logistics City is situated West of Dubai World Central (see figure 2), adjacent to the southern runway, taxiway and aprons. Dubai Logistics City (DLC) is strategically located beside Al Maktoum International Airport, adjacent to one of the largest container handlers, Jabel Ali Port and Free Zone. DLC is the state-of-the-art multimodal logistic hub with direct access to the airport, seaport and regional road network. The DLC is mainly comprised of Forwarders Area, Light Industrial Units, Air Cargo Terminals, and Contract Logistic & Industry Area along with other ancillary facilities.

#### 3.1 General Provisions

The Regulations described in this document apply to developments within the DWC- Dubai Logistics City. These shall be applied along with the current Building Regulations and Specifications issued by Dubai Municipality.

3.1.1 Within the Logistics City, all land plots are determined as in the Land subdivision plan. Plots shown on these plans cannot be subject to further subdivision, however, two or more adjoining plots not separated by the public domain (road, easement, footpath, open spaces...) and pertaining to the same owner, may be grouped after obtaining special permission from the Authority.

3.1.2 Every individual building must be connected to the internal utility networks provided by the Authority.

3.1.3 In the office buildings, all mechanical equipment, water tanks and other technical installations located on the flat roofs of the office buildings must be screened from the external views by means of shading devices and perforated and/or ventilated screens. The maximum height of the roof parapet (opaque or transparent) is 4 meter, measured from the finish floor level of the top floor to the external top of the parapet. Screens (such as louvers, perforated panels, wire mesh, net, etc...) will be made of metallic products.

3.1.4 The following structures could be exempted from the restricted buildings height after prior approval of the Authority:

- a. Erection of Minarets of Mosques and domes.
- b. Tent's pylons and towers designed exclusively for structure and for ornamental purposes.
- c. Antennas of telecom utilities, private and public satellite receiving equipments installed on top of the roof floors, water tanks and similar structures
- d. Any temporary construction structure, metallic poles and fair ground machines that have been approved by the Authority.

3.1.5 All buildings should be of good quality construction and architectural materials shall be in accordance with the Authority and in full compliance with, but not limited to, the following standard specifications or any equivalent standards approved by the Authority.

- o ASTM: American Society for Testing and Materials
- o NFPA: National Fire Protection Association
- o ANSI: American National Standards Institute
- o BS: British Standard
- o UBC: Uniform Building Code
- o UL : Underwriters' Laboratories Inc.
- o FM: Factory Mutual

3.1.6 All plots must be suitably landscaped to:

- a. Provide attractive and pleasant appearance
- b. Contribute to the relief of heat, noise, dust and glare through proper placement of green planting
- c. Provide visual privacy, in which significant trees are to be planted adjacent to boundaries, acting as a buffer zone.
- d. Provide a natural shading device

3.1.7 All the installations and Buildings to follow Green Building Norms all through design to operation as stipulated by Government of Dubai.

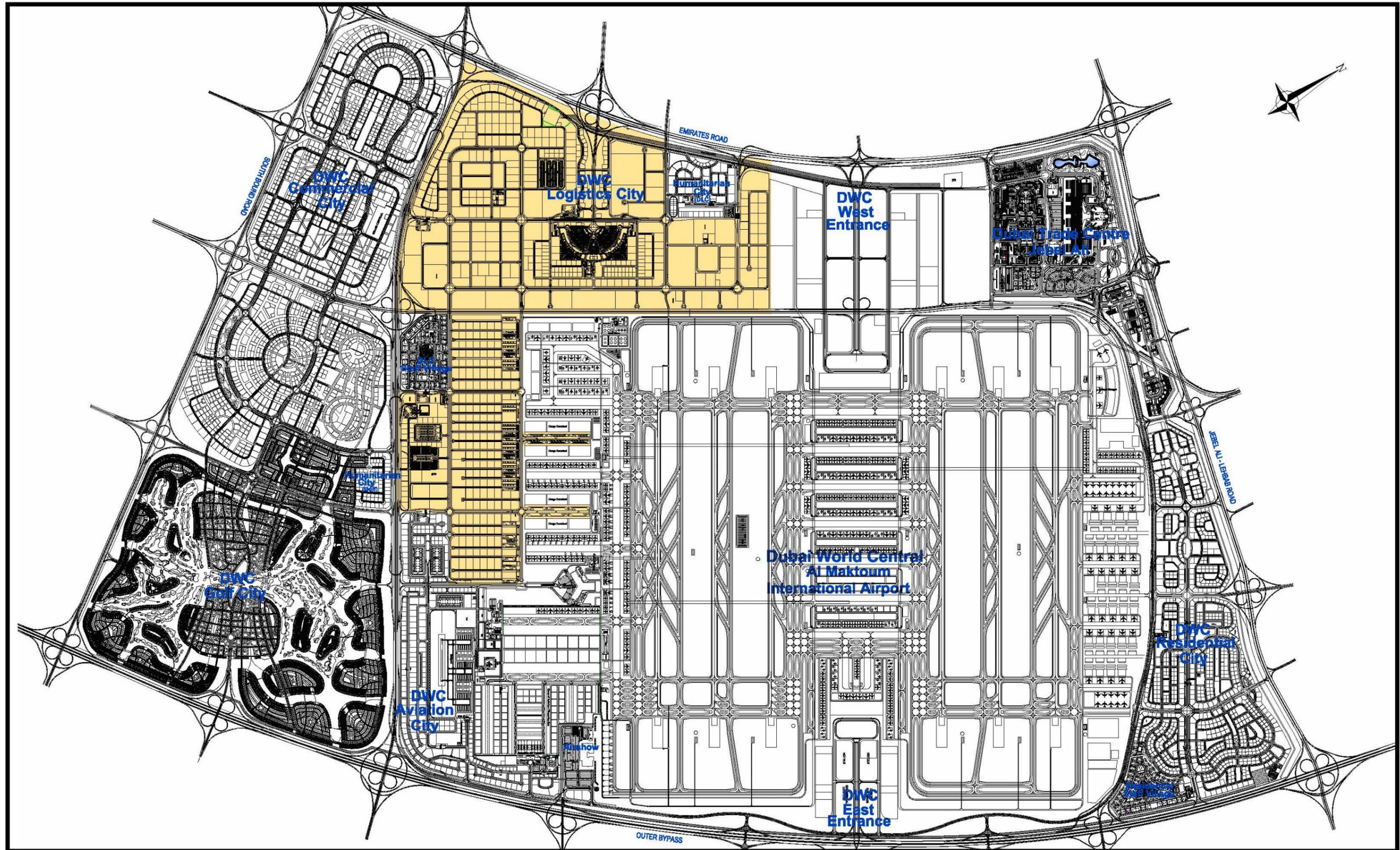
3.1.8 GSM towers as a communication facility have been planned for Logistics City. Many of such towers are planned on the roof top of the designated buildings in the Master Plan in view to create an efficient design for the GSM network. Owners of such building / buildings shall allow the service provider to erect such towers on roof top as and when approached for without and additional cost or whatsoever.

### 3.2 Dubai Logistics City Zones

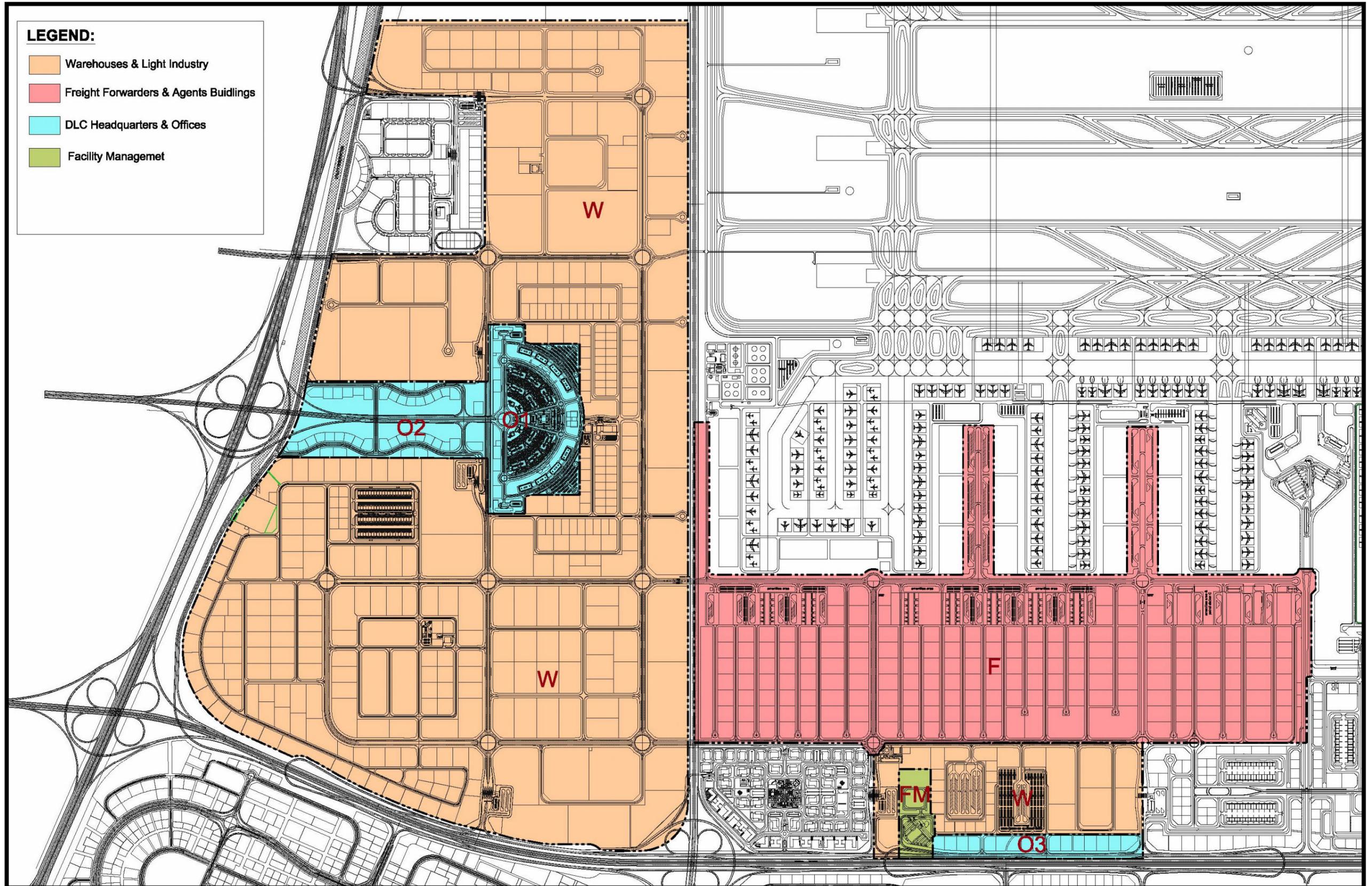
The Dubai World Central Logistics City is divided in terms of land use into 4 main zones (see Figure 5):

- o Zone "O" (Offices, Hotels and Light Commercial)
- o Zone "W" (Light Industrial and Warehousing)
- o Zone "F" (Freight Forwarders)
- o Zone "FM" (Facility Management)

