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KUALA LUMPUR INTERNATIONAL AIRPORT
PROPOSED NEW LCC TERMINAL AND ASSOCIATED WORKS AT KL INTERNATIONAL AIRPORT, SEPANG, SELANGOR

1. PURPOSE

1.1 The purpose of this AIC is to provide information and advice regarding the scope of works and facilities provided pertaining to the proposed new LCC Terminal and associated works at KL International Airport, Sepang, Selangor. This AIC will be followed by a number of AIP Supplements that will provide details of the development works, introduction of new facilities and services, relocation of existing facilities and services, and revision to existing procedures.

2. WORK PROGRAMME

2.1 The proposed development at KL International Airport, Sepang comprises of introduction of New LCC Terminal and Aircraft Parking Apron, Third Runway and Dual Parallel Taxiway with associated connecting taxiways, Lateral Taxiway connecting Runway 2 and Runway 3, Taxiway connecting Runway 2 and New LCCT Apron, New Apron Control Tower, relocation of existing utilities, etc. Introduction of new visual and non-visual navigational aids will be also be part of this programme **[see Appendix 1 – Layout Phase 1 30 MAP].**

3. APRON , MANOEUVRING AND MOVEMENT AREAS

3.1 Runway

The third runway will be constructed staggered northwards 850m to existing Runway 2. The total length of the third runway will be 3660m with a width of 45m and 7.5m half strength paved shoulder. RESA 120m x 240m will be provided at ends of the third runway.

3.2 Main Taxiway

i) Taxiway pavement for Main Central Connecting Taxiways/Cross Taxiway shall comprise of 25m full strength and 9.5m shoulder at half strength both sides;
ii) Taxiway pavement for Parallel & Associated Connecting Taxiways shall comprise of 23m full strength and 10.5m shoulder at half strength both sides;

3.3 Parking Apron

The parking apron provides for 104 aircraft stands including remote stands. In this phase, the implementation for aircraft parking apron is to cater for 30mppa but the ultimate planning is for 45mppa [see Table 1]. New high mast lighting will be installed for every aircraft parking stands.

4. BUILDINGS

4.1 New LCC Terminal

The New LCC Terminal is to cater for ultimate 45mppa but the implementation at this stage will only cater up to 30 mppa.

4.2 Aircraft Stand Requirements

The apron and taxiway layout [see Appendix 2A] has been designed to be functional according the requirements to handle traffic for the ultimate 45MAP (Million Annual Passengers) phase as given in the Traffic Forecast [See Table 1].

Table 1: Aircraft Stand Requirements

	30 MAP Acc. User Requirements
International Stands	
Code C	40
Code E	10
Code F	0
Domestic Stands	
Code C	22
Total Semi Contact Stands	**72**
Remote Stands	0
Total	**72**

4.3 Apron Control Tower

A new apron control tower and associated operations building, complete with guard house, car-parking area and access road will be constructed at landside area for apron operation and management services.

4.4 Airport Fire and Rescue Station

A new airport sub-fire station will be built near the third runway to cater new demand when the third runway is in operation.

5. Airside Configuration

5.1 Runway Designations

The new runway has the same runway orientation with the existing runways. Currently Runway 1 is designated as 14L and 32R while Runway 2 is designated as 14R and 32L. For consistency, it is proposed that Runway 2 to be re-designated as 14C and 32C and the new runway designated as 14R and 32L.

5.2 Taxiway Designations

The proposed taxiway designation is a continuity of present numbering systems adopted at KLIA.

6. NAVAIDS CRITICAL AREA AND SAFETY AREA

These areas are used to protect against signal interference that may lead to major navigational fatalities/errors/accidents.
The Critical Area (CA) is an area in-front of the LLZ or GP–antenna system where all aircraft and all ground vehicles are excluded during ILS operations. The nominal location for the new ILS Localizer is at approximately 300 – 325m from the threshold and ILS/GP critical/security area at 300m from the threshold with 125m offset from centerline
The Sensitive Area (SA) is extending the critical area. Parking and/ or moving object including aircraft are controlled in that sense that eg small to medium ground vehicles can enter this area but large, wide body aircraft have to keep off during approach.

6.1 Existing Navaids Critical Area at Runway 2

The proposed location of the connecting taxiways is currently affecting the existing Glide Path (ILS/GP) located on one side of Runway 2 – 14C. The major concern is that the current location of the proposed connecting taxiway will encroach into the critical and restricted/safety area of the Glide Path. In view of the above, vehicle and aircraft movements have to be controlled from encroaching into the critical areas by holding them at designated holding points away from the critical and sensitive areas during ILS/GP operation.

