

## Specification ( Airfield Facilities )

The airfield consists of the parts of airport which accommodate the movement of aircraft. It encompasses runways, associated taxiways and aprons including airfield lighting, navigational aids and communication equipment which are required to facilitate aircraft operations.

### 1. RUNWAY

A runway is a defined rectangular area on an airport prepared or suitable for the landing and take-off of aircraft.

#### a. Number and Orientation

Wind speed and direction determine the number and orientation of runways, and dictate the period of time a particular runway may be in use at an airport. The ICAO recommends that the number and orientation of runways at an airport should be such that the usability factor of the airport is not less than 95% for the aircraft which the airport is intended to serve. The 95% wind coverage is computed on the basis of the cross-wind component not exceeding the speeds defined in the ICAO Annex 14, Volume 1 – Aerodrome Design and Operations. **Table (1)** summarizes the wind distribution at the KHIA computed from the wind data recorded for the period 1992-2006 at the airport.

There is only one runway at the KHIA. It is orientated 14 degree from the magnetic North when viewed from the direction of aircraft approach to the southern end of the runway, and 194 degree from the magnetic North when viewed from the direction of aircraft approach to the northern end of the runway. The runway orientation conforms closely to the prevailing wind direction which is predominantly from the north and north-northwest for most of the time as shown in **Table (1)**.

In order to comply with the ICAO standards, each runway end is designated by a two - digit number, which is the whole number nearest the one-tenth of the magnetic North when viewed from the direction of aircraft approach, to indicate its orientation. When the aforesaid rule would give a single digit number, the number is preceded by a zero. Therefore, the single runway at the airport is designated as Runway 01/19.

**Table (1)**  
**WIND DISTRIBUION AT THE KHIA**

Wind Direction	PERCENTAGE OF WINDS			
	7-24 km / h (4-13 knots)	26-37 km / h (14-20 knots)	39-76 km / h (21-41 knots)	Sub-Total
N	46.1	0.6	-	46.7
NNE	2.8	-	-	2.8
NE	-	-	-	-
ENE	-	-	-	-
E	-	-	-	-
ESE	-	-	-	-
SE	-	-	-	-
SSE	-	-	-	-
S	-	-	-	-
SSW	-	-	-	-
SW	-	-	-	-
WSW	1.1	-	-	1.1
W	-	-	-	-
WNW	0.6	-	-	0.6
NW	2.2	-	-	2.2
NNW	34.3	0.6	-	34.9
Calms – 0-6 km / h (0-3 knots)				11.7
Total				100.0

*b. Width and Length*

Runway 01/19 is 45 m wide with a 7.5 m wide shoulder on each side.

The length of the runway is 3,000 m which is sufficient for the operations of all current types of passenger aircraft excluding A380 in normal weather conditions. On the extremely hot days, some of the aircraft may have to reduce their passenger or cargo load to operate safely on the runway since the higher the temperature at the airport the aircraft will require a longer runway for landings and take-offs as is the case for B747.

Taking into account the existing runway width and length as well as the greatest wing span of aircraft for which the runway is intended, namely a B747 which has a wing span of about 65 m, the airport reference code is 4E in accordance with the ICAO classification.

Table (2) shows the average monthly temperatures and the average maximum monthly temperatures at the KHIA computed from the weather data recorded for the period 1996-2006 at the airport

**TABLE (2)**  
**MONTHLY TEMPERATURES AT THE KHIA (1996-2006)**

Month	Average Monthly Temperature ( °C )	Average Maximum Monthly Temperature ( °C )
January	15.2	20.9
February	16.4	22.3
March	19.7	26.0
April	24.1	30.8
May	28.6	35.6
June	31.2	38.3
July	33.5	40.1
August	33.1	39.7
September	30.5	37.0
October	26.5	32.5
November	21.3	27.2
December	16.5	22.3

As temperature at an airport is an important factor in determining the length of runway for aircraft landings and take-offs, it is taken into consideration when calculation of the runway length required by each type of aircraft anticipated at the KHIA is made in Chapter 4 – Demand/Capacity and Facility Requirements.

c. Slope

Runway End 01 has an elevation of 53 m (175 ft) and Runway End 19 has an elevation of 34.3 (113 ft) while the mid point of the runway is at 43 m (144 ft). The average slope of the runway is 0.62% which is well within the maximum of 1.25% stipulated by the ICAO.

As runway slope is also an important factor in determining the length of runway for aircraft landings and take-offs, it is taken into consideration when calculation of the runway length required by each type of aircraft anticipated at the KHIA.

d. Pavement Conditions and Strength

The runway pavement is a flexible or asphalt pavement. Its condition is rated as poor in accordance with the FAA Advisory Circular 150/5320-17 – Airfield Pavement Surface Evaluation and Rating Manuals. The bearing strength of the runway pavement is PCN 54/F/A/W/U based on the ICAO reporting format.