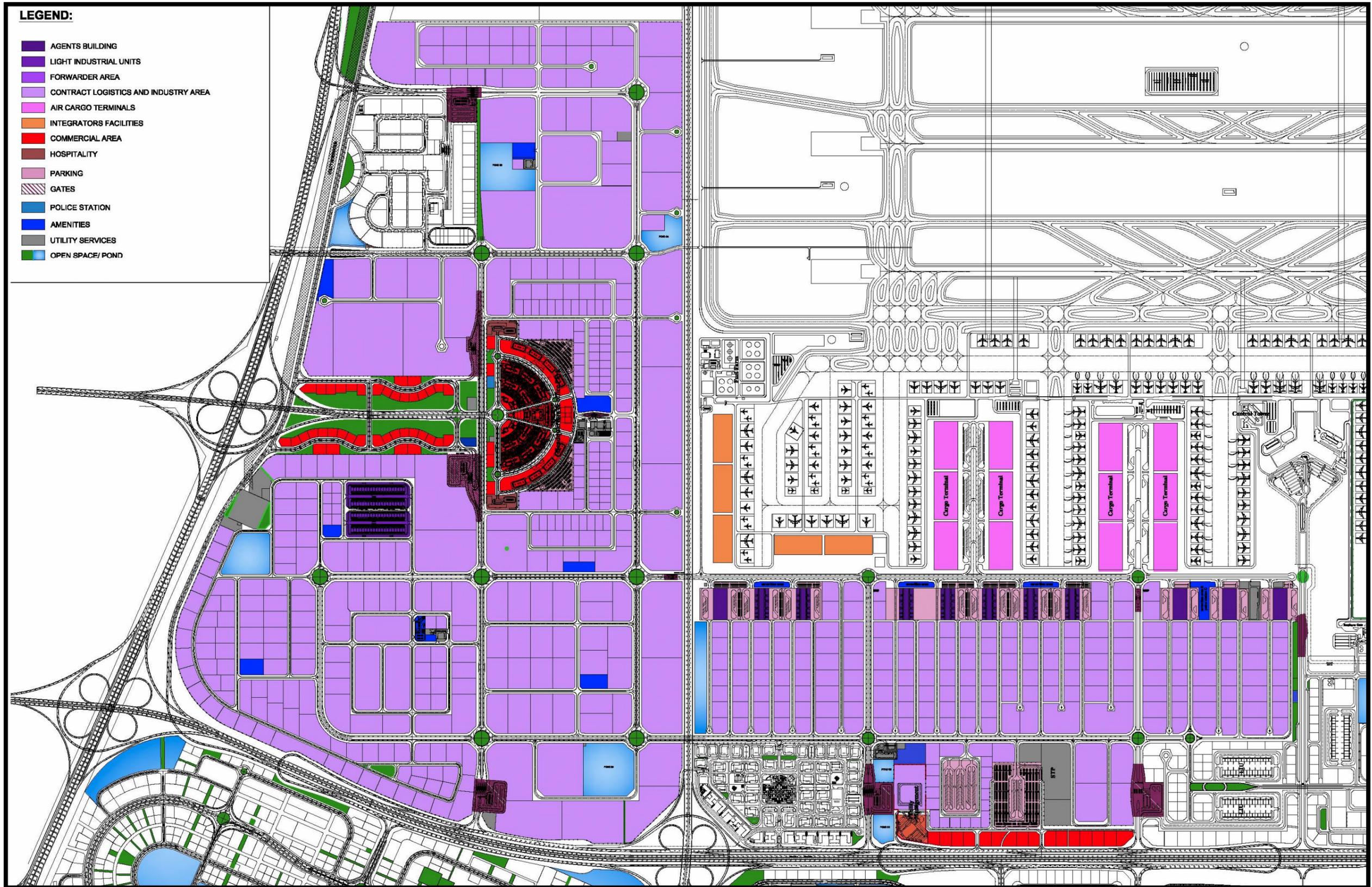
Figures 4 Logistics City and other DWC Developments



Figures 5 Zoning Plan



Figures 6 Land Use Plan



3.3 Zone “O” – Office Zone

This Zone is spread over three sub-zones “O1”, “O2” and “O3” (see Figure 5 & 6):

3.3.1 Zone “O1”

As shown in figure 5, this sub-zone is located in the centre of the DLC area and designed around a circular shaped landscaped open space. It is a proper site reserved for the construction of office buildings and commercial activities belonging to the Authority it is excluded from the regulations listed here below and has a special design agreed and approved by the Authority.

3.3.2 Zone “O2”

3.3.2.1 General

This is mixed use commercial, offices and hotels sub-zone, as the plan shows. It includes a strip of plots located to the west of sub-zone O1. Sizes and dimensions of the plots in this zone vary. These plots are not subjected to any subdivision; on the other hand two or more plots could be grouped subject to the plan approved by the Authority.

3.3.2.2 Permitted Uses:

Offices, showrooms, hotels, mosques, small shops and restaurants, outside the bonded area (within free zone). Banks will be allowed to operate in this area, however will be excluded from free zone status.

3.3.2.3 Setbacks: (see plate1)

- a. From Public Roads 4m minimum
- b. From Adjoining Plots 6m minimum
- c. From Rear Boundaries 6m minimum
- d. From buildings within a plot 12m minimum

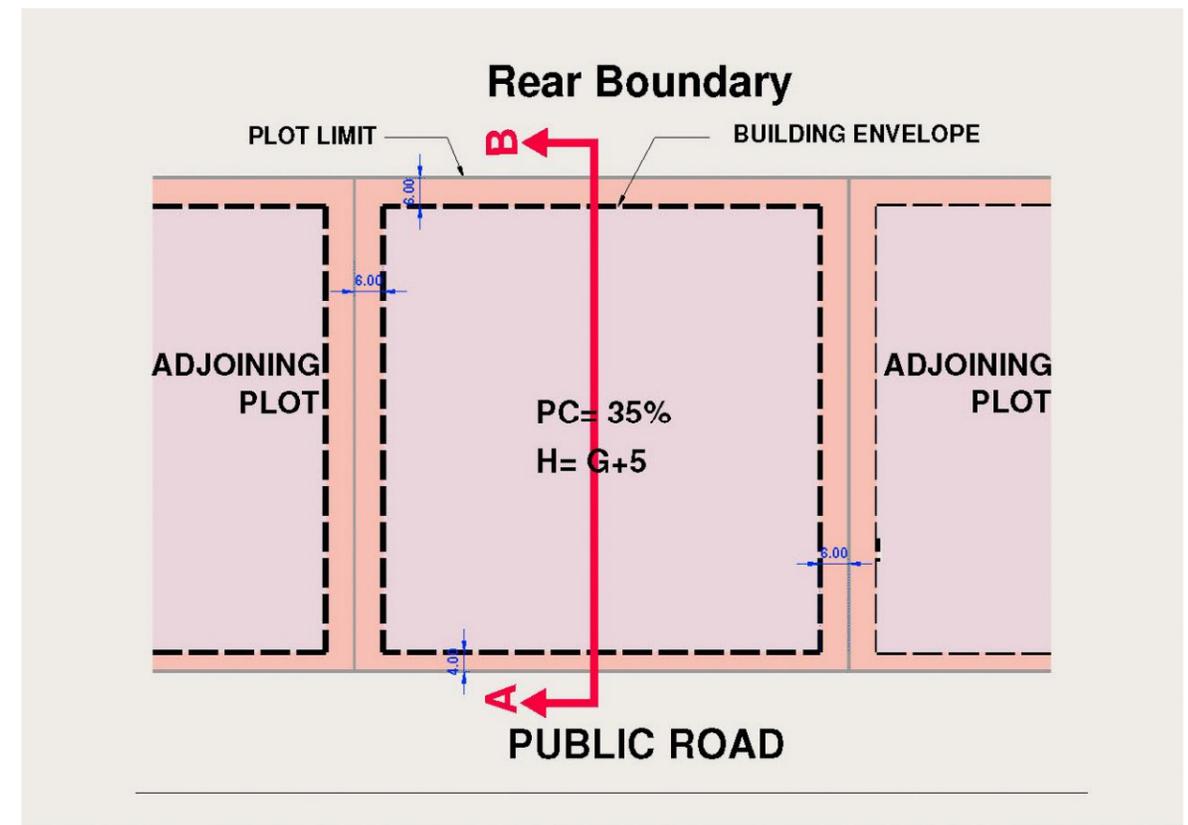
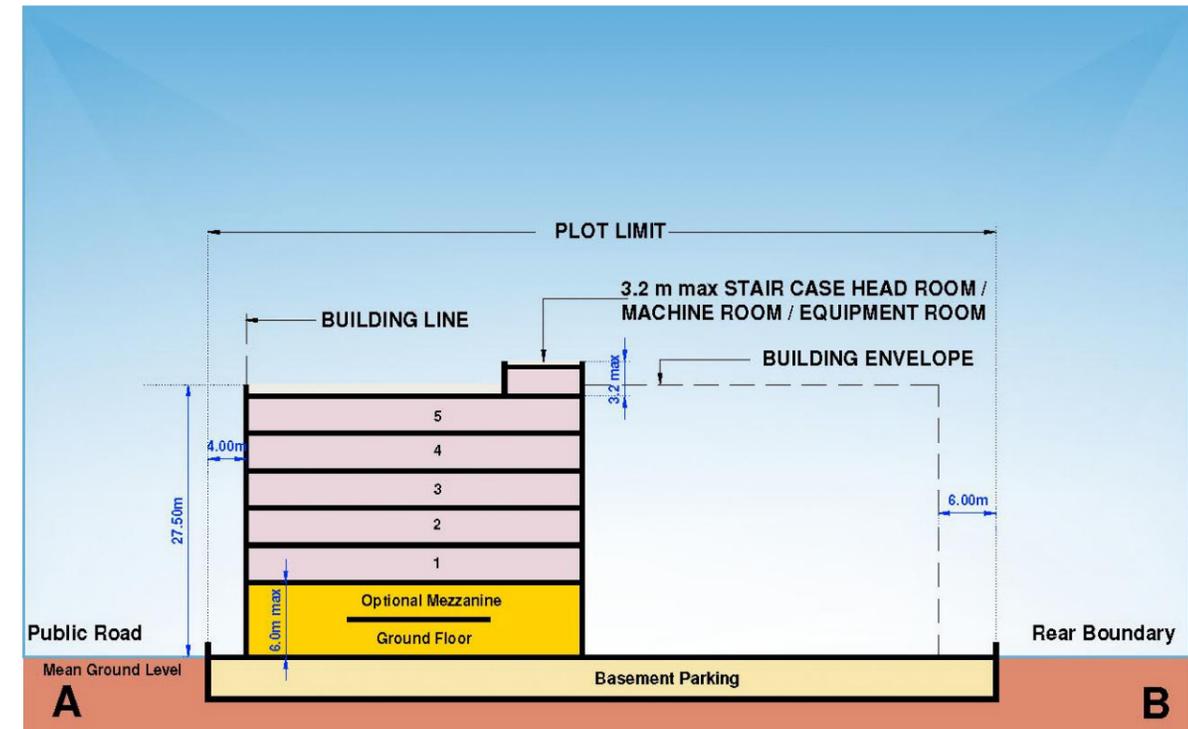


Plate 1 - Zone “O2”

- 3.3.2.4 Maximum Plot Coverage (PC) = 35%.
- 3.3.2.5 Maximum Floor Area Ratio (FAR) = 1.5
- 3.3.2.6 Maximum Number of Floors above ground = 6 including the Ground floor
- 3.3.2.7 Maximum Height of the Ground Floor (including Mezzanine) = 6.00 meter
- 3.3.2.8 Maximum Height of the Finish Floor Level of the Ground Floor = 1.20 meter in comparison to the corresponding road approach level.
- 3.3.2.9 Maximum Buildings height = 27.50 meter
- 3.3.2.10 Requirements for on plot parking:
  - a. Offices and commercial spaces:
    - i. Staff: one parking space for each 45 m<sup>2</sup> of leasable area of office space / commercial space.
    - ii. Visitors: 10% of the staff parking provision.
  - b. Showrooms:
    - i. One parking space per 45 m<sup>2</sup> of floor area
  - c. Hotels:
    - i. Rooms: One parking space per 4 hotel rooms for all types.
    - ii. Conference rooms: 1 parking space per 20 m<sup>2</sup> of floor area or 1 parking space per 5 seats.
    - iii. Restaurants: 1 parking space per 45 m<sup>2</sup> of total restaurant area.
    - iv. Staff: one parking space per two employees.

3.3.3 Zone "O3"

3.3.3.1 General

Located on the edge of the Southern section of the Periphery Road, within sub zone WT, this area will accommodate a mixed use commercial, offices and hotels sub-zone, as the plan shows (figure 5). Sizes and dimensions of the plots in this zone vary. These plots are not subject to any subdivision; on the other hand two or more plots could be subject to assembly according to a plan approved by the Authority.

3.3.3.2 Permitted Uses:

Offices, showrooms, hotels, mosques, small shops and restaurants, outside the bonded area (within free zone). Banks will be allowed to operate in this area, however will be excluded from free zone status.

3.3.3.3 Setbacks (see plate 2)

- a. From Public Roads 4m minimum
- b. From Adjoining Plots 6m minimum
- c. From Rear Boundaries 6m minimum
- d. From buildings within a plot 12m minimum

3.3.3.4 Maximum Plot Coverage (PC) = 40%.

3.3.3.5 Maximum Floor Area Ratio (FAR) = 2.2

3.3.3.6 Maximum Number of Floors above ground = 6 including the Ground floor

3.3.3.7 Maximum Height of the Ground Floor (including Mezzanine) = 6.00 meter

3.3.3.8 Maximum Height of the Finish Floor Level of the Ground Floor = 1.20 meter in comparison to the corresponding road approach level.

