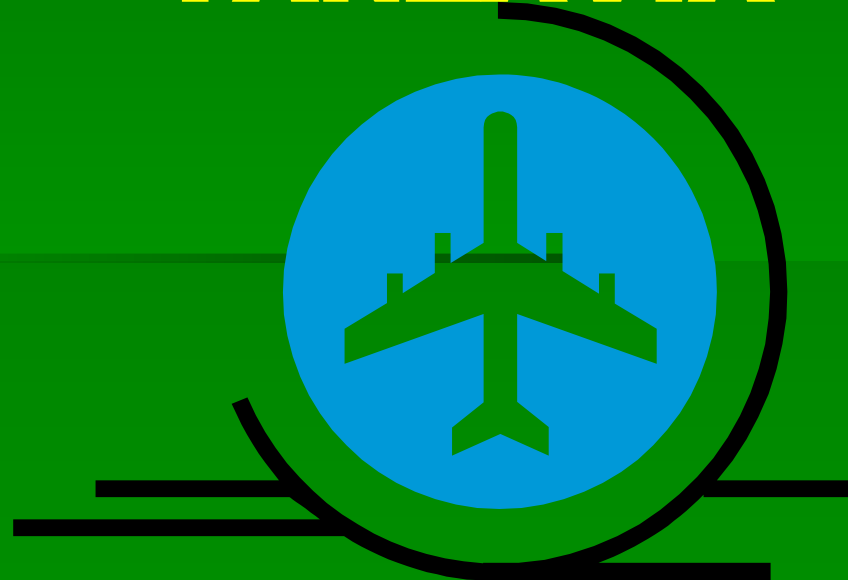


REHABILITATION AND UPGRADING OF AIRPORTS IN TANZANIA

TANZania AVIAtion Safety – “TANZAVIA”



**PRESENTATION – THE HAGUE
15 SEPTEMBER 2014
ENG. GEORGE SAMBALI**

OUTLINE

1. GENERAL BACKGROUND

2. BACKGROUND OF JNIA
3. COMPLETED “JNIA-AIRSIDE” PROJECTS
4. SUPPORT FACILITIES NAVIGATIONAL AIDS

5. ON GOING “DUTCH-FUNDED” PROJECTS
6. PROPOSED/UPCOMING PROJECTS

1.0 GENERAL BACKGROUND

- Mutual Co-operation known as *“Twin Relations”*
- Between URT and The Netherlands 1970s’
- *“TANZania AVIAtion”* Safety – *“TANZAVIA”*
- **COMPLETED PROJECTS (ORET FUNDS):**
 - *Supply of 4 Fire Tenders: JNIA & KIA- \$2.5m*
 - *Electrical Power SyS: JNIA & KIA- Euro 4.8m*
 - *Rehab JNIA Phase I (RWY & Apron): Euro 22.9m*
 - *Rehab JNIA Phase II (Pave & Elect): Euro 33.1m*

2.0 BACKGROUND OF JNIA

- TB.I&SMALL RWY - IN 1954; SMALL JETS
- TB.II& RWY05/23 UPG – 1984; CODE: C&E
- TB.II FOR 1.5MIO PAX PER ANNUM IN 1984
- PAX UP BY400%: 0.59M('99) - 2.4M(2013)
- **TB.II CAP. REDUCED TO 1.0M PAX DUE TO INTRODUCTION OF SHOPS & SECURITY**
- PAX PROJECTED TO 9.0 MIO IN 2033
- **CAPACITIES: BEFORE PROJECTS**
 - **< THAN 6 A/C -OPERATIONS/HR FOR AIRSIDE**
 - **<THAN LEVEL OF SERVICE “C” FOR TB.II**

3.0

**COMPLETED
“JNIA-AIRSIDE”
PROJECTS**

ORET Phase I-MANAGEMENT

■ **CLIENT:**

Tanzania Airports Authority [TAA]

■ **DESIGN:**

Sir Frederic Snow & Partners Ltd

■ **SUPERVISING CONSULTANTS:**

- KBR/Howard Humphreys (TZ)
- Stewart Scott International (SA)
- NACO (NL)

■ **CONTRACTOR** – Interbeton Tanzania Branch:

Phase I - Scope

MAIN OBJECTIVE: RESTORE AGED APRON & RWY PAVEMENTS + RIGID PAVEMENT APRON

- Milling & Resurfacing Of RWY 05-23 (60MX3KM)
- Replacement of runway edge lights, end lights, threshold lights and CCR's
- Milling And Resurfacing Of The Apron Around International Terminal 2
- **Construction Of Rigid Pavement (Concrete) At International Terminal 2**
- Environmental works; Construction of pressure pipe connection and treatment ponds for terminal 2 sewerage

Phase I – PROJECT FUNDING

- Contract value 22,956,332 Euro
- 50% ORET - Grant
- 50% ING-BANK Export Credit

Phase I - PROGRAM

- Tender date: November 2002
 - Contract signed: November 2003
 - Contract effective: October 2004
 - Commencement date: April 2005
-
- Completion Ahead of Time: August 2006

ORET Phase II -MANAGEMENT

- **CLIENT:**

- Tanzania Airports Authority [TAA]

- **DESIGN & SUPERVISION:**

- Howard Humphreys (TZ)

- Stewart Scott (SA)

- NACO (NL)

- **CONTRACTOR:**

- Interbeton Tanzania Branch:

ORET Phase II: - Scope

MAIN OBJECTIVE: RESTORE AGED PAVEM & INCREASE AIRSIDE CAPACITY UP TO 30-A/C MOVEMENTS PER HOUR

- Milling, resurfacing and widening of all existing taxiways to Code 4E (FROM 23M TO 45M WIDE)
- Construction of new taxiway sections P1 and P4
- Milling and Resurfacing of Cross-RWY 14-32
- Replacement of taxiway edge lights, PAPI and CCR's,
- Installation Of RWY approach lights Cat.1 Precision Approach,
- Installation of AGL Remote Control and monitoring system
- Environmental works Storm-Water drainage improvements

ORET Phase II Scope

- Construction of Access road and car parking at new VIP Terminal
- Resurfacing of car parking bays F & G at TB.II
- Construction, Rehabilitation and Upgrading of Access roads around the airport including:
Gate 18 to Tower & MET; TB.I to TB II; Gate 18 to TBII, TB I to Gate 7 etc . . .
- Construction of new water supply source for Terminal 2 and additional storage capacity for Firefighting utilization

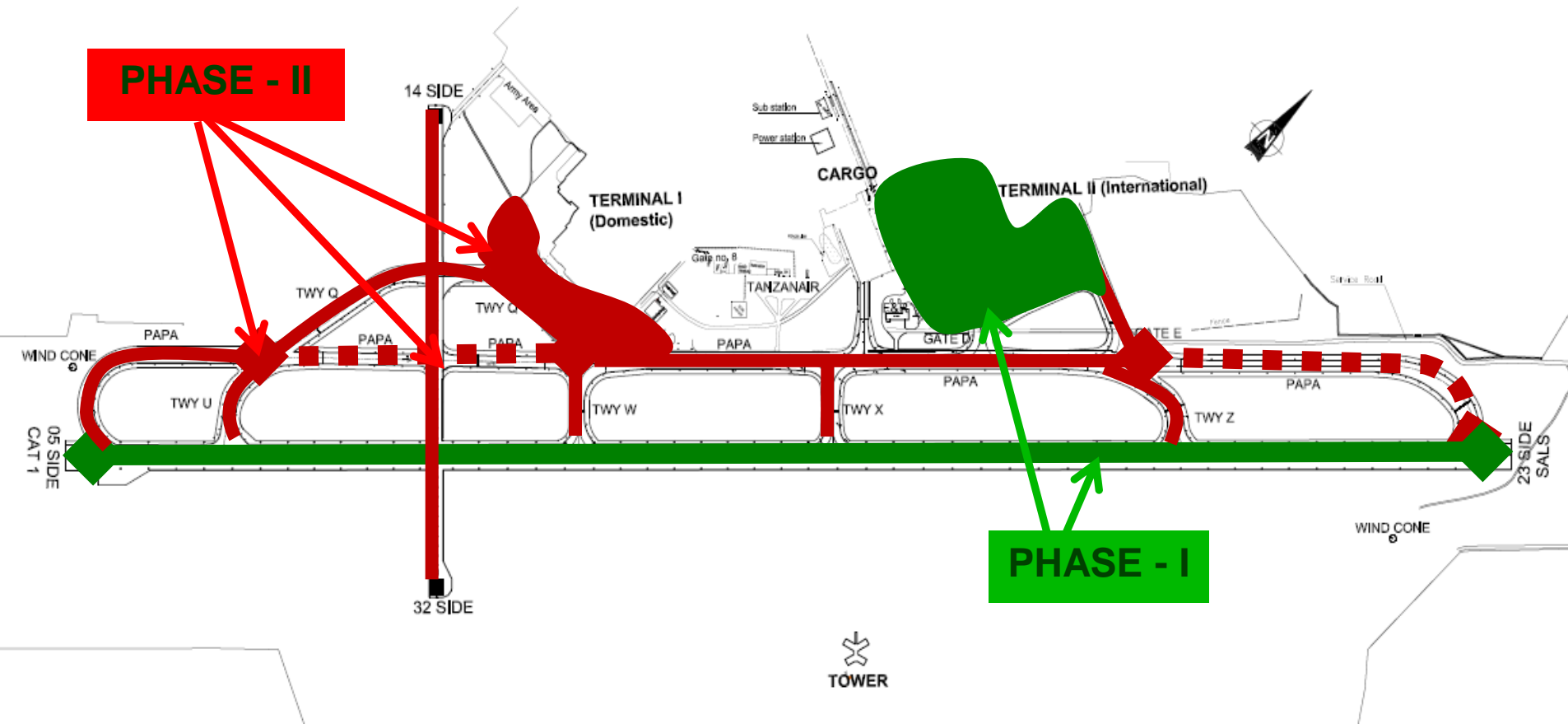
Phase II - FUNDING

- Construction & Consultancy
- Contract value 33.1 Million Euro
- 50% ORET grant
- 50% Loan ING-Bank-Export credit

Phase II - PROGRAM

- Tender date: October 2006
 - Contract signed: August 2007
 - Effective Date: August 2008
 - Commencement date: November 2008
-
- Completion on Time: JANUARY 2011

LAYOUT PLAN JNIA – PHASE I&II



PROJECTS BENEFITS-I&II

- **Flexible Pavements' Strength** (for runway, taxiways and apron) restored for the next 20 yrs. Whereas rigid pavements design life is over 40yrs.
- **Capacity of Runway And Taxiway System** increased From 6 A/C-Operations per hour to 30 A/C-Operations per hour.
- **Increased Safety And Efficiency** through rehabilitation and upgrading of Airfield Ground Lighting (AGL) system.

