

UNITED REPUBLIC OF TANZANIA
MINISTRY OF TRANSPORT

TRANSPORT SECTOR SUPPORT PROJECT CIVIL AVIATION MASTER PLAN

FINAL REPORT VOLUME IV INSTITUTIONAL, ECONOMIC AND FINANCIAL ASSESSMENT



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**UNITED REPUBLIC OF TANZANIA
MINISTRY OF TRANSPORT**

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FINAL REPORT**

**VOLUME IV
INSTITUTIONAL, ECONOMIC AND FINANCIAL
ASSESSMENT**

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ABBREVIATIONS

AAKIA	- Abeid Amani Karume International <i>Airport</i>
ACC	- Area Control Centre
ADB-S	- Automatic dependent surveillance-broadcast
AFIS	- Aerodrome Flight Information Service
AFTN	- Aeronautical Fixed Telecommunication Network
AGL	- Airfield Ground Lighting
AIM	- Aeronautical Information Manual
AIP	- Aeronautical Information Publication
AIS	- Aeronautical Information Service
AMHS	- Automatic Message Handling System
AMSS	- Aeronautical Mobile Switching System
ANS	- Air Navigation Services
AOC	- Air Operator's Certificate
AODBS	- Airport Operational Data Base System
ARFSS	- Aerodrome Rescue and Fire Fighting Services
ATC	- Air Traffic Control
ATIS	- Automatic Terminal Information Service
ATM	- Air Traffic Management
ATR	- Aerei da Trasporto Regionale
ATS- DS	- Air Traffic Services Direct Speech
AWOS	- Automated Weather Observation System
AVSEC	- Airport Security
BOT	- Build Operate Transfer
CAMP	- Civil Aviation Master Plan
CAR	- Civil Aviation Regulation
CATC	- Civil Aviation Training Center
CEO	- Chief Executive Officer
CNS	- Communications, Navigation and Surveillance
CPDLC	- Controller–pilot data link communications
CRDB	- Cooperative Rural Development Bank
CSIS	- Strategic and International Studies
CTB	- Central Tender Board
DAR	- Julius Nyerere International Airport
DME	- Distance-Measuring Equipment
DVOR	- Doppler VHF Omni-directional Range
EAC	- East African Community
EIB	- European Investment Bank
EIRR	- Economic Internal Rate of Return
ENPV	- Economic Net Present Value
FIC	- Flight Information Centre
FIR	- Flight Information Region
FIRR	- Financial Internal Rate of Return
FL	- Flight Level
FOC	- Fibre Optical Cable
FYE	- Financial Year End
GA	- General Aviation
GDP	- Gross Domestic Product
GNSS	- Global Navigation Satellite System
GIS	- Geographical information systems
HAL	- High Intensity Approach Lighting
HR	- Human Resources
HSBC	- Hongkong and Shanghai Banking Corporation

IATA	- International Air Transport Association
ICAO	- International Civil Aviation Organisation
ICT	- Information and communications technology
IFR	- Instrument flight rules
ILS	- Instrument Landing System
ISDN	- Integrated Services Digital Network
JNIA	- Julius Nyerere International Airport
KADCO	- Kilimanjaro Airports Development Company Ltd
KIA	- Kilimanjaro International Airport
LoS	- Level of Service
MASLR	- Medium Approach Light System with Runway Alignment Indicator Lights
MET	- Meteorology
MIS	- Management Information System
MOF	- Ministry of Finance
MSDPS	- Multi-sensor Surveillance Data Processing System
MSSR	- Monopulse Secondary Surveillance Radar
MRO	- Maintenance, Repair and Overhaul
MTOW	- Maximum Take Off Weight
NDB	- Non-Directional (Radio) Beacon
NPV	- Net Present Value
PCN	- Pavement Classification Number
PPP	- Public Private Partnership
PSC	- Passenger Service Charge
PSR	- Primary Surveillance Radar
PTB	- Passenger Terminal Building
RCAG	- Remotely- Controlled Air Ground
RCC	- Rescue and Coordination Centre
RCMS	- Remote Control Monitoring System
RESA	- Runway End Safety Areas
RFFS	- Rescue Fire Fighting Services
RNAV	- Area navigation
SADC	- Southern African Development Community
SALS	- Short Approach Lighting System
SAR	- Search and Rescue
SARP	- Standards and Recommended practices
SMS	- Safety Management System
TAA	- Tanzania Airports Authority
TANSA	- Tanzania Air Navigation Services Authority
TCAA	- Tanzania Civil Aviation Authority
TMA	- Terminal Control Areas
TMA	- Tanzania Meteorological Agency
VIP	- Very Important Person
VHF	- Very high frequency
VOR	- Omni Directional Radio
VoIP	- Voice-over-Internet Protocol
VSAT	- very small aperture terminal
ZAA	- Zanzibar Airport Authority
ZIA	- Zanzibar International Airport

WEIGHTS AND MEASURES

ha (hectare)	- Unit of area
kg (kilogram)	- Unit of weight
m (metre)	- Unit of length
m ² (square metre)	- Unit of area
MHz (Mega Hertz)	- Unit of radio frequency
NM (Nautical Miles)	- Unit of distance

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1.0 INTRODUCTION

This report is Volume IV of the 6-volume report series prepared for the Tanzania Civil Aviation Master Plan. It covers a range of topics relating to the administration of civil aviation in Tanzania and the institutions that are responsible for operating, managing and developing civil aviation and its infrastructure in the country, as well as their financial performance.

In addition, Volume IV addresses the required restructuring of the TCAA, TAA and KADCO in order to administer, regulate, operate and develop the civil aviation infrastructure of Tanzania, and projects into the future the financial picture for these agencies based on a restructuring of the organizations, and realization of forecast future air traffic levels at the nation's airports.

Analysis has also been carried out to assess the feasibility for certain of the airports to generate a sufficient cash flow to be able to repay capital expenditures on necessary facility upgrading and expansion where capital funds might be sourced externally, such as through commercial loans and private sector investment.

2.0 CIVIL AVIATION ADMINISTRATION IN TANZANIA

2.1 Overview

Civil aviation in Tanzania is administered and regulated under the authority of the government of the United Republic through the Ministry of Transport. Regulation of civil aviation is delegated under the Civil Aviation Act to the Tanzania Civil Aviation Authority (TCAA), a corporate body established under the Civil Aviation Act 2006. The TCAA provides oversight of aviation safety and security, and economic regulation. It regulates air transport services, aeronautical airport services, and air navigation services in both mainland Tanzania and in Zanzibar. In this regard the TCAA is responsible authority in Tanzania for ensuring the nation's obligations as a signatory state to the Chicago Convention.

Responsibility for the management, operation and development of the fixed infrastructure of civil aviation rests with several agencies of government. The TCAA, while also regulating civil aviation, is responsible for managing, operating, maintaining and developing the national air traffic services and air navigation system, including the infrastructure comprising the aeronautical telecommunications and navigation facilities located across the country. TCAA is also responsible for coordination of Search & Rescue operations following loss of an aircraft in flight, although subsequent accident investigation is a responsibility of the Ministry of Transport.

As far as the airports and airfields of the country are concerned, there are 58 state-owned airports and airstrips for which responsibility for management, operation and development rests with the Tanzania Airports Authority. For the two airports located in the territory of Zanzibar (the Abeid Amani Karume

International Airport on Zanzibar Island and the Pemba Airport on Pemba Island), full responsibility for management and operation rests with the Zanzibar Airports Authority, while the government-owned Kilimanjaro International Airport is managed and maintained by the Kilimanjaro Airports Development Company (KADCO) under the overall administrative supervision of the Tanzania Airports Authority (TAA).

Also forming part of the civil aviation infrastructure is a large number of unpaved murrum or gravel airstrips. These are operated and maintained by the Tanzania National Parks, Ministry of Natural Resources, Ngorogoro Conservation Area Authority, as well as private enterprises, villages, religious missions and non-government organisations. Despite their small size and limited use, these airstrips form a vital part of the civil aviation infrastructure in Tanzania and often provide the only convenient means of accessing some of the more remote and sparsely populated areas of the country. Overall, including other privately-owned airstrips, it is reported that the country has some 600 airports and airstrips scattered across the nation.

Important operational support services are provided to the aviation industry and to the state-owned airports by two government ministries. The Ministry of Home Affairs – Fire & Rescue Force is responsible for the operation of the national fire services, and its mandate currently includes operation of the rescue and fire-fighting services at several of the state-owned airports. Another important support services is provided by the Tanzania Meteorological Agency (TMA) which is the agency of the Ministry of Transport responsible providing aviation meteorology services at 22 of the state-owned airports.

2.2 Legal Basis for Civil Aviation Regulation and Operation

2.2.1 Civil Aviation Act 2006

2.2.1.1 General Powers and Provisions of the Act

The enabling legislation for the regulation of civil aviation in Tanzania, and for some operational functions of government with respect to operating the civil aviation infrastructure, is vested in the Civil Aviation Act 2006, Chapter 80 of the Laws of the United Republic of Tanzania. The Civil Aviation Act 2006 applies both to the mainland of Tanzania as well as to the territory of Zanzibar.

The Civil Aviation Act is structured as 16 ‘Parts’, with Parts II to VIII defining specific provisions for regulation of civil aviation and establishment of committees, and Parts IX to XVI covering the establishment and powers of the Tanzania Civil Aviation Authority, and governing its activities. The specific provisions of the Act govern:

- Establishment of a Technical Committee to advise the Director-General of Civil Aviation on technical matters;

- Regulation of civil aviation activities;
- Marking of aerodromes and obstructions;
- Establishing liability provisions for damage caused by aircraft;
- Detaining aircraft;
- Establishing a National Air Transport Facilitation Programme and Committee, and Airport Facilitation Committees for each international airport, and;
- A variety of other miscellaneous provisions.

One of the primary purposes of the Act, however, is to enable the regulation of civil aviation. In this, under Part III, the Act makes provision for the following general powers, and enables:

- The Minister responsible for civil aviation to make regulations to regulate air navigation and to apply and enforce the provisions of the Chicago convention and its Annexes;
- The Minister responsible for civil aviation to regulate:
 - Use, operation, marking and licensing of aircraft;
 - Licensing of personnel operating and maintaining aircraft;
 - Conditions for operation of aircraft and aerodromes available for entry to and exit from Tanzania;
 - Conditions for carriage of passengers and cargo by air, prohibition of carriage of certain cargo, and aircraft used for commercial operations;
 - Minimising or preventing unlawful interference in operation of aircraft;
 - Securing the safety, efficiency, and regularity of air navigation and safety of aircraft and occupants;
 - Prevention of aircraft from endangering persons or property;
 - Requiring the dissemination of Meteorological data for air navigation purposes;
 - Making signals and communicating by or to aircraft and occupants;
 - Prohibiting aircraft flight over gazetted areas;
 - Prescribing fees to be paid for licensing and certification, air navigation and use of aerodromes;
 - Empowering the Civil Aviation Authority to exempt aircraft and persons from the provisions of the Act;
 - Providing for aircraft accident investigation, and prohibiting access to aircraft where an accident has occurred;
 - Requiring aircraft owners and commercial operators to provide information on aircraft activities and costs of operation;
 - Inspection, certification and licensing of aerodromes, aircraft manufacturing premises and maintenance establishments;
 - Firing of rockets;
 - Prescribing of powers of arrest by aircrew;
 - Economic regulation of air transport;

- Safeguarding of international and domestic civil aviation against unlawful interference with aircraft and other security matters and prosecution of offenders;
- Prescribing the fines to be paid for offences regulated under the Act.
- The Minister to apply different regulations for different classes of aircraft, aerodromes or property or categories of persons, and for different parts of the United Republic;
- The Director-General and authorised employees of the Civil Aviation Authority to compound any offence under the Act or its regulations.

Under Part IV of the Act, “Aerodromes and Obstructions”, the Act enables the Director-General to require lighting and warning of obstructions that might interfere with the safe navigation of aircraft. In addition, it requires that aerodrome proprietors do not permit unauthorized trespass by persons or animals on any land forming part of a licensed aerodrome, and to erect warning notices to the public advising of such prohibition.

Supporting the Act, and enabling its implementation and enforcement across all of the areas for which the TCAA is responsible as the regulator of civil aviation in Tanzania, are the Civil Aviation Regulations, of which there are in excess of 30 CARs currently in force.

2.2.1.2 Tanzania Civil Aviation Authority (TCAA)

The Tanzania Civil Aviation Authority (TCAA) was originally established in 2003 as an autonomous authority under the Civil Aviation Act 2003. This legislation was superseded by the Civil Aviation Act 2006 which provides the current mandate of the TCAA. The Act covers the provision of air navigation services and the regulation of safety and security aspects of civil aviation, and extends the regulatory mandate of the TCAA to cover the economic regulation of air transport services, aeronautical airport services (airside airport operations, ground handling, refueling, in-flight catering etc.) and air navigation services. The economic regulation mandate under the Act involves monitoring of the performance of service providers in relation to levels of investment; availability, quality and standards of services; the cost of services; the efficiency of production and distribution of such services, protection of the environment, and the safeguarding of consumers and the general public.

The TCAA is led by a Director-General and governed by a seven-member Board of Directors with six non-executive members and the Director General as the seventh member. The Chairman and Vice-Chairman are appointed by the President of the United Republic while the other directors are appointed by the Minister of Transport. The Board provides the overall leadership and strategic direction for the TCAA. The Board is accountable for the overall performance of the TCAA in carrying out its statutory functions and achieving its objectives.

The TCAA Board has four Committees - Executive Committee, Finance and Administration Committee, Audit and Regulatory Committee. These carry out analysis of issues at the direction of the Board, and refer them to the Board for consideration and decision. Nevertheless, the TCAA Board retains sole power over critical issues, such as grant of licenses, rule-making, decisions to hold inquiries and for adoption of the TCAA Code of Conduct.

The responsibilities, duties and functions of the TCAA are defined in the Act. The primary purpose of the TCAA is to ensure and regulate civil aviation operations and infrastructure, and to:

- Give effect to the Chicago Convention and other international agreements relating to civil aviation;
- Provide for the control, regulation, and orderly development of civil aviation;
- Implement the national civil aviation policy;
- Maintain an orderly air transport system within Tanzania;
- Provide for a safe, orderly and expeditious air traffic control service;
- Maintain approved technical standards of aircraft operation and aviation infrastructure;
- Oversee the competence of aeronautical personnel;
- Ensure the integrity of the systems, equipment and facilities of the TCAA;
- Ensure the sustainability of services maintained by operating in a prudent and businesslike manner; and
- Produce accurate, timely, comprehensive and relevant air transport information for planning and decision-making purposes.

Functions of the TCAA defined in the Act provide for the TCAA to establish standards for regulated goods and services, issue and renew licenses for air services, providing economic regulation of air transport and rates and charges applied for aviation services, and establish the standards for regulated goods and services and monitoring the performance of regulated suppliers.

In addition to defining the responsibilities, duties and functions of the TCAA, the Act also enables the TCAA to provide air navigation and aeronautical services within Tanzania. TCAA is currently regulating as well as providing this operational service.

2.2.2 Tanzania Airports Authority (TAA) Establishment Order, 1999

The Tanzania Airports Authority (TAA) was established as an Executive Agency of the Ministry of Transport, under the authority of the Tanzania Airports Authority Establishment Order 1999. Its aim is to provide high quality airport services and facilities to the international and domestic air transport system in a most cost-effective manner. It has the vision to become a model for provision of airport facilities and services in East Africa.

TAA was formed from the Directorate of Aerodromes which was a Department of the (then) Ministry of Communications and Transport. At the time, in keeping with the prevailing international view of how aviation services should be administered, the Government decided that its non-core functions should be undertaken either outside of government or as semi-autonomous Executive Agencies. As an operating department, the Directorate of Aerodromes was selected to become an Executive Agency and then renamed as the Tanzania Airports Authority.

The TAA Establishment Order under which TAA was created as an Executive Agency sets out the formal performance agreement between the TAA and the Ministry of Transport and is the framework within which the TAA is required to operate.

Under the Order, TAA is led by a Chief Executive Officer appointed by the Minister for a term of up to 5 years. Strategic management of the TAA is the responsibility of the Permanent Secretary of the Ministry. The CEO of the TAA reports to the Permanent Secretary of the Ministry and is guided by a Ministerial Advisory Board chaired by the Permanent Secretary and up to 8 members appointed by the Minister for a period of 3 years. The Ministerial Advisory Board advises the Minister and the Permanent Secretary on the strategic management of the TAA. Ultimate responsibility for the TAA rests with the Minister of Transport.

At its inception in 1999, the TAA was staffed by 1265 employees, and had a budget of Tshs 3.6Billion (USD 2.1M). Currently, some 14 years later, the TAA has 608 staff and an operating budget of 37.3Billion Tshs (USD 21.5M) and an annual income of 45.4Billion Tshs (USD 26.2M)¹.