3.3.3.9 Maximum Building height = 27.50 meter

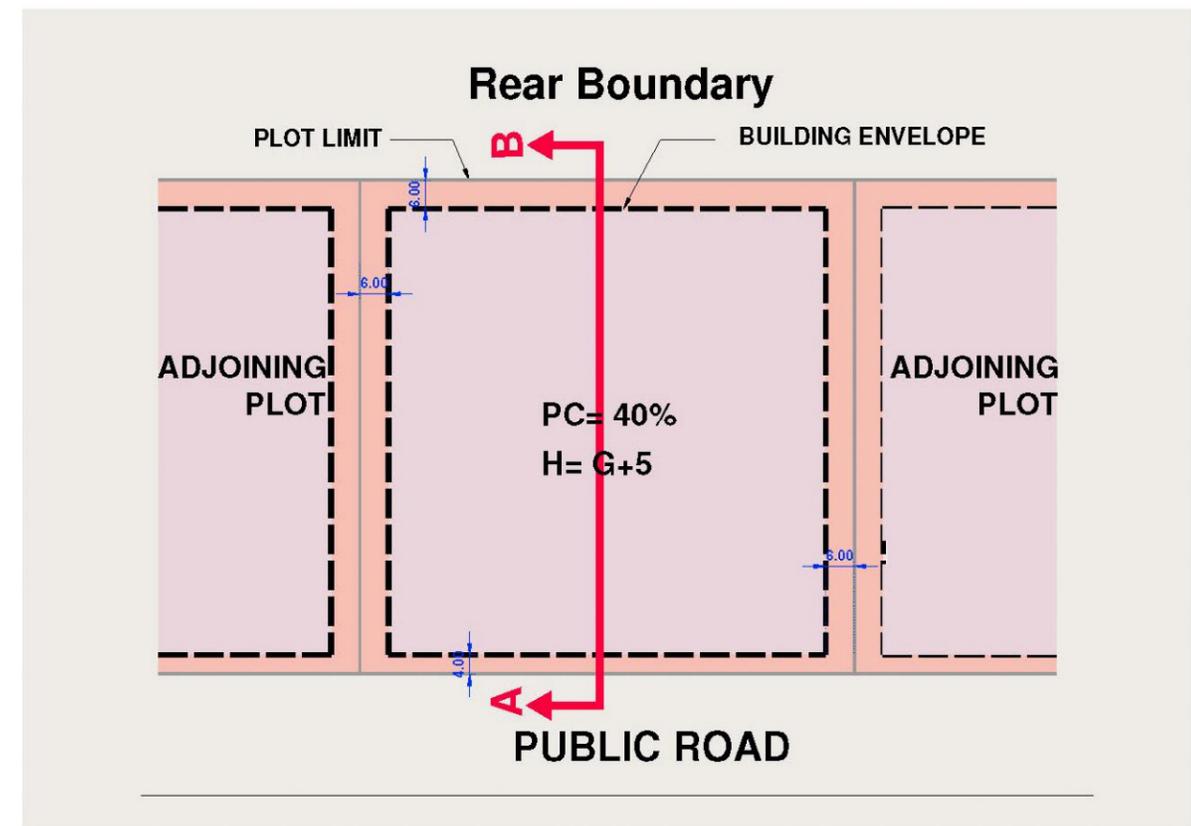
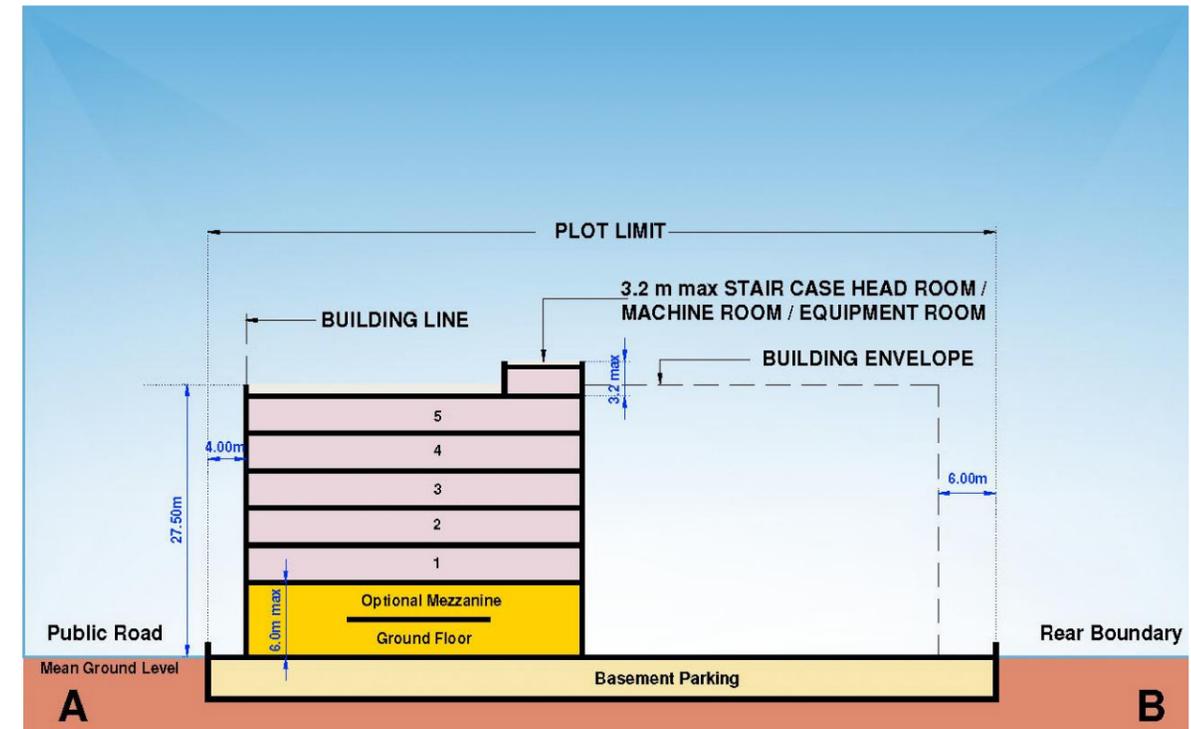


Plate 2 - Zone "O3"

### 3.3.3.10 Requirements for on plot parking:

#### a. Offices and commercial spaces:

- i. Staff: 1 parking space for each 45 m<sup>2</sup> of leasable area of office space / commercial space.
- ii. Visitors: 10% of the staff parking provision.

#### b. Showrooms:

1 parking space per 45 m<sup>2</sup> of floor area

#### c. Hotels:

- i. Rooms: 1 parking space per 4 hotel rooms all types.
- ii. Conference rooms: 1 parking space per 20 m<sup>2</sup> of floor area or 1 parking space per 5 seats.
- iii. Restaurants: 1 parking space per 45 m<sup>2</sup> of total restaurant area.
- iv. Staff: 1 parking space per 2 employees.

### 3.4 Zone "W" – Industrial and Warehouses

#### 3.4.1 General

The zone "W" is intended for light, clean and non-polluting industries as well as warehousing. This zone is located to the North of Al Maktoum International Airport platform. The plot size mix varies from 3,500 m<sup>2</sup> for the smaller plots to 40,000 m<sup>2</sup> for the largest plot. The layout allows small and medium size plots to be grouped into larger plots within the same super-block.

#### 3.4.2 Permitted Uses

In this zone all the industrial and warehousing activities as well as ancillary offices to serve them are permitted except the following:

- Chemical fertilizers works and chemical incineration works.
- Ammonia and Sulphuric acid works.
- Chlorine and Hydrochloric acid works.
- Asbestos and lead works.
- Mineral works, large boilers and furnaces.
- Iron and steel works, foundries.
- Cement works.
- Petroleum refineries.
- Any other industrial process that may generate liquid or gaseous toxic waste, or any other hazardous emissions that may cause great harm to the community

#### 3.4.3 Setbacks (see plate 3)

- |                                                        |              |
|--------------------------------------------------------|--------------|
| a. From Public Roads:                                  | 5.5m minimum |
| b. From Adjoining Plots                                | 5.5m minimum |
| c. From Rear Boundaries                                | 5.5m minimum |
| d. From Buildings within the same plot                 | 6.0m minimum |
| e. From the Perimeter Fence of the Logistics city zone | 8m minimum   |

Except for perimeter fence gates and electrical supplies, the area of the setbacks must be kept free from any form of temporary building or shading structure for parking.

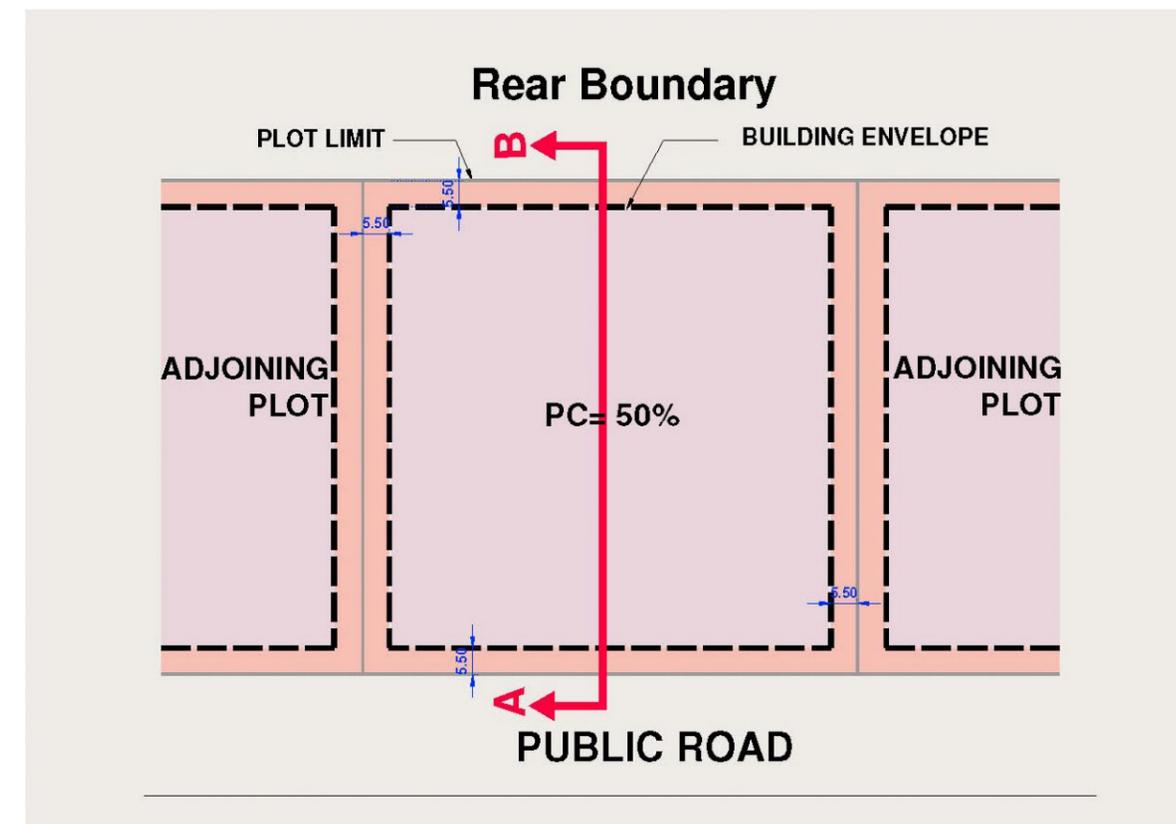
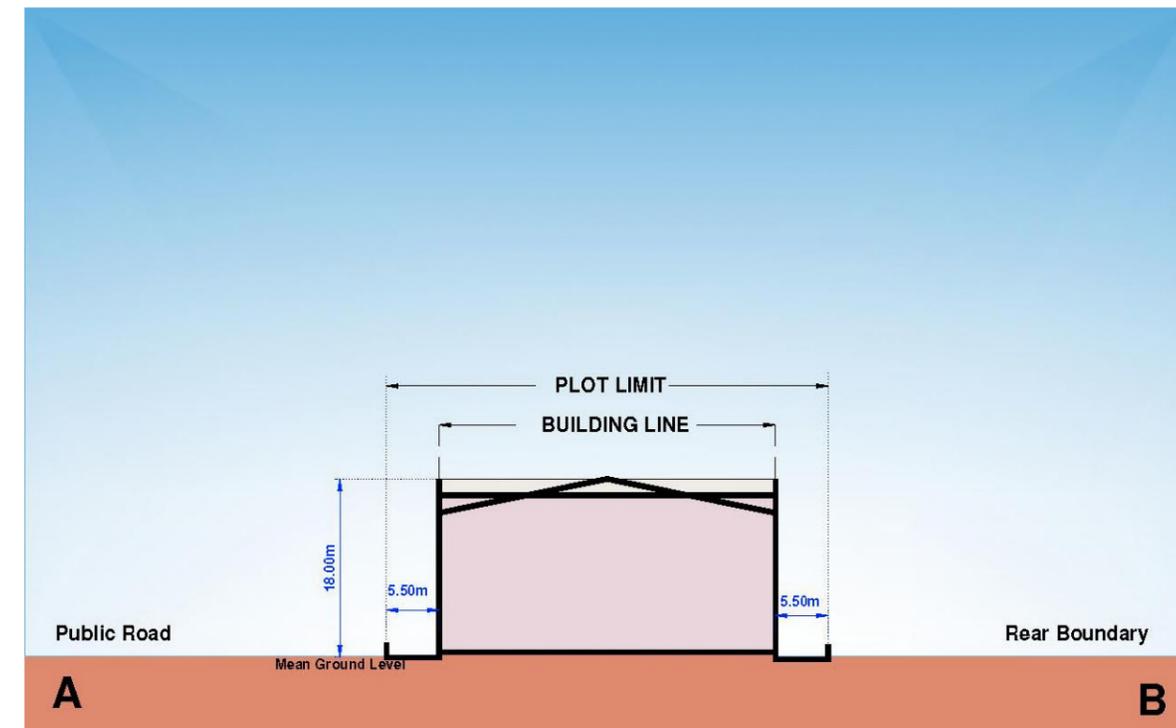


Plate 3 - Zone "W"

- 3.4.4 Maximum Plot Coverage: 50%
- 3.4.5 Maximum Floor Area Ratio: 0.55, the area of ancillary offices should not exceed a maximum of 10% of the total built up area allowed using the FAR.
- 3.4.6 Maximum Number of Floors: must comply with the restrictions imposed by the maximum building height and the minimum clear height requirement for the floors as described in 3.4.7 below.
- 3.4.7 Maximum Building Height:
- Overall building height measured from the mean finished level of the ground floor to the top of the roof parapet or the top of the coping tile of the pitched roof must not exceed 18m, except for special cases approved by the authority, granted that it falls within the allowable heights imposed by the airport operation.
  - For all buildings the clear height of each floor measured from the finished floor level to the ceiling should not be less than:
    - 2.80m for offices
    - 4.0m for industrial units and warehouses.
  - Roofs of industrial units and warehouses should preferably have a gentle pitch. All water storage tanks must be conveniently concealed under the pitched roof or adequately screened in cases where the roof is flat.
  - The finished ground floor level of any building shall not be less than 300 mm above the approach road level.

