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SOMEX ENERGY S.A.

MANTA NEW INTERNACIONAL AIRPORT

M A NT A NEW INTERNATIONAL AIRPORT

ARCHITECTURAL PROPOSAL FOR THE PLANNING, AND CONSTRUCTION OF QUICK BUILD TECHNIQUES. AIRPORT TERMINAL / TERMINAL HOTEL / WAREHOUSES BUILDINGS / HANGARS.

T E C H N I C A L T E A M :

PROJECT MANAGER:
JORGE GÓMEZ. ARQUITECTO

VICTOR SERRA GÓMEZ
SOMEXPROYECTOS DEL PACIFICO SA

URBAN DEVELOPMENT AND PLANNING:
G-ARQUITECTURA Y URBANISMO SLPU

DESIGN AND CONSTRUCTION:
A. GALLARDO, J. CUEVAS, POL SAEZ Y MIREIA LAN

ENGINEERING:
A. ENGINYERS S.A.
BARCELONA

INFORMACION Y VENTA DEL PROYECTO:
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CONSTRUCTION SYSTEM:
AYKKOS EUROPE S.A.
BARCELONA

INFOGRAPHY:
ANIMAX ESPAÑA ESTUDIO, SL

NEW INTERNATIONAL AIRPORT AT MANTA

GENERAL PLANNING AND ARCHITECTURAL PROJECT FOR THE INDUSTRIALISED CONSTRUCTION OF THE FOLLOWING BUILDINGS: PASSENGER TERMINAL/ FREIGHT TERMINAL/ HOTEL/ WAREHOUSES/ HANGAR

The Preliminary Study for the International Airport at Misrata has as its purpose the reorganisation of a 125 ha. site which is situated within the existing surface area of the airport.

The study outlines the necessary buildings and structures that will be required as well as the build systems needed to ensure speedy and effective construction.

In response to the client's wishes, we propose the construction of a Passenger Terminal along with an adjoining Hotel, a Cargo Terminal along with 3 Warehouses and a Hangar, as well as the appropriate level of services and infrastructure to facilitate the proper functioning of the Airport.

The study suggests dividing the available terrain into three areas; Passenger Zone, Cargo Zone and finally the Technical Aviation Zone with the remaining land being given over to Runways. The idea would be to roll out the project in a series of Phases in each respective zone, in accordance with the immediate and future demands of the Airport.

PHASE ONE

PASSENGER ZONE

Passenger Terminal with an annual capacity of 250,000 passengers.
Departure Area, initially with 6 Check-In Desks and 3 Departure Gates
Arrivals Area, equipped with 2 Baggage Reclaim Belts

The Terminal would be 4,300 m2 with room to eventually take up to 12 Check-In Desks and have a total of 6 Departure Gates.
2 of these Gates would be equipped with “Fingers” so as to eventually accommodate 1,000,000 passengers a year.

The idea would be to build the Terminal Hotel *** , a 50 room facility, within this self-same structure.

CARGO ZONE

The Cargo Zone would be built in this area. An office building that could be expanded up to an area of 1,530 m2 which will be constructed with a modular, industrialised system. Alongside this building would be the relevant Handling Companies office facilities.

Initially the plan proposes constructing 3 Warehouses in this area. Said Warehouses would be 590 m2 and able to accommodate 300 Pallets (European) each.

1. Cold Storage
2. Frozen Goods
3. Perishables

Turnaround on average would be 10 days and so an annual Storage Capacity of 16,200 Tonnes could be achieved.

TECHNICAL and AVIATION ZONE

A 9,720 m2 Hangar (135 x 72 x 30 m) which could service the following Aircraft in a series of combinations

*AIRBUS 320-200 + AIRBUS 320-200 + BOEING 737-400
*BOEING 767-200/300/400 (Airbus 330) + AIRBUS 320-200

RUNWAY ZONE

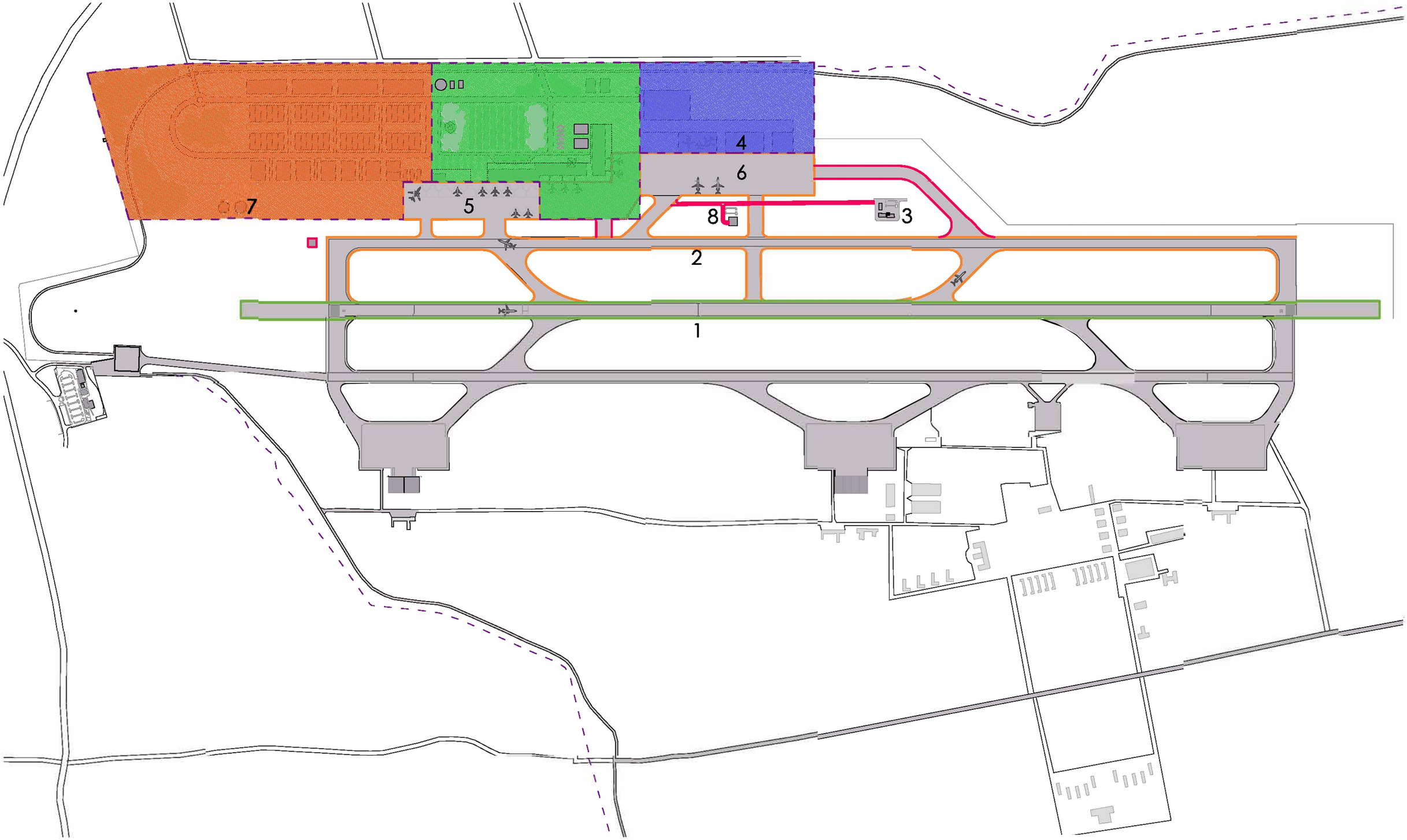
The layout of this area, in the initial phase, would preserve the Control Tower along with its relevant systems and the existing Runway which is 3,400 x 45 m2. This size runway allows even the largest existing aeroplane the Antonov An 225 to land.
There would be a series of additional take off exit points along the length of the existing runway, running N-S at 700m, 1,500m and 2,100m respectively. In addition there would be another series of taxiways running S-N at 1,300 m, 1,900m and 2,600m. All of these taxiways would connect with the new 3,400 x 30m Asphalt Runway which would safely interconnect the take off points and the new Parking Bays.