2.2.2.1 Provisions of the TAA Establishment Order

The Order defines for the TAA its role as the airport service provider for mainland Tanzania, charged with:

- Operating, managing, maintaining and developing the government-owned airports;
- Providing comfortable efficient and secure services and facilities for the movement of passengers and cargo;
- Providing technical advice to government on the development of airports;
- Ensuring that the government's policies, regulations and procedures are implemented in accordance with international standards;
- Advising the Government on national and international aspects of airport administration, regulations, fees and charges;
- Supporting national economic development by providing the necessary airport infrastructure, facilities and services.

In its operations, the Order sets the strategic objectives of the TAA as to achieve a surplus of income over expenditure and to increase its revenues by attracting additional investments at airports, to improve service delivery,

1

TAA Strategic Plan 2012/2013 – 2016/2017, Revised April 2014

to build a competent and efficient workforce, and to implement international standards and recommended practices with respect to safety security and information systems.

The Order also makes provision for the performance of the TAA to be evaluated by the Ministerial Advisory Board on a regular basis as far as quality of service and financial and operational performance are concerned.

The TAA is responsible for preparing and submitting to the Permanent Secretary for approval, a 3-year Strategic Plan and an Annual Business Plan. These two plans form the framework within which the CEO of the TAA is to manage the business operations and development, and against which the performance of the TAA may be measured. In addition to the Strategic and Business Plans, the TAA is required under the Order to prepare and submit to the Permanent Secretary and the Minister of Transport, Annual Reports and Annual Statements of Account.

As far as financial management is concerned, the CEO of the TAA has authority within the “Ministry of Finance guidelines and limits to manage the TAA Capital and Operating Budgets, and its assets and liabilities. The CEO can authorise capital expenditure on individual capital projects, transfer resources from one budget item to another, and carry over in full the next financial year any under-expended funds on capital works. As far as the TAA operating budget is concerned, the CEO has a similar authority as for capital expenditure. In addition to this, the CEO is empowered to authorise write-offs and special payments, disposal of moveable assets, expenditure on consulting services and Information Technology projects, and authorise single negotiated tenders for procurement.

A provision in the Order defines the employees of the TAA as public servants of the Government, and whose conditions of service are based on the regulations pertaining to the Executive Agencies.

2.2.2.2 Comment on the TAA Establishment Order 1999

In concept it appears that the TAA Establishment Order had set up the TAA in a satisfactory manner, however it can be argued that the Order now needs to offer greater flexibility to the TAA and to deal with changes in its overall operation that were not foreseen at the time of its creation.

For instance, as it now stands, the TAA is under the overall control and influence of the Ministry of Transport through its Permanent Secretary, and its degree of autonomy and independence from the Ministry is limited. Its capital budget is derived from the Ministry, and therefore dependent upon the Ministry’s overall budget allocation, although TAA is able to supplement the capital grants by obtaining external grant aid from multi-lateral and bilateral aid funding agencies. Additionally, as a new venture, the TAA, through the government and with government guarantee, has taken on through the commercial banks a major capital loan of €235M to construct Phase 1 of the new Terminal 3 at JNIA.

Two particular issues have been noted arising from the provisions of the Order and the establishment of the TAA. One concerns the capital budgeting which is zero-based and assigned on an annual basis. While TAA can carry over unspent capital funds from one year into the subsequent year, it appears to be unable under the present capital budget approach under the Order to budget for multi-year projects as it appears that a contract cannot be awarded that requires funds to be drawn from a subsequent year's budget. Consequently, TAA has some difficulty in managing projects that need to span across two or more years as the capital budgeting rules appear not to facilitate this need, which has arisen due to the increased size and more extended programmes of some of the airport upgrading projects undertaken by TAA.

The second issue, also derived from the provisions of the Order, arises because the TAA staff are public servants and subject to civil service rules applicable to the Executive Agencies. These affect employment conditions, staff salaries and benefits and various human resources practices.

After some 14 years of operation, however, TAA is not consistently profitable on its operating account without government subvention. In the last 5 financial years TAA has been profitable without government subvention for only two of the five years (FY2008/09 and FY2009/10). On its capital account, the TAA relies on government grants and funding from external sources.

While it would be desirable to seek ways to improve the position of the TAA due to constraints arising from the Order and inherent in being subject to civil service employment rules, for the TAA to become an autonomous authority would require financial self-sufficiency similar to TCAA. However, for TAA, this would mean examining its cost structure and rationalising its role so as to divest itself of some unprofitable operations, or find alternate funding for operations and maintenance, where this can be realistically be achieved.

The main issue facing the TAA in the near future will be to find ways to finance the quite considerable need for capital upgrading works at the airports for which it is responsible. Although, through the World Bank, a number of capital works projects have been carried out, or are underway, these do not nearly cover the need to both bring the airports of Tanzania into compliance with international safety standards, or to expand their capacity in the light of expected growth, especially at the six mainline regional airports, and at JNIA. The issue of expansion of JNIA is critical for the TAA, as air traffic levels forecast for JNIA over the coming 20 years imply a need for very major capacity expansion. While some possibilities exist for the private sector to fund some of the potential revenue-generating capacity expansion, such as through financing specific revenue-generating projects, the mechanism for TAA to partner with the private sector does not appear to be provided for under the Establishment Order, and revision of the Order needs to be considered to allow for this concept to be adopted where appropriate.

3.0 ORGANISATION OF THE TANZANIA CIVIL AVIATION AUTHORITY

3.1 Organisation, Structure & Functions of TCAA

Tanzania Civil Aviation Authority (TCAA) has both a regulatory responsibility and an operational function. In terms of regulation, the Authority regulates civil aviation safety and provides regulatory oversight over the economic activities of air transport, including air carrier market entry and activities, and regulates the provision of aeronautical services to air transport. Its operational functions cover the provision of air traffic and air navigation services.

In its regulatory role, TCAA regulates all aspects of civil aviation. This means that it inspects, examines, licenses and certificates air transport operators (airlines and commercial air services), private and commercial aircraft (but not military aircraft), aircraft maintenance and repair organisations, and the personnel involved in the operation and maintenance of aircraft (flight crews and maintenance engineers), as well as air traffic controllers, and the service providers for aircraft handling, catering and a range of support services to air transport.

In its operational role as a service provider, TCAA operates the air traffic and air navigation system in the Dar es Salaam Flight Information Region, including operation of the upper airspace above FL 245 over the territories of Burundi and Rwanda, and operation and maintenance of the TCAA's aeronautical telecommunications and navigation aids. TCAA also provides air traffic control services (aerodrome control and, in some cases, approach control) at 12 airports in Tanzania.

With its role as operator of the air traffic and navigation system, TCAA is in the position of having to regulate its own functions and its own staff activities. This creates the potential for a conflict of interest among the functions of TCAA, and this issue is recognised by TCAA as needing to be addressed through restructuring of the TCAA functions and organisation.

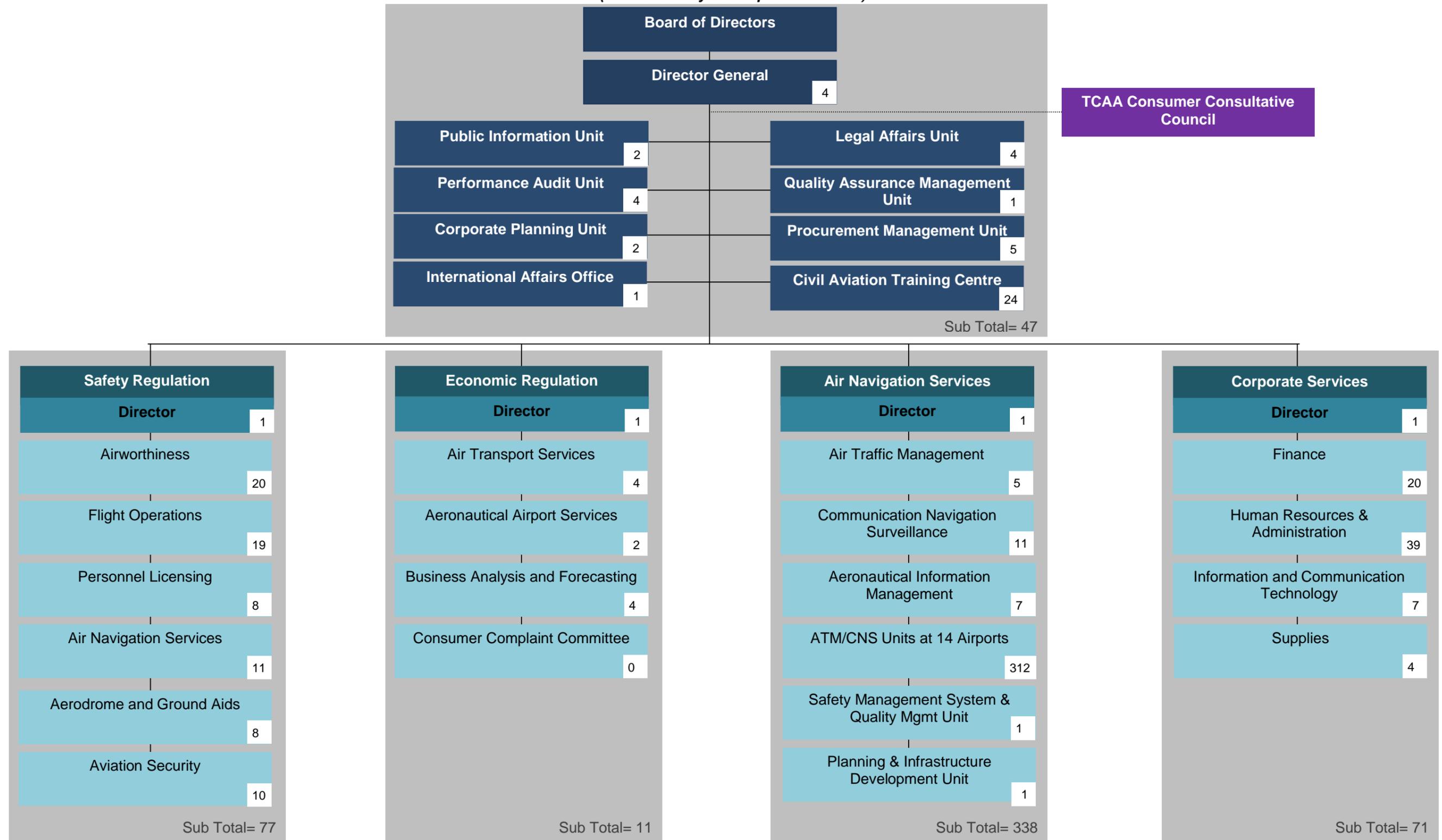
TCAA is led by a Director General and is staffed by a total of 544 staff. The Authority is organised into 4 Departments (Safety Regulation, Economic Regulation, Air Navigation Services and Corporate Services), each of which operates through several sections. The current organisation chart for the TCAA, identifying the staffing levels by department and section, is provided as **Exhibit 3-1**.

In addition to the Departments and Divisions of TCAA that form part of the four main departments, there are eight functions of a corporate nature based at the TCAA Headquarters that serve the Board of Directors and the Director General of Civil Aviation. These are the Public Information Unit, Performance Audit Unit, Corporate Planning Unit, International Affairs Office, Legal Affairs Unit, Quality Assurance Management Unit, Procurement Management Unit and the Civil Aviation Training Centre. These eight units have an establishment staffing of 47 staff including four staff assigned to the Director-General's office itself. Some 24 of these staff positions relate to the Civil Aviation Training Centre which provides training for TCAA technical and

operational functions, especially for air traffic controllers. All of these corporate units report directly to the Director-General of Civil Aviation. The role and function of each is self-explanatory based on their title.

While these functions have possibly evolved over time to be under the direct authority of the Director-General, it is questionable whether some of these functions, such as those relating to public information, corporate planning, international affairs and legal affairs should not be incorporated under the TCAA Corporate Services department rather than function as a direct responsibility of the Director-General.

**Exhibit 3-1
 TCAA Organisation Structure
 (as at February 2014 updated to 2015)**



Grand Total Staff: 544

3.2 Departments of the TCAA

3.2.1 Safety Regulation Department

The Safety Regulation Department has responsibility for one of the prime functions of the TCAA and functions purely as a regulator of civil aviation. With an establishment staff complement of 77 personnel, the Safety Regulation Department operates through six main Divisions each headed by a Chief Officer.

The Divisions of the Department are Airworthiness, Flight Operations, Personnel Licensing, Air Navigation Services, Aerodrome and Ground Aids and Aviation Security. The roles of the six divisions are noted briefly below:

- **Airworthiness Division**

The Airworthiness Section is responsible for inspecting and regulating the airworthiness of aircraft on the Tanzania Aircraft Register, and for inspecting and approving aircraft maintenance facilities in Tanzania or used by Tanzanian registered aircraft. The Airworthiness Division is responsible for the licensing of aircraft and for maintaining the Tanzania Aircraft Register.

- **Flight Operations Division**

The Flight Operations Division of the TCAA Section has responsibility for inspecting and approving of commercial aircraft operations and cabin safety.

- **Personnel Licensing Division**

The Personnel Licensing Section carries responsibility for the examination and licensing of aircrews, air traffic controllers and aircraft maintenance engineers.

- **Air Navigation Services Division**

The Air Navigation Services Division provides regulatory oversight over the Air Navigation Department of the TCAA and regulates its Air Traffic Services, Aeronautical Information Services and Communications, Navigation and surveillance functions. In that respect the air Navigation Services Division of the Safety Regulation Department is required to regulate the services that the TCAA also operates.

- **Aerodrome and Ground Aids Division**

The Aerodromes and Ground aids Division if the TCAA is responsible for the inspection and certification of aerodromes in Tanzania and for maintaining compliance with ICAO Annex 14.

- **Aviation Security Division**

The Aviation Security Division of the Safety Regulation Department provides aviation security oversight in accordance with Annex 17 and the Tanzanian security regulations over the security functions provided for all aspects of aviation in Tanzania, but especially the security services provided by the TAA at the nation's airports.

Review of the functions and staffing of the Safety Regulation Department at the time of the CAMP showed that the Department was seriously under staffed, and that only 34 of the 77 positions were filled, and that five of the staff, including the Director of Safety Regulation, were due to retire in 2014. Staffing of the Safety Regulation Department is a serious issue for TCAA as there are insufficient young persons being recruited into the aviation technical fields and an apparent reluctance of government to provide the necessary training funds to enable the TCAA and other aviation stakeholders to avail of a pool of experienced staff to fill the technical requirements. The main issues affecting its ability to provide safety oversight is a lack of adequate funding to staff the Department and to provide adequate training. The Department advises that due to being underfunded it is unable to provide the level of safety oversight that is needed in the country. Currently, the users fees charged for aviation safety oversight in Tanzania meet only 30% of the costs.

3.2.2 Economic Regulation Department

The Economic Regulation Department is responsible for applying Government regulation over the entry and economic operation of air transport services in Tanzania. The government's main role in economic regulation is to promote fair competition and efficiency of air transport operations in Tanzania. Headed by a Director, the Department comprises four divisions, Air Transport Services, Aeronautical Airport Services, Business Analysis and Forecasting, and an ad hoc Consumer Complaints Committee, and has an establishment staffing of 11 staff including the Department Director. The roles of each of the Divisions of the Economic Regulation Department are described briefly below.

- **Air Transport Services Division**

This division is led by Chief Air Transport Regulation Officer and staffed by 4 regulation officers. The Air Transport Services Division regulates entry into the air transport business by airlines and commercial air operators, ensures compliance by the service providers under the terms of their Air Operator's Certificate (AOC), and monitors and approves rates and charges levied for provision of air transport, including air fares and freight. The Division also develops operating standards for the air operators that it regulates. As of July 2014 there were 40 operators licensed by the TCAA for the provision of commercial air services of various forms.

- **Aeronautical Airport Services Division**

The Aeronautical Airport Services Division, staffed by 2 persons, is responsible for regulating the provision of services at airports. This refers to a wide range of services such as Ramp and Aircraft Servicing, In-flight Catering, Aviation Fuel Servicing, Surface Transport, Passenger and Baggage Handling, Airline Self-Handling, and Flight Crew Administration. Currently, some 50 companies are licensed to provide various airport services, although only 30 of these were operational as of July 2014.

- **Business Analysis and Forecasting Division**

This division is mainly responsible for collection and analysis of air transport traffic statistics and for undertaking all required forecasting for the Economic Regulation Department. There are 4 staff in this Division.

- **Consumer Complaints Committee**

The Consumer Complaints Committee is responsible for receiving, analysing and addressing complaints regarding the licensed air operators and handling agencies. It is convened on an ad hoc basis as and when required and does not have any dedicated staff.

Although the Economic Regulation Department has an establishment of 18 positions, only 11 of these were filled at the time of the CAMP study. All four Divisions of the Department are reported to be understaffed. Concern has been raised that the TCAA is exercising economic regulatory oversight over air carriers and aviation commercial enterprises, while also regulating some of these activities from a safety standpoint.