PROJECTS BENEFITS-I&II

- **Manage Largest Aircraft A.380.** Runway and taxiway system is able to operations. **The only Challenges: Handling Facilities, Gates &TB.**
- **Improved Environmental Condition** through proper Management of Waste Water at JNIA
- **OVERALL BENEFIT:** Achievement of **Airside Infrastructure Standards CODE 4E (as per ICAO)** and Requirements to be **Able To Operate The Airport As A Regional Hub**

4.0 SUPPORT FACILITIES

NAVIGATIONAL AIDS

NAVIGATION

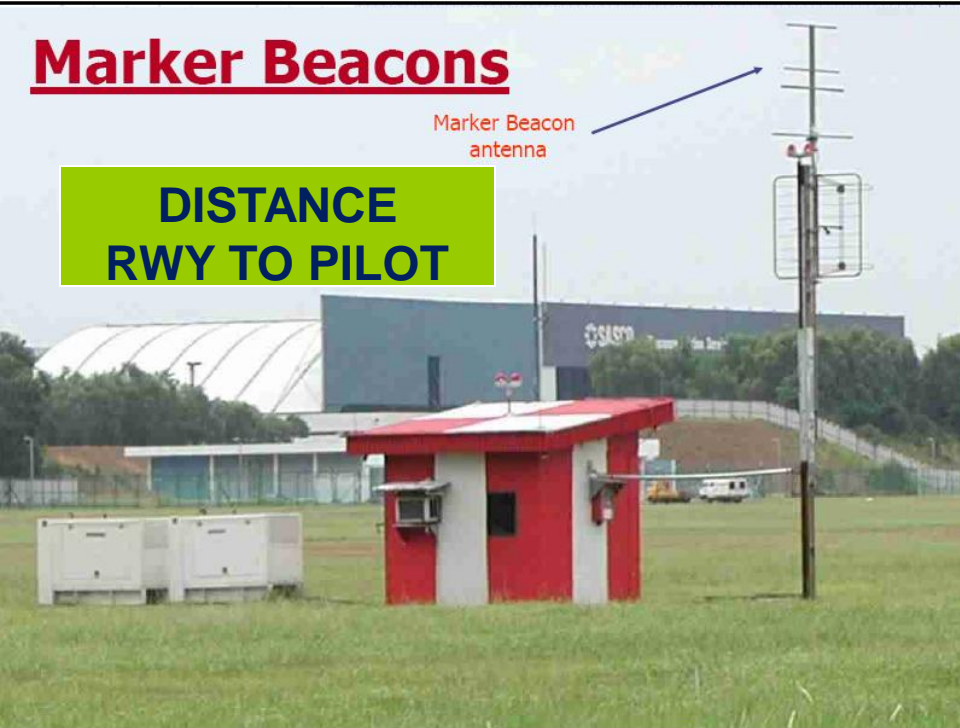
- Instrument Landing System (ILS)
- VHF Omni-Directional Radio Range (VOR)
- Distance Measuring Equipment (DME)
- Non-Directional Beacon (NDB)