A 62,400 m2 Terminal Platform with a concrete stand of 480 x 130m right in front of the Terminal Buildings and able to accommodate 9 aircraft of Type A-320 or B-737 as well as 2 Type B-767-400 or B-777 (B-787) / Airbus 330/340. This allows for a 3,000 m2 area for other aircraft.

A Hangar Platform of 69,000 m2 concreted and with an area of 460x150m in front of the Hangar which could take up to 6 Aircraft of Type B767-800.

The Runway Area would house the Firefighting, Refueliing and Control Tower Services.

Barcelona, 26 Abril 2012
Jorge Cuevas Gómez, Architect
Technical Project Manager



1 - **LONGITUD DE PISTA 3.400m, ANCHURA 45m**
RUNWAY LENGHT 3.400m, WIDTH 45m
2 - **CALLE DE RODAJE, ANCHURA 30 m**
TAXIWAY, WIDTH 30m
3 - **TORRE DE CONTROL ACTUAL**
CURRENT CONTROL TOWER
4 - **HANGAR**
HANGAR

5 - **PLATAFORMA TERMINAL**
TERMINAL PLATFORM
6 - **PLATAFORMA HANGAR**
HANGAR PLATFORM
7 - **REPOSTAJE COMBUSTIBLE**
REFUELLING
8 - **ESTACIÓN DE BOMBEROS Y EMERGENCIAS**
FIREFIGHTING AND EMERGENCY SERVICES

ZONA DE CARGA: 56,15 Ha
CARGO ZONE: 56,15 Ha
ZONA DE PASAJEROS: 40,15 Ha
PASSENGERS ZONE: 40,15 Ha
ZONA TÉCNICA: 28,65 Ha
TECHNICAL ZONE: 28,65 Ha

PISTA ACTUAL
EXISTING RUNWAY
FASE 1
PHASE 1
FASE 2
PHASE 2

PRELIMINARY STUDY FOR THE INTERNATIONAL AIRPORT AT MISURATA

AIR ZONE E: 1/12.500

0m 250m 500m 1.000m

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PLATAFORMA ESTACIONAMIENTO HANGAR
HANGAR PLATFORM

HANGAR
HANGAR

ESTACIÓN BOMBEROS
FIREFIGHTING STATION

TORRE CONTROL EXISTENTE
EXISTING CONTROL TOWER

TERMINAL PASAJEROS
PASSENGER TERMINAL

TERMINAL CARGA
CARGO TERMINAL

PLATAFORMA ESTACIONAMIENTO TERMINAL
TERMINAL PLATFORM

REPOSTAJE DE COMBUSTIBLE
REFUELLING

CALLE DE RODAJE 3.400 x 30m
TAXYWAY 3.400 x 30 m

PISTA EXISTENTE 3.400 x 45m
EXISTING RUNWAY 3.400 x 45m

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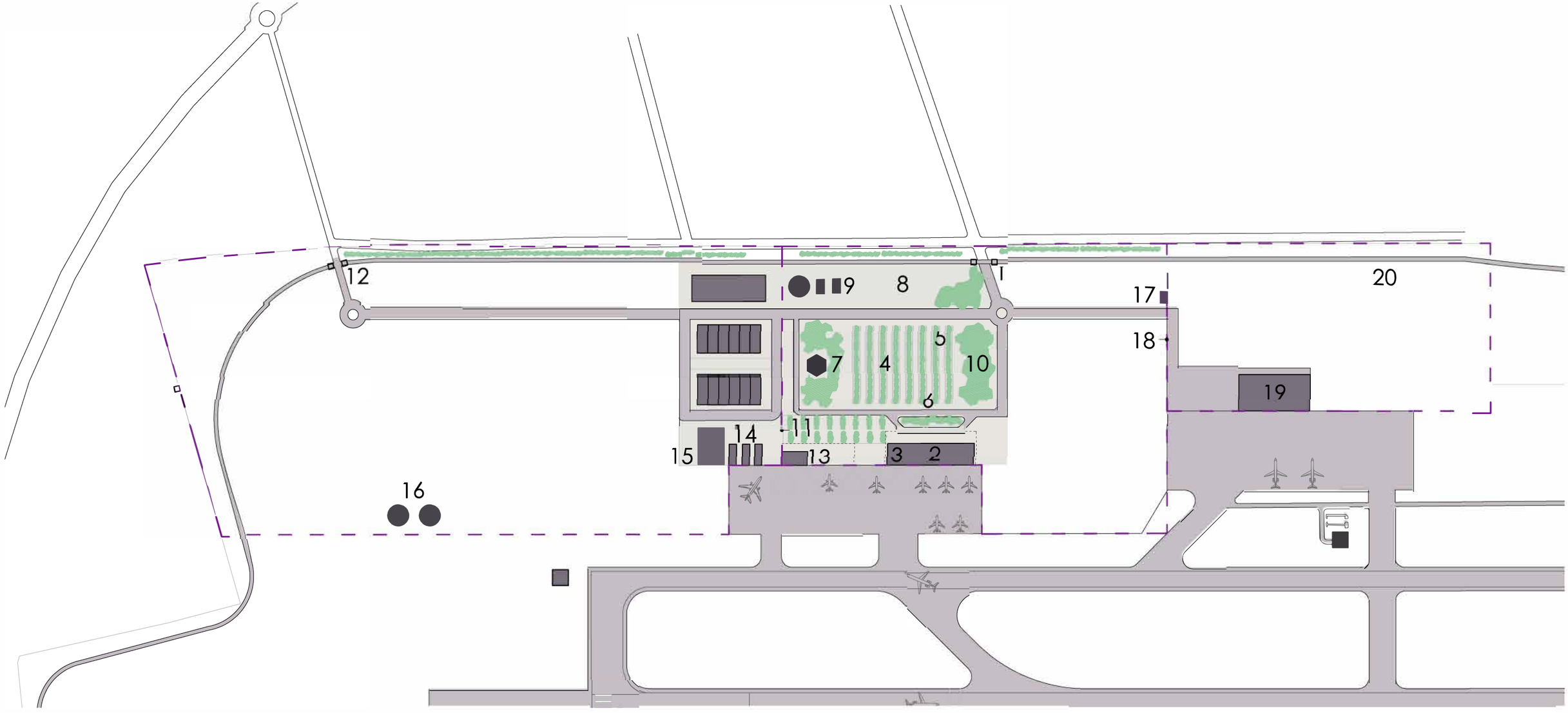