3.2.3 Air Navigation Services Department

The Air Navigation Services (ANS) Department is the largest of the TCAA Departments, having a staffing establishment of 338 personnel. The Department has responsibility for operation of air traffic services within the Dar es Salaam FIR, for operation and maintenance of the aeronautical telecommunications, navigation aids, radar and satellite links, and for the preparation and dissemination of aeronautical information. In this role the Department provides ATS, ANS and AIS services to JNIA, KIA, AAKIA and to 11 of the domestic airports. Aeronautical telecommunications as well as air navigation guidance and radar surveillance is provided by the Department to users of the Tanzania airspace.

The ANS Department operates with 4 main Divisions (Air Traffic Management, Aeronautical Information Services, Communication Navigation & Surveillance and the Stations Division). In addition, there are two small units (Planning and Infrastructure Development and Safety Management System & Quality Management) that report directly to the Director of Air Navigation Services. The three main divisions of Air Traffic Management, Aeronautical Information Services and Communications Navigation & Surveillance report directly to the Director of Air Navigation Services,

however the units of the Stations Division based at the 14 airports have a dual reporting role, in that while they are responsible to the Director of Air Navigation Services at Headquarters in Dar es Salaam, the individual units have a reporting function to the Airport Managers at the airports at which they are based.

The units of the Stations Division are responsible for air traffic control services and for operation and maintenance of navigation aids, radar and telecommunications at the airports. The Area Control Centre in Dar es Salaam also has responsibility for enroute control within the Dar es Salaam flight information region which includes airspace above FL 245 over the territories of Burundi and Rwanda.

The current organisation of the Air Navigation Services Department is illustrated in **Exhibit 3-2**.

- **Air Traffic Management Division**

The Air Traffic Management Division is a small unit that provides a Headquarters function for the planning of the airspace and flight procedures, determines and monitors the quality of the ATM services provided by TCAA, manages all ATM operations and training and provides the required coordination for civil and military search and rescue operations. The ATM division functions with a staffing establishment of 5 persons.

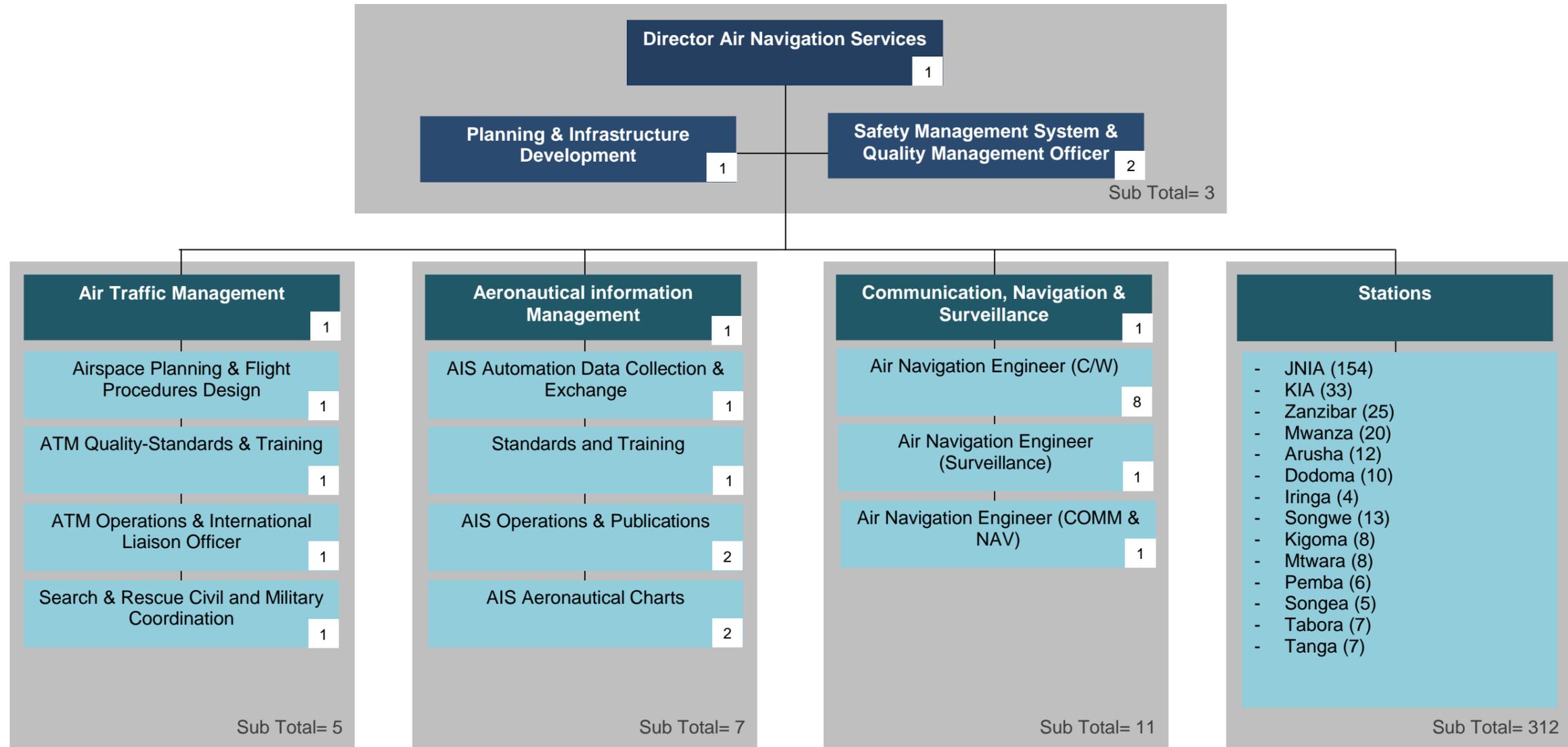
- **Communication Navigation Surveillance Division**

The CNS Division has responsibility for the operation and maintenance engineering of the aeronautical telecommunications equipment and services, the ground-based air navigation equipment at the airports (ILS, DVOR/DME, VOR/DME and NDBs) and the radar surveillance equipment at JNIA. In practice the CNS Division staff provide a Headquarters oversight over CNS equipment operation and maintenance carried out at the 14 airports in mainland Tanzania and Zanzibar. At Headquarters the CNS Division has a staff establishment of 11 persons.

- **Aeronautical Information Management Division**

An important function of the TCAA Air Navigation Services Department is the preparation and distribution of aeronautical information for users of the national airspace. The Aeronautical Information Management Division collects and collates aeronautical information, prepares the Tanzania Aeronautical Information Publication (AIP) and develops and prints the various aeronautical charts for sale and distribution to air operators. The functions of Aeronautical Information Management are provided by the TCAA with a staff establishment of 7 staff.

Exhibit 3-2
TCAA Air Navigation Services Department Structure
 (as at February 2014)



Grand Total Staff: 338

- **Stations Division**

The Stations Division is the largest division of the ANS Department, having a staff establishment of 312 personnel. The Department is responsible for air traffic control operations, for CNS operations and maintenance, and AIS services provided by the TCAA at the 14 airports at which it has operating units (See listing of airports in Exhibit 3-2). Included as an air traffic control function is the operation of the JNIA Area Control Centre at JNIA, as well as the air traffic control towers at other airports.

In terms of its organisation, the Stations Division is structured within the organisation of each airport at which TCAA provides services, and is in all cases headed by a Civil Aviation Manager stationed at each airport.

- **Safety Management System & Quality Management Unit**

The Safety Management System and Quality Management Unit is staffed by one officer whose responsibility is to manage the Safety Management System of the Air Navigation Services Department.

- **Planning & Infrastructure Development Unit**

As its name implies the responsibility of this unit of the ANS Department is to provide an overall analysis and planning service for future development of the ANS infrastructure to the Director. This unit is staffed by a single officer.

The Air Navigation Services Department is relatively well staffed against its establishment, but under its present staffing would not be able to support operations should any additional ATC towers be developed.

3.2.4 Corporate Services Department

The Corporate Services Department of the TCAA is responsible for providing all of the services necessary to support the operations of the TCAA. Reporting to the Director of Corporate Services it has 4 divisions – Finance, Human Resources & Administration, Information & Communication Technology, and Supplies. The Department has a staff establishment of 71 positions and is reported to be at full strength.

- **Finance Division**

The Finance Division of TCAA is responsible for collecting revenues, and reporting financial information to the Director of Corporate Services.

- **Human Resources & Administration Division**

The Human Resources & Administration Division is responsible for all TCAA recruitment and training, and for providing administration

services and administrative staff for all of the other TCAA Departments.

- **Information and Communication Technology Division**

The Information and Communication Technology Department (ICT) provides operational support functions relating to the TCAA's information and communication technology use.

- **Supplies Division**

Currently staffed by 4 persons, the main role of the Supplies Division is to procure all necessary materials needed for production or daily operation of the TCAA.

3.3 Comment on the Role, Functions & Organisation of TCAA

There are relatively few issues upon which to comment regarding the organization and functions of the TCAA, as this has been established in a fairly traditional format for a regulatory organization.

Nevertheless, there are two areas relating to the functions over which TCAA has jurisdiction for the purposes of regulation that warrant mention. One concerns the regulation of aviation safety within the same organisation as regulation of economic activity. This could possibly be seen as having the potential for creating a conflict of interest in that TCAA is in the position of approving the market entry of air carriers to provide air services in Tanzania, while also providing safety oversight of those same air carriers. At the time of the CAMP, this had not been raised as an issue or a concern for aviation safety and it is believed that the present arrangement is manageable and acceptable for TCAA to have responsibility for both safety and economic regulation. Nevertheless, mention has been made that, in the longer term, consideration might be given to placing economic regulation of civil aviation under the Ministry of Transport rather than the TCAA. The CAMP project has judged that there appears to be no pressing need for such restructuring and no evidence has been produced to suggest that the present arrangement represents any form of conflict of interest.

The other area at issue is that TCAA has direct responsibility for both regulating and operating the air navigation system in Tanzania. ICAO has, on a global basis, adopted the principle that full separation of regulatory functions from those other functions over which the regulator has oversight is required. This principle is accepted by TCAA and the organisation is well aware that the TCAA will need to be restructured in order to comply with the ICAO requirement. The main issue for TCAA with this requirement has been the question of how to support financially the operations of the regulator once the ANS has been separated out as the organisation presently benefits from the income to TCAA from ANS which amounts to over USD 12.5M annually. Under the required restructuring, TCAA would become only the regulator of civil aviation, while the operational functions of air navigation services would be separated and organised under a different organisation or entity.

It is also noted that while TCAA has responsibility for coordination of Search & Rescue in the event of loss of an aircraft in flight, Accident Investigation of a subsequent accident has become a responsibility of the Ministry of Transport, and there is no potential for conflict of interest within TCAA with respect to accident investigation.

Aside from the need to separate regulatory and operational functions, possibly the greatest area of concern for the TCAA as a regulator is in obtaining suitably qualified staff for the safety regulation functions, especially for airworthiness and flight operations regulation. In part this is due to a lack of qualified specialists in these fields in the local labour market, but also due to competing factors such as salary levels and other regional opportunities. There is a need for funding for training, and for funding access to foreign experts on temporary assignment in order to supplement the training capability of the TCAA, so that the shortage of specialised personnel may ultimately be overcome.

4.0 ORGANISATION OF THE TANZANIA AIRPORTS AUTHORITY

4.1 Organisation, Structure & Functions of the TAA

The Tanzania Airports Authority (TAA) has overall responsibility for the management, operations, maintenance and development of 58 government-owned airports and airstrips in Tanzania. These are categorised into 5 Groups, being two Government-owned international airports of JNIA and Kilimanjaro International Airport, six Group 2 principal domestic airports, thirteen Group 3 small domestic airports, four Group 4 local airports, and thirty-three Group 5 airstrips.

To carry out its mandate, the TAA is currently organised into 5 Departments, with a total staffing of 608 personnel. Each Department is headed by a Director reporting to the Chief Executive Officer (CEO) of the TAA. The CEO reports to a Board Chaired by the Permanent Secretary of the Ministry of Transport, the official representative of the Government as the single shareholder of the TAA.

Reporting to the CEO are the 5 main Departments of the TAA, as well as seven separate specialist support units. The 5 main departments of the TAA are:

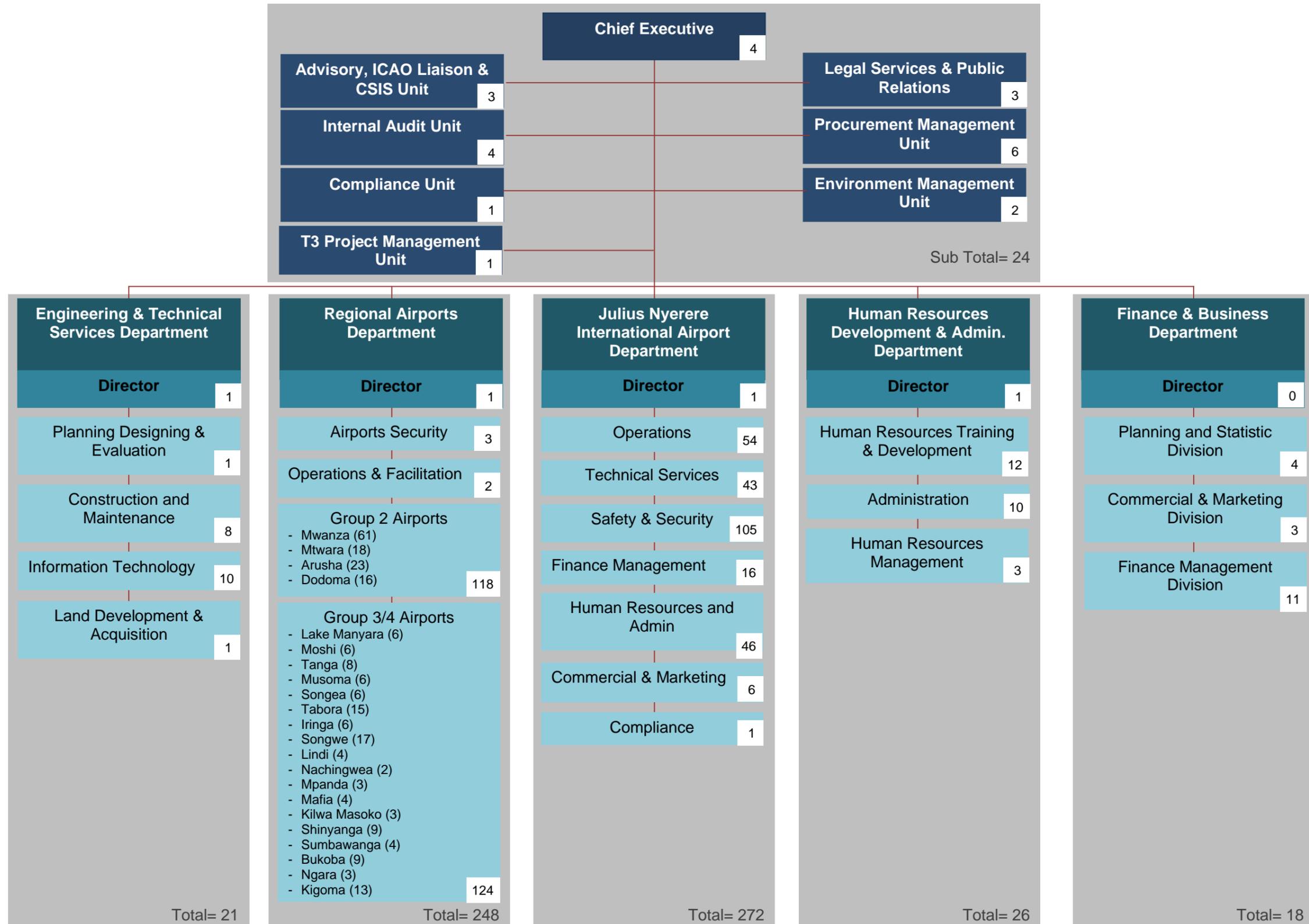
- Engineering and Technical Services
- Regional Airports
- Julius Nyerere International Airport (JNIA)
- Human Resource Development and Administration
- Finance and Business

The seven specialist support units that support the operation of the TAA and its Chief Executive Officer (CEO) are an Advisory, ICAO Liaison & CSIS Unit, an Internal Audit Unit, a Compliance Unit, a Legal Services & Public Relations Unit, a Procurement Management Unit an Environment Management Unit, and the Terminal 3 Project Management Unit. These are all directly responsible to the CEO of the TAA.

The organisation structure of the TAA and its staffing is provided in **Exhibit 4-1**.

As of February 2014, the TAA had an establishment of 609 staff positions. Of these positions 15% are Headquarters staff positions, based at the TAA Headquarters near Terminal 1 at JNIA, while JNIA and the Regional Airports account for the remaining 85% of the TAA staff. It is to be noted in the TAA staffing that TAA does not operate the Airport Rescue & Fire-fighting Services (ARFFS) at any of its airports and ARFFS staff are on the payroll of the Ministry of Home Affairs, rather than on the payroll of the TAA.