7. AIRFIELD GROUND LIGHTING (AGL)

The airfield lighting system for the third runway and associated taxiways and aprons at Kuala Lumpur International Airport (KLIA) will be based on ICAO CAT I recommendations. Some subsystems that are not mandatory for CAT I systems will be included in the design to standardized with current system.

7.1 General

The airfield lighting system will be based on standards set out in ICAO Annex 14 for a Category I lighting system.

7.2 Approach System

The approach lighting system will be based on a ICAO CAT I precision approach lighting system. The length of the approach shall be 900m with barrettes spaced at intervals of 30m. The approach centreline barrettes will be composed of four lights and the spacing between these lights will be 1.5m. Crossbars on the other hand, will be located at a distance of 150m and 300m from the threshold. These crossbars consist of number of lighting fixtures installed between the centreline barrette and the side-row barrette. All the fixtures in the approach will have clear lenses. Lights that are located on the blast pad will be inset fixtures and then rest will be elevated lights which will either be installed on frangible poles or masts, the height of which will depend on the final levels of the approach profile. The approach lighting fixtures in each approach will be supplied from two constant current regulators dedicated for each approach and located in adjacent substation to the approach being served. The fixtures will be interleaved over the two constant current regulators in accordance with ICAO recommendations.

7.3 Sequence Flashing System

Both of the approaches for Runway 3 will be equipped with a sequence flashing system. The sequence flashing system will be composed of 21 light stations and shall be powered from a low voltage source. Sequence flashers will be co-located with the approach light barrettes. The sequence flashers will be installed from the 300m crossbar up to 900m of the approach.

7.4 Runway Edge Lights

Runway edge lights will be installed along the full length of the runway, these fixtures shall be spaced at a distance of 60m apart. They will be installed in two straight parallel lines which will be offset from the runway edge marking by 1m. Fixtures will be elevated lights mounted on frangible couplings except on non-rapid exit taxiway and rapid exit taxiway where the fixtures will be inset. As specified by ICAO the fixtures will show clear light on both sides except for the final 600m of the runway which shall show yellow. Runway edge lights will be supplied from two constant current regulators located in two different substations serving runway 3. These lighting fixtures will be interleaved over the two constant current regulators.

7.5 Precision Approach Path Indicator (PAPI)

PAPI's will be installed for both approach directions of the runway. Each approach direction will be equipped with a single full bar set of PAPI's located on the left hand side in the direction of approach. The location of the PAPI's will be harmonized with the glide slope angle for the ILS glide slope. Calculations will be provided which will help to find the most optimum location for the PAPI's while adhering with appropriate standards for wheel height clearance for a Boeing 747-400 aircraft. PAPI's will be elevated and mounted on frangible legs. The distances from the runway edge will be as per ICAO guidelines of 15m with the distance between individual PAPI units being 9m. The left and right wing bars in each approach will be supplied from two different constant current regulators located in the same substation serving one particular approach.

7.6 Threshold/Runway End Lights

A combined threshold/runway end light system will be installed at the extremities of the runway. The threshold lights will be green in the direction of the approach and the runway end lights will be red in the direction of runway. The runway end lights will be

connected to the runway edge light circuits and will be interleaved over two circuits from two different substations. The threshold lights for each threshold will be connected to two constant current regulators dedicated for each threshold and located in the same substation. Threshold lighting fixtures will be interleaved over the two constant current regulators. Fixtures will be inset and mounted on a concrete beam spanning the width of the runway, with 1m offset from the extremities of the runway.

7.7 Rapid Exit Identifier Lights (RETILS)

RETIL's are a fairly recent addition to ICAO Annex 14, whose purpose is to provide distance to go information to pilots of an upcoming rapid exit taxiway. The fixtures will be inset lights, installed in accordance with ICAO recommendations. ICAO recommends installing RETIL's on runway where the traffic density is heavy and therefore we propose installing them on runway 3 in order to assist pilots locate the entrance to rapid exit taxiways. There will be three sets of lights for each rapid exit taxiway spaced 100m apart. The first bar will have three fixtures spaced 2m apart, the second bar will have two fixtures spaced 2m apart and the third bar will be a single fixture. The circuits for RETIL's will be wired in such as way as to have the entire set of lights shutting down in the event that one of the lights in the sequence has failed.

7.8 Taxiway Centreline Lights

The taxiways will be equipped with centreline lights. The fixtures will be inset lights installed along the taxiway centrelines. They will be offset from the taxiway markings by 0.3m as per the ICAO recommendation. Maximum spacing between fixtures will be 30m for the straight sections and 7.5m for the curved sections of the taxiways. The same shall be adopted for taxi lane centrelines. Spacing of light fixtures on the taxiway shall be based on the tangent points for curves provided on the civil drawings. Taxiway circuits will be interleaved over two circuits with both CCR's located in the same substation.