3.4.8 Provisions of parking, loading and unloading space:

3.4.8.1 Car Parking Provision.

The minimum standards for the provision of on plot car parking for industrial and warehousing units will be as follows:

- 1.0 car per 715 m<sup>2</sup> of gross industrial and warehousing floor area and 1.0 car per 45 m<sup>2</sup> gross office floor area inclusive of employees and visitors parking.
- Allowance of 37 m<sup>2</sup> should be made for maneuvering and parking each vehicle.

3.4.8.2 Truck loading and unloading bays:

- The site layout shall allow for loading and unloading of trucks to take place within site boundaries.
- To accommodate large trucks, bays should be 5m wide by 18m deep for WB15 trucks and 5m wide by 22m deep for WB19 trucks. For pick up trucks, bays should be 3m wide by 7m deep. Loading bays should be equipped with dock levellers.
- Loading bays should not be preferably located on the street side of the building, nor on the sidewalk facing the Frontage side.
- The entry and exit point for the proposed facility shall have a holding area and also be located in a way so as not to hinder traffic movement on the main arterial roads.

3.5 Zone “F” – Freight Forwarders

3.5.1 General

Zone “F” is intended for the use of freight forwarders and warehousing. This zone is located to the west of DWC Airport Platform. Each plot is serviced by roads from 2 opposite sides. One of the roads will be used for cars and trucks access from the DLC and the other for trucks and dolly traffic from the Cargo Terminals. The smallest plot has an area of 10,000 m<sup>2</sup> and the largest has an area of 20,000 m<sup>2</sup>. Plot grouping is possible within the constraints imposed by the road system and approval of the Authority.

3.5.2 Permitted Uses

Storage and forwarders facilities, ancillary offices, amenities in plots allocated for that purpose to include mosques, restaurants, retail units, petrol stations and any other use of the same category subject to approval by the Authority.

In this zone the storage of materials and goods is generally permitted except for the following materials or goods which will be prohibited from any storage area:

- a. Chemical fertilizers.
- b. Ammonia and Sulphuric acid.
- c. Chlorine and Hydrochloric acid.
- d. Asbestos and lead.
- e. Minerals.
- f. Iron and steel.
- g. Cement.
- h. Any other materials that may be dangerous or hazardous and may cause great harm to the community.

3.5.3 Setbacks (see plate 4)

- |                                                    |              |
|----------------------------------------------------|--------------|
| a. From Public Roads                               | 5.5m minimum |
| b. From Adjoining Plots                            | 5.5m minimum |
| c. From Rear Boundaries                            | 5.5m minimum |
| d. From Perimeter Fence of the Logistics city zone | 8.0m minimum |

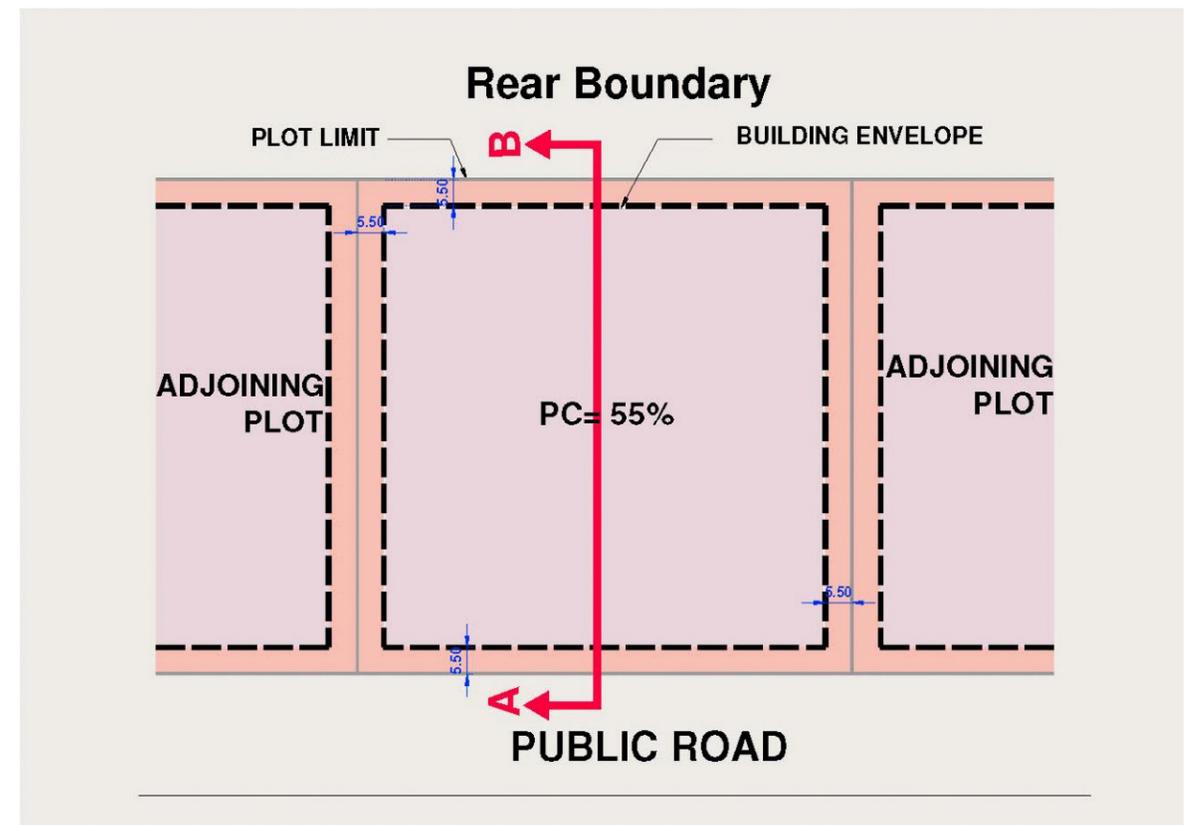
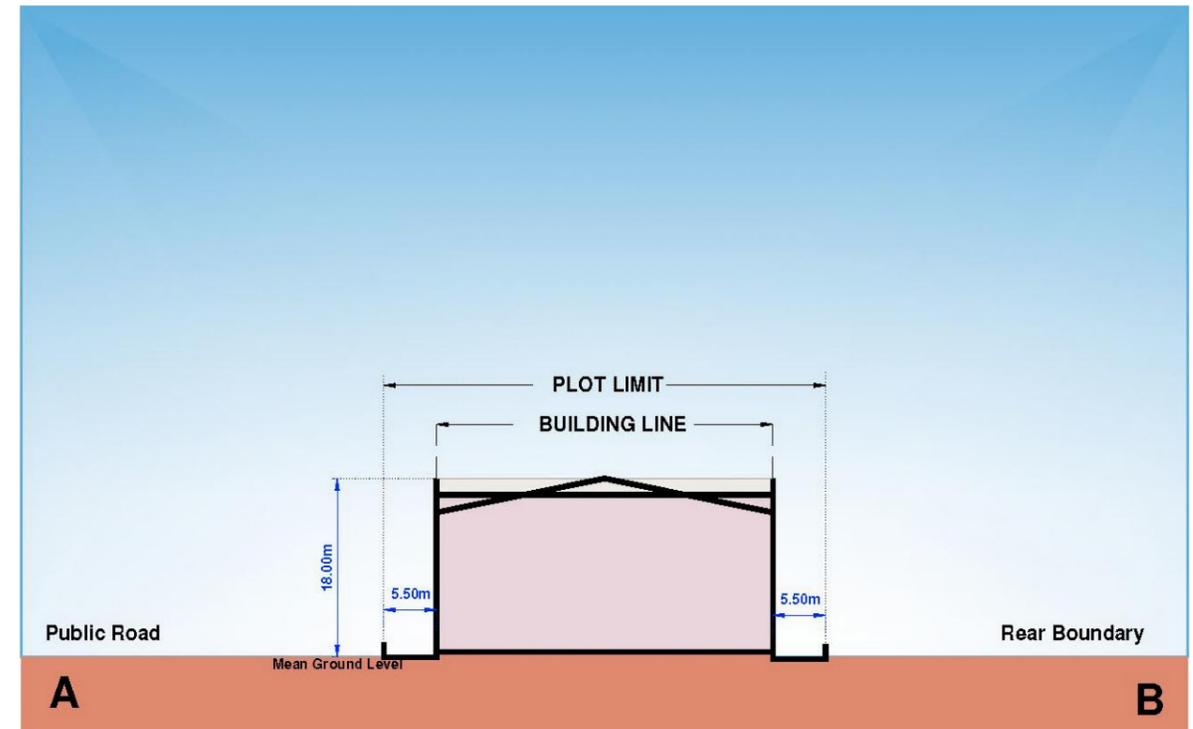


Plate 4 - Zone “F”

Except for perimeter fence gates and electrical supplies, the area of the setback must be kept free from any form of temporary building or shading structure for parking.

3.5.4 Maximum Plot Coverage: 55%

3.5.5 Maximum Floor Area Ratio: 0.6, the area of ancillary offices should not exceed a maximum of 10% of the total built up area allowed using the FAR.

3.5.6 Maximum Number of Floors: must comply with the restrictions imposed by the maximum building height and the minimum clear height requirement for the floors as described in 3.5.7 below.

3.5.7 Maximum Building Height:

- a. Overall building height measured from the mean finished level of the ground floor to the top of the roof parapet or the top of the coping tile of the pitched roof must not exceed 18m, except for special cases approved by the Authority, granted that it falls within the allowable heights imposed by the airport operation.
- b. In all building the clear height of each floor measured from the finished floor level to the ceiling should not be less than:
  - 2.80m for offices
  - 4.0m for industrial units and warehouses.
- c. Roofs of warehouses should preferably have a gentle pitch. All water storage tanks must be conveniently concealed under the pitched roof or adequately screened in cases where the roof is flat.
- d. the finished ground floor level of any building shall not be less than 300 mm above the approach road level.

3.5.8 Provisions of parking loading and unloading spaces:

3.5.8.1 Car Parking Provision

The minimum standards for the provision of on plot car parking for Industrial and storage units will be as follows:

- a. 1.0 car per 715 m<sup>2</sup> of gross industrial and warehousing floor area and 1.0 car per 45 m<sup>2</sup> gross office floor area inclusive of employees and visitors parking.
- b. Allowance of 37 m<sup>2</sup> should be made for manoeuvring and parking of each vehicle.

3.5.8.2 Truck loading and unloading spaces:

- a. Parking and manoeuvring areas for trucks should be clearly marked on the site Plan.
- b. To accommodate large trucks, bays should be 5m wide by 18m deep for WB15 trucks and 5m wide by 22m deep for WB19 trucks. For pick up trucks, bays should be 3m wide by 7m deep. Loading bays should be equipped with dock levellers.
- c. The entry and exit points for the proposed facility shall have a holding area and also be located in a way so as not to hinder traffic movement on the main and arterial roads.