**Exhibit 4-1
Tanzania Airports Authority Organisation Structure
(as at February 2014)**



Total Staff: 609

4.2 Departments of the TAA

4.2.1 CEO Direct Reporting Units

As indicated in Exhibit 4-1, there are currently seven units that report directly to the CEO on specialist matters. These are:

- Advisory, ICAO Liaison & CSIS Unit
- Internal Audit Unit
- Compliance Unit
- Legal Services & Public Relations Unit
- Procurement Management Unit
- Environmental Management Unit
- Terminal 3 Project Unit

Of the above, the Terminal 3 Project Unit is a temporary unit established to provide project management and coordination services for the duration of the Terminal 3 construction project which commenced in 2014. The Terminal 3 Project Management Unit is currently headed by the Chief of the compliance Unit.

- **Advisory, ICAO Liaison & CSIS Unit**

This unit is responsible for managing international relations between TAA and other aviation interests, including relations with ICAO. The function also exists to advise the CEO on technical and strategic planning matters and liaise with other Departments of the TAA.

- **Internal Audit Unit**

The Internal Audit Unit has direct responsibility to the TAA CEO to monitor and audit the operation of the TAA Departments. Its function is to carry out audits of the TAA operations. This includes such the appraisal of use of TAA financial resources and Internal Control System, as well as conducting physical stock count.

- **Compliance Unit**

This unit is headed by a Chief Compliance Officer and staffed by one additional employee. The main function of the unit is to perform international oversight for TAA safety and security operations in accordance with ICAO Standards and Recommended Practices, as well as National Standards and Legislation before review by the regulatory authorities. Another function is to assist in the aerodrome licensing and certification process, coordinate the licensing of aerodromes and maintain a list of compliance features for the aerodromes.

- **Legal Services & Public Relations Unit**

This unit has a total staff complement of 3 persons. Headed by a Legal Secretary, Its functions are to provide the necessary legal services to TAA and to advise on legal matters affecting TAA and on contracts of all types.

- **Procurement Management Unit**

This Unit has 6 staff working on managing the procurement process for the TAA Departments. Its main task is to execute day-to-day procurement functions based on the Public Procurement Act, TAA Internal procurement policies, and other relevant legislation, and to liaise with the Ministry Tender Board, Central Tender Board (CTB) and other relevant bodies to ensure proper procedures for procurement of goods, services and works are followed.

- **Environment Management Unit**

The purpose of the Environmental management Unit is to monitor and advise on the TAA's adherence to the environmental requirements of the state with respect to the operation, management and development of the TAA airports and aerodromes.

- **Terminal 3 Project Management Unit**

The development of the new Terminal 3 at JNIA is the largest single project undertaken by the TAA and, as a result, the TAA has established its own management, monitoring and liaison unit to represent the interests of the TAA and the government in the construction and commissioning of the new terminal building.

4.2.2 Engineering & Technical Services Department

The development and maintenance of airports under TAA are the responsibility of this department. Under the leadership of a director, this department consists of four divisions, as discussed below:

- **Planning Designing & Evaluation Division**

All of the airport development work carried out by the TAA is contracted to the private sector, including the planning and engineering design of development works. The Planning, Designing and Evaluation Division has responsibility for assessing the planning and design work carried out by consultants contracted to the TAA for engineering design, and for proposing plans for airport development. This division is currently staffed by only one person.

- **Construction & Maintenance Division**

This Division is responsible for initiating, managing and monitoring all construction contracted out by the TAA at the regional airports, and for all maintenance work at the airports. Currently, this division is staffed by a manager with a staff of 7 working to manage, supervise and maintain the TAA airports infrastructure.

- **Information Technology Division**

The Information Technology Division is responsible for all functions related to the computer networks of the TAA and all IT functions. The division is mainly responsible for acquisition and development of ICT infrastructure. This division has a manager and 9 staff working to operate, manage and maintain the ICT resources in a manner that supports the operations of the TAA.

- **Land Development & Acquisition Division**

As many of the airport projects undertaken by the TAA require acquisition of land and development of its use, the Department of Engineering & Technical Services has its own staff dedicated to this function. Currently, this Division is staffed by only one person.

4.2.3 Regional Airports Department

The Regional Airports Department is responsible for all activities associated with the management, operation and maintenance of the all regional airports under the management of the TAA. It has no role in the management of Julius Nyerere International Airport which is under a separate Department of the TAA.

Under this Division are the functions of airport security and safety, airport operations and minor maintenance that is not otherwise contracted out. The total staff of the Regional Airports Department amounts to 248 persons, of whom only 5 staff are based at the TAA headquarters. Management of the regional airports is carried out by 22 Airport Managers and their staff, stationed at 22 domestic airports. While the TAA staffing levels at the regional airports is as noted above, the Regional Airports Department uses an additional 69 military personnel for security duties. The military security personnel are not on the TAA payroll although they do carry out normal airport security duties.

- **Airports Security Division**

The Airports Security Division is a Headquarters unit that has a staff complement of three persons. This division is tasked to implement airport security programmes and coordinate the benchmarking of security standards at the TAA Regional Airports.

- **Operations & Facilitation Division**

This division provides the headquarters function to supervise the operations and management of the regional airports. In addition, the manager also coordinates the Implementation of Master Plans across the airports and identifies requirements for airport upgrading and development.

- **Group 2 Airports**

The Regional Airports Department manages four Group 2 Airports at Mwanza, Mtwara, Arusha and Dodoma. Management of these airports is provided with a staff complement of 118 persons. Most of the airport managers also have 2 or 3 nearby TAA airstrips under their supervision, and most of the TAA airstrips have 1 or 2 attendants.

- **Group 3 and Group 4 Airports**

The TAA manages 14 Group 3 airports and 4 Group 4 airports and has a total staff complement of 124 persons to provide management of these airports. As with the Group 2 airports, the airport managers also have responsibility for a number of nearby Group 5 airstrips that are under the overall management of the TAA.

4.2.4 Julius Nyerere International Airport (JNIA) Department

Management and operation of the Julius Nyerere International Airport (JNIA) is provided by a separate Department of the TAA, The JNIA Department is the largest of the TAA Departments with a staff complement of 272 personnel. The Department is responsible for all activities associated with the management, operation and maintenance of JNIA. Under this Department there are 7 divisions covering the functions of airport operations (management of airside, terminal and landside operations), airport technical services, airport security, finance management, human resources management and administration, commercial affairs and marketing, and standards compliance.

Management of the JNIA is the responsibility of the Director of JNIA, who is assisted by Managers for each of the 7 Divisions.

- **JNIA Operations Division**

Airport management and operation of JNIA is a direct responsibility of the Manager of Operations with the assistance of 2 Duty Managers and 51 operating staff carrying out such functions as facilitation of passengers, aircraft and cargo movement, coordination of provision of First Aid, supervision of the cleanliness of the terminal buildings and their surroundings, and other tasks to ensure an acceptable standard of operations at JNIA. Excluded from the responsibility of the Operations Division is the Airport Rescue & Fire-fighting Service which is the responsibility of the Ministry of home Affairs.

- **JNIA Technical Services Division**

The Technical Services Division organises the maintenance of the JNIA facilities and building infrastructure, including both the landside and airside facilities. This Division is managed by a Manager, reporting to the Director of JNIA. With a staff of 43, the Division is responsible for all maintenance work on the JNIA Airport site, including the airside and landside facilities and pavements. Excluded from the responsibility of the Division is the maintenance of air navigation and telecommunications equipment, which rests under the responsibility of the TCAA. This Division is generally responsible for civil, electrical and mechanical maintenance, as well as the stocking of spare parts and materials for maintenance purposes. The Technical Services Division supervises, evaluates and certifies maintenance contract works carried out on the JNIA site.

- **JNIA Safety & Security Division**

Management of the Safety and Security Division comes under the Security manager, who is responsible for a further 104 safety & security staff. Its responsibility is to operate and manage aviation security and safety at JNIA. In addition to the Division staff charges with carry out security operations, JNIA also uses 102 military staff to supplement the airport security force. These military personnel are provided by the military and are not covered on the TAA payroll.

The Division consists of two sub-divisions, one for security services and the other for safety services. The main roles of the security services staff are to ensure airport perimeter security to safeguard the airport and aircraft against acts of unlawful interference, and to apply airport passenger and baggage security screening. The other sub-division, the Safety Services is responsible to study and disseminate safety and security information to all staff, based on ICAO Standards and Recommended practices (SARP's), and to monitor compliance and evaluate implementation of the mandated safety standards. The sub-division is also responsible for the review of the airport safety management system and programmes for quality control of safety.

- **JNIA Finance Management Division**

The Finance Management Division is responsible for most of the financial accounting for JNIA. Primarily, this Division is responsible for billing customers and collection of revenues, maintaining proper books of account, and controlling budgets. In addition, the Division is tasked with preparation of periodic financial statements in accordance with the applicable accounting standards and procedures, and to respond to audit queries. In addition to these finance functions, the Finance Management Division of JNIA is also responsible for the management of stores and to carry out procurement in accordance with user requirements and the financial and procurement rules of the TAA.

- **JNIA Human Resources and Administration Division**

Staffed by 46 personnel, the Division manages all of the Human Resources and Administrative requirements for JNIA. This includes the functions of workforce planning and management (ie. in the areas of recruitment, training, performance assessment, staff promotion, staff welfare, staff grievances, disputes etc) as well as to provide office support services such as secretarial services; stationery and control over movable and immovable assets.

- **JNIA Commercial & Marketing Division**

The JNIA Commercial Division is responsible for the management of the non-aeronautical leases and revenues of JNIA that are due to the commercial activities of tenants and users of JNIA. In addition, the Division develops a strategy for marketing its potential commercial activities in order to identify and initiate new sources of commercial revenue.

- **JNIA Compliance Division**

This Division is staffed by a manager and is responsible for ensuring JNIA complies with the ICAO Standards as well as national standards and legislation before review by the regulatory authorities.

4.2.5 Human Resources Development & Administration Department

The Human Resources Development & Administration Department of TAA is based at the TAA Headquarters Building on the JNIA airport site. This Department has a total staff of 26 and is responsible for the administrative affairs and management of TAA's Human Resources needs for all of the airports. The core functions of the Department are human resource planning, recruitment, management, training and development as well as performance management. Under the direct supervision of a Director, the Division operates through three functional groups, as described below.

- **Human Resources Training & Development Division**

As its name implies the Human Resources Training and Development Division is responsible for staff training and development for TAA staff. This includes managing all training (foreign and local) given to TAA staff, as well as the functions of performance reviews and staff promotion. The division is staffed by a Manager and 11 other staff.

- **Administration Division**

The Administrative Division is responsible for the administrative functions of the TAA, however this excludes administration of JNIA, which is provided through the resources of the JNIA Department, and also excludes administration of the Regional and Domestic Airports which is provided from among the airport staff under the Regional

Airports Department. The present staffing of the Administration Division comprises 10 staff to administer the Headquarter operations of TAA and includes secretarial staff, switchboard operators, and drivers.

- **Human Resources Management Division**

While the Human Resources Training and Development Division manages aspects of the staff training and development, the Human Resources Management Division is responsible for HR management of the large workforce of the TAA, with the exception of the JNIA staff.

4.2.6 Finance & Business Department

The Finance & Business Department operates through three Divisions with a current total staffing of 18 personnel. The position of Department Director who reports directly to the CEO, has been vacant for some time.

- **Planning and Statistics Division**

The Planning and Statistics Division is responsible for the collection, collation and analysis of all statistics for the operation of the TAA airports, including KIA. The Division is also responsible for forecasting future air traffic for the purposes of infrastructure and operational planning by other TAA Departments. The Division is charged with the regular preparation of the TAA Business Plan and Strategic Plan. Led by a Manager, there are three staff supporting the activities of the Division.

- **Commercial & Marketing Division**

The Commercial & Marketing Division was formed to manage the non-aeronautical commercial business of the TAA. This division, which has a staff complement of 3 based at the TAA Headquarters, is responsible for the commercial, retail and property management for TAA, with the exception of JNIA for which a separate JNIA Division provides a service. The Division works with the TAA airport managers to identify new commercial activities at airports, monitors the performance of existing commercial activities at the airports and liaises with the Finance Management Division to ensure timely invoicing and follow-up on non- aeronautical revenue collection from customers. The Commercial & Marketing Division is also responsible for developing and implementing TAA policy for property leasing on the TAA airports.

- **Finance Management Division**

Under the leadership of a Manager, the Finance Management Division is responsible for maintaining the TAA's accounts and for reporting to the TAA management on the financial performance of the Authority.

4.3 Comment on the Organisation, Functions & Staffing of the TAA

In its present form the TAA suffers from several deficiencies in terms of its organisation, functions and staffing. To some degree these reflect the constraints placed upon the organisation due to its status as a government organisation and subject to recruitment limitations and government conditions of service. The areas noted as being deficient in one way or another are summarised below.

- **Planning Services**

Currently TAA has no effective planning capability for strategic, physical or financial planning. This is evident in various projects that have been initiated by TAA, especially the Terminal 3 project and the recent World Bank funded airport upgrading projects. For all of these there is imbalance between the strategic requirements, physical planning needs and financial implications, and lapses in the application of international standards for airports. The TAA planning capability needs to be strengthened and established as a standalone function with a responsibility to identify all future TAA projects in their strategic context, and a mandate to ensure compliance with approved airport master plans, to feed into the project development stream.

- **Project Development & Engineering**

Currently projects at the airports are generated through the Department of Engineering and Technical Services. For the most part all engineering design and construction is outsourced to international and domestic engineering consultants and contractors. The Department therefore plays the role of project manager, coordinating funding, retaining consultants, and managing the construction contracts awarded by the TAA. From examples of projects initiated recently under World Bank funding for the upgrading of certain airports suggest that the process of consultant selection and procurement has not included adequate planning support either from the selected consultant or internally, and suffered from lack of adequate prequalification evaluation of consultants and a low-bid procurement policy. In the future there is a need to ensure that projects to be initiated reflect the CAMP development criteria for airports. Internally, to effectively manage the airport development programme there is a need to better define the project initiation and management process and procedures, so that inconsistencies in application of design parameters, standards and construction are not guided by notional objectives that are themselves questionable.

- **Management of Major Projects**

With the JNIA Terminal 3 project, TAA has taken on a very major development project and has temporarily devoted one senior staff member to function as its project manager. Future development of JNIA will also create several very major projects for which TAA will need to have the capability to manage in the capacity of 'client', particularly if some of these might be initiated as public-private

partnership arrangements. Currently, TAA does not have a formal unit established to manage such major projects and this will need to be addressed in the very near term as new major projects are identified for JNIA as a result of the Airport Master Plan.

- **Responsibility for Airports**

Currently, the TAA has responsibility for some 58 airports and airstrips, most of which do not manage to break even financially. It is reported that only JNIA, Mwanza, Arusha and Mtwara airports achieve profitability and these therefore cross-subsidise the TAA's role to manage and maintain the remaining 54 airports in Tanzania. While there is merit for TAA to retain responsibility for JNIA, and to establish control over KIA, as well as the 6 Mainline Regional Airports of Mwanza, Arusha, Songwe, Kigoma, Mtwara and Dodoma, and the 12 Secondary Regional Airports identified in the CAMP, there is little justification for the 5 Community Airports or the 33 rural airstrips to remain under the responsibility of the TAA for operations and maintenance. As these smaller airports and airstrips serve principally a local community function, and receive little or no air traffic, full responsibility for maintaining these should be passed to the level of the local municipality, and/or to other community groups and the private sector. It is recognised that such a transfer of responsibility from the TAA to local authorities may take some time to achieve and require training of local resources to take over the full management, operation and maintenance of these smaller airports and airstrips.

- **Kilimanjaro International Airport**

Due to its historical origins, operation of the Kilimanjaro International Airport has remained under a separate operating company, the Kilimanjaro Airports Development Company (KADCO). However, ownership of KIA is now entirely held by the Government, and the Director-General of TAA sits on the Board of KADCO. In view of its role in the airport system and in relationship to the development of Arusha Airport, there is merit in bringing management and operation of KIA under the wing of the TAA, as a parallel Department of TAA to JNIA. By formalising the relationship of KIA within the TAA structure, the development of KIA can be better coordinated, and the staffing of KIA rationalised among the staff resources of TAA.

- **Airport Rescue & Fire-Fighting Services**

As noted above, all airport ARFFS services in Tanzania are presently managed and operated by the Ministry of Home Affairs – Tanzania Fire Services, and all ARFFS staff are Ministry personnel. However, the units of the Tanzania Fire Services located on the airports are not adequately established to fulfil the role of providing airport rescue and fire-fighting services. While the ARFFS vehicles and equipment are provided by TAA, the staff are all employed by the Government and training is carried out on the basis of the government funding received through the Ministry of Home Affairs. It is reported that the specialised training required for aircraft fire-fighting is not, in fact, being carried out

and the present fire-fighting staff are not properly qualified to fight aircraft fires, which is contrary to ICAO requirements. The optimum arrangement, which is recommended, would therefore be for all ARFFS units located at the TAA airports to become part of the TAA Headquarters organisation, and for TAA to manage, operate and equip all ARFFS functions, and provide the necessary staffing and training so as to ensure compliance with ICAO requirements. As such, the ARFFS should therefore become a Department of the TAA, along with Airport Security, under direct management from the TAA Headquarters level.