7.9 Taxiway edge lights

Taxiway edge lights will be installed only on the curves and not the straight sections of the taxiways. Guidance for straight sections will be from taxiway centreline lights. Taxiway edge lights will not be interleaved and will be provided by power from the substation closest to them. Taxiway edge lights will be elevated lights and will be offset 1m from the edge of the taxiway.

7.10 Stop Bar Lights and Runway Guard Lights

Stop bars will be installed at every entry to the runway providing a "ring of red" around the runway to protect the runway from incursions. Stop bars will be located at 107.5m from the runway centreline, the recommended distance for Code 4F operations. Stop bars shall be composed of a row of red insets lights spanning the full width of the taxiway, fixtures will be spaced at not more than 3m apart. Elevated red lights will be installed outside the full strength pavement in the same line as the insets lights. They will be mounted on frangible poles. Each stop bar will also be equipped with a pair of runway guard lights mounted on frangible couplings. Interleaving of stop bars shall be from two separate circuits fed from two different substations.

7.11 Taxiway Guidance/Mandatory Signs

Signage shall be designed in accordance to ICAO Annex 14. Signs located on the runway shall be located between 8 and 15m from the defined runway pavement edge. Signs on taxiways will be located between 11 and 21m from the defined taxiway edge.

Signs shall have fluorescent lamps. Signs will be mounted on concrete pads and will be powered by their own dedicated circuit, signs will not be interleaved. Location of signs will be checked using Pathplanner to minimize the effect of jet blast on the signs.

7.12 Windcone

Illuminated windcones will be provided on both ends of the runway, close to the thresholds. The windcones will be provided with power from a low voltage source.

7.13 Pit and Duct System

All cables for the airfield lighting system will be installed in ducts. Primary cable ducts will be encased in concrete if they are located under pavements and will be sand surrounded where they are not under pavements. The ducts shall be of either uPVC or HDPE. Secondary cable ducts will be installed in the base layers of the pavement and be paved over. A core will be made at the location of the fixture to penetrate the secondary duct. Isolating transformer and control and monitoring system logic units will be located in pre-cast concrete transformer pits. Pits will be installed outside the pavements where possible and will be designed to withstand aircraft loading. Pit covers will be heavy duty F900 rated covers.

7.14 Runway Incursion System

All stop bars will have a runway incursion detection system installed. The sensors for Runway 3 will be microwave based. Each stop bar will have three pairs of sensors installed, a presence sensor to detect the presence of an aircraft at the stop bar, an incursion sensor to detect an unauthorized incursion, and a departure sensor to show that an aircraft has departed. The sensors will also be used to control the switching of lead-on lights and also switching of the stop bar.

7.15 Airfield Lighting Substations

The airfield lighting system will be served from two new substations each located close to the threshold. The design of the substations will be based on that of the existing substations for runway one and two. The size of the buildings will be determined by the number of CCR's that will be installed in them. Portions of lighting installed on the cross taxiways and aprons will be powered from the relocated existing substation ALD.

8. AIRSIDE ROADS

The airside roads mainly consist of:

a) Apron service roads

b) Main Service roads

c) Perimeter roads

d) Maintenance and Security Roads

e) Crash roads

Beyond the airside road system which carries apron operations-related traffic around the LCCT terminal complex & apron, vehicle access is required to more remote areas of the airfield. In these areas are sited navaids, lighting equipment, drainage installations etc requiring maintenance; security of the airfield perimeter requires access for patrol and maintenance vehicle; crash vehicles must have ready access to

all areas, including as far as practicable areas beyond the runway ends. The apron service roads are 10m wide and based on two way traffic. Similarly, main service roads that are located parallel to the main cross and parallel taxiways are also 10m wide and based on two way traffic. The distance from the edge of the road to the centerline of parallel taxiway is 65m and clears the minimum ICAO Code F obstacle clearance requirement. The width of the perimeter road is only 8m and is located at 162m from runway centerline when it runs parallel with the new runway. For other service roads with limited traffic facilities such as providing access to airside facilities for maintenance, a 5m wide pavement width will be sufficient. The crash road, which is meant for fire rescue vehicles usage during emergency, will have a width of 10m.

9. REVISION TO INSTRUMENT APPROACH AND LANDING PROCEDURES AND CHARTS

9.1 The introduction of third runway and navigational aids necessitates the need to revise existing IAL charts and procedures. This will be detailed out in subsequent AIP Supplements to follow.