SECTOR TERMINAL PASAJEROS
PASSENGER TERMINAL SECTOR

1 - **ENTRADA PRINCIPAL AEROPUERTO**
MAIN AIRPORT ACCESS

2 - **TERMINAL DE PASAJEROS (4.300 m2)**
PASSENGER TERMINAL (4.300 m2)

3 - **HOTEL 50 HABITACIONES**
HOTEL - 50 ROOMS

4 - **APARCAMIENTO COCHES (860 PLAZAS)**
CAR PARK (860 PARKING PLACES

5 - **APARCAMIENTO COCHES ALQUILER (100 PLAZAS)**
RENT A CAR PARKING (100 PARKING PLACES)

6 - **PLAZAS TAXI (20 PLAZAS)**
TAXI PARKING (20 PLACES)

7 - **MEZQUITA**
MOSQUE

8 - **ÁREA DE CRECIMIENTO**
GROWTH AREA

9 - **DEPURADORA DE SANEAMIENTO**
SEWAGE TREATMENT PLANT

10 - **ZONA VERDE**
GREEN ZONE

SECTOR TERMINAL DE CARGA
CARGO TERMINAL SECTOR

11 - **LÍMITE ZONA CARGA/PASAJEROS**
CARGO/PASSENGER ZONE LIMIT

12 - **ENTRADA SECUNDARIA AEROPUERTO**
SECONDARY AIRPORT ACCESS

13 - **TERMINAL DE CARGA**
CARGO TERMINAL

14 - **ALMACENES**
WAREHOUSE FACILITIES

15 - **SUBESTACIÓN ELÉCTRICA**
ELECTRICITY SUBSTATION

16 - **DEPÓSITOS DE COMBUSTIBLE**
FUEL STORAGE FACILITIES

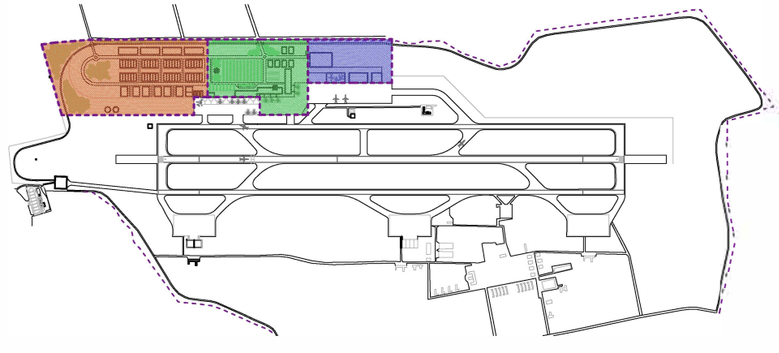
SECTOR TÉCNICO
TECHNICAL SECTOR

17 - **CONTROL**
CONTROL

18 - **LÍMITE ZONA TÉCNICA/PASAJEROS**
TECHNICAL/PASSENGER ZONE LIMIT

19 - **HANGAR**
HANGAR

20 - **RECORRIDO PERIMETRAL DE SEGURIDAD**
PERIMETER SECURITY ROAD



PRELIMINARY STUDY FOR THE INTERNATIONAL AIRPORT AT MISURATA

LAND ZONE - PHASE 1 E: 1/7.500

0m 250m 500m 1.000m

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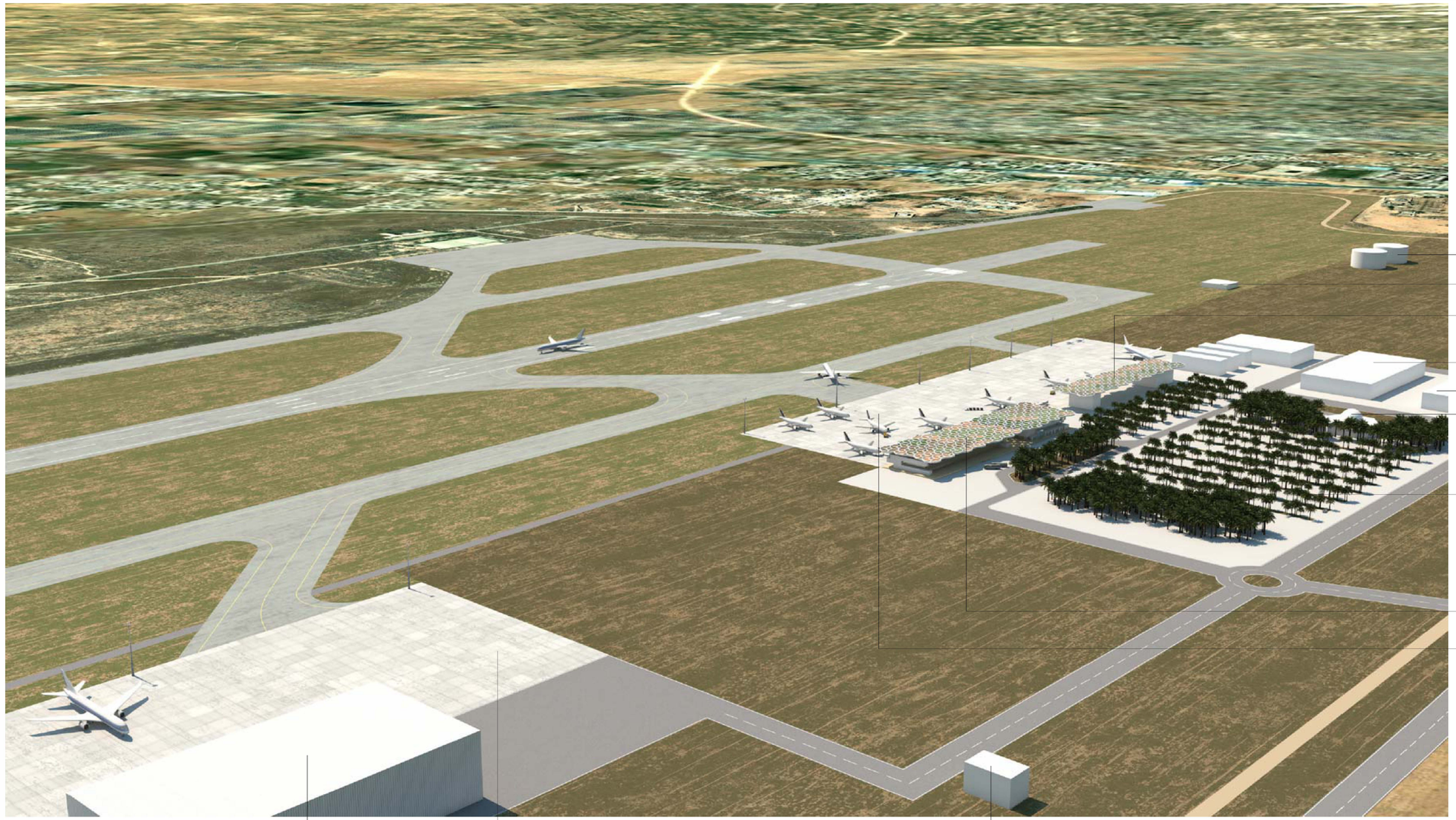
MANTA NEW INTERNACIONAL AIRPORT