- **Financial Management & Reporting**

Currently, due to the zero-based budgeting approach, the TAA is not able to manage multi-year capital projects, where a project cannot be completed in a single financial year. With some very major projects identified for implementation in the coming years, the ability to budget for, and manage, multi-year projects needs to be established. Another area where institutional strengthening is evident is in the preparation of financial reports, especially at a disaggregated level, as it is necessary to analyse the financial performance of individual airports in order to support detailed decision-making by senior management. This capability must be established through acquisition of additional staff, initiation of training and acquisition of suitable software to enable the Finance Department staff to fulfil the required reporting functions and support the rest of the organisation.

- **Commercial Operations & Land Management**

The TAA policy towards commercial use of TAA airport land by other parties under lease is in need of review and revision. While leases for built-up land are normally short-term, those for unimproved land are restricted to a maximum term of 15 years. It is reported by airport stakeholders that the lease term limitation of 15 years has prevented development from occurring by discouraging tenants from constructing facilities on other wise unimproved land. Given the need for substantial development to take place on some of the TAA airports in the future, and especially at JNIA, longer lease terms, such as for 25 to 30 years or longer, will need to be applied if investors are to be attracted to invest in facilities for which a return may take longer than 15 years to be realised. Reconsideration of the conditions of leasing unimproved land at the TAA airports is needed in order to avoid discouraging the private sector from investing in airport infrastructure. This issue is particularly important if the TAA is to encourage private sector participation in airport infrastructure development.

- **Office Services**

Currently, TAA and its staff are not served by an efficient document control system, nor do they benefit from the ability to store and easily retrieve documents and drawings. There is no management information system in place to manage documents, report, statistics and data used by TAA personnel in their everyday functions. Of

concern, too, is the lack of a centralised filing of up-to-date CAD drawings of the TAA airports, or a system in place to record and track changes made over time to the infrastructure existing at the airports. The TAA is in need of a thorough review of its information management needs, establishment of a document control, central filing and retrieval system, as well as implementation of a GIS-based drawings management system and an authority-wide Management Information System.

- **Staffing of TAA**

Currently, there are several areas where staffing may be judged to be insufficient, such as in the strategic and physical planning functions, evaluation and supervision of engineering projects, financial management and reporting, offices services and IT support. For the operation of the airports, additional staff are required within the TAA organisation in order to assume full responsibility for Airport Rescue and Fire-Fighting Services, and for the ultimate need to take over full management and operation of KIA.

- **TAA Headquarters Accommodation**

The present TAA Headquarters Building is totally inadequate in its ability to function as the headquarters building for the Authority. Not only is it far too small in size to accommodate existing staff levels but is unable to accommodate any further expansion of the staff complement. In addition, some headquarters functions of the TAA have to be housed in temporary unsuitable offices adjacent to the TAA building. The lack of office space, lack of meeting facilities, lack of storage space, and the general design of the building does not lend itself in any way to facilitate the proper functioning of the organisation. The fact that staff are accommodated in very small offices, and function behind closed doors, does not foster an environment of consultation among staff leading to what senior management of TAA have referred to a cultivating a 'silo' mentality among staff. A new, larger, and better planned headquarters building is an urgent requirement for TAA.

5.0 ZANZIBAR AIRPORTS AUTHORITY

The Zanzibar Airports Authority was established by means of the Aerodromes Act which was passed by the Zanzibar House of Representatives in August 2011. At that point the ZAA came into being as an autonomous institution under the overall administration of the Ministry of Infrastructure and Communications.

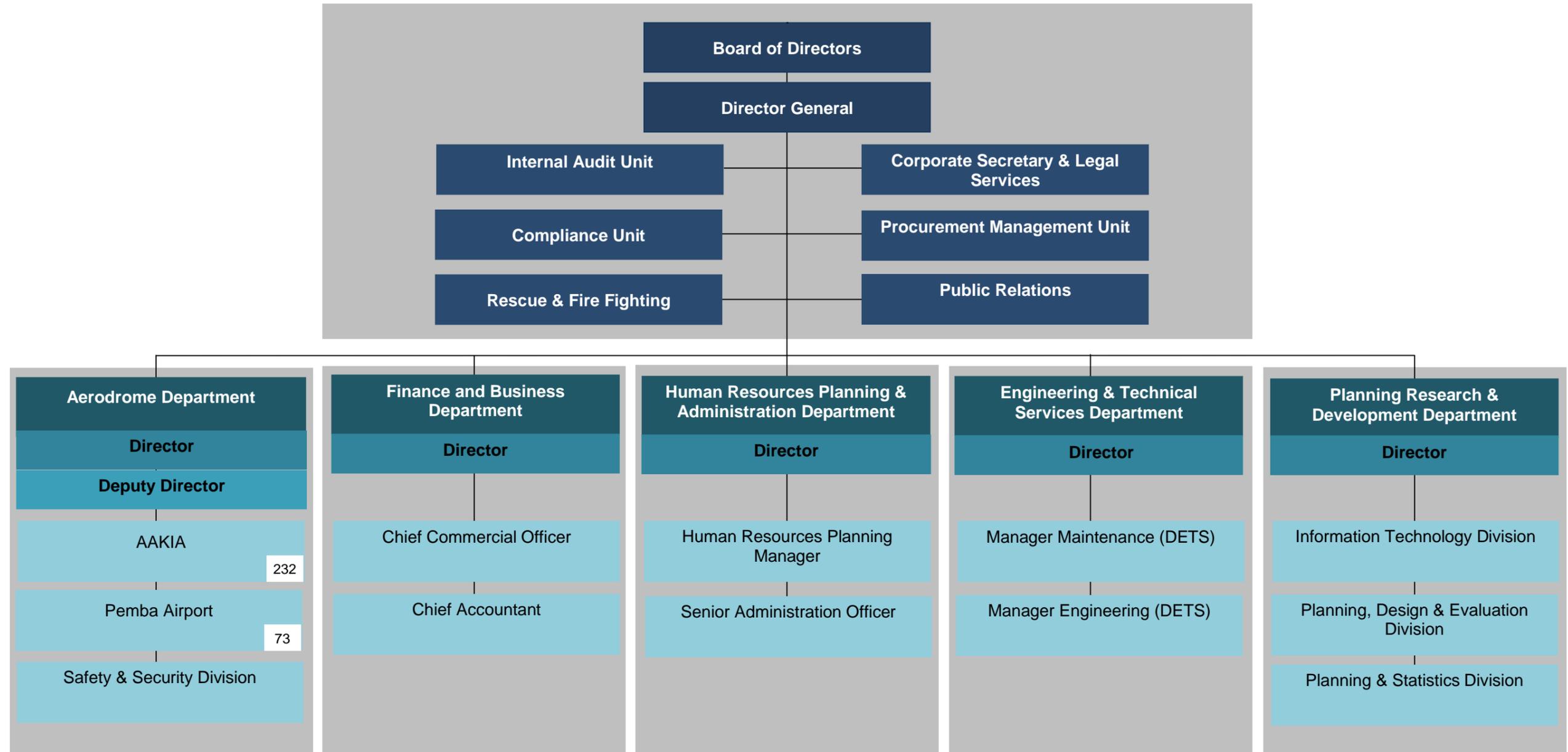
The responsibility of the ZAA is to operate maintain and develop the two airports of Zanzibar, namely the Abeid Amani Karume International Airport (AAKIA) close to Zanzibar City on Unguja Island, and the Pemba airport on Pemba Island off the northeast coast of Tanzania. The headquarters of the ZAA are located on the site of the AAKIA.

Currently, the ZAA has a total staff complement of 430 personnel (including 56 temporary staff). Of these, 232 staff are employed to operate and maintain the AAKIA, while 73 staff are based at the Pemba Airport. The remaining 125 staff are ZAA headquarters staff involved in the administration of the Airports Authority.

Led by a Director-General, the ZAA is organised into 5 basic operating departments comprising Aerodromes, Finance and Business, Human Resources Planning & Administration, Engineering & Technical Services, and Planning Research and Development. In addition to these primary departments, the ZAA has 6 functions that report directly to the Director General of the ZAA.

The current organisation structure and staffing of the ZAA is illustrated in **Exhibit 5-1**.

**Exhibit 5-1
 Zanzibar Airports Authority Organisation Structure**



Total Staff: 430 (Including 56 Daily Temporary Staff)

6.0

KILIMANJARO AIRPORTS DEVELOPMENT COMPANY

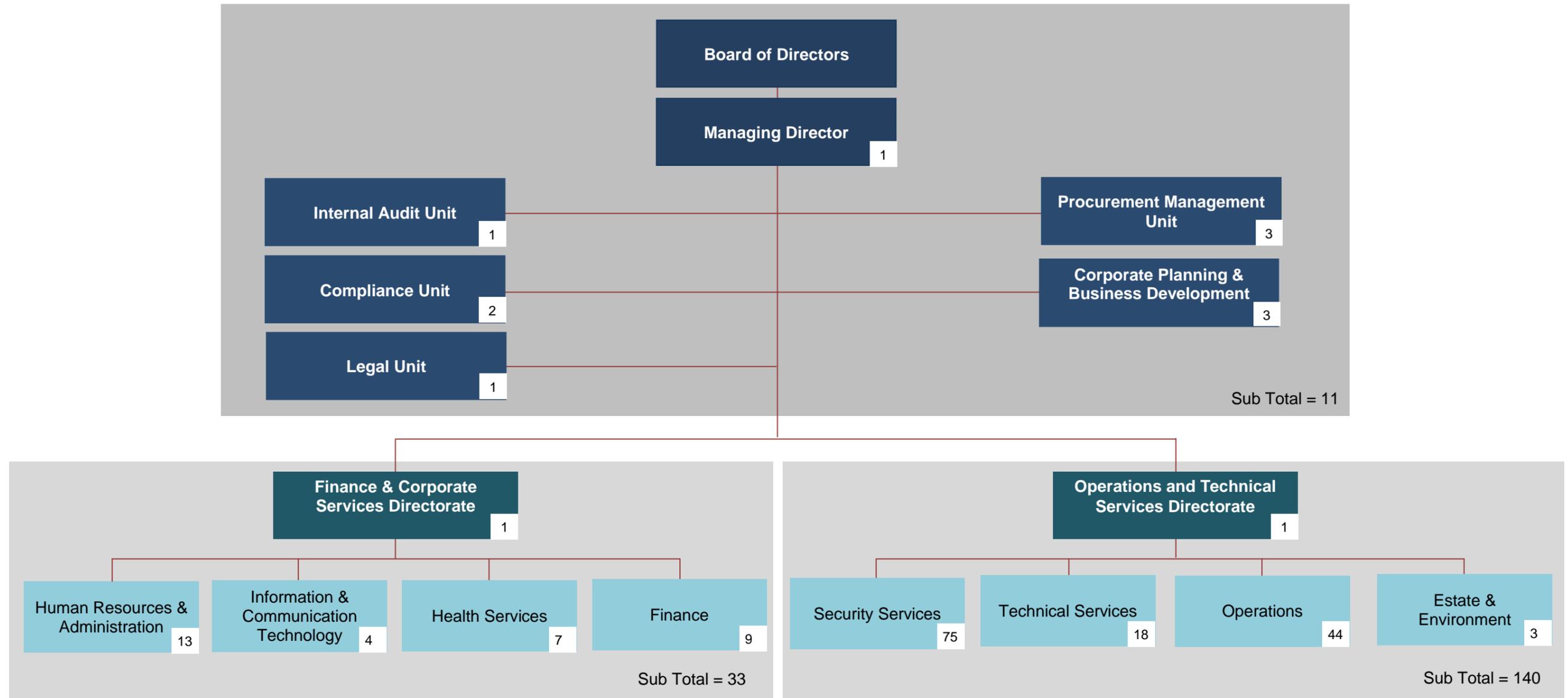
The Kilimanjaro International Airport, which was inaugurated in December 1971 as the first privately-developed airport in Africa, is operated by the Kilimanjaro Airports Development Company. Originally developed as a Build-Operate-Transfer project, ownership of the airport was later acquired by the Government of Tanzania. KADCO is operated by a 6-person Board of Directors, which includes the Director-General of the Tanzania Airports Authority as a member.

KADCO is responsible to its Board, and to the Government of Tanzania as sole shareholder, for the operation, management, maintenance and development of the Kilimanjaro International Airport. As such it fulfills all of the management functions of KIA on an exclusive basis with no other airports under its jurisdiction. There has been discussion at the Ministry of Transport level of bringing KIA and KADCO under the overall administration of the Tanzania Airports Authority, however no progress has been made to bring this about.

Currently, KADCO has a total staffing of 211 staff organized into two main directorates (Operations & Technical Services, and Finance & Corporate Services), each of which functions through four sections.

The current organisation structure and staffing of KADCO is illustrated in **Exhibit 6-1**.

Exhibit 6-1
Kilimanjaro Airports Development Company Organisation Structure (KADCO)



Total Staff: 184 (as at Oct 2014)

7.0 RESTRUCTURING CIVIL AVIATION ADMINISTRATION

7.1 TCAA Restructuring

7.1.1 Requirement for Restructuring TCAA

The ICAO Document “*Policies on Charges for Airports and air Navigation Services*” (Doc 9082) recommends that States establish autonomous entities for Air Navigation Services provision, noting that autonomy tends to improve managerial efficiency of an entity when empowered to take independent decisions and to exercise full control over the revenues generated from operations. ICAO’s document “*Safety Oversight Manual*” (Doc 9734), recommends that where the State is both regulator and operator of the air traffic services function, the requirements of the Chicago Convention will be met by a clear separation of authority and responsibility between the operating agency and the regulatory agency.

ICAO has also noted that when a State has found it necessary to separate the service provision functions by creating an independent and autonomous entity outside of the regulatory authority, a clear division of responsibilities must be defined between the regulatory functions and those of service provision. In addition, ICAO has made it clear that the provision of regulatory and safety oversight functions must always remain the responsibility of the state.

The above makes it clear that there is an international requirement to bring about a separation of civil aviation regulation from the operation of aviation functions, such as operation of airports and operation of the air traffic and navigation services within a state. At the same time, the provision of regulation and safety oversight for civil aviation must remain a function of the state, preferably provided through an autonomous government authority.

In Tanzania, restructuring to achieve the requirements of ICAO has progressed to the point that regulation and safety oversight is a state function that is provided by an autonomous authority, in the form of the TCAA. However, as the operation of the air traffic and air navigation services are also part of that same authority, the requirements of the Convention are not yet fully met. The potential for conflict of interest among the functions of the TCAA therefore exists in this respect. Responsibility for the operational functions currently performed by the TCAA Air Navigation Services Department must therefore be separated out of the TCAA organisation, and these operations provided through the mechanism of another autonomous authority.

In the case of the operation of the national airports, a measure of separation from government has occurred through the establishment of the Tanzania Airports Authority as an Executive Agency of the Ministry of Transport. However, while a separation of responsibility for airport operations has taken place, this has not progressed to the stage of creating the TAA into an autonomous authority, and the airport authority is therefore still an entity under the control of government, and therefore holding an obligation to the Ministry whether or not such obligation has financial or economic merit.

To bring about the separation of regulation (both Economic and Safety Regulation) from the operational functions of air navigation services, as currently provided within the TCAA, there are some few options open to the Government to consider. These have been explored by the TCAA in its paper “*Separating Air Navigation Services from Regulatory Function*”. Options suggested for Tanzania to consider are described in the following section.

7.1.2 Options for Restructuring TCAA

The TCAA has studied the issue of separation of regulation from operations in its internal paper referenced above. Three options were identified by TCAA for consideration, with these being:

1. Separation of the ANS function from TCAA to become part of a Government Department;
2. Creation of an autonomous public sector organisation owned by the Government of Tanzania to become the Air Navigation Services Provider, or:
3. Creation of a private sector entity in partnership with the Government of Tanzania as minority shareholder to provide air navigation services as an ANS Company.

The above structural models for the provision of air navigation services all exist in other countries.

Retention of air navigation services provision as a function of a government department is still a common model, but generally this is combined with regulation of civil aviation and not normally provided through government separate from regulation. For Tanzania, where much has already been achieved to separate civil aviation administration generally from government, it would be a backward step to re-incorporate the air navigation services provision back into a non-commercial government structure, and would clearly be contrary to the ICAO recommendation of Doc. 9082.

Creation of an autonomous public sector organisation, owned by the Government of Tanzania, to provide the air navigation services on a commercial basis meets the recommendations of ICAO. This would essentially mean creation of another Authority, similar to the TCAA, that would provide only for the ANS function, with the TCAA retaining its existing Safety and Economic regulatory functions.

The third option mentioned above is found in some mature civil aviation environments, such as the U.K. and Canada, and would also be relevant to Tanzania. However, this model is possibly more appropriate to consider as an ultimate stage of evolution for provision of air navigation services on a commercialised basis, rather than as the first step towards the separation of functions.