3.6 Zone "FM" – Facility Management

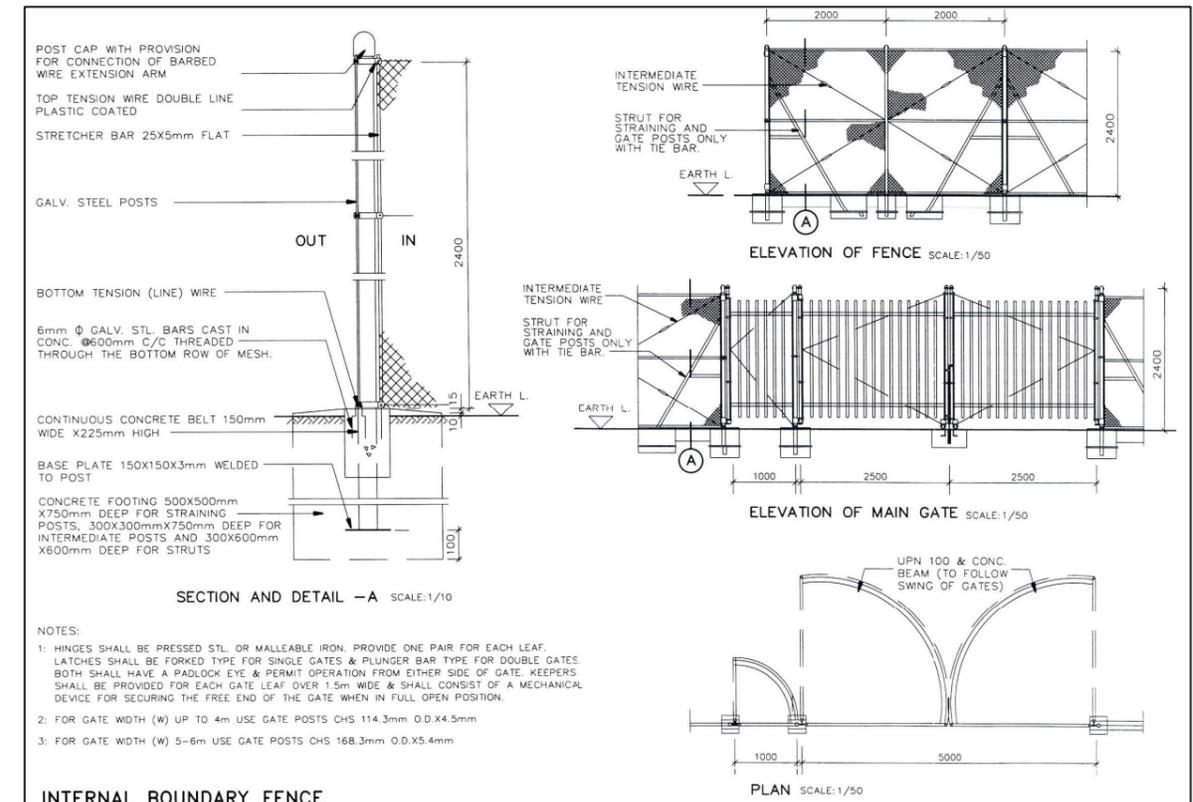
Located within sub zone WT and comprises of two plots of land, one dedicated for administration offices and another for truck maintenance facility which is a typical warehouse design. The Facility Management has a special architectural design with its own specific regulations; hence, it is not included in this document.

### 3.7 Fencing

- a. The Developer is required to provide sturdy perimeter fencing to define the boundary of his property and ensure the necessary security to his operations (figure 7).
- b. Gates shall open inwards only and shall be restrained from swinging beyond the fence line and outside the limits of the plot.
- c. Fencing height shall be a standard 2.40m.
- d. Standard internal fencing shall consist of galvanized wire mesh supported on intermediate steel posts at 3.0m interval fixed on a concrete base 30cm high from ground level (see enclosed typical detail).
- e. Steel posts shall be cold formed circular hollow section to BS standards, galvanized and coated with polyester resin.
- f. Chain link fabric must be galvanized and finished in plastic coated mild steel 3.55mm core diameter helically wound and interwoven to provide a continuous mesh without knots or ties except in the form of knuckling or twisting the ends of the wire to form the selvage at both ends of the fabric. The woven wires will form a 50 x 50mm mesh with diamond-shaped openings.
- g. All gates must have a clear opening width of 5m for vehicles and a side opening of 1 m for pedestrians (see enclosed typical detail). Gates are to be constructed of vinyl coated sections joined at the corners with specially designed corner fittings. Braces and truss rods are to be provided as necessary to prevent sagging. Gate fabric is to be the same type used in the fence construction. The fabric is to be attached securely to the gate frame at intervals not exceeding 380mm. gate hinges must be of adequate strength for gate and with large bearing surfaces for clamping in position, the hinges are not to twist or turn under the action of the gate. The gates are to be capable of being opened and closed easily by one person. Gate latches stops and keepers are to be provided for each gate. Latches are to have a plunger bar arranged to engage the centre stop. Latches are to be arranged for locking. Centre stops are to consist of a device arranged to be set in concrete and to engage a plunger bar of the latch of double gates. Keepers are to consist of a mechanical device for securing the free end of the gate when in the full open position.
- h. Services sites must be fenced 90 days after the commencement of the rent agreement.

- i. The placing of any signs displaying the name of the Consultant and Contractors during construction will be subject to prior approval from the Authority and must be removed upon completion of the construction.
- j. The metering points for electrical and water services shall be accessible from outside the plot at all times.

Figures 7 Fencing Detail



### 3.8 Building External Appearance

#### 3.8.1 Advertisement Controls

- a. The Developer shall provide a sign board displaying the name of the company which shall be fixed against the wall of the building and shall not project more than 200mm from the face of the wall. All signs shall be placed below the roof line, at least 2.50m above ground level.
- b. The Consultant shall present to the Authority a drawing of the elevation of the building on which the sign is to be fixed showing the location and design of the proposed sign.

c. Directly illuminated signs and intermittent flashing signs will not be allowed. Indirect lighting of signs will be allowed through spot lights fixed to the wall or from ground projectors.

d. No sign shall be displayed without the written approval of the Authority.

e. No sign shall be allowed to be placed on the property fence or on the roof of any building.

### 3.8.2 Open Storage Yards

Any open storage is not allowed within the plot boundaries, unless the view from outside the plot is hidden by durable means of screening (trees, transparent or opaque structures...) which should be approved by the Authority.

### 3.8.3 Elevation Treatment

The Consultant shall exercise great care in the design and detailing of the building elevations which should be kept simple and well proportioned. The colour, materials and finishes used on the façades and roofs of buildings shall be subject to the approval of the Authority.

External cladding shall be made of industrial products such as steel, aluminium sheets or composite panels, copper, glass, etc.... The use of sharp colours for external cladding and glass shall be discouraged.

### 3.8.4 Overall Appearance

It must be noted that all building developments in the Al Maktoum International Airport Logistic zone should follow the overall style, character, finishing standard and colour scheme of the entire surrounding Airport City.

As such, all developers should approach the Authority with the initial design documentation, in order to obtain the approval on the external character and skin finishing material specification.

## 3.9 Landscaping

All the plots are to be landscaped as mentioned as mentioned under. Clearly defined areas, accounting to not less than 20% for office plots and 8% for the other plots with other uses are to be landscaped.

a. The total area of the plot as mentioned above needs to be completely landscaped and planted with appropriate plant material to provide visual interest, shade and colour within the plot. Available spaces and areas assigned for car parking should also be landscaped, but without reducing the number of vehicles of car parking, nor inhibit their safe movement and manoeuvring.

b. The use of adequate desert style furniture like rock, pavers, pebbles, shrubs and trees is highly recommended.

c. Where buildings cannot provide adequate shade, trees should be used to shade walkways, car parks, buildings and outdoor common spaces. Mature specimens or fast growing trees with high, dense, near evergreen canopies should be planted as early as possible.

d. Evergreen succulents should be used whenever possible as ground cover, these serve as a glare reducer and to hold the soil from wind born.

e. It is imperative that water usage be kept to a minimum. "Desert landscaping", which emphasizes shallow rooted plants and hard surfaces is encouraged to minimize water consumption.

f. Landscaping plans should reflect the site drainage system, take advantage of water runoff, and should take into account shaded and wind protected areas, such as those created by building forms and walls. They also have to show and indicate the numbers, species, positions and sizes of all trees and shrubs, ground cover plants and lawn areas related to the estimated irrigation water demand calculations.

g. It is recommended that distinctive accent lighting be provided at alleyways and entryways and that special attention be given to eliminate flood light heat generators.

h. No non-operational areas within the plot shall be left un-surfaced and shall be paved in a material compatible with material specified for areas reserved for car parking.

i. No landscaping works shall be undertaken outside the boundaries of the assigned plot.

j. All areas reserved for car parking inside the plot boundary must be paved with grey interlocking blocks and with colour interlocking blocks used to define parking limit for each type of vehicle. These roads should be drained and maintained to the satisfaction of the Authority.

#### 4. SITE AND SERVICES

##### 4.1 Site access

4.1.1 Each serviced site must have uninterrupted access to all buildings and facilities situated on it. Internal road width shall be a minimum of 5.50 m and designed to an adequate standard for the use of fire vehicles. It should also be illuminated.

4.1.2 The finished level of any paved road, parking or footpath should not be less than 150 mm above the finished level of the approach road to the site and shall have an adequate fall towards the approach road.

##### 4.2 Utility Services

###### 4.2.1 Utility requirements:

The Developer shall provide within the plot boundaries the following:

- a. Water supply, sewerage and irrigation services to habitable parts of any building in compliance with the standards set out by the Service Authorities.
- b. Electrical power distribution installations in compliance with the Regulations set out by the Service Authority (Electrical).
- c. Fire protection facilities shall be in accordance with the recommendations, requirements and specifications of the National Fire Protection Association, NFPA and approved by the Service Authority (Fire).
- d. Storm water drainage and disposal, in accordance with the recommendations and regulations of the relevant Service Authority and Dubai Municipality.

The developer has the right with the agreement of the Authorities to do some works outside the plot boundaries in order to connect to the infrastructure networks.

Provision of any utility and its necessary reservation on any plot will require liaising between the customer and the responsible authorities.

###### 4.2.2 Water Supply

a. Water supply installations shall comply with the relevant Service Authority (water) standards and with the Authority requirements, the British standards and/or the Uniform Plumbing Code (UPC) USA.

b. Water storage tanks shall be provided for every serviced site to accommodate for both the fire protection and the daily domestic water demand requirement. The minimum capacity of any storage tank should not be less than two days or 1 m<sup>3</sup> whichever is higher for domestic water use and 90 minutes of coverage for fire protection use.

c. The Developer shall submit a request for a service connection to the Service Authority (Water) documents upon completion of construction.

d. All installations shall be subject to testing by the Service Authority (Water), in accordance with the relevant Regulations.

e. Developers shall pay a one-time water connection charge and all other charges in application to the Service Authority (Water) Regulations.

###### 4.2.3 Wastewater

a. Wastewater installations shall comply with relevant the Service Authority (Wastewater) requirements and the Authority requirements and British standards.

b. All chambers for the disposal of foul sewerage from any building shall be adequately vented and impervious to liquids internally or externally.

c. Sewers must be of durable material and construction and watertight under all conditions. The internal diameter of any soil drain shall not be less than 150 mm.

d. Service connection between the main inspection chamber of a serviced site and the public infrastructure shall be paid for by the Developer.

e. Drains shall be laid in straight lines between changes of direction or gradient. Maximum distance between manholes shall be 30 m. Manholes must be provided at each change of direction.

f. All installations shall be subject to testing and approval of the Authority.

g. Where industrial liquid waste is likely to be generated, effluent shall be collected into a separate approved system. Effluent treatment plant or a specific tank shall be provided in accordance with the relevant Authority requirements and British standards (BS 6297). No drains from industrial processes shall be allowed to discharge into the Authority drainage network or

- any soak away without prior treatment complying with the relevant Authority and British standards.
- h. Developers shall pay a one-time connection charge and all other charges thereof in accordance with Authority charges.
- 4.2.4 Irrigation
- a. Irrigation installations shall comply with relevant to the Service Authority (Irrigation) and Authority requirements.
- b. All installations shall be subject to testing and approval of the Authority.
- c. Water storage tanks shall be provided for every serviced site to accommodate for the daily water demand requirement.
- d. The Developer shall submit a request for a service connection to the Authority upon completion of construction, accompanied by a detailed drawing indicating the exact location of the storage reservoir(s) (daily water demand) and connection location with diameter.
- e. Developers shall pay a one-time connection charge and all other charges thereof in accordance with Authority charges.
- 4.3 STORMWATER DRAINAGE
- 4.3.1 Storm water installations shall comply with the relevant the Service Authority (Drainage) requirements and the relevant Authority and British standards.
- 4.3.2 Roof drainage network shall be designed to a frequency return period of five years.
- 4.3.3 Roof finish shall have a gradient of at least 1:80 capable of directing rainwater to suitable outlets or down pipes, which will discharge freely at ground level.
- 4.3.4 Channels, gutters, outlets or down pipes shall be of durable material with suitable watertight joints, in accordance to Authority standards.
- 4.3.5 Down pipes shall be at least 80 mm diameter, securely attached to the building.
- 4.3.6 Public parking shall be provided with channels and gutters inlets designed to a minimum rainfall intensity of 64 mm per hour and a minimum time of concentration of 10 minutes.
- 4.4 REFUSE DISPOSAL
- 4.4.1 Refuse shall be sorted by each Developer or tenant in two different types, namely domestic and industrial non hazardous.
- 4.4.2 Domestic waste shall include those generated from usual office work and shall be disposed off in an easily identifiable and accessible container. It is the responsibility of the tenant to make appropriate arrangement for the disposal of his generated trade waste.
- 4.4.3 Industrial non hazardous waste shall include all bulky packaging material made of card board, wood, or paper. Developers or tenants are expected to dispose such material in the bulk bins provided for such purpose by the Authority throughout the Logistics City site.
- 4.4.4 If Developers are expected to generate industrial non hazardous waste, they may submit a request to the Authority for placing bulk bins within their sites. The request shall include a plan indicating the location and number of the plot, the type of industrial activities, the type of waste and the expected daily and weekly generation rate.