DEPÓSITOS COMBUSTIBLE
FUEL STORAGE FACILITIES
REPOSTAJE COMBUSTIBLE
REFUELLING
TERMINAL CARGA
CARGO TERMINAL

ALMACÉN
WAREHOUSE FACILITIES
SUBESTACIÓN ELÉCTRICA
ELECTRICITY SUBSTATION

MEZQUITA
MOSQUE

APARCAMIENTO 860 p.
CAR PARK 860 p.
BUS 12 p.
RENT A CAR 100 p.
TAXIS 20p.

TERMINAL PASAJEROS
PASSENGER TERMINAL

PLATAFORMA ESTACIONAMIENTO TERMINAL
TERMINAL PLATFORM

HANGAR
HANGAR

PLATAFORMA ESTACIONAMIENTO HANGAR
HANGAR PLATFORM

CONTROL ACCESO ZONA TÉCNICA
TECHNICAL ZONE ACCESS CONTROL

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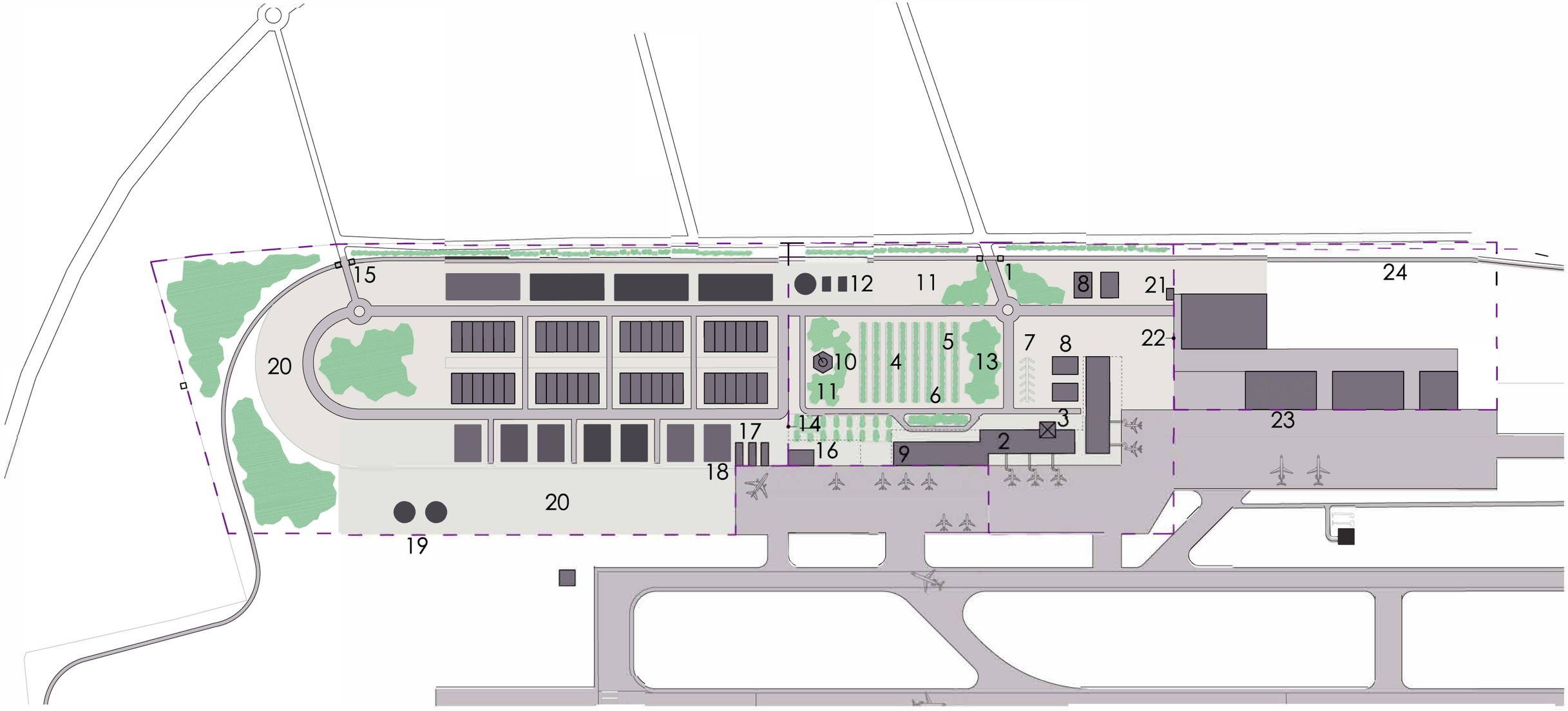

SECTOR TERMINAL PASAJEROS
PASSENGER TERMINAL SECTOR

1 - **ENTRADA PRINCIPAL AEROPUERTO**
MAIN AIRPORT ACCESS

2 - **TERMINAL DE PASAJEROS (4.300 m2)**
PASSENGER TERMINAL (4.300 m2)

3 - **TORRE DE CONTROL NUEVA**
NEW CONTROL TOWER

4 - **APARCAMIENTO COCHES (860 PLAZAS)**
CAR PARK (860 PARKING PLACES)

5 - **APARCAMIENTO COCHES ALQUILER (100 PLAZAS)**
RENT A CAR PARKING (100 PARKING PLACES)

6 - **PLAZAS TAXI (20 PLAZAS)**
TAXI PARKING (20 PLACES)