2. RUNWAY STRIP

Runway strip is a defined area which includes the runway and stopway intended to reduce the risk of damage to aircraft running off a runway, and to protect aircraft flying over it during take-off or landing operations.

The declared dimensions of the runway strip at the KHIA are 3,120 m long x 300 m wide, although they should have been declared as 3,315 m long x 300 wide if taking into account the presence of the stopway which is 195 m long in order to fully meet the ICAO standards.

### 3. RUNWAY END SAFETY AREA (RESA)

RESA is an area symmetrical about the extended runway centre line and adjacent to the end of the strip primarily intended to reduce the risk of damage to the aircraft undershooting or overrunning the runway.

The declared dimensions of the RESAs for Runway 01 and Runway 19 are 240m long x 90m wide.

### 4. STOPWAY

Stopway is a defined rectangular area on the ground at the end of take-off run available prepared as a suitable area in which an aircraft can be stopped in the case of an abandoned take-off.

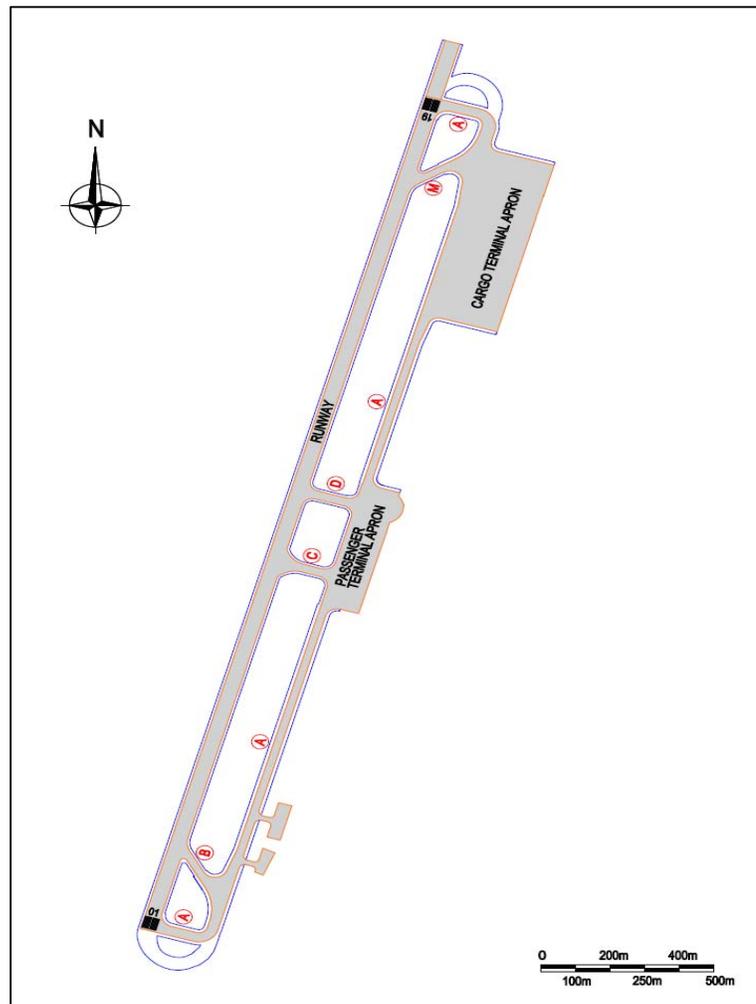
Stopway is only provided at Runway End 19 and has dimensions of 195 m long x 45 m.

### 5. TAXIWAYS

Taxiways are paved areas over which aircraft move from one part of the airfield to another. There are five taxiways at the KHIA as depicted in **Figure (1)**.

Taxiway A, which is a parallel taxiway combined with two entrance/exit taxiways at the runway ends, generally provides a route for aircraft to reach the runway end. This taxiway also serves as an apron taxiway to provide a through taxi route across the passenger apron and cargo apron at the airport.

**Figure (1) Taxiway Locations at the KHIA**



Taxiway B, C, D and M, which are exit taxiways connecting the runway to Taxiway A, provide paths for aircraft to leave the runway after they have landed.

Table (3) summarizes the physical characteristics of the five taxiways.