9.2 Standard Instrument Departures and Standard Instrument Arrival Routes [SIDs and STARs] will be published in a timing manner to improve the efficiency of airspace utilization and safety to arriving and departing aircraft.

10. IMPLEMENTATION

10.1 This AIC is disseminated for general information of operators. The availability of maneuvering/movement areas and apron/aerobridge will be notified by NOTAM as the development works progresses.

11. CANCELLATION

11.1 These AIC remains current until superseded by subsequent AIP Supplement notification on the development works where more details will be incorporated.

11.2 This circular is published for the guidance and information of all concerned.

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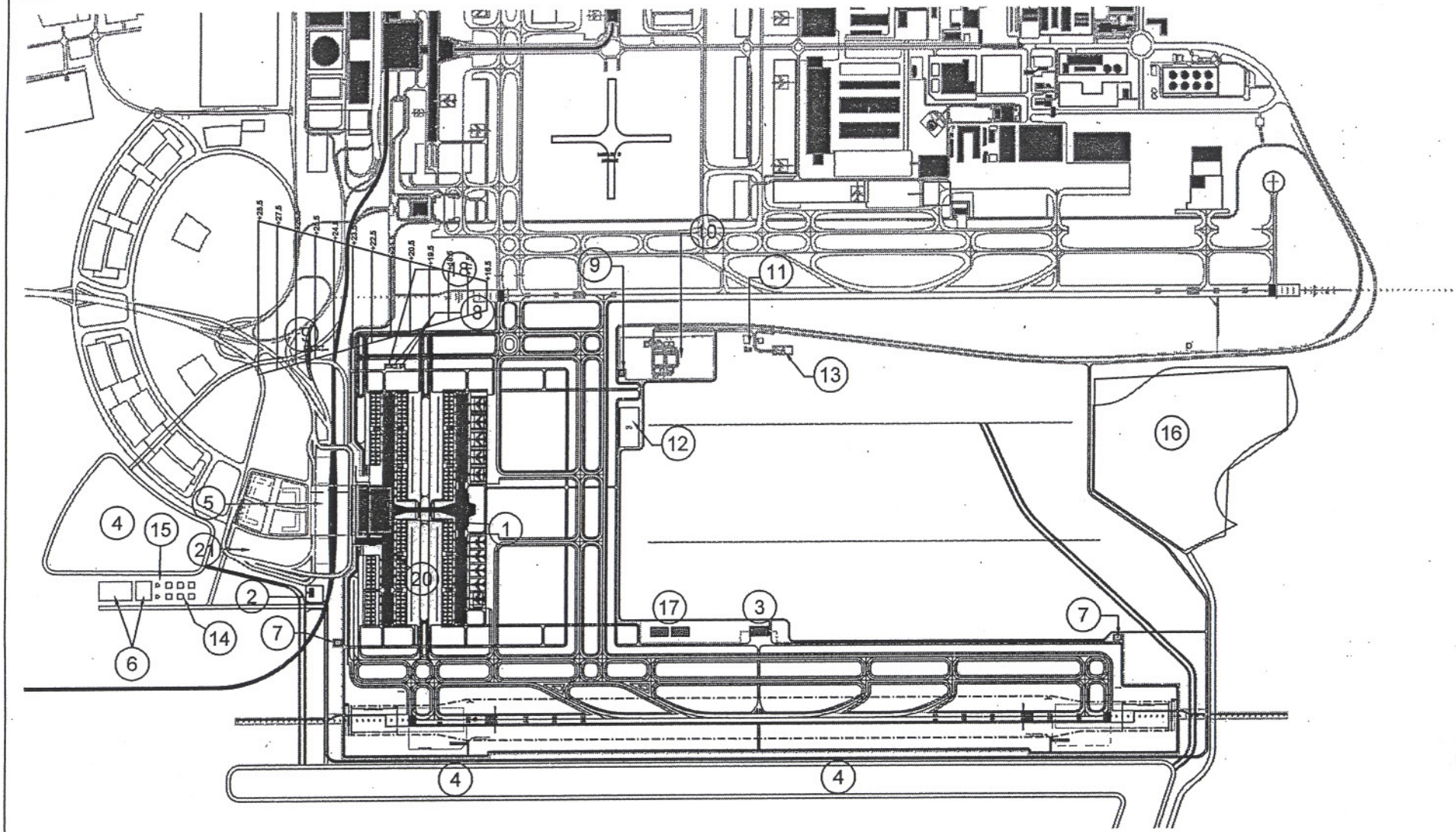