ILS – WHEN DESCENDING

Marker Beacons

Marker Beacon
antenna

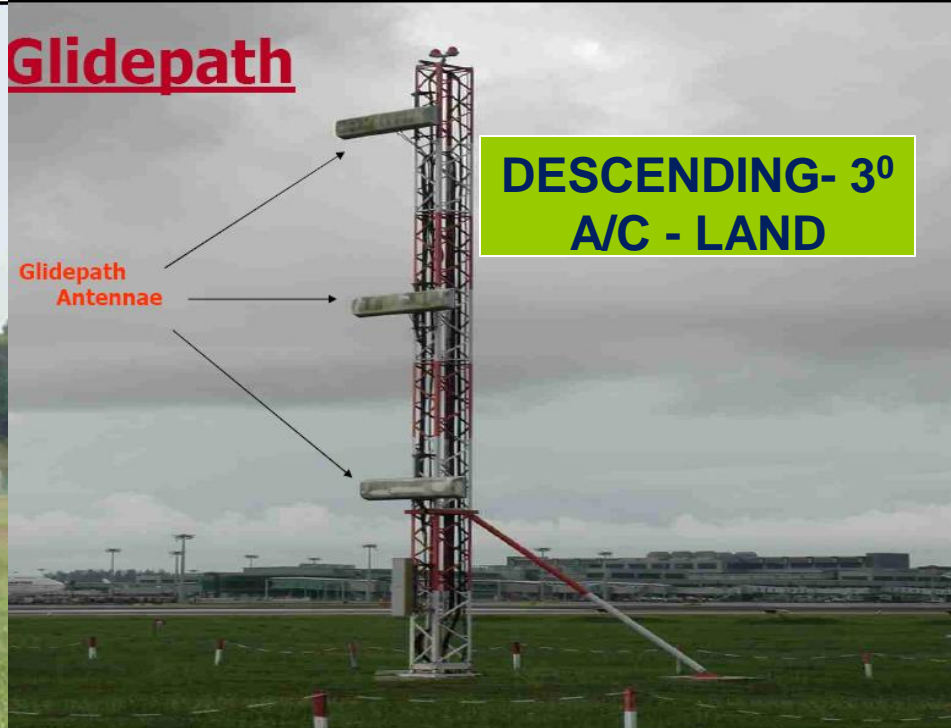
DISTANCE
RWY TO PILOT



Glidepath

Glidepath
Antennae

DESCENDING- 3°
A/C - LAND



Localiser Antenna

POSITION
A/C – RWY CENTER LINE



VOR/DME/NDB - APPROACH

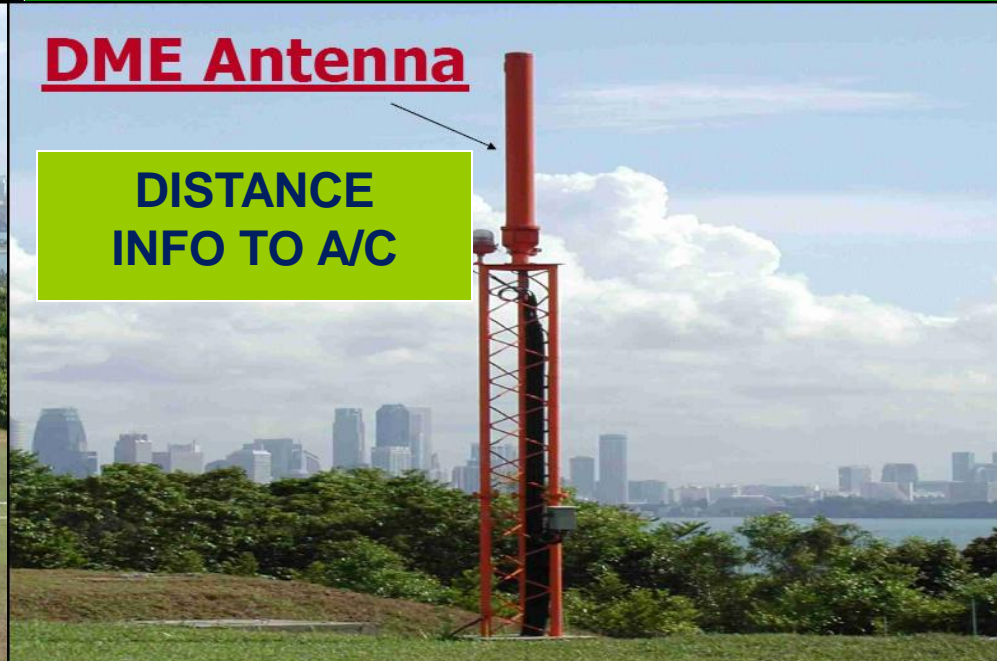
VOR Antenna

DIRECTION-360°
TO A/C



DME Antenna

DISTANCE
INFO TO A/C



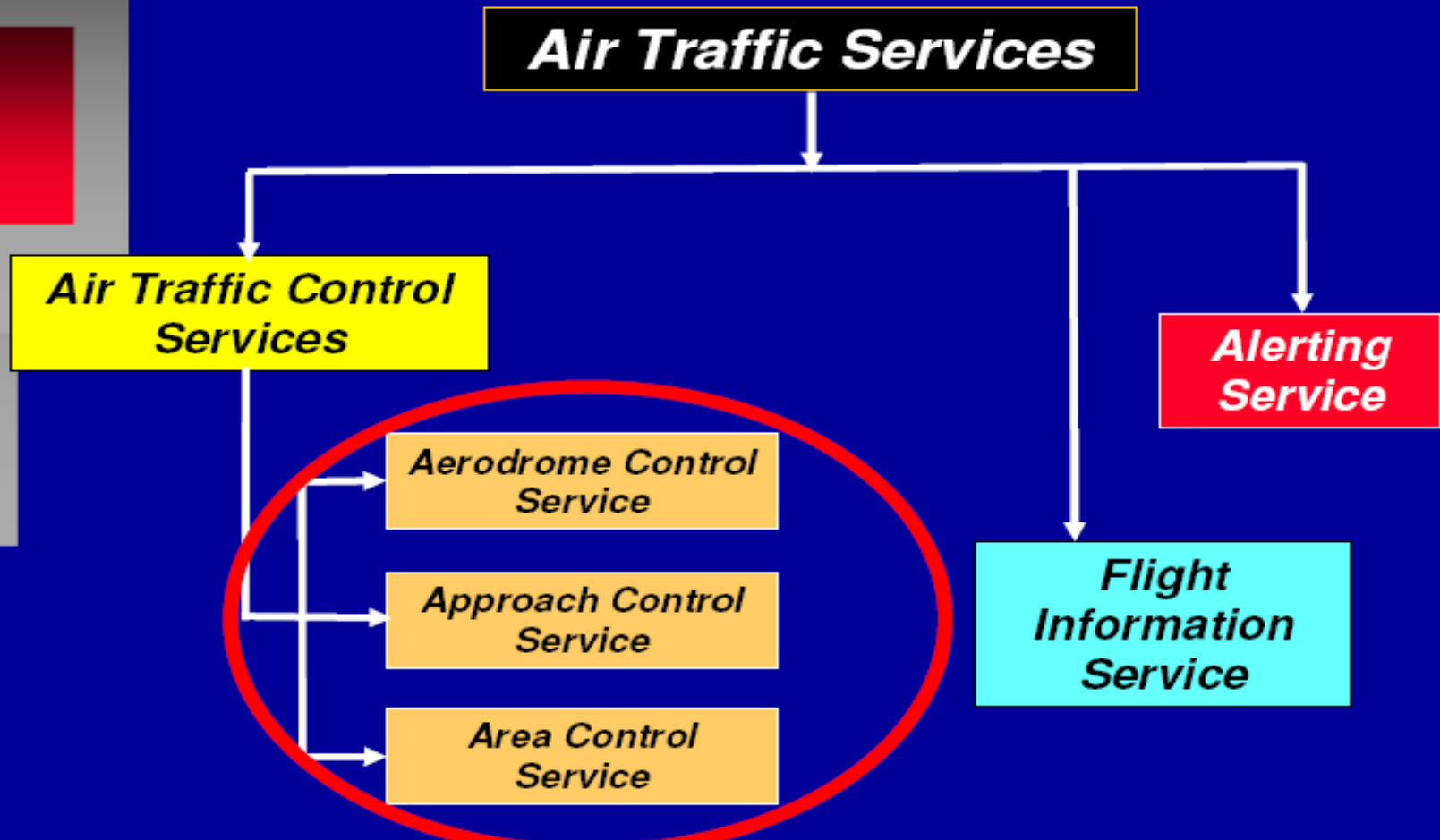
NDB Antenna

BEARING
INFO TO A/C



ATC – IN SUMMARY

Divisions of Air Traffic Services



ATC – IN SUMMARY

* Aerodrome Control Service

**CONTROL
TOWER**

At and within vicinity of aerodrome

* Approach Control Service

**SMALL
RADAR**

Aerodrome
Control

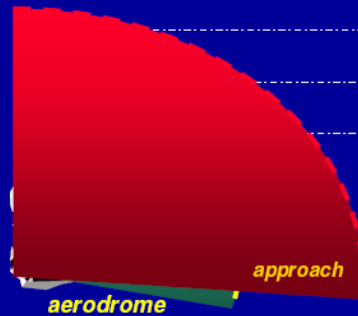
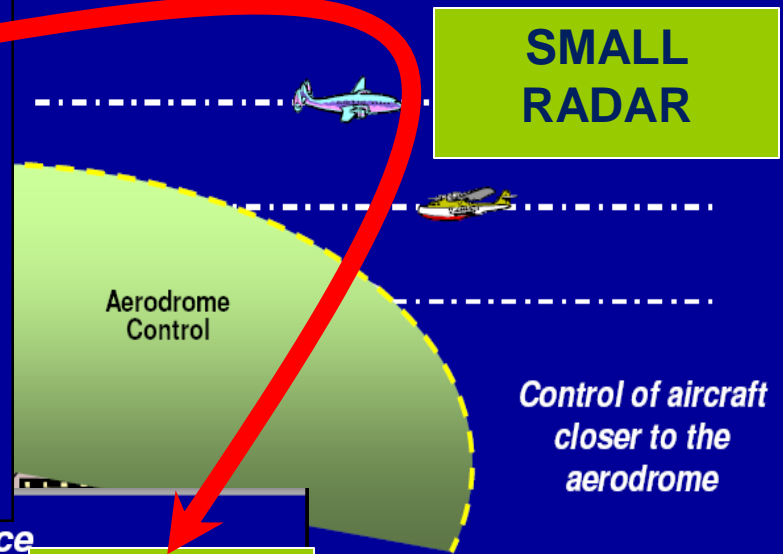
*Control of aircraft
closer to the
aerodrome*

* Area Control Service

**BIG
RADAR**

*Control of traffic very
much further from
aerodrome and approach*

**TZN AREA - ALSO
RWANDA & BURUNDI**



5.0

**ON GOING
“DUTCH-FUNDED”
PROJECTS**

ON GOING PROJECTS

- REHABILITATE AND EXTEND THE EXISTING TB.II AS SHORT-TERM MEASURE (**2.5M PAX - DOMESTIC**): AFD
- DEVELOP NEW TB.III-MED/LONG - TERM (**6.5.0M PAX- INTER**): HSBC
- REHABILITATE AND UPGRADING OF KILIMANJARO INTERNATIONAL AIRPORT (**ORIO & ING BANK**)

5.1 REHABILITATION OF TB.II - JNIA

- REHABILITATE AND EXTEND THE EXISTING TB.II AS SHORT-TERM MEASURE (2.5M PAX - DOMESTIC).
 - TERMINAL II TO BE USED FOR DOMESTIC OPP.
 - PRELIMINARY DESIGN AND STUDY FINANCED BY AFD OF FRANCE AT Euro 400,000
 - STUDY STARTED SEPTEMBER, 2014
 - WORKS ESTIMATED AT Euro 20M YET TO BE FUNDED

■ TERMINAL II

GROUND FLOOR EXISTING



EXISTING GROUND FLOOR

[illegible]

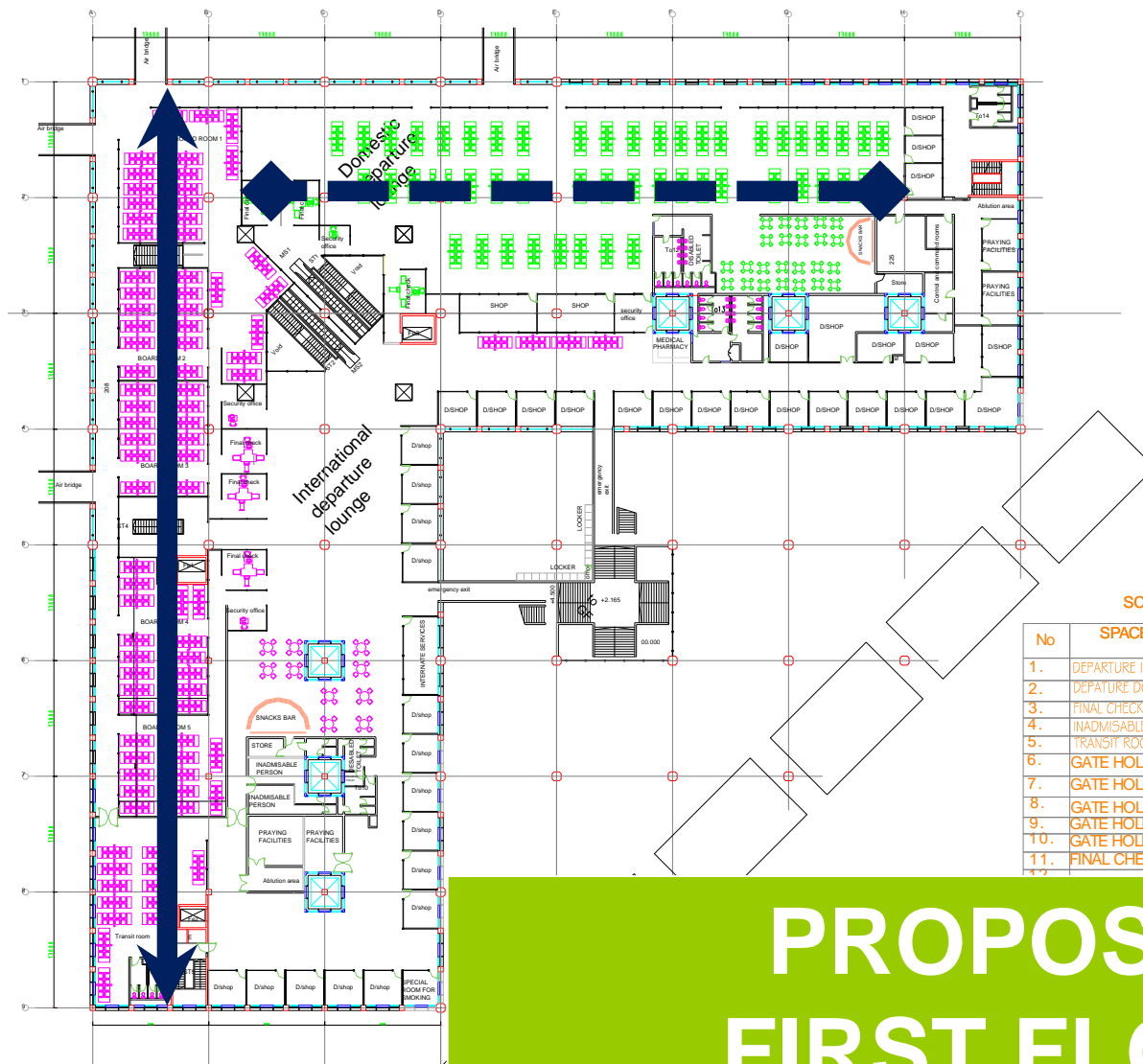
Consultants:
AERO PROJECT(T) LTD
P.O BOX3148, DSM

Architect:
VERTEX SERVICES
BOX 35413
DAR ES SALAAM



EXISTING FIRST FLOOR

Architect:
VERTEX SERVICES
BOX 35413
DAR ES SALAAM



FIRST FLOOR PLAN

SCHEDULE OF AREAS

No	SPACE NAME	AREA / No
1.	DEPARTURE INTERNATIONAL LOUNGE	1207(M2)
2.	DEPARTURE DOMESTIC LOUNGE	982(M2)
3.	FINAL CHECK	9'DESK
4.	INADMISSABLE	46.79M2
5.	TRANSIT ROOM	173(M2)
6.	GATE HOLD ROOM 1	318.10(M2)
7.	GATE HOLD ROOM 2	125.68(M2)
8.	GATE HOLD ROOM 3	128.66(M2)
9.	GATE HOLD ROOM 4	159.04(M2)
10.	GATE HOLD ROOM 5	135.32(M2)
11.	FINAL CHECK INTERNATIONAL	105(M2)