## 5. BUILDING DESIGN STRUCTURAL REQUIREMENTS

5.1 The building shall be so constructed that the combined dead, imposed and wind loads are safely transmitted to the ground without deformation and deflection of any part of the building, and without such ground movement impairing the stability of any part of another building. Building stability shall not be impaired by subsoil movement due to swelling or shrinking.

5.2 Structures shall be designed in accordance with the current Uniform Building Code (UBC) and British standards codes of practice, and shall comply with the durability requirements mentioned in this section. The following list includes some of the British standards that are applicable to building design and construction:

BS 6399: Part 1: Code of practice for dead and imposed loads.

BS 6399: Part 3: Code of practice for imposed roof loads.

CP3: Chapter V: Part 2: Wind loads.

BS 5628: Code of practice for use of masonry.

BS 449: Specification for the use of structural steel in buildings.

BS 3692: Specification for ISO metric precision hexagon bolts, screws and nuts- Metric units.

BS 4232: Specification for surface finish of blast cleaned steel for painting.

BS 4604: Specification for the use of high strength friction grip bolts in structural steelwork - Metric series.

BS 5950: Structural use of steelwork in buildings.

BS 8004: Code of practice for foundations.

BS 8007: Code of practice for the structural use of concrete for retaining aqueous liquids.

BS 8110: Structural use of concrete.

Basic design wind speed should not be less than 45 m / s.

5.3 Seismic design shall be to Uniform Building Code zone 2A.

5.4 Minimum requirements for structural steelwork:

a. Minimum thickness of material for main structural members shall be 6 mm unless the member is a hot rolled section complying with BS4 and BS 4848, or similar approved standards.

b- Painting shall be epoxy based paint with a minimum life to first maintenance of 20 years.

5.5 Minimum requirements for concrete work:

a. Minimum cement content shall be 370 kg / m<sup>3</sup>.

b. Maximum water / cement ratio shall be 0.45.

c. Minimum 28 days characteristic cube strength shall be 30 N / mm<sup>3</sup>.

d. Maximum chloride content (as NaCl) in any mix shall not exceed 0.3 % by weight of cement for reinforced concrete 0.12 % by weight of cement for mass concrete and 0.06 % by weight for prestressed concrete.

5.6 The following are particular minimum requirements for concrete in contact with soil:

a. Minimum 28 days characteristic cube strength shall be 40 N / mm<sup>3</sup>.

b. All reinforced concrete members shall be protected with a 1.5 mm thick proprietary self adhesive bituminous membrane and protected with 4 mm thick hardboard prior to backfilling.

c. Clear concrete cover to reinforcement shall be not less than 75 mm for footings and 50 mm for columns, beams, slabs and walls.

5.7 The design and construction of pipelines, storage tanks, boilers, cranes, lifting equipment and pressure vessels shall be checked and certified by an independent third party inspection agency approved by the Authority.

## 6. MATERIALS

### 6.1 General

6.1.1 Green Building products shall be used in all the building construction as laid down in the Green Building regulations by the authorities.

6.1.2 All materials used in any construction shall be of a type and quality that fulfils the purpose for which they are used. They must be safe and durable. Where and to the extent that materials, products and workmanship are not fully detailed or specified, they are to be of a standard appropriate to the works and suitable for the functions stated in or reasonably to be inferred from the project documents, in accordance with good building practice.

6.1.3 Products must be new and previously unused. For products specified to British or other approved standards, certificates of compliance shall be obtained from manufacturers. Where a choice of manufacturer or source of supply is allowed for any particular product, the whole quantity required to complete the work must be of the same type, manufacture and/or source.

6.1.4 Concerning basic workmanship; and where compliance with BS 8000 is specified, this is only to the extent that the recommendations therein define the quality of the finished work. Where BS 8000 gives recommendations on particular working methods or other matters which are properly within the province and responsibility of the Contractor, compliance therewith will be deemed to be a matter of general industry good practice and not a specific requirement of the Authority.

### 6.2 Screeds and Toppings

Cement screed shall be to BS 8204 and BS 8000 part: 9.

Heavy duty epoxy topping shall be composed of epoxy aggregate matrix and top coats to produce a dense, seamless and impervious topping, colours to be selected by the Consultant.

Epoxy concrete floor sealer to be solvent based epoxy floor coating providing abrasion, chemical resistant, coloured, dustproof and sealed surface.

### 6.3 Finishes

All finishes are to conform to relevant BS and BS code of practice.

6.3.1 Internal plastering is to be executed in accordance with BS 5492.

6.3.2 External rendering is to be executed in accordance with BS 5262.

6.3.3 Painting is to be in accordance with BS 6150 and BS 8000 pt: 12.

### 6.4 Rigid Floor and Wall Tiling and Slabs

6.4.1 Ceramic tiles and fittings shall conform to BS 6431. Fixing of ceramic tiling and fittings is as per BS 5385: part: 1.

6.4.2 Terrazzo tiles and fittings shall conform to BS 4131, hydraulically pressed and steam cured. Joints to be true to line, continuous and without steps and parallel to the main axis of the space or specified features.

### 6.5 Cladding and Covering

6.5.1 Insulated composite cladding panels comprising outer skin of profiled sheet steel, hot-dip galvanized to BS 2989 -82 type G275. Sheets are to be coated with an anti corrosive epoxy primer and barrier coat on both sides and a protective coloured coating. Profiled sheeting and ancillary materials are to be fixed neatly to manufacturer's recommendations to make the whole sound and weather tight.

6.5.2 External cladding shall be executed in accordance with BS 8298. Cladding is to resist all dead and live loads; wind loads are to be calculated in accordance with BS CP 3, chapter V, Part 2 based on prevailing site conditions.

### 6.6 Glazing

Glass generally shall conform to BS 952. Glazing must be wind and water tight under all conditions to BS 6375 with full allowance made for deflections and other movements. Preparation of surrounds, dimensions of edge cover and clearance, positions and materials of distance pieces, setting and location blocks are to conform to BS 6262 and to glass and sealant manufacturers' recommendations. General glazing is to conform to BS 6262. Security glazing is to be to BS 5357.

## 6.7 Thermal Insulation

Thermal insulation requirements for the building envelope shall be provided as per Dubai Municipality regulations and shall be subject to the Authority's approval.

## 6.8 Metal Work General

Grades of metals, section dimensions and properties shall be prescribed in accordance with appropriate British standards. When not specified, grades and sections shall be appropriately for the purpose. Metalwork shall be carefully and accurately fabricated to ensure compliance with design and performance requirements using types, grades and sections of metal appropriate for the purpose. Finished work must be free from distortion and cracks.

## 6.9 Woodwork General

All woodwork shall generally comply with British standards 1186 parts 1 and 2.

## 6.10 Doors and Windows

6.10.1 Aluminium alloy windows and screens shall comply with the general requirements of BS 4873. Weather tightness shall be to BS 6375: Part 1 constructed from extruded aluminium sections made from alloy 6063 fully heat treated. Bearing devices, hardware and reinforcing members are to be from material that is corrosion resistant and compatible with aluminium. Weather-stripping is to be made from neoprene or EPDM rubber. Aluminium sections are to have electrostatically applied polyester powder coating or fluoro-polymer finish. Operation and strength characteristics to be to BS 6375: Part 2.

6.10.2 Flush steel doors shall be to BS 6510. Doors are to be flush, watertight, with closed tops and edges and reinforced internally with stiffeners welded and spaced not more than 150 mm over centres. Fire resisting steel doors are to satisfy the requirements of BS 476: Parts 20 and 22.

6.10.3 Wood semi-solid core flush doors are to be to BS 4787 part 1. Wood fire-resisting flush doors are to satisfy the requirements of BS 476: Parts 20 and 22;

6.10.4 Roller Shutters: Comprising curtain of interlocking galvanized steel with electrostatically applied polyester powder coating finish, supplied complete with barrel rollers, helical springs, vertical guides, operating gear for motorized operation, hoods, personnel doors, glazed panels and ventilation slots, as shown on the drawings, and with manufacturer's standard ironmongery, accessories and fixings.

6.10.5 All doors within a facility must be on a master key, a copy of which must be handed over to the Authority.

## 6.11 Fire Resistance

The specified performance is to be the minimum period attained when tested for integrity in accordance with the relevant parts of the British standard (BS 476), U.L. standards and shall be listed for the intended function and use by an authorized third party approved by the Authority.

## 6.12 Welfare and Sanitation Requirements in Buildings

6.12.1 Every habitable building must include the provision of sanitary facilities for use of the staff. The facilities must include a minimum of one W.C. for men and one W.C. for women with indirect access to the habitable space.

### 6.12.2 Minimum requirements for offices and industrial units:

- a. For men: one W.C. and one hand wash basin for every 10 men or part thereof. Or one W.C., one urinal and one hand wash basin for every unit employing 25 persons or more or part thereof.
- b. For women: one W.C. and one hand wash basin for every 10 women or part thereof.

6.12.3 Hot and cold water services shall be provided to hand wash basins.

6.12.4 Drinking water shall be provided from a potable water tap, with one tap per 50 persons as a minimum standard.

6.12.5 Trapped floor gullies or drainage channels shall be provided in toilets and ablution areas to enable all areas to be washed and drained.

- 6.12.6 All sanitary fixtures, water closets, hand wash basins and urinals must be specified, constructed and installed in accordance with the Authority established Standards, the British standards and/or the Uniform Plumbing Code (UPC) USA. Each fixture shall discharge into a sanitary trap of suitable dimensions.
- 6.12.7 Soil pipes and waste pipes shall have a minimum diameter at least equal to the internal diameter of the outlet of any appliance that discharges into it.
- 6.12.8 Vent pipes shall have a minimum internal diameter of 50 mm. Vent pipes shall be extended an adequate distance in height, preferably to top of roofs, so not to transmit any odour into ventilation openings (minimum 3m clear distance).

## 7. FIRE PROTECTION REGULATIONS

- 7.1 Provision of Fire Protection Facilities shall meet the recommendations, requirements and specifications of the National Fire Protection Association, NFPA and shall be approved by the Service Authority (Fire) and the Authority based on fire risk assessment and (UAE) Government Safety Regulations.
- 7.2 Every building shall be provided with adequate means of egress, and other safeguards which shall be specified in kind, number, location and capacity, taking into consideration type of occupancy, number of persons exposed type of building materials and other relevant factors that may affect the safety of occupants.
- 7.3 A minimum of two means of escape shall be provided in every building, and shall be arranged in such a way that will minimize the eventuality of both being rendered impassable during the same emergency conditions.
- 7.4 Every exit stair and other vertical opening between floors of a building shall be enclosed and protected as necessary to prevent the spread of fire, fumes and smoke through the vertical openings from floor to floor, giving enough time for the occupants to reach the means of escape.
- 7.5 Every building shall be provided with fire detection alarm system to warn the occupants in the event of fire. The alarm system shall be adequately connected to the Fire control room monitoring system through a digital communicator and to the DWC City Integrated Intelligent Building Solution (I<sup>2</sup>BS) System through DWC WAN. The developer shall provide necessary gateway equipment and connectivity to the DWC WAN available with in the Building telecom room. The consultant shall refer to the DWC City I<sup>2</sup>BS specifications available with DWC-DuServe for technical details. The developer may choose to avail the services of 365/7/24 monitoring of the fire alarm system by the DWC City I<sup>2</sup>BS Central Control Centre and receive alarm/fault notifications by email/SMS.
- 7.6 Every building which utilizes any inflammable or hazardous GAS in places like restaurants/canteens, etc. shall be provided with gas detection system to shut off the gas supply and to warn the occupants in the event of gas leakage. The gas detection system shall be adequately connected to the DWC City Integrated Intelligent Building Solution (I<sup>2</sup>BS) System through DWC WAN. The developer shall provide necessary gateway equipment and connectivity to the DWC WAN available with in the Building telecom room. The consultant shall refer to the DWC City I<sup>2</sup>BS specifications available with DWC-DuServe for technical details. The developer may choose to avail the services of 365/7/24 monitoring of the detection system by the DWC City I<sup>2</sup>BS Central Control Centre and receive alarm/fault notifications by email/SMS.
- 7.7 Portable fire extinguishers of appropriate type and numbers must be provided and conveniently located in every building in accordance with NFPA requirements.
- 7.8 For industrial occupancy - fire protection and means of egress shall be provided as per their occupancy and hazard classifications, i.e.
- a. General industrial Occupancy or
  - b. Special Purpose Industrial Occupancy
- 7.9 For storage occupancy - fire protection and means of egress shall be provided as per their hazard contents classifications in compliance with NFPA requirements.
- 7.10 Every building shall be properly and fully fire protected by an approved fire protection system complying with NFPA requirement taking into consideration the type of occupancy and usage. Main fire protection system components such as fire pumps, controller, sprinklers and accessories as applicable shall be U.L. listed for the intended use and Factory Mutual approved.