7 - **APARCAMIENTO BUS (12 PLAZAS)**
BUS PARKING (12 PLACES)

8 - **EDIFICIOS DE APARCAMIENTO**
PARKING BUILDINGS

9 - **HOTEL - 50 HABITACIONES**
HOTEL - 50 ROOMS

10 - **MEZQUITA**
MOSQUE

11 - **ÁREA DE CRECIMIENTO**
GROWTH AREA

12 - **DEPURADORA DE SANEAMIENTO**
SEWAGE TREATMENT PLANT

13 - **ZONA VERDE**
GREEN ZONE

SECTOR TERMINAL DE CARGA
CARGO TERMINAL SECTOR

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CARGO/PASSENGER ZONE LIMIT

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19 - **DEPÓSITOS DE COMBUSTIBLE**
FUEL STORAGE FACILITIES

20 - **ÁREA DE CRECIMIENTO**
GROWTH AREA

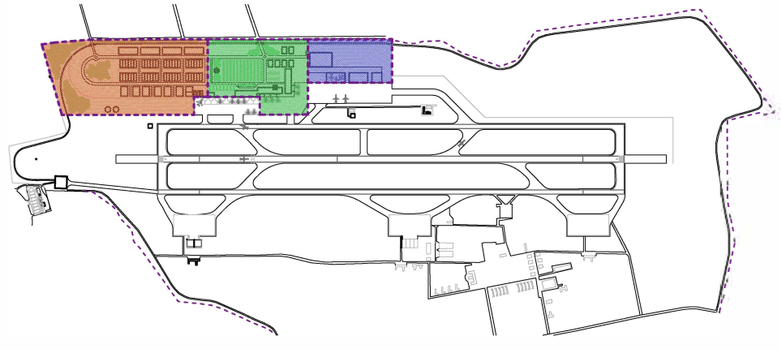
SECTOR TÉCNICO
TECHNICAL SECTOR

21 - **CONTROL**
CONTROL

22 - **LÍMITE ZONA TÉCNICA/PASAJEROS**
TECHNICAL/PASSENGER ZONE LIMIT

23 - **HANGAR**
HANGAR

24 - **RECORRIDO PERIMETRAL DE SEGURIDAD**
PERIMETER SECURITY ROAD



PRELIMINARY STUDY FOR THE INTERNATIONAL AIRPORT AT MISURATA

LAND ZONE - PHASE 2 E: 1/7.500

0m 250m 500m 1.000m

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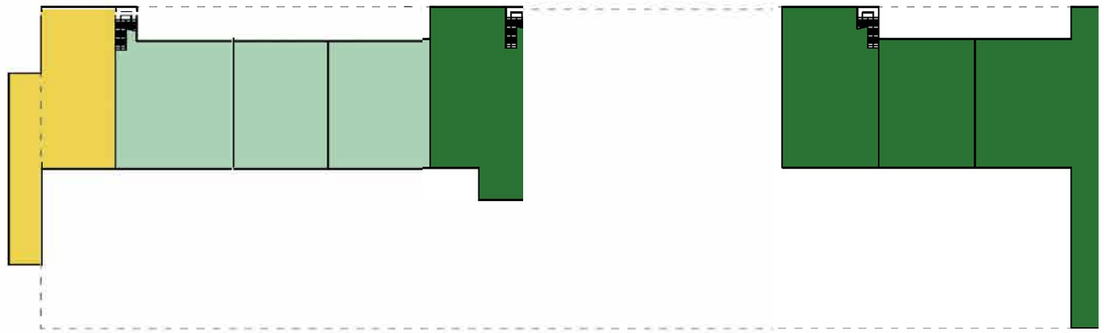
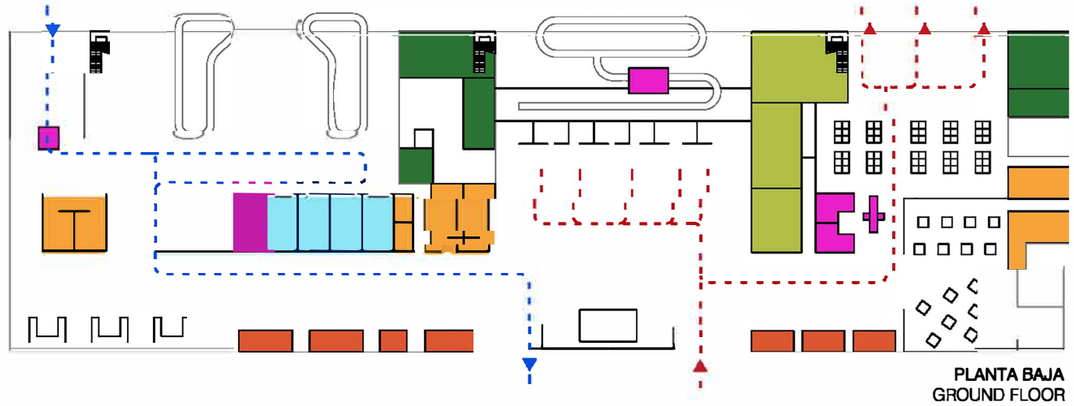
MANTA NEW INTERNACIONAL AIRPORT



PLANTA PRIMERA
FIRST FLOOR



PLANTA BAJA
GROUND FLOOR

PLANTA BAJA
GROUND FLOOR

- ASEOS/CONSIGNAS
  TOILETS/SETPOINTS
- CONTROLES DE SEGURIDAD
  SECURITY CONTROL
- COMPAÑÍAS AÉREAS
  AIRLINE OFFICES
- SALIDAS
  DEPARTURES
- ALQUILER VEHICULOS/TIENDAS
  RENT A CAR/SHOPS
- OFICINAS
  OFFICES
- SERVICIOS GENERALES DE LA TERMINAL
  TERMINAL GENERAL SEVICES
- LLEGADAS
  ARRIVALS