**PROPOSED
FIRST FLOOR**

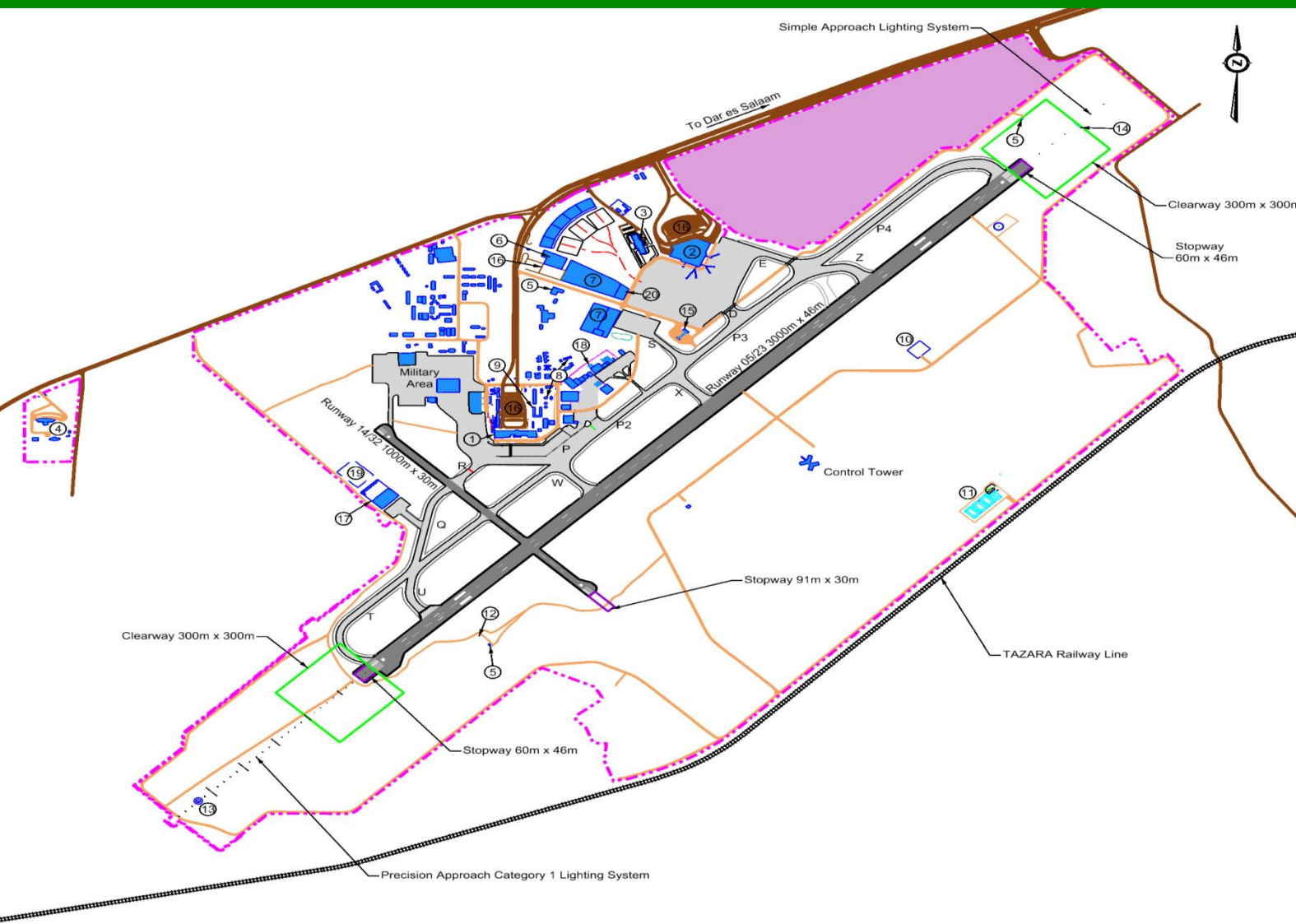
Notes:

No. Revision/Issue Date

Consultant:
AERO PROJECTS LTD
P.O BOX 3146 DSM

Architect:
VERTEX SERVICES
BOX 36415
DAR ES SALAAM

5.3 NEW TERMINAL III JNIA AT KIPAWA



Legend

- Airport Fence
- Access Road
- Public Road
- Railway
- Site for Terminal III
- Terminal I
- Terminal II
- VIP Terminal
- TCAA HQ Building
- Substation
- Alliance
- Air cargo
- Fuel Farm
- TAA HQ
- Radar
- Ponds
- ILS Glide Path 05
- DVOR / DME
- ILS Localizer
- RFFS
- Car Parking
- Precision Air Hangars
- GA Hangars
- New Hangar (Under Construction)
- GSE Maintenance & ULD Yard

Terminal III Phase I - Scope

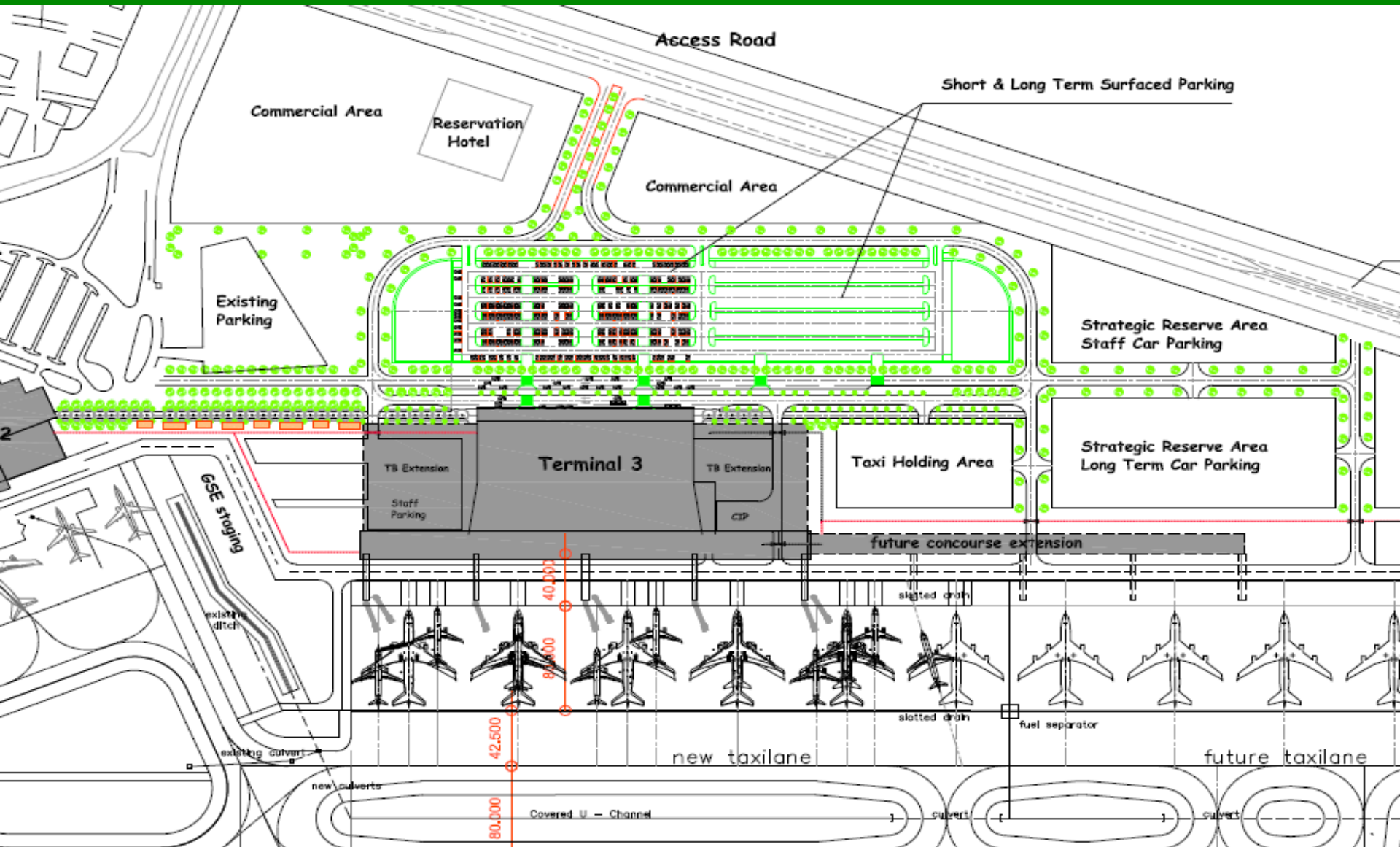
CONSTRUCTION OF TERMINAL BUILDING

- Total of 3.5 million passengers per annum
- Total floor area about 35,000sqm
- Total of 7 Aerobridges

CONSTRUCTION OF LAND&AIRSIDE PAVEMENTS

- Construction of Apron and taxiways
- Construction of Access roads and car parking

Master Plan JNIA - T3 Phase 1&2



Aerial View of Terminal 3 Project



Terminal Building – Exterior Images



Landside bird's eye view of the Passenger Terminal III at the Julius Nyerere International Airport (JNIA)

TERMINA III - FUNDING

- EPC & Consultancy Supervision
- Contract Value(Phase I): Euro 133 M
- 100% loan From HSBC
- ECA – Insurance (Atradius of NL)

TERMINAL III-MANAGEMENT

- **CLIENT:**

Tanzania Airports Authority [TAA]

- **SUPERVISION- CONSULTANT**

- Arab Consulting Engineers of Egypt

- **CONTRACTOR for EPC:**

- BAM: In-house design consultancy
- NACO: Airport design specialists

TERMINAL III - PROGRAM

- Contract Signed: April 2013
- Contract Duration: 36 Months
- Expected Completion: April 2016