## 8. SECURITY SYSTEM

- 8.1 Every building in Commercial sector shall comply to the regulations of Department of Protective Systems of Dubai Police ([www.dps.ae](http://www.dps.ae)) for CCTV/Security requirements
- 8.2 Every building in the residential sector shall be provided with CCTV cameras to monitor the following areas to comply with DWC city security requirements.
- 1) Car park entry and exit
  - 2) Car park lift lobby to identify the people entering
  - 3) All external entrances to the building to identify the people entering the building.
- 8.3 Every building in the Commercial sector shall have CCTV recording features as specified by Department of Protective Systems.
- 8.4 Every building in the Residential City shall have CCTV recording for a minimum of 31 days at minimum of 7 frames per second and CIF resolution.
- 8.5 All warehouses/compounds in the DLC Sectors shall monitor and record the vehicle entry and exits by manual procedures and by CCTV Cameras
- 8.6 Adequate lighting shall be provided at field of camera so that people/picture is identifiable at any time of the day.
- 8.7 Developers of commercial or residential buildings shall provide their own CCTV management system or provide only IP CCTV Cameras and choose to avail Network Video Management and recording services provided by DWC/Du Serve. The required cameras' video feeds shall be made available in IP formats at the building telecom room to avail the services of monitoring and recording by the DWC/ DuServe Security Control Room. The consultant shall refer to the DWC City I<sup>2</sup>BS specifications available with DWC - DuServe for technical details.

email/SMS. The consultant shall refer to the DWC City I<sup>2</sup>BS specifications available with DWC- DUSERVE for technical details.

Any building which is equipped with Access Control System may also choose to avail the services of 365/7/24 monitoring of the Access Control System by the DWC City I<sup>2</sup>BS Central Control Centre and receive alarm/fault notifications by

## 9. MECHANICAL INSTALLATIONS

### 9.1 General

9.1.1 All mechanical systems including plumbing, cold and hot water, drainage, rainwater, fire protection, refrigeration, kitchen planning, refuse disposal, ventilating and air conditioning, controls, compressed air, fuel and LPG systems, and materials shall be in accordance with the Authority Standards and in full compliance with, but not limited to, the following standards specifications or any equivalent standard approved by the Authority.

ASHRAE	American Society for Heating Ventilation and Air Conditioning Engineer
NFPA	National Fire Protection Association
ANSI	American National Standards Institute
BS	British Standard
UBC	Uniform Building Code
SMACNA	Sheet Metal and Air Conditioning Contractors National Association
ARI	Air Conditioning and Refrigeration Institute
AMCA	Air Moving and Conditioning Association
UL	Underwriters' Laboratories Inc.
FM	Factory Mutual
AGA	American Gas Association
API	American Petroleum Institute
LEED	Green Building related code of practice

9.1.2 All mechanical systems are to have identification and colour coding system in compliance with ANSI or any equivalent standard approved by the Authority.

### 9.2 Plumbing

9.2.1 Water supply, plumbing and sanitary drainage installations shall be in accordance with the requirements of the Authority Standards and the relevant Service Authority (Water) Regulations in compliance with the Uniform Plumbing Code (UPC) and/or the British standards.

### 9.3 Ventilation and Air Conditioning

9.3.1 The design and installation of all air conditioning and ventilation systems shall be in accordance with latest guidelines of ASHRAE standards, ANSI, the UBC and applicable NFPA standards.

9.3.2 The design of walls and roof shall take into account Ventilation and Air conditioning requirements. The purpose is to limit the accumulation of moisture and pollutants which originate in the building and which would otherwise become a health hazard. An adequate supply of fresh air is necessary to ensure the health and comfort of the occupants of buildings and to limit condensation.

9.3.3 The objective is to provide means of:

- Proper ventilation, either natural or mechanical, to ensure acceptable Indoor Air Quality (IAQ) and dilution of pollutants.
- Proper air conditioning to ensure comfortable indoor temperature.
- Proper extraction of moisture and control of contaminants (e.g., from kitchens, laundries, toilets, industrial spaces, etc).

9.3.4 Habitable rooms will comply if there are provisions for:

- One or more operable Ventilation Openings to the exterior with a total area of at least 1/20 of the floor area of room with some part of the opening at least 1.75 m above floor level
- such opening(s) shall have a total ventilation area not less than 0.46 m<sup>2</sup> with opening secure and draughts avoided.
- mechanical ventilation capable of providing 2 air changes/hour with a minimum of 7 L/s of fresh unpolluted outside air for each occupant during the time the space is occupied.

9.3.5 Ventilation of kitchens will comply if there are provisions for:

- mechanical kitchen hood extract system designed and installed in compliance with ASHRAE guidelines.
- Background ventilation - either natural by means of operable opening(s) to the exterior of not less than 0.46 m<sup>2</sup> or mechanical ventilation operating

continuously to provide for the make-up air extracted by the hood and to give nominally a minimum of one air change per hour.

9.3.6 Toilet rooms may be ventilated by either natural ventilation with fully operable exterior windows with an area not less than 0.279 m<sup>2</sup> each and with part at least 1.75 m above floor or by mechanical extraction capable of providing 12 air changes/hour. Such mechanical extraction shall be communicated to the outside with point of discharge at least 3 m away from any fresh air opening.

9.3.7 Ventilating a habitable room through an adjoining space:

Two habitable rooms may be considered a single room for ventilating purposes if there is a permanent opening between which is equal to at least 1/20 of the combined floor area.

A habitable room may be ventilated through an adjoining space if:

- a. the adjoining space is a conservatory or a similar space and;
- b. there is an operable opening between the room and the space, with an area not less than 1/20 of the combined floor areas and;
- c. there is a ventilation opening(s) in the room and the space together, or in the space alone, equal to at least 1/20 of the combined floor areas and with a part of the ventilation opening area at least 1.75 m above the floor level; and for background ventilation there are openings to the space and between the space and room each having not less than 0.46m<sup>2</sup> area.

9.3.8 Alternative approaches

The movement of air may be activated by such means as the operation of the door of the compartment, the operation of the lighting or by independent manual control. However, there should be an overrun of at least 15 minutes after the use of the compartment.

A recommended alternative approach to meeting the performance requirements is contained in BS 5720:1979 Code of Practice for mechanical ventilation and air conditioning in buildings and BS 5250:1989 Code of Practice: the control of condensation in buildings (Clauses 9.8 and 9.9).

9.3.9 The ventilation of industrial buildings shall be in accordance with ASHRAE HVAC Application Handbook – latest Edition and ASHRAE Standard 62-2001.

9.3.10 No air conditioning or ventilation equipment shall be visible from outside.

9.3.11 Developer shall comply with Dubai Government's regulations for Green Buildings and provide adequate energy management system through Building Management System and Lighting Control System.

9.3.12 Any building which utilizes HVAC Control System and Lighting Control System in stand alone mode or centralized mode (Building Management System) may choose to connect to the DWC City Integrated Intelligent Building Solution (I<sup>2</sup>BS) System to avail the 365/7/24 monitoring services by the I<sup>2</sup>BS Central Control Centre and receive alarm/fault notifications through email/SMS. The consultant shall refer to the DWC City I<sup>2</sup>BS specifications available with DWC-DUSERVE for technical details.

9.4 ELV Systems

Any building which requires a centralized monitoring of the ELV systems installed in the building shall avail the services of 365/7/24 monitoring of the systems by the DWC-DuServe City I<sup>2</sup>BS Central Control Centre and receive of alarm/fault notifications by email/SMS. The consultant shall refer to the DWC City I<sup>2</sup>BS specifications available with DWC-DUSERVE for technical details. Any intelligent system which provides a communication port (RS232, RS485, Ethernet, Lon, etc...) and a communication protocol (standards such as LonWorks, BacNet, ModBus, TCP/IP, or any well defined API) shall be connected to I<sup>2</sup>BS system.

9.5 District Cooling Services

9.5.1 Objective: To Provide world class, energy efficient, economical and environmental friendly DCS to the DWC customers.

9.5.2 Overview of Various types of Customers: Mainly Master Developers and Building Owners. Master Developers (MD) are two types: 1) Exclusivity and 2) Reseller Building Owner (BO) are two types: 1) BO with Master Development and 2) Individual Customer (Building Tenant)

- 9.5.3 Basic MD exclusivity idea: DWC is the Master Developer as a whole in exclusivity right to provide DCS to site development along with title to land DCS Plant and associated equipments.  
Further DWC DuServe at its own expense design, constructs, commission, operates and maintains the DCS Plant and Equipment required supplying DCS to the entire site up to its maximum cooling capacity for the term of the agreement with DWC DuServe.
- 9.5.4 MD Reseller: The MD reseller contracts with DWC DuServe to provide DCS to entire site and agrees to purchase in advance all the required cooling load capacity. Further DWC DuServe at its own expense design, constructs, commission, operates and maintains the DCS Plant and Equipment required supplying DCS to the entire site up to its maximum cooling capacity for the term of the agreement with DWC DuServe.
- 9.5.5 MD / BO obligations:
- 1) Assistance and information to be provided by the BO, Approvals, License and permits, Easements and Right of the ways, ETS Room (provided at no expense with adequate space for ETS installation) & ETS connection.
  - 2) Accuracy and up to date information, immediate update of any changes, final building plan, size and location of ETS Room as (size as advised by DWC DuServe)
  - 3) Changes to load and delivery date critical and to be provided as soon as reasonably practical.
  - 4) Information in locating underground services going to Building
  - 5) ETS requirements and details of ETS installations to be followed as per DWC-DuServe standards.
- 9.5.6 DCS Conditions: The purpose and objective is to remove ambiguity and establish rules of interpretation in case of dis-agreement. Warranty to temperature at point of delivery not to exceed maximum supply temperature and maintain temperature between chilled water supply and building return water.
- 9.5.7 District Cooling Service: Standard term and conditions applicable to all customers – How DWC-DuServe DCS operates.
- 9.5.8 Description of Service: Important provisions, BO incorporated into agreement, Legal Standards, Maintain Delta Temperature.
- 9.5.9 Availability of DCS: a) DCS up to site demand ETS load only b) If increase in demand, which should be addressed in writing mentioning specific dates for which additional cost payable by BO for the change in demand load. (Applicable additional cost and approval of demand change will be under DWC-DuServe discretion. c) There will be incremental phasing in building or development demand load d) Reserves the right to use Temporary District Cooling Plants and equipments if relevant.
- 9.5.10 What if DWC- DuServe is ready to deliver DCS but customer is not ready?1) Commencement of demand charges  
2) Exclusively will not permit any third party DCS provider within the site during the term or any other alternative form of air-conditioning.3) MD to assist in all respect to provide personnel and building load details information and data assistance and coordination with their representative or consultant .
- 9.5.11 DWC-DuServe Obligation: 1) To construct, operate and maintain DCS plant and equipment at own cost 2) To exercise “reasonable skills” care and due diligence in providing DCS
- 9.5.12 DCS Charges: MD and BO to abide the DCS charges set by DWC-DuServe regulatory body such as demand, connection, consumption, metering equipment charges and surcharge with applicable refundable deposit.
- 9.5.13 Limitations of liabilities and indemnities: DWC-DuServe to manage risk, pertaining to liability clause (proven damage to building solely caused by fraud and negligence), indemnity clause, failure to deliver DCS, insurances, term of agreement and contracts, renewal of agreements (2yrs) and expiration(retain or sell).
- 9.5.14 Suspension and Termination: To be implemented for Force Majeure, such as events outside either party’s reasonable control ie: floods, natural disaster, terrorism etc.