PLANTA PRIMERA
FIRST FLOOR

- SALA VIP
  VIP ROOM
- SALAS POLIVALENTES
  MULTIPURPOSE ROOM
- OFICINAS
  OFFICES

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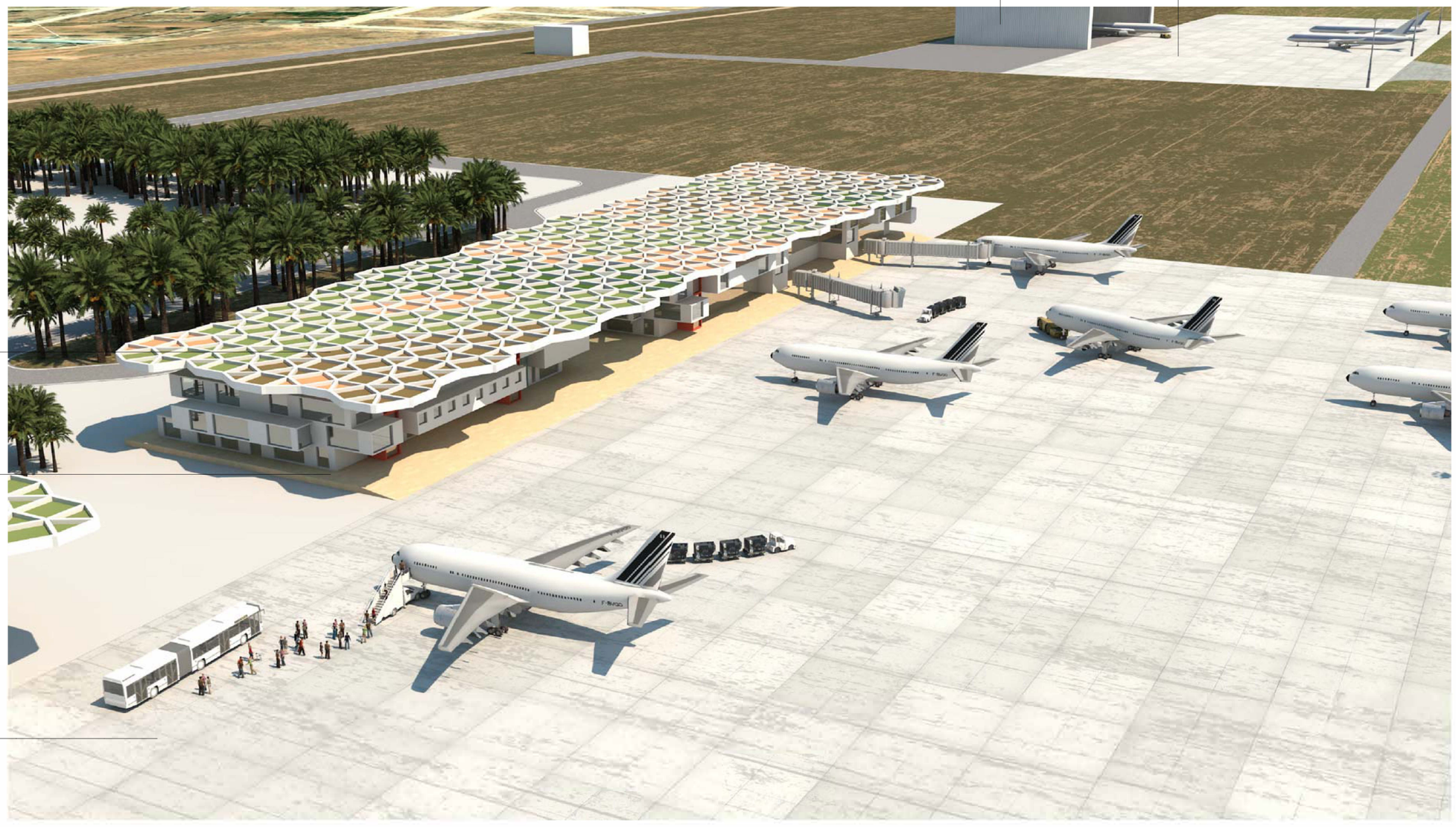

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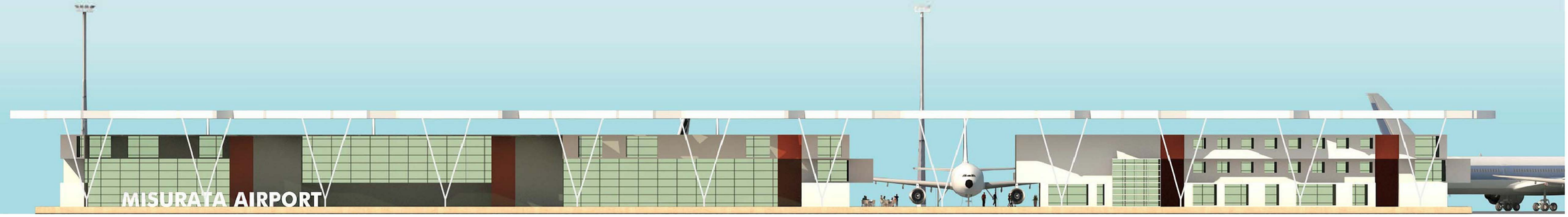
ALZADO LADO TIERRA
LAND SIDE ELEVATION



TERMINAL PASAJEROS
PASSENGER TERMINAL

HOTEL TERMINAL
TERMINAL HOTEL

SECCIÓN
SECTION

PLATAFORMA ESTACIONAMIENTO
AIRCRAFT STAND

TERMINAL PASAJEROS
PASSENGER TERMINAL

CALLE
ROAD

RENT A CAR

BUS

APARCAMIENTO
CAR PARK

MEZQUITA
MOSQUE

LADO AIRE/AIR SIDE

LADO TIERRA/LAND SIDE

ALZADO LADO AIRE
AIR SIDE ELEVATION

HOTEL TERMINAL
TERMINAL HOTEL

TERMINAL PASAJEROS
PASSENGER TERMINAL

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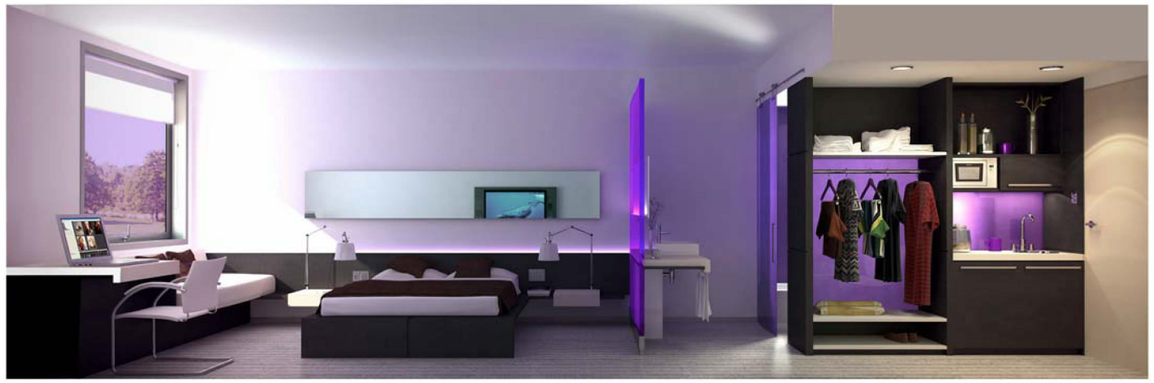