5.4 REHABILITATION AND UPGRADE OF KIA

REHABILITATION OF TERMINAL BUILDING

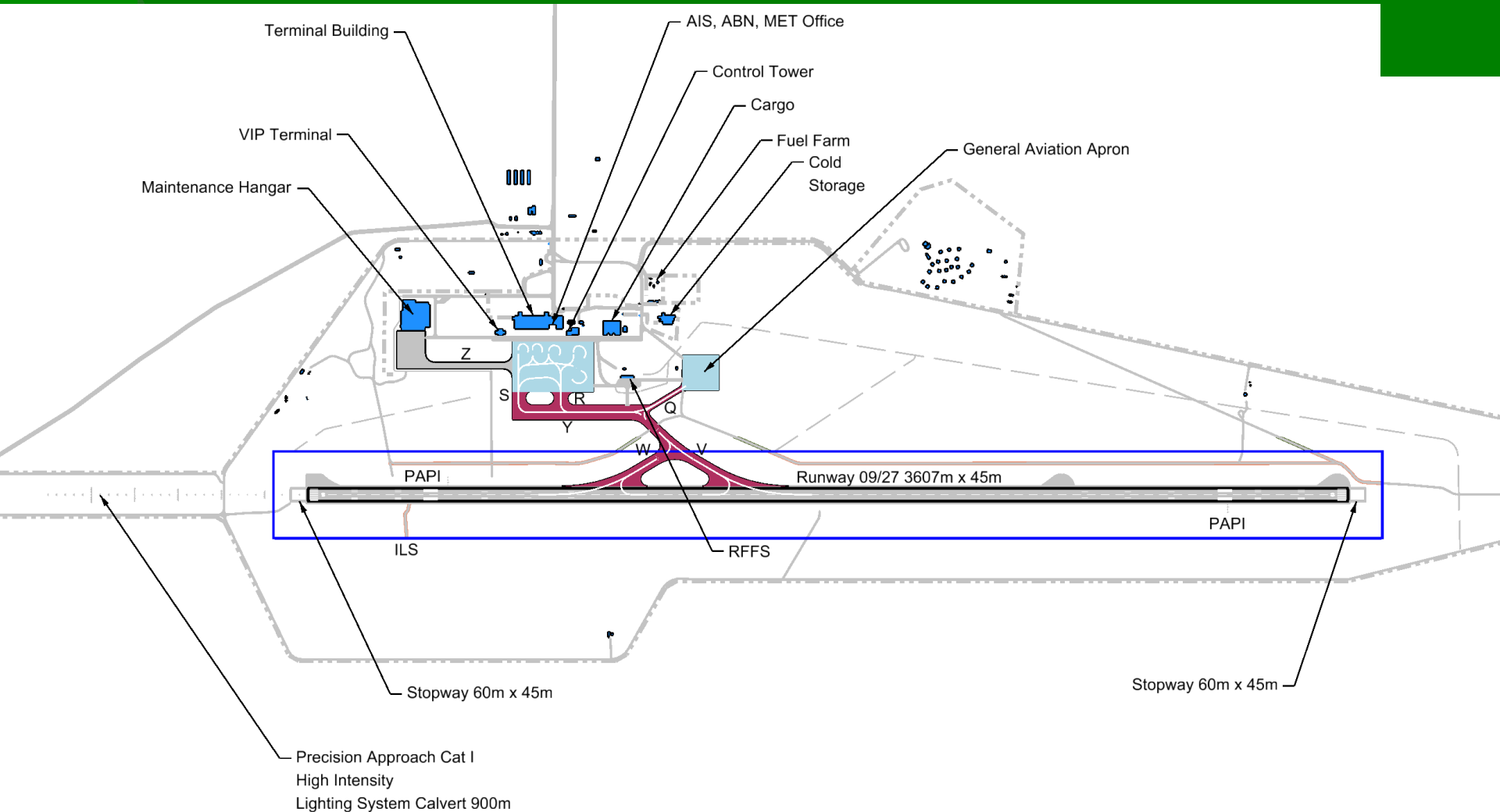
- Vertical Extension one floor for waiting lounges
- Separation of International and Domestic PAX
- Development of Sewerage System -Ponds

REHABILITATION &UPGRADING OF PAVEMENTS

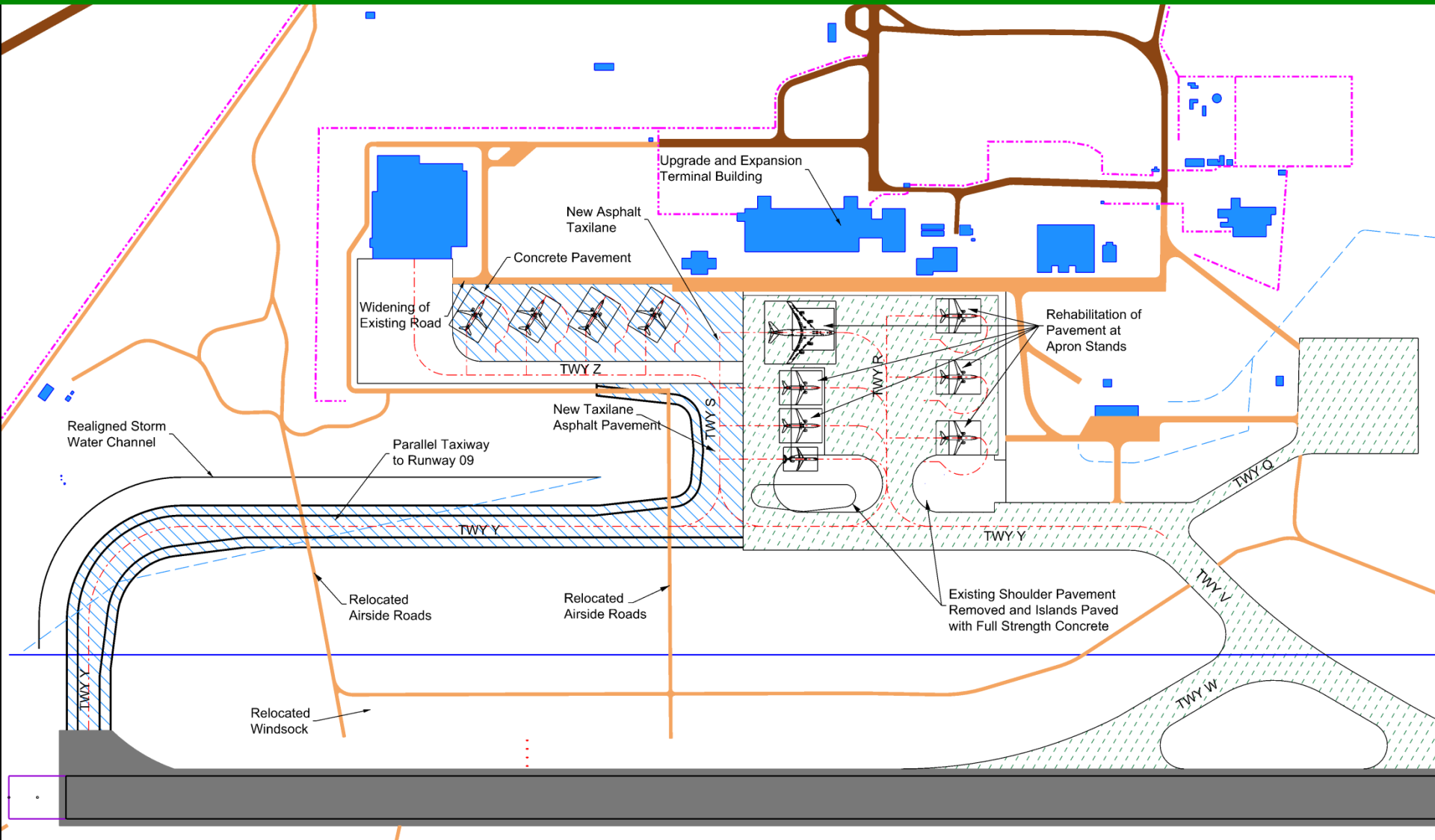
- Rehabilitation and Extension of Apron
- Rehabilitation and Extension of Taxiways
- Runway spot repairs
- Airfield Ground Lighting System

Existing Facility - KIA

Primary International Airports



Development Strategy - KADCO Primary International Airports



KILIMANJARO - FUNDING

- EPC & Consultancy Supervision
- Contract Value: Euro 35.5 M
- ORIO: Euro 15.0 million
- ING BANK 20.5 MILLION

KILIMANJARO-MANAGEMENT

- **CLIENT:**

Tanzania Airports Authority [TAA]

- **SUPERVISION- CONSULTANT**

- NACO &SSI

- **CONTRACTOR for EPC:**

- TO BE KNOWN SOON

6.0

**PROPOSED/UPCOMING
PROJECTS**

UPCOMING PROJECTS

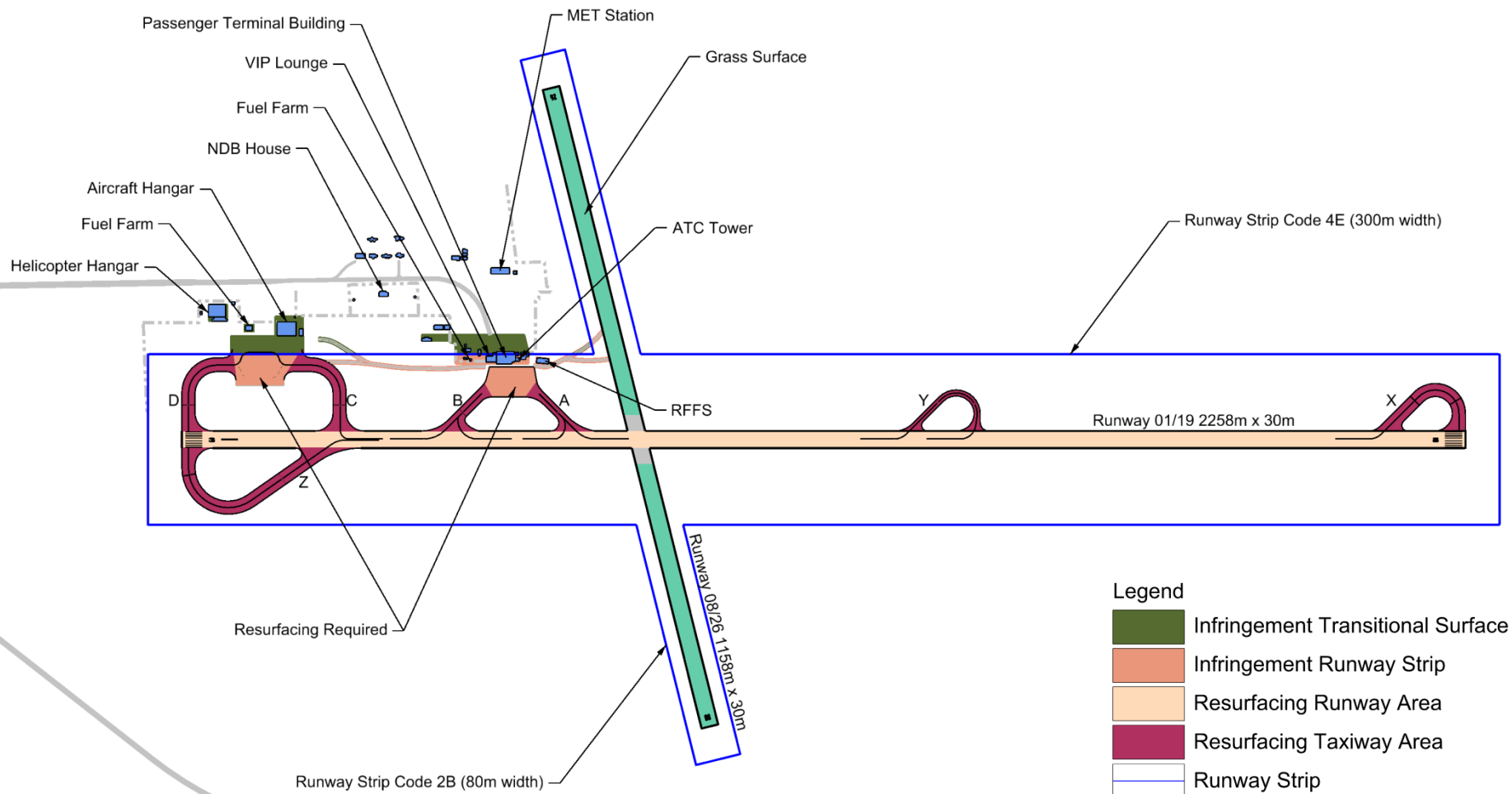
- DEVELOPMENT OF MTWARA TO CODE 4E FROM THE CURRENT CODE 3C (**FOR FUEL & GAS FACILITATION**): **US\$ 370M**
- MAJOR UPGRADE OF JNIA WITH 2ND & 3RD RUNWAYS & OTHER FACILITIES **US\$ 200M**
- DEVELOPMENT OF NEW BAGAMOYO AIRPORT (**REPLACEMENT OF JNIA**): **\$1.0B**
- UPGRADING OF REGIONAL AIRPORTS (DODOMA/**US\$ 165M**, LINDI/**US\$ 100M**, MANYARA/ **US\$ 40M**, TANGA **US\$ 40M** ...)