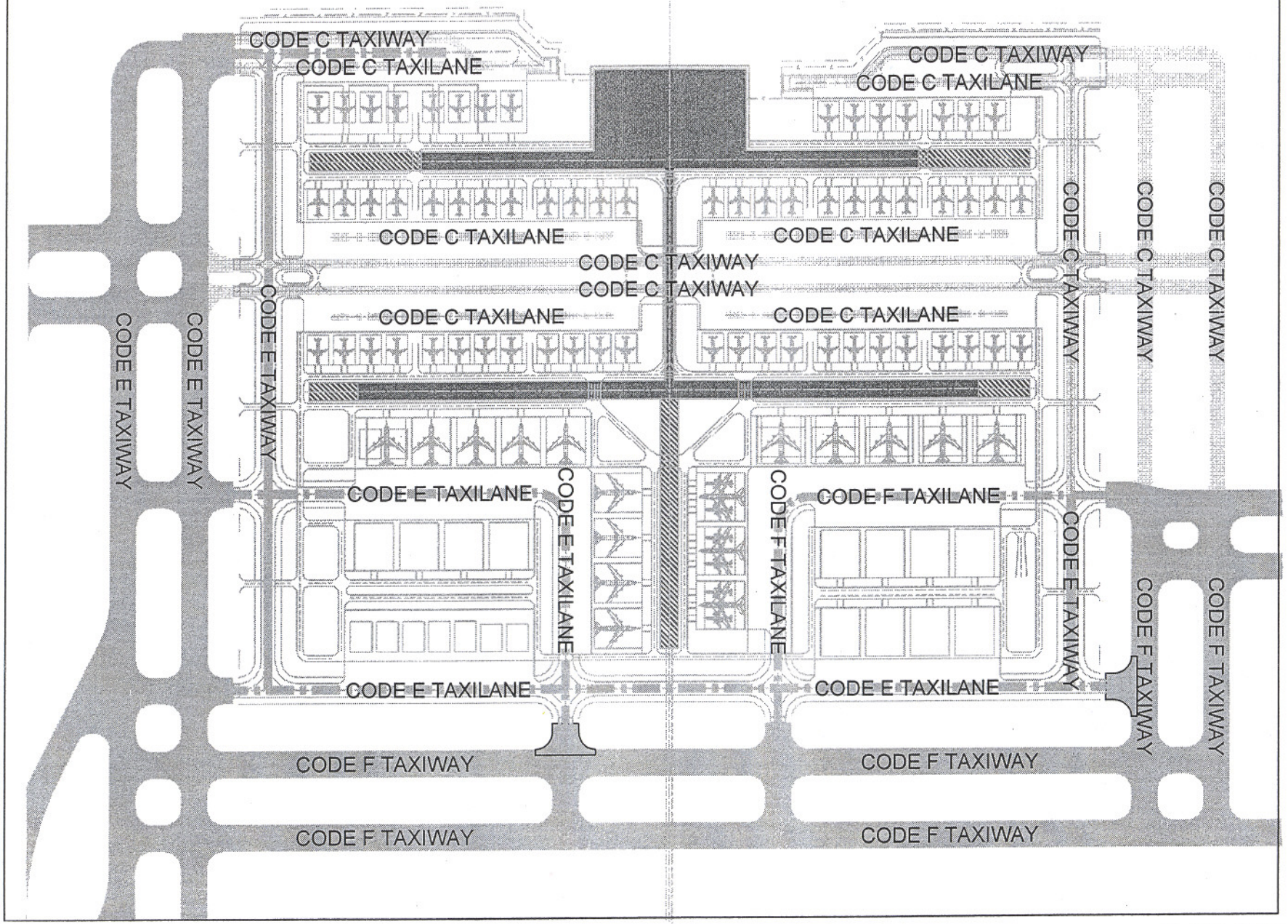


1. Passenger Terminal Building
2. Apron Control Tower
3. R&FF Sub Station
4. Ponding Area
5. Multi Modal Transportation Hub
6. Consolidation Centre / Bonded Store
7. New AGL Building
8. Relocated Pump Station
9. Relocated AGL Building
10. Sewage Treatment Plant
11. Relocated Sub Station & Pump Station
12. Forward Fuel Base
13. Meteo Facilities
14. Power Supply - MTB
15. Water Supply
16. Existing Ponding Area
17. Short Term Airline Facilities
18. Aircraft Waste Disposal
19. Security Check Point
20. Airside Security Check Point
21. Airline Office

New ERL Route
Fence
Drainage Line

45 MAP Aircraft parking Congfiguration



30 MAP Aircraft parking Congfiguration