- 9.5.15 Reason for Termination: Events like insolvency close of businesses, winding up, court order and lender enforcement of asset security.
- 9.5.16 Default Termination: Material breach by customer and failure to remedy within 60 days notice.
- 9.5.17 Effects of Termination: DWC-DuServe right, stop providing DCS to site, cease all work and retain ownership of plant and equipment, sell land etc.
- 9.5.18 What if MD / BO terminate contracts earlier? 1) Such as, during design, procurement etc, for which 2 years demand charge for the contracted load demand with any other cost to be incurred on MD / BO. 2) After design, construction, etc.
- 9.5.19 Confidentiality: Both parties need to protect confidential information which is exchanged between them in course of performing obligations under the agreement, i.e.: designs, technical data, trademark, financial data, legal documents etc.
- 9.5.20 Improper Payment by MD or BO, will lead DWC-DuServe right to stop providing DCS under conditions of contract agreement, with a notice period.
- 9.5.21 Miscellaneous Provisions: Dispute Resolution – choosing an efficient and neutral forum to resolve disputes within DWC-DuServe authority or by Dubai Chamber of Commerce and Industry.
- 9.5.22 DWC-DuServe Obligation 1) To construct, commission, own, operate and maintain DC Plant, CHW piping network and primary side ETS installation up to agreed building load demand. 2) DCS as per agreement between DWC-DuServe and the customer (MD / BO) 3) Additional redundancy, standard care and all reasonable efforts for continuous supply of District Cooling Services.
- 9.5.23 DCS Contract: The contract shall be up to 25 yrs, extendable there off on both DC provider regulation that could be revised for other reasons such increased in utility, operation and maintenance cost or any other charges etc. The contract can be extendable for another 25 yrs time period mutually agreeing on DC regulations.
- 9.5.24 The Purchaser / DCS subscriber acknowledges and understands that the Seller / DWC- DuServe may identify and approve of a particular district cooling plant, company or operator to provide cooling services exclusively to the Master Community and the Purchaser agrees to acquire chilled water for the purposes of air-conditioning for the Building(s) only from such DWC-DuServe approved district cooling plant, company or operator serving the Master Community and shall in a timely manner enter into an exclusive supply agreement with the said district cooling plant, company or operator. The Purchaser shall be responsible to pay for chilled water consumption and connection charges and other applicable tariffs from date of chilled water connection readiness, (irrespective of customer consumption) calculated at the district cooling plant service provider applicable tariff.
- 9.6 Mess and Kitchen Construction
- 9.6.1 A mess and kitchen if required shall be constructed of fire resisting materials.
- 9.6.2 Floors and walls shall be impervious to moisture and capable of being cleaned by washing down.
- 9.6.3 Walls to be tiled to a height of min 2m above floor level with ceramic tiles.
- 9.6.4 Drains to incorporate grease and food particle traps and interceptors.
- 9.6.5 Working surfaces for preparation of food are to be of stainless steel or other approved impervious material to facilitate cleaning and maintenance of hygienic conditions.
- 9.6.6 Mechanical extraction with exhaust hoods and fans to all areas with cooking taking place i.e. stoves, gas ranges and ovens tandoors etc.
- 9.6.7 Kitchens shall be fitted with the recommended fire protection system in accordance with the latest NFPA 96 requirements. Kitchen hoods shall be provided with an approved and certified automatic fire protection system fitted to the hood.

- 9.6.8 Gas pipes to cooking equipment etc., inside the building shall be with double containment and shall be in accordance with the latest NFPA requirements and shall be laid in an approved manner with U.L. listed and approved materials and accessories i.e. copper tubing or steel piping with tapered threads or welded permanent joints, minimum length of flexible hoses to connect to equipment, gas shut off valves, gas leak detection, etc.
- 9.6.9 Automatic gas leak detection and shut-off systems shall be provided to automatically shut-off the main gas supply to all burning equipments in the event a gas leak or a fire is detected and shall be in compliance with NFPA 96 requirement.
- 9.6.10 Layout and construction details of any temporary canteen, required during the period of construction, shall be approved by the Authority.
- 9.7 Energy Conservation
- 9.7.1 Energy efficient designs taking into consideration energy conservation and use of higher efficiency equipment is highly recommended by the Authority.
- 9.7.2 Special consideration and incentives may be applicable subject to prior arrangement with the Authority and /or the relevant Service Authority.

## 10. ELECTRICAL INSTALLATION

### 10.1 General

- 10.1.1 All Electrical Installations shall follow and comply with the Service Authority (Electrical) Rules and Regulations for electrical installations, IEE Wiring Regulations, and International Electro technical Commission (IEC) Codes (latest Editions).
- 10.1.2 The Developer shall provide to the Service Authority (Electrical), the connected load and maximum demand load (in kVA) required for his construction and operation in a format prescribed by Authority. A copy of the Service Authority (Electrical) N.O.C. shall be forwarded to the Authority for their information. The Developer shall also submit to the Authority the following:
- Electrical Distribution Single Line Diagram.
  - Schematic Diagram showing load intake and metering arrangements.
  - Load Schedules.
  - Electrical rooms and incoming cable routing layouts.
  - General arrangement and dimensional layout of electrical switch room with KWH metering facilities.
  - Cable routes.
  - Wiring layouts.
- 10.1.3 The Developer shall also provide a detailed list of equipment to be installed, indicating type of equipment/load, voltage, No. of phases, capacity in kW or kVA and applicable overall diversity factor.
- 10.1.4 The Developer shall take the necessary steps to protect and keep safe any service corridor passing nearby the plot. In case of damage, the Developer shall report immediately to the Authority in concern.
- 10.1.5 Developers shall make provisions for mains power out lets in the ETS room and in the telecom room in each building to enable connectivity of ETS room equipment to DWC District Cooling Central plants. The consultants shall contact the Service Authority (DWC-DuServe) for actual power requirements.

### 10.2 Application to the Service Authority (DEWA)

- 10.2.1 Upon signing a lease for the allocated plot, the Developer shall apply to the Service Authority (DEWA-Electrical) for his power connection and for the installation of his own meter.
- 10.2.2 The Consultant must apply, prior to commencing any construction works for the following:
- No Objection Certificate (N.O.C) from the Service Authorities (DM, DEWA).
- 10.2.3 The Contractor shall submit to the Service Authority (DEWA-Electrical) "Inspection Certificates" in accordance with the Service Authority (DEWA-Electrical) prescribed forms. All installations and equipment installed therein shall be subject to the Service Authority (DEWA-Electrical) inspection, testing and final approval before connecting the electric supply. All relevant documents shall be submitted to DWC Authority after the final approval of Service Authority (DEWA-Electrical).
- ### 10.3 Power Supply Connection
- 10.3.1 The point of supply to the allocated plot shall be decided by the Service Authority (DEWA-Electrical), and shall be made available at one location within the plot/project, unless otherwise approved by the Service Authority (DEWA-Electrical).
- 10.3.2 Power supply from the Service Authority (DEWA-Electrical) network shall be subject to terms, fees and tariffs issued by the Service Authority (DEWA-Electrical).
- 10.3.3 Power supply shall be provided at 230/400V, 50Hz, 3-phase 4-wire with separate neutral and protective conductor, where the total connected load does not exceed 400 kW.
- 10.3.4 In general, if the total connected load exceeds 400 kW, provision shall be made within the plot/building for the Service Authority (DEWA-Electrical) substation based on the Service Authority (DEWA-Electrical) approved details for the proposed substation. In some circumstances a substation may be required even if the total load is less than 400kW.

- 10.3.5 The Developer main distribution board and associated metering shall be installed in locations to which access is available at all times. Prior approval shall be obtained from the Service Authority (DEWA-Electrical).
- 10.3.6 Space clearance around the electrical equipment shall be provided for safe operation, inspection, testing and maintenance, according to the Service Authority (DEWA-Electrical) Regulations.
- 10.3.7 Electrical rooms and substations shall be properly ventilated/air conditioned, as applicable. In case, electronic equipment shall be installed within the electrical rooms or substations, these shall be air conditioned to a max. temperature of 26 deg. C.
- 10.3.8 The Developer shall be responsible for terminating the incoming supply cable at the Service Authority (DEWA-Electrical) metering cabinet, in accordance to the Service Authority (DEWA-Electrical) Regulations.
- 10.3.9 All tariff metering shall be provided by the Service Authority (DEWA-Electrical) and restricted to one for each consumer, unless otherwise approved by the Service Authority (DEWA-Electrical).
- 10.3.10 If continuity of power is essential for the safe operation of the equipment, it shall be the responsibility of the Developer to provide stand-by power supply in the event of mains power supply failure. The stand-by generators shall not be synchronized with the Service Authority (DEWA-Electrical) network at any time. Proper electrical and mechanical interlocks between breakers shall be provided. Generator installation shall be permitted subject to the Service Authority (DEWA-Electrical) approval.
- 10.3.11 Generator noise level shall not exceed 75 dBA at 1m outside the generator enclosure. Generator characteristics and specifications shall comply with ISO Standards and comply with local Authorities for environmental restrictions.
- 10.3.12 Service Authority (DEWA-Electrical) Substation requirements shall be according to the Service Authority (DEWA-Electrical) - General Conditions for providing 11kV Supply to Consumer's Plots and subject to Service Authority (DEWA-Electrical) approval.
- 10.3.13 All electrical installations shall be provided with separate earthing. The consumer's earthing system shall be connected to the Service Authority (DEWA-Electrical)'s earthing system subject to the Service Authority (DEWA-Electrical) approval.
- 10.4 Installation Requirements
- 10.4.1 All the Electrical installations shall follow and comply with the Service Authority (DEWA-Electrical) Rules and Regulations for electrical installations, IEE Wiring Regulations, and International Electro technical Commission (IEC) Codes.
- 10.4.2 Temporary power supply for plot construction shall be the responsibility of the Developer and subjected to the Authority approval.
- 10.4.3 The Developer shall maintain a power factor not less than 0.9 for all installation. The Developer shall consider the use of energy efficient lamps, equipment, appliances and motors.
- 10.4.4 The Developer shall install an approved fire detection and alarms system in all his constructions. Fire Alarm system shall be installed in the premises in compliance to NFPA Code or relevant British Standards and according to the local Authorities jurisdiction.
- 10.4.5 The Developer shall install 10cm UPVC ducts (number of ducts shall depend on the facility requirements) to connect the plot with the outside service corridor for the telecommunication, control and fire alarm detection wiring.
- 10.5 Completion Certificate
- 10.5.1 The Developer shall ensure the following for the Service Authorities inspection:
- o The main electrical incoming supply arrangement is completed.
  - o The electrical installation inside the plot is completed.
  - o Fire detection and alarm system installation is completed.
- 10.5.2 On completion of satisfactory inspection by the Service Authorities and the Authority, a Building Completion Certificate shall be issued. This certificate is a pre-requisite for the connection of electrical installations to the Service Authority (Electrical) power supply grid.

## 11 TELEPHONE & TELECOM INSTALLATION

### 11.1 Main Guideline for Structured Cabling System (SCS)

- 11.1.1 All the Structure Cabling Installations shall follow the Service Authority (DWC) Standards. Refer to Appendix ( )
- 11.1.2 The detailed design along with the materials to be used shall be submitted to the service authority (DWC) for approval.
- 11.1.3 The consultant must apply prior to commencing any construction works for the No Objection Certificate (N.O.C) from the service authority (DWC). See Appendix ( ).
- 11.1.4 The connection to the outside service corridor should be as per the service authority (DWC) requirements and subject to its approval.
- 11.1.5 Adequate size telecom room should be allocated as per the service authority (DWC) requirements, with 24 hours access to the service authority (DWC).
- 11.1.6 Warranty period shall start after issuing of the completion/ Acceptance certificate. See Appendix ( ).
- 11.1.7 Developers shall make provisions for cable connectivity between the Energy Transfer Station (ETS) Rooms and Telecom room in each building to enable connectivity of ETS room equipment to DWC District Cooling Central plants.

## 12 LIGHTING INSTALLATION

12.1 All lighting installations shall comply with the requirements of CIBSE (Chartered Institution of Building Services Engineers). The Developer shall consider the use of energy efficient lamps and fixtures.

12.2 Safety and emergency light fittings shall be installed in electrical switch rooms, operational area, entrances and escape routes, as per NFPA requirements or relevant British Standards and local codes.

12.3 The outdoor lighting luminance levels shall be in accordance with CIE (International Commission on Lighting). The lighting levels below are an indication of the minimum required lighting levels for different areas:

- o Roads Primary/Secondary: 2.0cd/m<sup>2</sup>/1.0cd/m<sup>2</sup>
- o Outdoor areas: 25 Lux
- o Stores/stairs: 150 Lux
- o Lobbies: 200 Lux
- o Offices: 500 Lux
- o Industrial areas (requiring accuracy): 300 Lux
- o Industrial areas (requiring extreme accuracy): 500 Lux

12.4 The outdoor lighting shall be designed to minimize the light pollution in the area. Outdoor lighting design shall be submitted to the Authority for approval. Specific requirements for the outdoor lighting shall be followed, as per the Authority requirements.