AIR TRANSPORT IS PIVOTAL

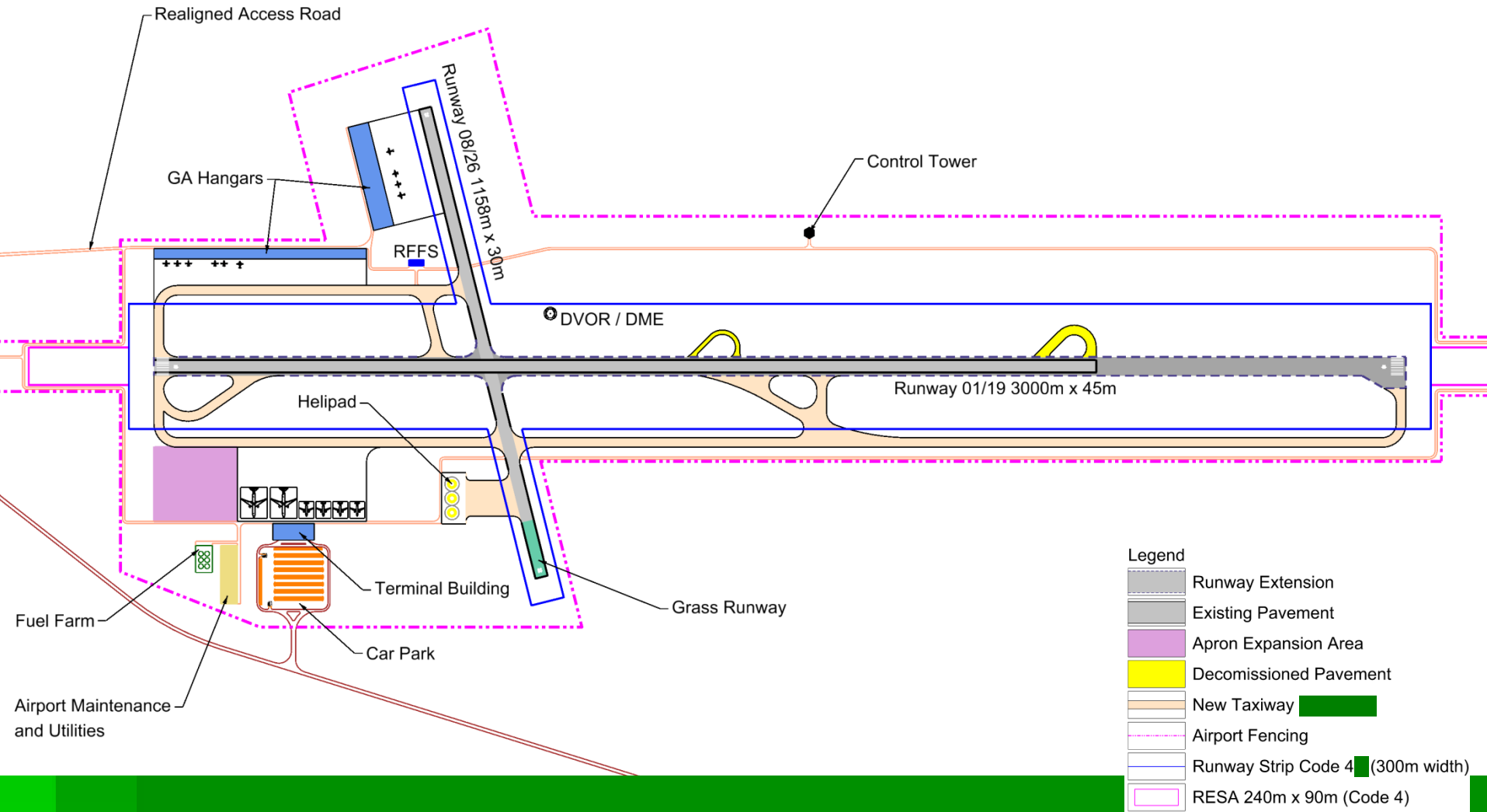
A map of Tanzania with several red dots indicating key air transport hubs. Red arrows radiate from these hubs, showing flight paths to various destinations. The hubs are located in Arusha, Dodoma, Mombasa, and Zanzibar. The map also shows major cities like Nairobi, Kilimanjaro, and Mwanza, as well as geographical features like Lake Victoria and Lake Tanganyika. A blue box highlights the central region around Dodoma and Singida.

Constraints - Mtwara

Mainline Regional Airports

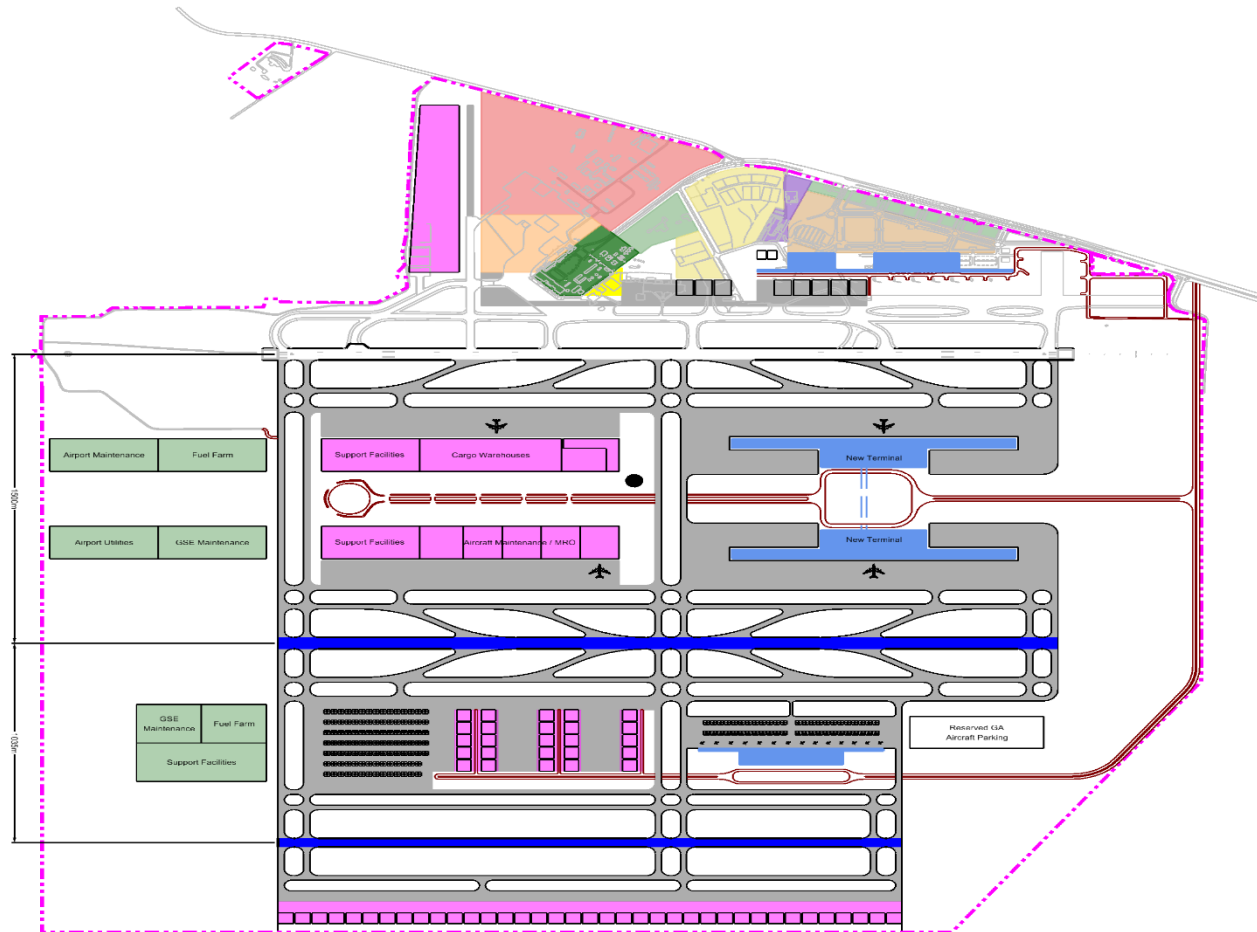


Development Strategy - Mtwara Mainline Regional Airports



JNIA Development Strategy Option1 (BY 2020&2028)