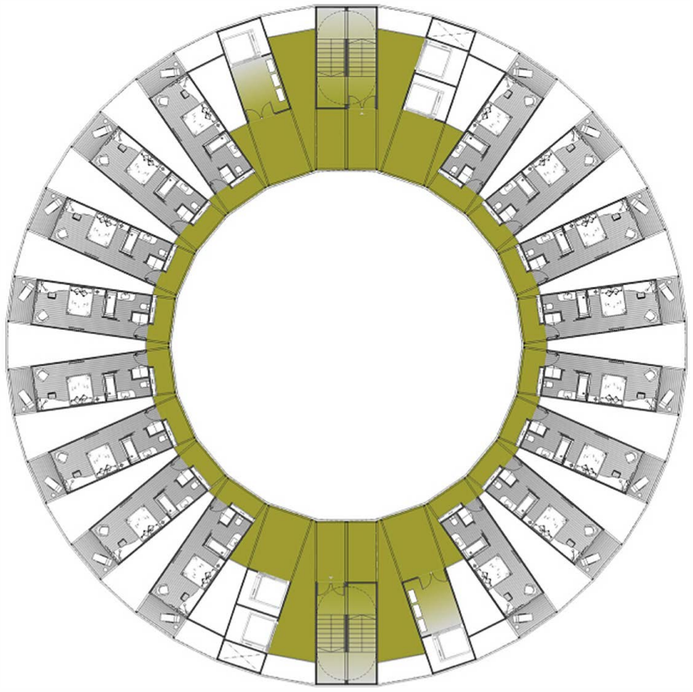
VISTA INTERIOR HABITACIONES
ROOMS INTERIOR VIEW

VISTA ENTRADA A HOTEL TERMINAL * * * 50 HABITACIONES
TERMINAL HOTEL ACCESS VIEW ***50 ROOMS

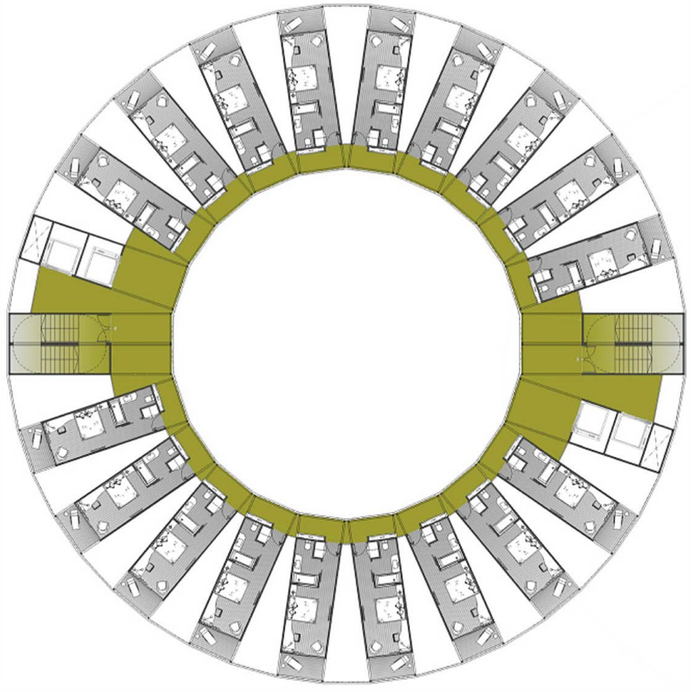
VISTA INTERIOR HABITACIONES
ROOMS INTERIOR VIEW

VISTA INTERIOR HABITACIONES
ROOMS INTERIOR VIEW

VISTA EXTERIOR HOTEL *****



PROPUESTA 16 HABITACIONES/PLANTA.
HOTEL 192 HABITACIONES



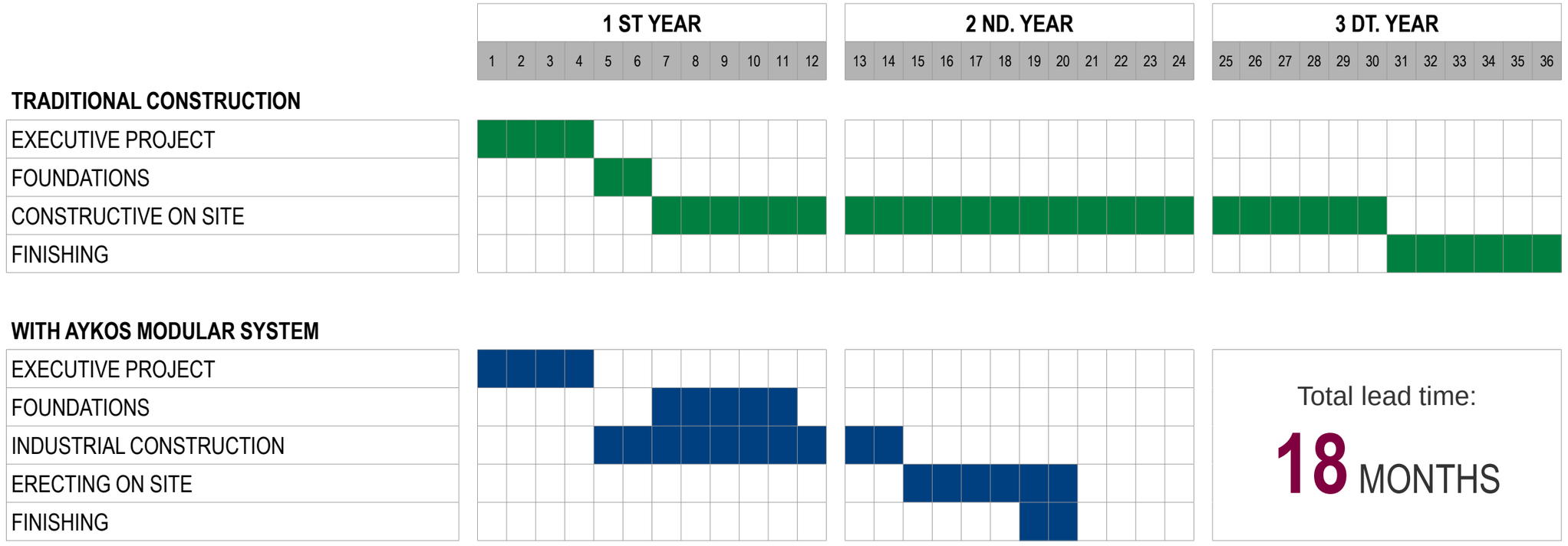
PROPUESTA 18 HABITACIONES/PLANTA.
HOTEL 216 HABITACIONES

VISTA INTERIOR HABITACIONES

TIME IS MONEY

Phase 1 _ final Project / design architecture + and manufacturing [16 weeks] plans, floor plans, elevations, sections, construction details, project facilities, engineering, health and safety, measurement and final budgets.Phase 2 _ manufacturing, integration /assembling and civil works [40 weeks] manufacture according to the project, excavations, foundations, general civil works, and planning.Phase 3 _ logistics, assembly, interconnection and termination [16 weeks] road and maritime transport, loading, unloading and assembly of modules, interconnection, finishes, covered, networking connexion, quality control and final work.