While the above three options have been put forward by the TCAA as possible options for a separated air navigation services provider, there is also one other option that has not been identified. This is to combine the two operational functions of civil aviation together into a single authority. This approach would combine the air navigation services provider with the airports management and operations function, so as to create a single large operating authority, which could mature over time to become a private sector partnership with Government. However, given the present status of the Tanzania Airports Authority as an Executive Agency of the Ministry of Transport, rather than as an autonomous authority, to combine air navigation services into the present TAA would not achieve autonomy for ANS, and at the present time would be a retrograde step. Ultimately, when and if the TAA can evolve from its present status into an autonomous authority, combination of the ANS and Airports functions could become a more attractive model than exists under the present circumstances.

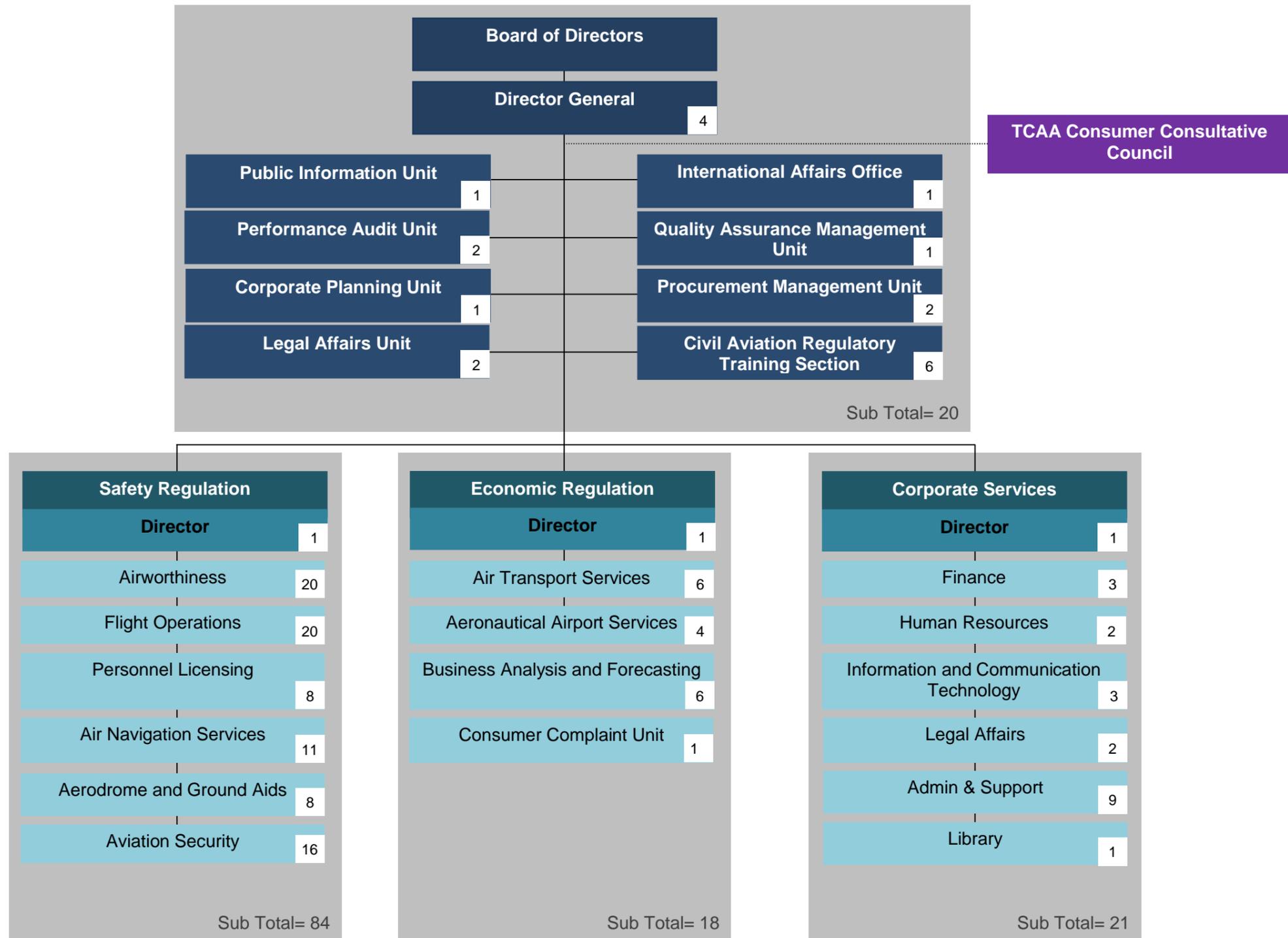
7.1.3 Recommendation for Restructuring TCAA

As a model for restructuring TCAA, given the present circumstances of the authority and the options available, the most realistic option is to create a separate, autonomous, Air Navigation Services Authority along the same lines as the present TCAA. Ultimately, if it appears to be a sound proposition, the ANS Authority could later transition into a public-private partnership with government and the private sector. Establishment of an ANS Authority could be achieved by way of amendment to the Civil Aviation Act. It is therefore recommended that this approach be adopted by the Government of Tanzania as a means of achieving separation of functions between civil aviation regulation and provision of air navigation services.

Restructuring of TCAA to create a new ANS Authority would also require restructuring of the regulatory element of TCAA to account for the separation of functions and for the reduced staffing level remaining to perform solely the regulatory and safety oversight functions.

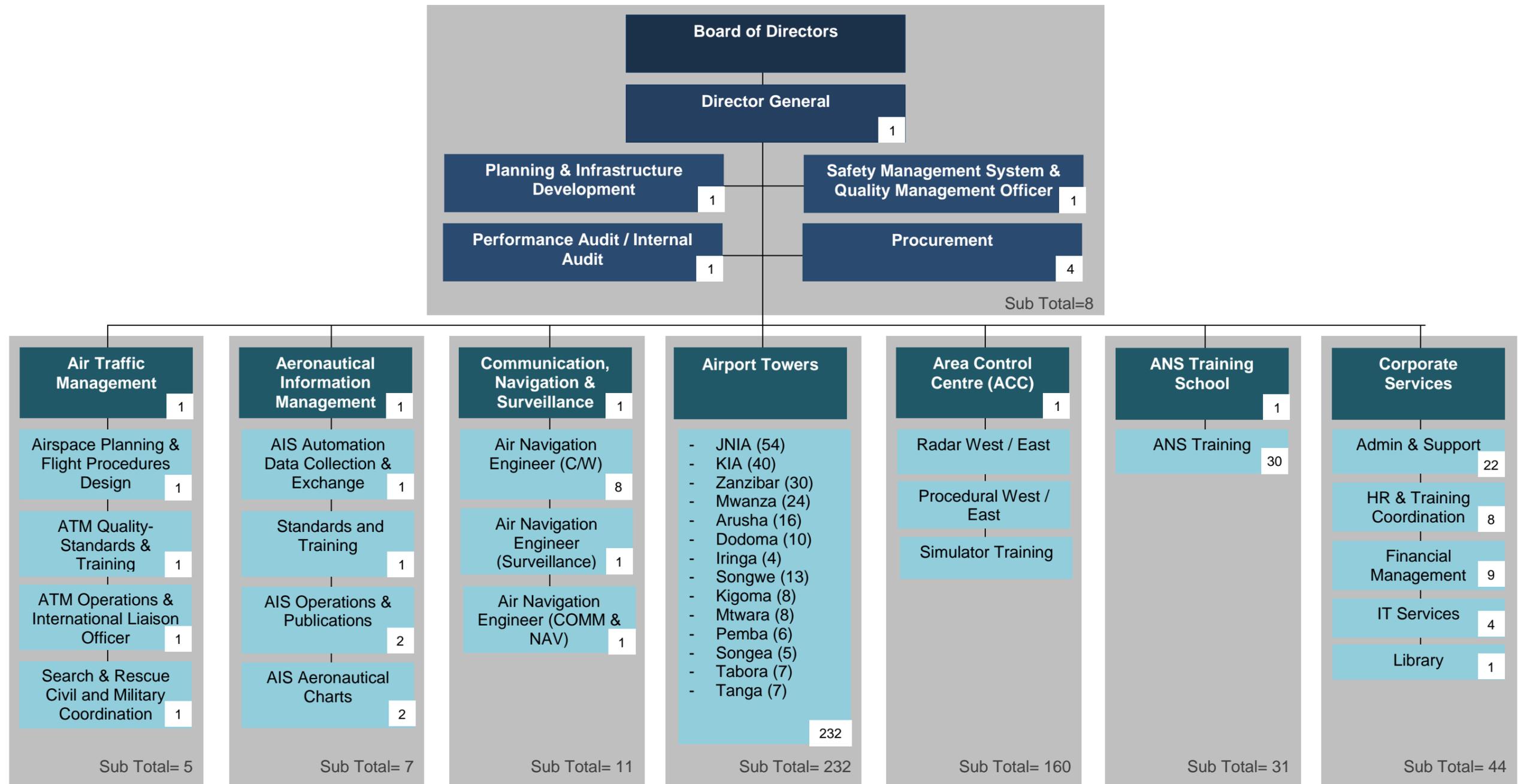
Possible organisational structures for the TCAA as the Civil Aviation Regulator and for the Tanzania Air Navigation Services Authority as the air navigation services provider are shown as **Exhibits 7-1 and 7-2**.

Exhibit 7-1
Proposed Restructured Organisation
Tanzania Civil Aviation Authority (Civil Aviation Regulator)



Grand Total Staff: 143

**Exhibit 7-2
 Proposed Restructured Organisation
 Tanzania Air Navigation Services Authority**



Grand Total Staff: 498

Note The proposed staffing shown above reflects the implications for ANS staff requirements arising from the forecast of future increased air traffic levels for overflights of the FIR, for internal air traffic within the enroute airspace of the FIR, and at the airports of Tanzania

7.1.4 Implications of TCAA Restructuring

Aside from the legal implications for enabling legislation to permit the creation of an Air Navigation Services Authority, the main issues arising from the recommendation to separate regulatory and operational functions into two separate autonomous authorities are seen in terms of:

- **Human Resources and Staffing**

There will be a need for the separated ANS Authority to acquire its own administration to provide administrative support to the new organisation, as well as the services of finance, human resources management, training management, legal services and procurement. This will lead to an increase in the present ANS Department staffing. At the same time there would logically be a reduction in the administrative support requirements for the TCAA Regulatory component. As Exhibits 7-1 and 7-2 show, the staff complement of the TCAA in its recommended role as the regulator of civil aviation would be 143 persons, while the Air Navigation Services Authority would increase its staffing to 498 persons. The overall staffing of the two Authorities would therefore show a net increase of almost 18%. This increase reflects both an expanded staffing for Safety Regulation as far as the regulator is concerned, and the expanded role of the Air Navigation Services function due to the projected increase in air traffic at the airports (particularly JNIA), in the enroute airspace of the FIR, and a forecast increase in overflights through the FIR.

- **Operating Costs and Revenues**

In separating regulation from ANS operations there is always a question as to how to cover the costs of providing regulatory services. This is also an issue for Tanzania as the existing TCAA Air Navigation Services Department is responsible for generating some 56% of the USD 20M annual revenues of the TCAA, and is a self-supporting unit and capable of profitable operations. It would appear that the regulatory functions of TCAA are not themselves financially self-sufficient and would need to be funded by a levy on the ANS Authority, TAA as well as other stakeholders, possibly with supplementary funding from Government.

- **Civil Aviation Training Centre**

The Civil Aviation Training Centre (CATC) is currently an operational function under the Director-General of the TCAA. The Centre is presently located in Terminal 1. Much of the training focus is on training air traffic controllers for the Air Navigation Services Department of TCAA and, because of its specialised nature, this training function should remain with the restructured Air Navigation Services Authority. All other aviation training currently carried out through the CATC should be shifted to become the responsibility of other secondary and tertiary training institutions. A Regulatory Training Section should be established within the TCAA Regulator organisation, with this function being to coordinate regulatory training.

7.2 TAA Restructuring

7.2.1 Requirement for Restructuring TAA

Restructuring of the TAA is required for reasons that are rather different than had been identified in the case of the TCAA. For TAA, as noted in Section 4.3, there are several deficiencies in the present organisation and its capabilities and staffing, and restructuring is required to strengthen and to add to the organisation in order to correct these. The proposed restructuring therefore comprises the following changes:

- **CEO Direct–Reporting Units**

Currently, there are 7 small units within the TAA organisation structure that report directly to the CEO. In restructuring the TAA, it is proposed that these separate units be reduced to 5 functions that would not otherwise be a line function of the TAA operations. Accordingly, the functions of Legal Affairs would become responsible to the Administration Department, while the Terminal 3 Project Management Unit would become part of the Special Projects Management Section within the Engineering & Construction Department.

- **Administration Department**

The Administration Department would continue to cover the present functions of Human Resources and management of all TAA training, however included under this Department would be the procurement and legal affairs functions, as well as responsibility for IT Services.

- **Regional Airports Department**

In the proposed restructuring the Regional Airports Department would remain responsible only for the 6 Mainline Regional Airports and 11 Secondary Regional Airports. Airports classified in the CAMP as Community Airports, as well as the TAA airstrips, are proposed to ultimately be divested from the Regional Airports Department and responsibility delegated down to Local Authorities and other more local organisations. This transition to divest TAA of the 5 community Airports and 33 airstrips could however be a lengthy process and in the interim TAA would remain responsible for these small facilities. Also included in the restructuring proposal is creation of an Airports Management and Coordination and Operations & Maintenance Advisory unit staffed by 5 persons. The restructuring change having the greatest impact on the Regional Airports Department will be the proposal to incorporate within TAA the AFRRS services provided at all of the Regional Airports, with the fire vehicle provision and consequent staffing reflecting the airport category, intended critical aircraft and number of shifts required for full coverage during airport operating hours. The ARFFS function and staff would be established as a separate Department of the TAA, along with Airport Security. These

staff are in addition to airport management, operations and maintenance staff.

- **JNIA Department**

In the case of JNIA, the restructuring concept would add a section for ARFFS to the existing organisation structure.

- **Kilimanjaro International Airport**

As discussed earlier, it is proposed that management, operations and maintenance of KIA be brought under the TAA organisation, and headed by the Director of KIA. This proposal may take some time to bring about and to coordinate due to differences in salary structures and conditions of employment. The overall intention, however, is to ensure that operations and development of KIA are coordinated under the TAA as an umbrella organisation, with KIA projects managed in the same way as other TAA airports, and financial and statistical reporting also largely integrated into the TAA organisation structure.

- **Business Services Department**

In the proposed restructuring, all business, commercial, financial and land management functions would be incorporated into a single department, which would benefit from also have a capability for financial planning as part of the business planning of the organisation.

- **Engineering & Construction Management Department**

It is proposed that the current planning function held under the Engineering & Technical Services Department be separated out, as described above. However, the Department would be expanded in its engineering services and construction management. A new separate function to manage special large projects, such as Terminal 3, would be established to provide project management under the Engineering & Construction Department.

- **Planning Department**

Establishment of a dedicated Planning Department to provide Strategic and Physical planning services to the TAA management and to the Engineering Department which is charged with implementation of airport projects. It is proposed that this new Department would be staffed by a Director and 9 staff.

- **Operational Services Department**

A new Department, responsible for the operational support for fire services and airport security at the airports, is proposed as an addition to the organisation of the TAA. This would have under its jurisdiction two sections, one responsible for management of the ARFFS services at the TAA airports and the other for Airport Security services. For the

ARFFS function, when fully staffed, the ARFFS Section would employ a total of 648 staff, of which 130 ARFFS staff would be deployed to the international airports of JNIA and KIA, 276 ARFFS staff would be deployed to the 6 Mainline Regional Airports, and 242 staff for the 11 Secondary Regional Airports.

The Airport Security Section would also be established at the Headquarters Level as a section under the Operational Services Department. This would employ 122 staff, principally for the two international airports at JNIA and KIA. Security services provided at the Domestic Airports would continue to be supplemented by military staff, whose activities and training would be coordinated from the TAA Headquarters by the Airport Security Section Management.

The proposed restructured organisation and staffing of the TAA is illustrated in **Exhibit 7-3**. As indicated in this exhibit, the overall staffing of the TAA is proposed to be increased from its current level of 609 to a total of 1345 staff, with this increase being due largely to the need to bring the Airport Rescue & Fire-Fighting function directly under the TAA (rather than under the Ministry of Home Affairs), and the proposal to bring the Kilimanjaro International Airport under the wing of the TAA and to rationalise its staffing. Together these changes account for an additional 716 staff positions, most of which are airport fire-fighters.

7.3 Capacity Building & Training Requirements for Restructuring

Restructuring of the two main agencies involved in civil aviation administration and operations will require that capacity is built within the organisations to enable them to function at the levels expected. In addition, there are existing requirements, and well as new requirements for staff training to enable the effectiveness of the organisations to be enhanced. Requirements for capacity building and training are discussed in this section with respect to the TCAA and TAA organisations after restructuring.