JNIA
Development
Strategy
Option 1

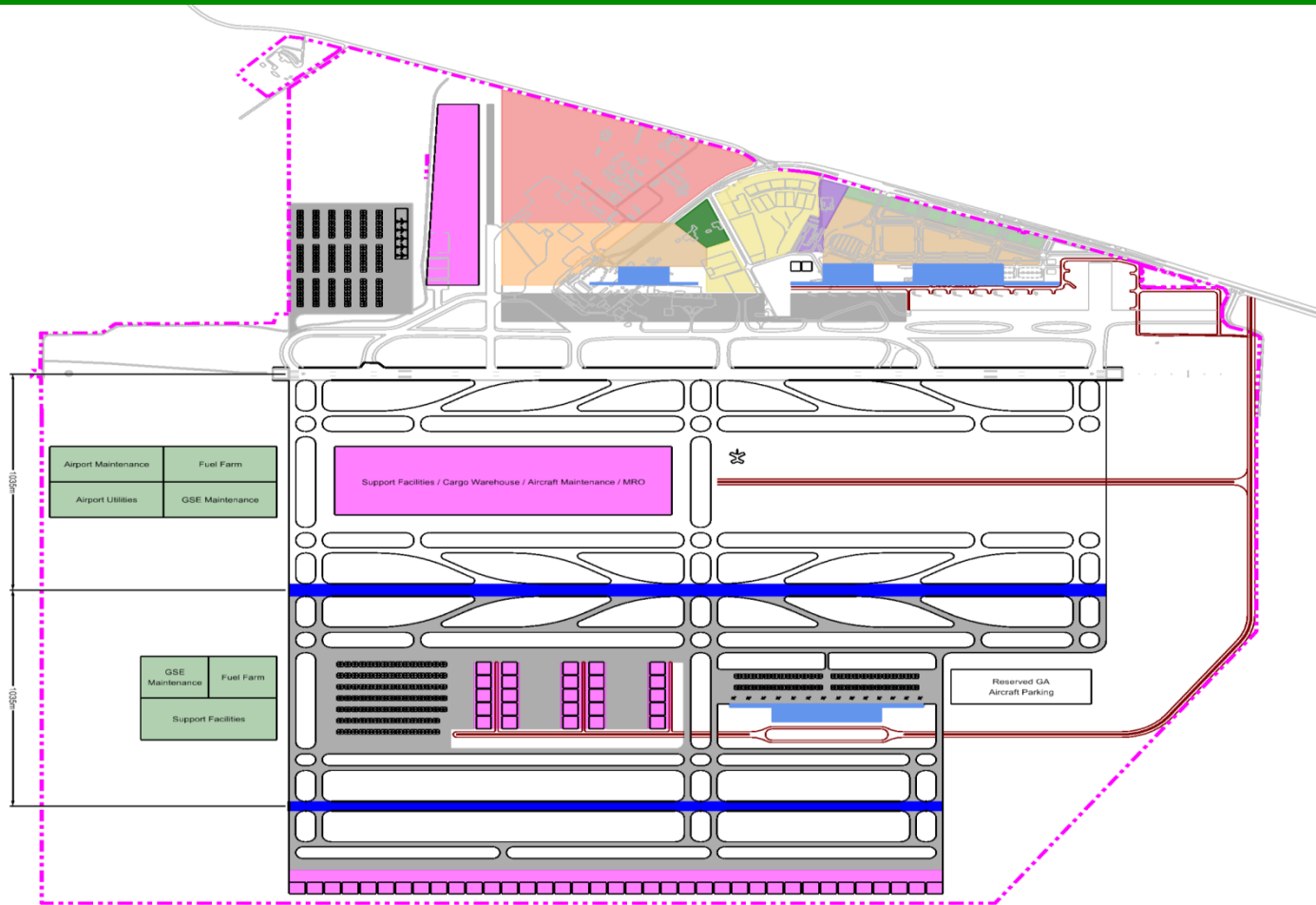


Legend

- Terminal Building
- New Runway
- New Airside Pavement
- Airside Commercial
- Landside Commercial
- Government
- Military
- Cargo
- Admin Support
- VIP
- Airport Support
- ARFFS
- Car Parking
- New ATC Tower

JNIA Development Strategy Option2 (BY 2020&2028)

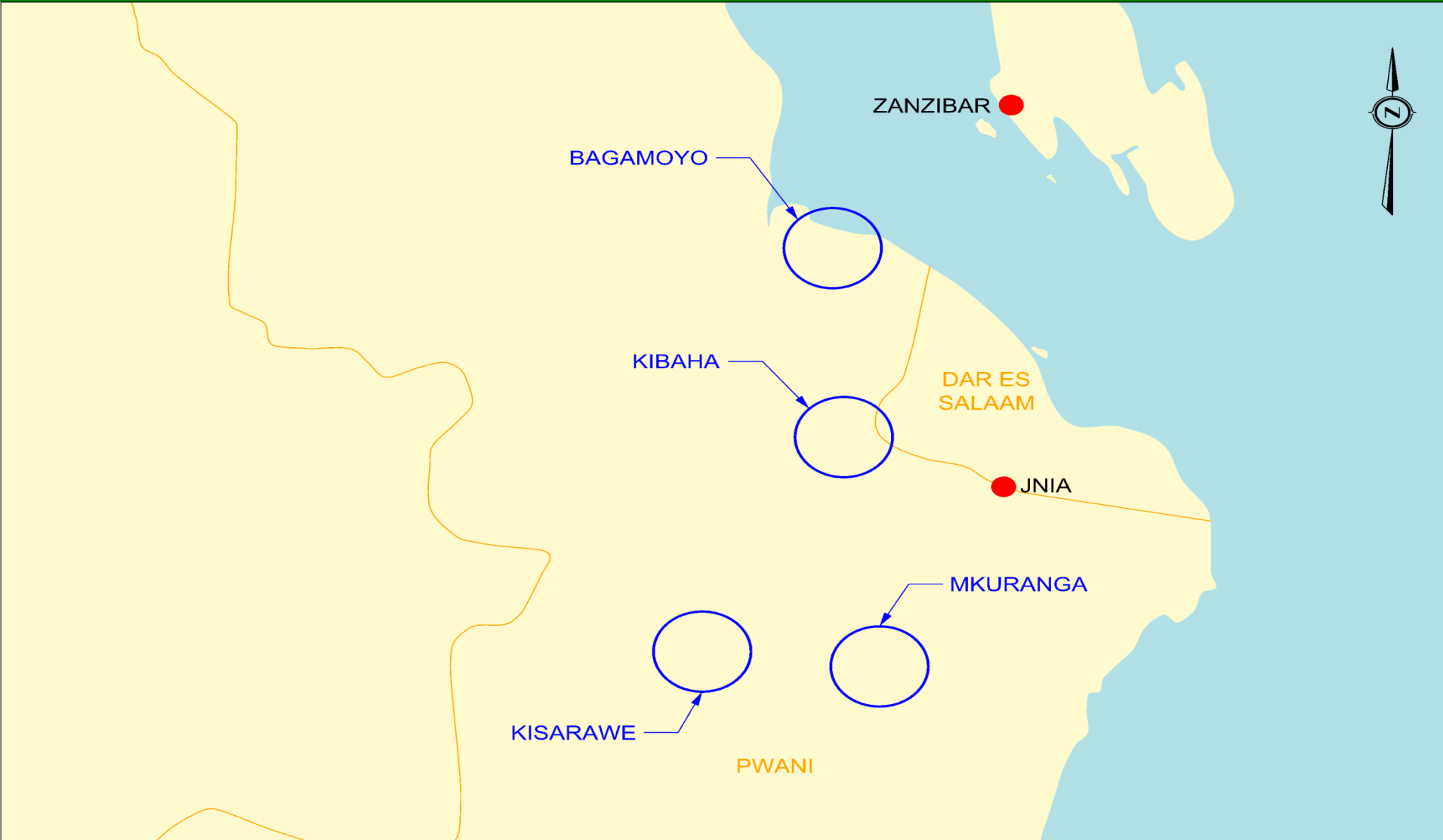
JNIA
Development
Strategy
Option 2



Legend

- Terminal Building
- New Runway
- New Airside Pavement
- Airside Commercial
- Landside Commercial
- Government
- Military
- Cargo
- Admin Support
- VIP
- Airport Support
- ARFFS
- Car Parking

BAGAMOYO NEW DEVELOPMENT (BTN 2020 - 2028)