**TABLE (3)**  
**PHYSICAL CHARACTERISTICS OF TAXIWAYS AT THE KHIA**

Taxiway	Length (m)	Width (m)		Bearing Strength	Pavement Conditions (As in Nov 07)
		Without Shoulders	With Shoulders		
Taxiway A	3,300	23	44	PCN 54/F/A/W/U PCN 42/R/A/W/U	Good
Taxiway B	200	23	38	PCN 54/F/A/W/U	Good
Taxiway C	150	26.5	42.5	PCN 54/F/A/W/U	Good
Taxiway D	150	28	44	PCN 54/F/A/W/U	Good
Taxiway M	200	23	38	PCN 42/R/A/W/U	Good

## 6. APRONS

There are three concrete parking aprons at the KHIA, namely the passenger terminal apron, the cargo apron and the aero sports apron. Their physical characteristics are summarized in Table (4).

**TABLE (4)**  
**PHYSICAL CHARACTERISTICS OF APRONS AT THE KHIA**

Apron	Dimensions	Surface Type and Bearing Strength	Apron Shoulder Width and Surface Type	Apron Conditions (As in Nov 07)
Passenger Terminal Apron	435 x 89 m	Concrete PCN 42/R/A/W/U	10.5.m (right side only) Asphalt Surface	Good
Cargo Apron	600 x 206 m	Concrete PCN 42/R/A/W/U	10.5.m Asphalt Surface	Very Good
Apron fronting Royal Falcons and Royal Sports Club	123.4 x 39.4 m	Asphalt Surface Axle Load 12 Tons	-	Very Good
Apron fronting Ayla Aviation Academy	84.5 x 32.2 m	Concrete	-	Under Construction
Apron fronting Royal Jordanian Academy	97.6 x 32.2 m	Asphalt Surface	-	Under Construction

## 7. VISUAL AIDS AND AIRFIELD LIGHTING

Visual aids and airfield lighting are necessary to provide pilots with critical landing and take-off information concerning runway alignment, lateral displacement, rollout operations and distance, and to guide pilots during the taxiing of aircraft on the runway and taxiways.

The visual aids and airfield lighting provided at the KHIA are summarized in Table 2-6.

**TABLE (5)**  
**VISUAL AIDS AND AIRFIELD LIGHTING AT THE KHIA**

Facility	Description
<b>Runway 01</b>	
Approach lighting system	Precision approach category I lighting system / white lights
Threshold and wing bar lighting	Green lights
Visual approach slope indicator, PAPI	4 units, 3 degree slope, on the left side of the runway and 420 m from the threshold / red and white lights
Touchdown zone marking	White painting
Centreline marking	White painting
Edge marking	White painting
Runway end lighting	Red lights
Stopway lighting	Red lights
<b>Runway 19</b>	
Approach lighting system	Simple approach lighting system, 300 m long with one cross bar / white lights
Threshold and wing bar lighting	Green lights
Visual approach slope indicator, PAPI	4 units, 3 degree slope, on the left side of the runway and 420 m from the threshold / red and white lights
Touchdown zone marking	White painting
Centreline marking	White painting
Edge marking	White painting
Runway end lighting	Red lights
<b>Taxiways</b>	
Edge marking	Yellow painting
Edge lighting	Blue lights
<b>Aprons</b>	
Aircraft stand marking	Yellow painting
Apron flood light	18 m high / white lights

Generally the visual aids and the lighting equipment at the KHIA are well maintained and in good conditions, and most of the runway and taxiway markings are also in good conditions.

## 8. NAVIGATIONAL AIDS

Navigational aids (NAVAIDS) include any visual or electronic devices, either airborne or on the ground which provide point-to-point guidance information or position data to aircraft in flight. Flight check is normally held every six months on all navigational aids to ensure their functionality and accuracy.

### *a) Runway 01*

This end of the runway is equipped with an instrument landing system (ILS). An ILS allows for precision approaches to the runway. Different types of ILSs exist. Known as ILS categories, the distinction lies in the difference between decision height and visibility requirements. Runway 01 has a Category 1 ILS or CAT I ILS which consists of the following:

- A localizer for horizontal guidance, which is located 330 m to the north of Runway 19 threshold;
- A glide path for vertical guidance, which is located 312 m to the north of Runway 01 threshold and 114 m to the west of the centerline of the runway;
- Middle marker and outer marker for identification of the distance from the runway, which are located 1,020 m and 3.7 nautical miles to the south of Runway 01 threshold respectively; and
- A DVOR/DME or a Doppler Very High Frequency Omni-Directional Range Ground Beacon with Distance Measuring Equipment for providing course and distance information, which is located 0.9 nautical mile to the south of Runway 01 threshold.

### *b) Runway 19*

This end of the runway is for visual approaches. The navigational aids provided are as follows:

- Non-Directional Beacon (NDB) AQC 326 which is located 17 nautical miles to the north of Runway 01 threshold; and
- NDB AQA 418 which is located 39.3 nautical miles to the north of Runway 01 threshold.

Both NDBs also provides signals for aircraft departing from Runway 01.