7.3.1 Capacity Building and Staffing

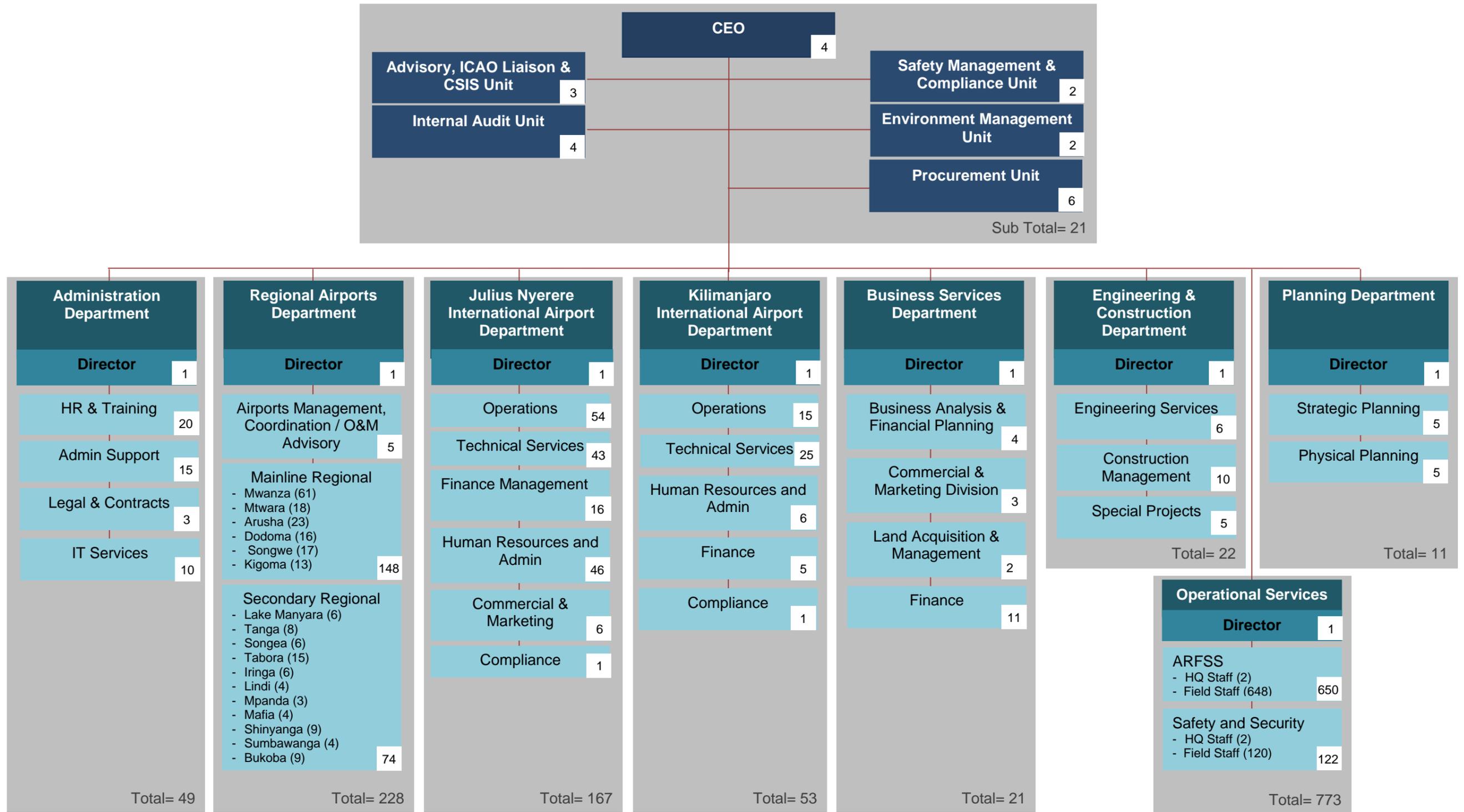
Restructuring of the TCAA and TAA, as recommended in Sections 7.1 and 7.2, does involve a need to increase the staffing levels of both organisations.

TCAA Staffing Needs

In the case of the TCAA this results from the recommended organisational split, whereby some functions now carried out for the combined regulatory and operational functions will now require to be staffed separately for each of the two organisations that emerge following restructuring. In addition to this, the expected growth in air traffic within Tanzania will create a need for increased staff within the air navigation services function in the form of additional air traffic controllers for the Dar es Salaam Area Control Centre and for some of the ATC towers where airports are expected to experience considerable growth in air traffic.

A comparison between the pre-restructuring and post-restructuring staffing for the TCAA is shown in **Exhibit 7-4**.

**Exhibit 7-3
 Proposed Restructured Organisation
 Tanzania Airports Authority**



Grand Total Staff: 1345

**Exhibit 7-4
TCAA Staffing Changes due to Organisational Restructuring**

Before Restructuring		After Restructuring		
Unit	Staffing	Unit	Staffing	Net Change
TCAA		TCAA		
Directorate	47	Directorate	20	
Safety Regulation	77	Safety Regulation	84	
Economic Regulation	11	Economic Regulation	18	
Air Navigation	338	Air Navigation	0	
Corporate Services	71	Corporate Services	21	
		Total TCAA Regulator	143	
		TANSA		
		Directorate	8	
		Air Traffic Management	5	
		AIS	7	
		CNS	11	
		Airports	232	
		ACC	160	
		ANS Training School	31	
		Corporate Services	44	
		Total TANSA	498	
Total TCAA Staffing	544	Total TCAA & TANSA	641	+97

As may be noted in the staffing comparison provided above, the net change in the staffing of the two organisations that emerge from restructuring of the TCAA amount to an additional 97 staff (an addition of 17.8% over current staff levels). However the organization that is suggested as the replacement for the TCAA Air Navigation Services department, TANSA, would have an overall net increase in staff of 160 staff, partly due to the need for TANSA to acquire its own corporate services function, but mainly due to the future need for the organization to increase its staffing in the ATC operational areas due to projected future air traffic growth.

The expected overall increase in staffing, particularly for TANSA, will also carry a need for an increased training programme to train technical staff and air traffic controllers in order to meet the future functional needs of the organization.

For the TCAA regulatory functions, increased staffing in the Safety Regulation and Economic Regulation department is also suggested in order to accommodate the future increased workload arising from increased air traffic growth and the impact of that on both the safety and economic regulation functions.

TAA Staffing Needs

For the TAA, the recommended new organisational structure will require a considerable expansion of the TAA, particularly as the organisation itself is planned to expand in order to better serve its present functions, but also to expand to absorb the staff to operate and manage KIA and to provide airport rescue and fire-fighting services.

A comparison between the pre-restructuring and post-restructuring staffing for the TAA is shown in **Exhibit 7-5**.

**Exhibit 7-5
 TAA Staffing Changes due to Organisational Restructuring**

Before Restructuring		After Restructuring		
Unit	Staffing	Unit	Staffing	Net Change
TAA		TAA		
Directorate	24	Directorate	21	
Engineering & Technical Services	21	Engineering & Construction	22	
Regional Airports	248	Regional Airports	228	
JNIA	272	JNIA	167	
HR & Administration	26	Administration	49	
Finance & business	18	Business Services	21	
		Planning	11	
TAA Total Staff	609	Operational Services	773	
KADCO	184	KIA	53	
Total TAA & KADCO	787	Total TAA	1,345	+558

As may be noted in the staffing comparison provided above, the net change in the staffing of the TAA that is proposed after restructuring of TAA and KADCO amounts to an additional 558 staff, or almost 71% over present staff levels. This increase is due partly to the proposal to bring KIA under the administrative jurisdiction of the TAA, but also due to the absorption of the ARFFS functions into TAA. Currently, ARFFS is under the administration and management of the Ministry of Home Affairs and its staffing is not considered part of the TAA staff complement. The proposal is to separate out the airport fire-fighting service from that Ministry, due to its very different and specialized nature, and incorporate the ARFFS staff into the TAA organization structure and staffing complement.

The proposed changes to the TAA organization, and the proposed expansion of functions and staff levels in some cases, will require that an increased level of training will be required for TAA to train both technical and operational staff in order to meet the future functional needs of the organization.

7.3.2 Training Requirements for TCAA, TANSA & TAA

The training requirements of the organisations primarily involved in administering, regulating and operating the civil aviation functions in Tanzania have been compiled on the basis of discussions with relevant staff, and from analysis of future requirements. These are listed in the table in **Exhibit 7-6** below.

Exhibit 7-6
Suggested Priority Training Needs

Organisation	Priority Training Topics
TCAA Regulator	- Airworthiness Engineering - Flight Operations Inspection - Aerodromes Inspection & Certification - Safety Management Systems Management - ICT – Management Information Systems
TANSA	- Air Traffic Controller Training - Flight Procedures & Recurrent Training - CNS Engineering
TAA	- Fire Officer Training & Recurrent Training - Airport Strategic Planning & Physical Planning - ICAO Safety Standards & Application - Airport Engineering - Airfield Pavement Evaluation & Design - Safety Management Systems - Computer Aided Drafting - ICT & Management Information Systems - Financial Management - Project Management - Construction Supervision - Airport Commercial Management - Airport Management - Airport Security Operations & Management

The above training requirements have been identified largely through discussions, as well as from analysis of departmental needs. They represent the priority training requirements for attention by the TCAA, TAA, and TANSA, the future Air Navigation Services Authority.

8.0 FINANCIAL MANAGEMENT ANALYSIS

Financial management analysis carried out for the CAMP has focused on an assessment of the current financial performance of the two primary agencies involved with civil aviation administration, regulation and operations. This has focussed on analysing the current financial performance of both the Tanzania Airports Authority (TAA) and Tanzania Civil Aviation Authority (TCAA) considering for the latter its two roles of regulation and operation of the air navigation system. Analysis has also been undertaken of the financial impact on TAA and TCAA's cash flows following phased implementation of the proposed improvement projects described in Volume III of the CAMP reports. Financial analysis of Tanzania Meteorological Agency (TMA) has not been carried out as part of the CAMP since aviation meteorology is only one of the functions of the TMA and it would not be possible in the context of the CAMP to attempt to separate out the costs of providing meteorology services to aviation as opposed to the non-aviation meteorological functions of the TMA.

TAA and TCAA's financial sustainability has been assessed to establish whether the two agencies are financially sustainable from their own revenues, and to determine what might be needed to improve the financial sustainability of these agencies. It also has the objective of determining what other improvements are necessary to ensure that the financial management process and the operation of the systems are carried out effectively and efficiently.

8.1 Financial Overview of Current Operations

In order to understand the current financial position of TAA and TCAA, an assessment of the accounts of both organisations was undertaken. From this, the extent of TAA's and TCAA's operating cash flow and profitability, or loss, was explored.

The financial assessment section discusses the sources of revenues and costs for the organisations. TAA and TCAA's reliance upon aeronautical or non-aeronautical revenues and scale of the capital works programme has been evaluated.

8.1.1 Tanzania Airports Authority

8.1.1.1 Financial Performance

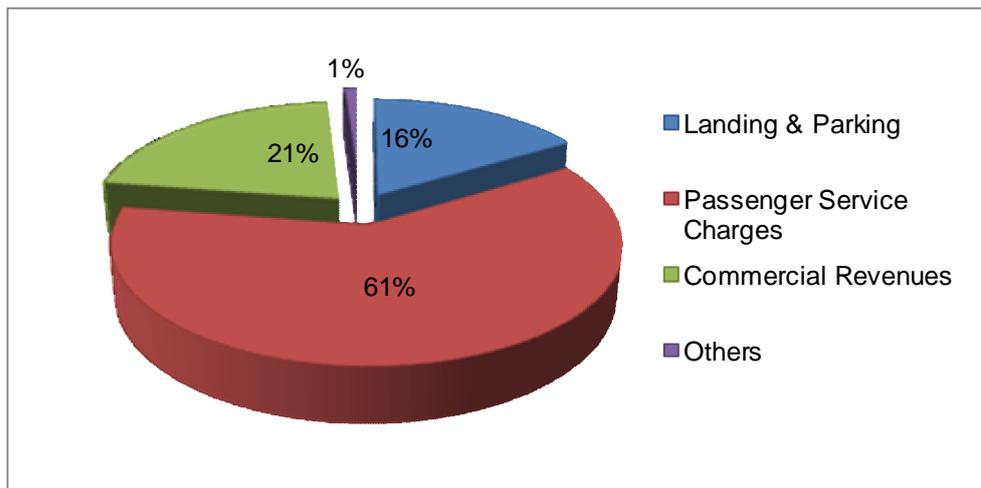
Tanzania Airports Authority (TAA) was established in 1999 as an Executive Agency by the Government Notice No. 404 made under the Executive Agencies Act No.30 of 1997. The Authority assumed the functions of the former Directorate of Aerodromes under the Ministry of Communications and Transport, currently the Ministry of Transport. The Authority is tasked to manage and operate 58 Government owned airports and airstrips in Tanzania. TAA currently encompasses the operational functions of airport operations, including administration, finance, security, maintenance, and

management of fire-fighting services on the airports. In addition, TAA manages all of the concession contracts for commercial activities at the 58 airports.

It should be noted however that accounts collected from TAA are all audited financial information, except for the year 2013/14, where only preliminary financial information was available for analysis. Therefore, information and analysis derived for the fiscal year 2013/14, although not confirmed to be accurate, are sufficiently indicative to determine the financial position of TAA.

TAA's operating revenues were generated mainly from its aeronautical charges and commercial activities. Total operating revenues for fiscal year 2013/14 amounted to Tshs 52.37 billion of which the principal source of revenue was derived from the Passenger Service Charge (as shown in **Exhibit 8-1**). Commercial revenues and Landing & Parking accounted for about 21% and 16% of the total TAA revenues respectively.

Exhibit 8-1: Composition of TAA Revenue for FYE 2013/14



Aeronautical Revenue

The primary source of revenue for TAA derived from civil aviation comes from aeronautical revenues comprising the passenger service charge and aircraft landing and parking, which is intended to cover the cost of providing airport services to airport users.

Passenger Service Charges are the most important revenue generator among the aeronautical charges, accounting for almost 74% of the total. TAA charges a Passenger Service Charge of USD 40 for each departing International Passenger and Tshs 10,000 (~USD 6) for each domestic passenger and these charges are applied following amendment of the Airport Service Charge Act, Cap 365.

Aircraft-based charges are charged according to the aircraft type or weight, as opposed to passenger-based charges, that are charged on a per-passenger basis. Aircraft Landing Charges depend on the aerodrome,

aircraft weight and registration. Note that landing charges for foreign registered aircraft are charged in US dollars, while the landing charges for locally-registered aircraft are levied in the local currency. **Exhibit 8-2**, which follows, details the landing fees.

Exhibit 8-2: Tanzania Aircraft Landing Fee Structure

Aerodromes	Charges per 1,000kg or part thereof	
	Aircraft registered in Tanzania	Foreign Registered Aircraft
Dar es Salaam, Kilimanjaro, Zanzibar and Pemba	Tshs. 5,500.00	US \$ 5.00
Dodoma, Kigoma, Mtwara, Mwanza, Songea, Tanga and Tabora	Tshs. 4,950.00	US \$ 4.50
Arusha, Bukoba, Biharamulo, Iringa, Kilwa Masoko, Lake Manyara, Lindi, Mafia, Mbeya, Moshi, Musoma, Nachingwea, Njombe and Shinyanga	Tshs. 4,400.00	US \$ 4.00
Other Government Aerodromes	Tshs. 3,300.00	US \$ 3.00

Source: <http://www.taa.go.tz>

Aircraft parking fees only apply after the first 2 hours that an aircraft parks on the apron. Fifty percent of the hangar fees are levied after the first 2 hours. Aircraft parking fees are charged on the basis of Aircraft Maximum Takeoff Weight (MTOW) and the pricing structure has three weight-bands, reflecting different charge rates for aircraft having weights below 20,000kg, between 20,000kg to 60,000kg and of above 60,000kg. Foreign registered aircraft are charged in US dollars, while the charges for aircraft registered in Tanzania are levied in the local currency. The Aircraft Parking Fee structure is provided in **Exhibit 8-3**.

Exhibit 8-3: Tanzania Aircraft Parking Fee Structure

Aircraft Weight	Charges per aircraft (after first two hours)	
	Aircraft registered in Tanzania	Foreign Registered Aircraft
Up to 20,000 Kg	Tshs 1000 per 12 hours or part thereof	US \$5.00 per 12 hours or part thereof
20,000Kg - 60,000 Kg	Tshs 1000 per 6 hours or part thereof	US \$5.00 per 6 hours or part thereof
More than 60,000 Kg	Tshs 1000 per 6 hours or part thereof	US \$5.00 per hour or part thereof

Source: <http://www.taa.go.tz>

Landing and parking charges collected are distributed to the agencies involved in civil aviation whereby 60% is returned to TAA, 30% to TCAA, and 10% to the Tanzania Meteorology Agency (TMA). There do not appear to be any other aeronautical charges levied by the TAA.