AIRPORT SUPPORT

AIRSIDE COMMERCIAL

Total Land
Required
2250 ha

Runway 3500m x 60m

AIRPORT
MAINTENANCE

CARGO

CARGO

TERMINAL DEVELOPMENT

AIRPORT
UTILITIES

AIRCRAFT MAINTENANCE

AIRSIDE COMMERCIAL

TERMINAL DEVELOPMENT

Runway 3500m x 60m

RESERVED

GA HANGARS & AIRCRAFT PARKING

RESERVED

GA / CORPORATE
TERMINAL
DEVELOPMENT

LANDSIDE COMMERCIAL

LANDSIDE COMMERCIAL

Runway 2400m x 45m

RESERVED

AIRSIDE COMMERCIAL

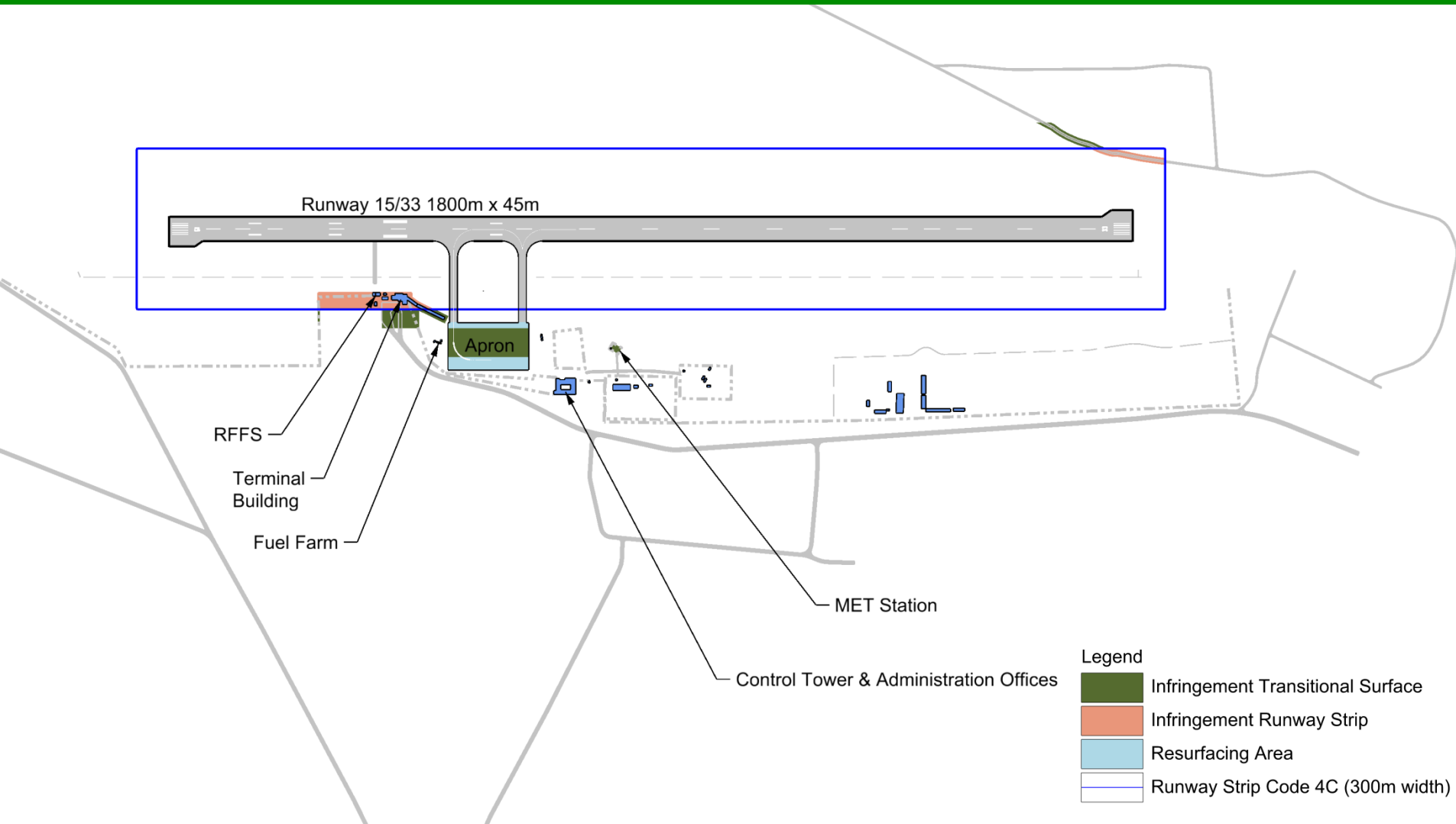
LANDSIDE COMMERCIAL

1500m

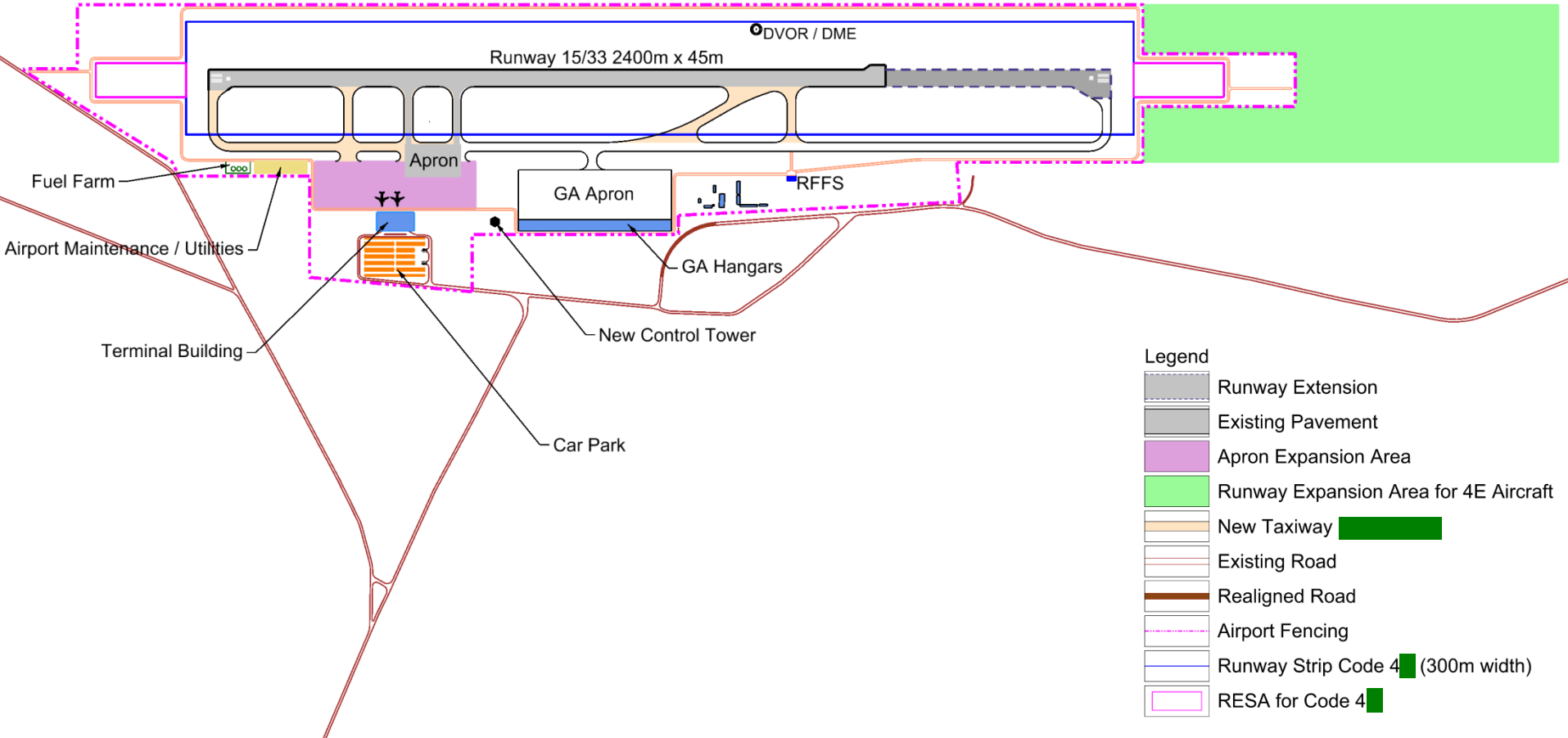
1500m

Constraints - Kigoma

Mainline Regional Airports



Development Strategy - Kigoma Mainline Regional Airports



PHASE

I

II

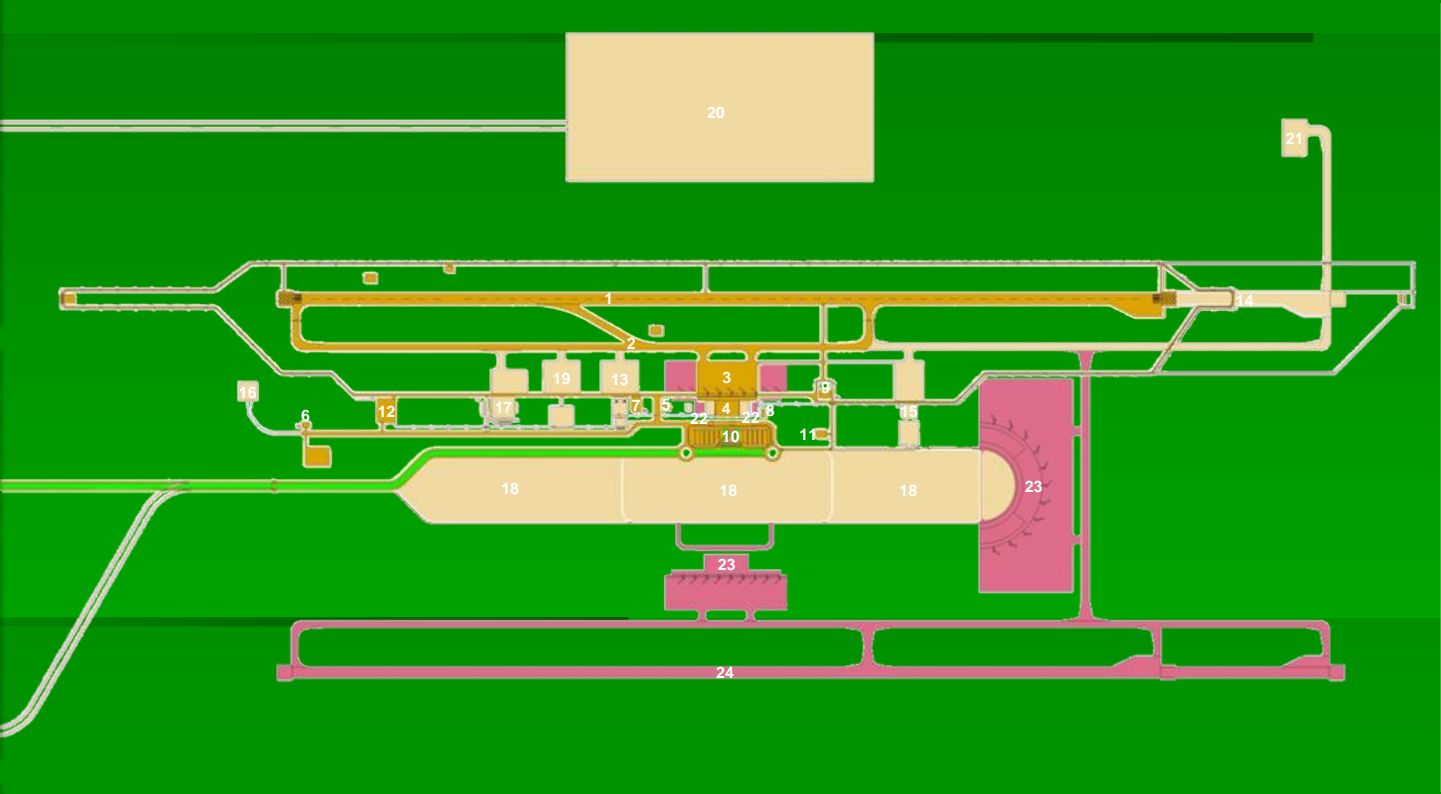
III

MSALATO - Master Plan Ultimate Expansion

- 1-Runway
- 2-Taxiway
- 3-Apron
- 4-Terminal
- 5-Control Tower
- 6-Power Station
- 7-GSE
- 8-Admin. Building
- 9-Fire Fighting
- 10-Parking
- 11-Water Tank
- 12-Fuel Farm

- 13-Cargo Buildings
- 14-Runway extension
- 15-Presidential pavilion
- 16-Sewage plant
- 17-Maintenance Hangar
- 18-Commercial areas
- 19-General aviation
- 20-Military base
- 21-Isolated aircrafts p.

- 22-Terminal Extension
- 23-Terminal 2,3
- 24-Parallel Runway



Development Strategy – MSALATO/DODOMA Airport



R
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C
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V
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ASANTENI
SANA