The comprehensive control of industrial process times and the simultaneity of the building below ground level and production factory, guarantee the shortage of lead times by almost 50%.



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EVOLUTION OR JUST REVOLUTION?

Evolving without preestablished rules

Rethink the whole process from Scratch. Implementing industrialization to a traditional construction process. suppliers become “partners” within the prroduction chain:

Their capacity and accuracy is fundamental to achieve the goals. Quality control improvement due to production within an industrial plant. Construction certificates as a ruling process and part of the production chain. Erecting the site is made by professionals but without the traditional workforce:

✓Personal trained as mechanical integrators.

✓Mechanical assembling & services interconnection.

New paradigma for construction “Construction Applied Engineering” instead of just architecture and building. Erecting on site the building is just the natural “Outcome” after Engineering process; It is not related to the construction workforce and professional trades. Changing the basic concepts of materials and processes, leads us to an industrial concept, opposite to the reality of the construction. 95% of the building / solution is build up in a mill where everything is controlled: “clima and lighting”,- 2/3 shifts that let us work up to 24 x 7 Suppliers stock each of them has the stock for at least 5 working days (to avoid disruption), Process controlled by engineers and suppliers instead of construction professionals (in general less prepared and with a lack of accuracy), After the industrial process, threedimensional modules already finished are stocked or directly transported where the building will be erected. The value of the proposal is the professional team and process, more than the production plant.

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THE TREND AND FUTURE OF CONSTRUCTION

QUALITY Industrial processes ensure unparalleled quality over the traditional construction. Prior control of costs and quality and therefore minimal budget deviations. The ease and economy of maintenance, ie, durability thanks to the quality and precision of execution and the rationalization of facilities. high specialization of labor.

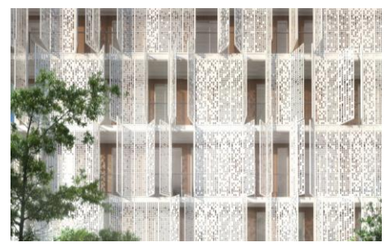
INNOVATION Dry manufacturing. lightweight construction with High structural strength. buildings over 12 stories high without specific reinforcement. Capacity to implement the latest advances in the manufacturing facilities during and at any time of life of he building.

SPEED Execution time in less than 50%. Time control of manufacturing and assembly. Simultaneity of the building below ground (foundations) and factory production. Elimination of unforeseen weather conditions and reduction of occupational hazards.

SUSTAINABILITY Huge reduction of pollutant emissions within the process. No construction waste generation. Renewable or recycled materials. Light foundations based on the low weight of the structure. Energy efficient buildings (application of bioclimatic solutions). thermal and acoustic insulation far superior to the traditional system.

Bioclimatic optimization and generation of renewable energy.

Minimal visual and noise pollution on site.



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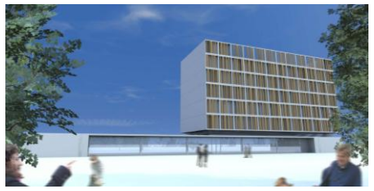
MANY APPLICATIONS & FLEXIBILITY

HOTEL It is one of the best applications due to the modulation and repetition of some basic modules : rooms, vertical connections, basement, . . . Multiple configurations, external skins and singular architecture. It is a fast, reliable and cost effective system to design any kind of Hotel. If necessary, the building can be deconstructed by modules and reerected somewhere else and for other applications (it has to be design from scratch for doulbe use), with no residual impact backwards. From local and rustic hostels up to 5*, we design, produce and install the modules according to the criteria from our customer.

HEALTH We are currently working with leader companies within this sector to create a state of the art modulation for Hospitals, efimeral Aid services, Retail clinics, etc.. We have developed Standarized rooms, offices and operating theatres. Using this standarized and totally equiped modules, we define the whole volumetry of the project, either in height or horizontal and always adapted to the customer specs and local needs. Every module has been studies to include best equipment and services necessary for every particular need.

EDUCATION We have two systems already developed : one for schools and second for kindergardens. Both are flexible, “growable” and dynamics. Materials are adapted for each use, Energy solution is defined after the analysis and understanding of the geographical situation and particular needs. They can be reconfigurated easily and adapted to future needs, including the chance of being extendable.

LIVING *(Houses + apartments + multistorey buildings.)* Currently designing, and producing singular houses for private customers (100% customized). Life nest: Specific project for Oil companies in Algeria and Kuwait to give decent homes to skilled workers ex pats and living in deserts and remote locations.



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ECO - EFFICIENCY

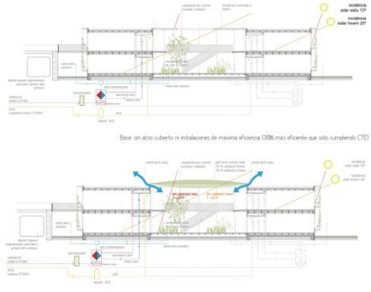
PASSIVE ENERGY

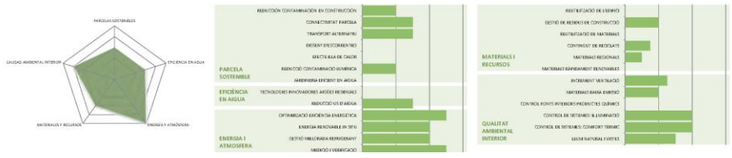
✓It covers different concepts within the process: the energy necessary during the process of production, transport and erecting the building. The studio and implementation of materials and solutions to achieve minimum consumption (related to air•flow, protection, ventilated facades or skins, stone fibers for thermal insulation, acoustic, . . .). Colors, surfaces, glasses, structures, thermal bridges . . . All details are considered to maximize the effectiveness of the energy saving. Maintenance and material replacement during the life of the building is also considered; it has a long term implication that we try to consider, to avoid unexpected costs and increase of energy needs (recurrence of resources).

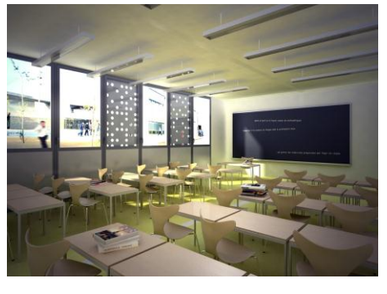
ACTIVE ENERGY

It is everything related with the use of the premises: Includes lighting, heating, water waste, air flow, humidity control and adjust, etc . . . Eco-efficiency, LEED platinum Certificate, improving local construction codes and rules, . . . Geothermy, solar and photovoltaic panels, wind power, . . . Work with all the energies and solutions integrated as a grid. Apply new materials (composites, natural fiber layers) to avoid waste and leakage of energy.

The best energy efficiency is to maximize not spending.







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SOMEX ENERGY S.A.