Non-Aeronautical Revenue

Non-aeronautical revenue for TAA is derived from commercial activities such as rental charges, concession fees, advertisement charges, airport car parking, and VIP charges.

Concession Fees are payments collected by service providers and businesses operating at the airports. Rental charges are levied on premises or on land leased to tenants based on the total areas occupied where different rates apply for different airports.

Advertisement charges are earned from space leased in facilities in the airport, such as on landside, in terminal concourse areas, within the passenger terminals and cargo buildings.

Car park charges are levied at some airports. Car parking charges are also expected to increase as the car park areas will be expanded, automated and introduced at some airports.

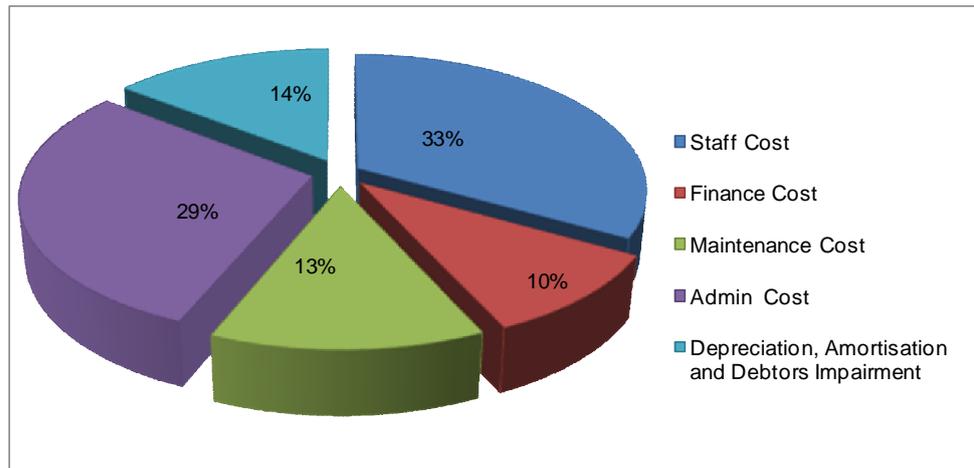
New VIP Charges are levied at JNIA for handling of VIP traffic. These commenced from FYE 2012/13 and are expected to increase with the widening of the scope of VIP users to include Chief Executives of Government Corporations, Agencies and Institutions.

Other Revenues include sale of tender documents and issuance of Airport passes etc.

Expenses

The major expenses of TAA include personnel emoluments, airport maintenance costs, financial charges, motor vehicle charges, and administrative and general expenses. Operating expenses in FYE 2013/14 totalled Tshs 51.45 billion and comprised of Tshs 38.8 billion in direct operating expenses and Tshs 12.5 billion in other expenses. Salaries and staff related costs accounted for Tshs 17 billion or 33% of total costs (as shown in **Exhibit 8-4**). Since TAA operates as a part of the Ministry of Transport, staff salaries are prescribed by the Government's salary scales and structure. Staff-related costs include salary and allowances, benefits, provident fund contributions, medical and training expenses.

Exhibit 8-4: Composition of TAA Expenses for FYE 2013/14



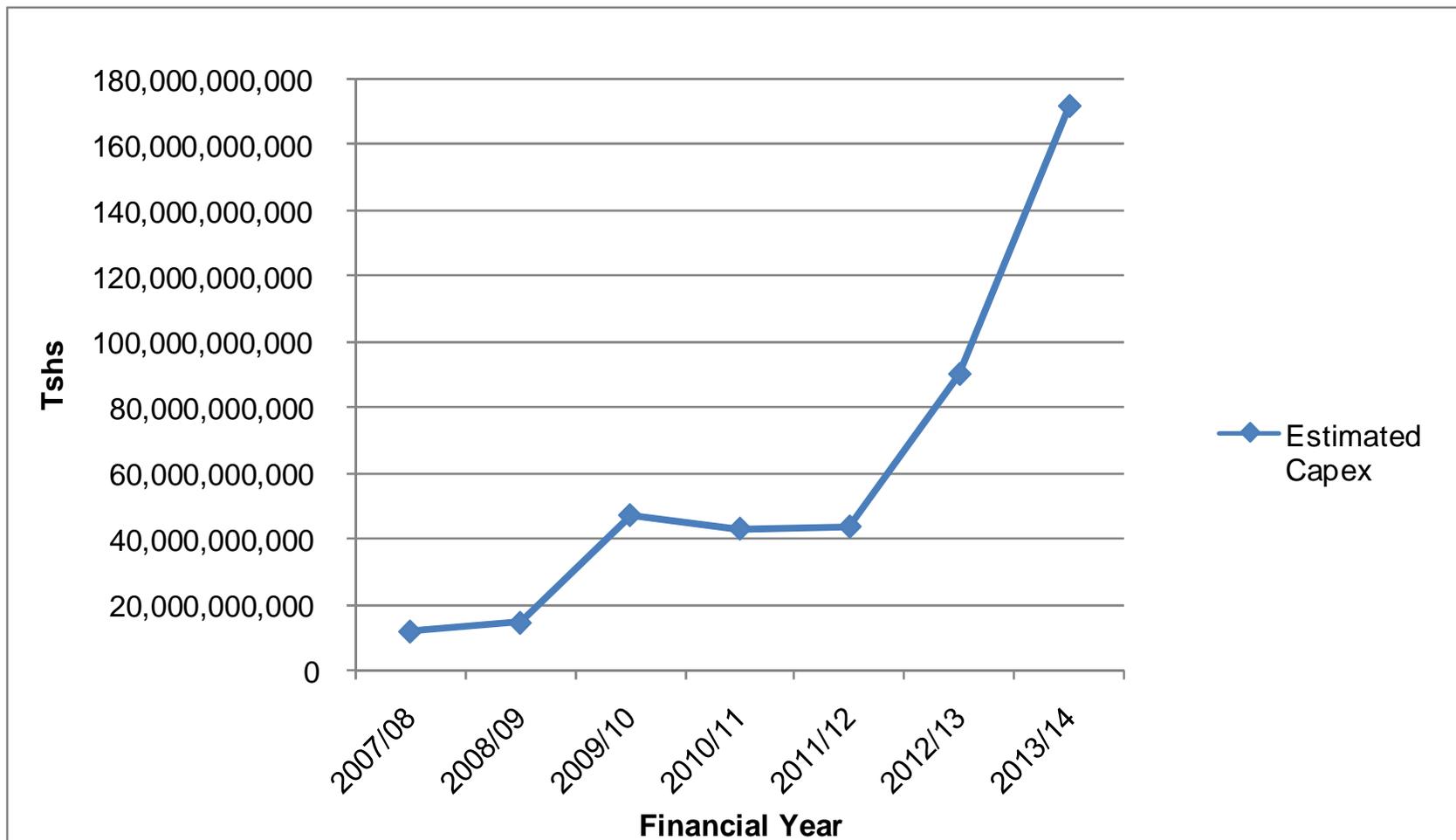
The government continues to support the Authority by subsidizing payment of personal emoluments to employees transferred from Central Government. However, in year 2013/14, the expected subsidy will decrease due to transfer of the Airport Rescue and Fire Fighting Personnel to the Ministry of Home Affairs, as compared to year 2012/13 (The decrease expected is around Tshs 1.37 billion or 40%).

Following closely as the second greatest expense item are general administrative expenses at the total Tshs 15.1 billion while maintenance costs totalled Tshs 6.6 billion. It is to be noted that these maintenance costs do not include the expenses incurred for large scale equipment or projects as these fall under TAA's yearly capital expenditure budget consideration and not the respective airport's budget of recurrent maintenance expenditure.

Capital Expenditure

There is no available information on the capital investment made by TAA in recent past years. Estimated capital expenses are calculated based on Balance Sheet and Income Statement results and are shown as a trend in **Exhibit 8-5** which follows.

Exhibit 8-5: TA Estimated Capital Expenditure from FYE 2007/08 to 2013/14



Note: Estimates based on figures obtained from TAA Audited Annual Reports

Due to lack of some of the financial information, it is unclear how TAA allocates and spends these capital investments, although it seems that most capital works are concentrated on the airside of the airports, especially on runways, taxiways and apron works. From the trend analysis, there is a significant upward trend in capital expenditure over the years reviewed. There was a sudden spike in FYE 2009/10 (more than 200% increase from the previous year) and after that, TAA’s capital expenditure level remained at a level of more than Tshs 40 billion per year for FYE 2009/10, 2010/11 and 2011/12. Subsequently, TAA increased its capital expenditure by more than 100% to Tshs 89 billion. Unaudited accounts for FYE 2013/14 show another spike in TAA capital expenditure by more than 90% compared to the previous year, to a new high of more than Tshs 170 billion.

Based on the TAA’s First Five Year Plan, the current agreed Capital Programme for TAA concentrates on the new terminal at JNIA (Terminal 3) and construction of Songwe Airport in FYE 2011/12 up to 2015/16. The Second Five Year Plan from FYE 2016/17 to 2020/21 continues the development of the new terminal at JNIA and upgrading of Kigoma Airport. As shown in **Exhibit 8-6**, Terminal 3 at JNIA is the greatest capital works project undertaken by TAA in recent years, and accounts for most of TAA’s capital investment.

Exhibit 8-6: Financial Requirements for TAA Agreed Projects (Tshs)

Agreed Project	First Five Year Plan (2011/12- 2015/16)	Second Five Year Plan (2016/17- 2020/21)
Construction of new terminal Building (Terminal III) at JNIA	Tshs 340.8 billion	Tshs 224.0 billion
Complete construction of Songwe Airport	Tshs 49.5 billion	-
Upgrading of Kigoma Airport to Code 4C	-	Tshs 42.0 billion

Currently, the Government and development partners have been supporting TAA in financing its airport infrastructure development projects. Other than the government budget, capital and development expenditures are also financed through internally-generated funds, grants and loans from donors and financial institutions. At the time of assessment, a total balance of Tshs 22.2 billion in two principal loans remained outstanding, based on the Unaudited Financial Report for FYE 2013/14, as listed in **Exhibit 8-7** which follows.

Exhibit 8-7: Listing of TAA Outstanding Loans (Tshs)

Lender	Details	Tshs
European Investment Bank	Undertaken by the Ministry of Finance	1,736,332,018
CRDB-Bank	Acquisition of Fire Tenders and JNIA Terminal 3	78,881,721,468

The existing European Investment Bank loan of Tshs 1.7 billion is supposed to be paid by the Government (MOF), and provided as a grant to TAA. However, this is uncertain as there may be a changed decision requiring TAA to pay back the loan. A new loan from HSBC totalling Euro 235.20 has been taken up for the construction of Terminal 3, of which Phases I and II will cost Euro 133.2 million (Tshs 285.0 Billion) and Euro 102 million (TZS 221.0 Billion) respectively. The Phase 1 loan has been drawn down at the applicable interest rate of 3.22%. However, it is to be noted that as the HSBC loan is to the Ministry of Finance and TAA is not required to repay this loan even though the loan is to fund the Terminal 3 development. The HSBC loan covers 85% of the financing required for Terminal 3, while the other 15% (USD 40 million) is provided by a local loan from the CRDB which is to pay for the Terminal 3 contractor's advance expenses for initiating construction on Terminal 3. The CRDB loan is taken out in TAA's name at 4.5% interest per annum, and is repayable starting from January 2014 at USD 600,000 per month for 8 years. Initially, it is the government's intention to fund 100% of the Terminal 3 loan, and therefore TAA is currently working to obtain government support in repaying the CRDB loan as well.

Operating Surplus/ Deficit

As a semi-autonomous body, TAA is required to adopt a commercial management style in order to be financially self- sustainable in the provision of airport services. In order to evaluate the current financial performance of TAA as an organisation, the operating revenue has been compared with TAA's operating expenditure to determine the operating surplus or deficit for TAA operations. In this case, to demonstrate the financial performance of TAA, it is assumed that government subventions do not exist. The result of this indicates whether TAA's operation is presently financially sustainable without any other government support. This analysis concentrates on revenues received by TAA and expenditures made for its operation. From **Exhibit 8-8**, it is apparent that TAA has not always been profitable by itself. Without any government support, TAA is seen to incur operating losses for the financial years 2010/11, 2011/12 and 2012/13. This is due to the growth in core revenues that was insufficient to meet the increase in operating costs. The growth in receipts from trading activities is offset by higher operating costs. In 2009/10, a profit was reported which was repeated in the recent year of 2013/14. For the most recently completed year, 2013/14, an operating surplus of more than Tshs 900 million was reported, with a small net profit margin of 1.8%.

Exhibit 8-8: TAA Operating Surplus / Deficit for FYE 2009/10 to 2013/14 (Tshs)

Description	FYE 2009/10	FYE 2010/11	FYE 2011/12	FYE 2012/13	FYE 2013/14 (unaudited)
Aeronautical Revenue	25,736,409,842	25,706,912,454	24,950,768,028	28,336,677,586	40,562,709,001
Non-Aeronautical Revenue	5,313,289,993	4,810,078,734	7,878,854,371	10,658,033,393	11,810,842,765
Other Income	59,000,315	85,403,832	51,630,064	60,941,138	42,681,389
Total Revenue	31,108,700,150	30,602,395,020	32,881,252,463	39,055,652,117	52,416,233,155
Staff Cost	10,263,995,225	13,104,317,304	13,479,971,747	14,533,379,168	17,094,903,792
Finance Cost	215,709,181	458,380,796	1,197,826,162	1,634,672,108	5,135,132,241
Maintenance Cost	4,143,796,899	5,330,029,327	4,729,555,649	6,295,778,317	6,673,026,658
Administration & Other Expenses	7,954,792,887	8,370,882,838	10,247,848,100	9,854,403,317	15,116,440,348
Total Expenses	22,578,294,192	27,263,610,265	29,655,201,658	32,318,232,910	44,019,503,039
Operating Surplus/ Deficit	8,530,405,958	3,338,784,755	3,226,050,805	6,737,419,207	8,396,730,116
Depreciation & Amortization	1,194,420,421	3,059,110,000	4,915,516,000	7,155,497,000	4,891,998,000
Debtors Impairment	17,056,000	1,234,221,431	122,043,894	196,550,230	2,539,370,398
Net Operating Profit/ Loss	7,318,929,537	(954,546,676)	(1,811,509,089)	(614,628,023)	965,361,718

Note: Based on figures obtained from TAA Annual Reports

Accounts obtained from TAA for the fiscal years 2009/10 to 2013/14 show negative net cash flow, after taking into account recurrent and capital expenditures, for the last 5 years, as indicated in **Exhibit 8-9**. Without any government support, TAA's operating cash inflow is enough to cover its operating costs, but is not adequate to support the capital works programme. Without government support, TAA's cash flow has deteriorated since 2009/10 from a negative cash flow of Tshs 38.3 to a negative cash flow of Tshs 162.9 billion in 2013/14. For the past few years, TAA's shortfalls are all supported by the government. Even though TAA experienced growth in receipts from trading activities, TAA's cash flow still remains in "red" and has decreased more than 300% over the 5-year period mostly due to the extensive capital works carried out for JNIA Terminal 3 and the recent development of the regional airports.

In summary, from an operating perspective, TAA's ongoing operations are supported by substantial government subvention for its operations and grant every year for its capital development. This is evidenced by the self-financing ratio which remains at less than 1 over the last 3 years, which means that TAA is not able to support the capital projects from the revenues derived from its operations. If the situation does not improve in the future, the question will be whether the government is able or even willing to continuously support the capital development of the airports administered by the TAA.

Is it also to be noted that TAA currently receives support from other government establishments for some of the airport functions, such as the cost of airport fire and rescue services, which is borne by the Ministry of Home Affairs, and also part of the cost of airport security, which is provided by the military. Therefore, the 'true' operating cost of TAA is unknown, since the costs of ARFFS and of part of the airport security operations are borne by other departments of government, but given the circumstances, these additional costs will only increase TAA's staff related costs and worsen the cashflow position if these functions are assumed by TAA in the future.

8.1.1.2 Financial Management Review of TAA

The existing financial management process and systems of TAA have been assessed in terms of their effectiveness. Suitable improvements are then suggested with a view to enhancing the long term financial sustainability of TAA.

Sources of Revenue

Sources of revenue for TAA comprise aeronautical and non-aeronautical charges. In terms of aeronautical revenue, TAA does not levy any other aeronautical charges other than aircraft landing and parking charges, and the passenger service charge. There are other potential revenue sources that are, in fact, untapped. Security fees, which are usually calculated on a per-passenger basis at most airports, are currently not being levied by TAA. It seems that there is also no cargo charge applicable in Tanzania even though there is cargo traffic.

Exhibit 8-9: TAA Cashflow for FYE 2007/08 to 2013/14 (Tshs)

Description	FYE 2009/10	FYE 2010/11	FYE 2011/12	FYE 2012/13	FYE 2013/14 (unaudited)
Total Operating Receipts (exclude Gov Subvention & grants)	31,108,700,150	30,602,395,020	32,881,252,463	39,055,652,117	52,416,233,155
Recurrent Expenses	22,578,294,192	27,263,610,265	29,655,201,658	32,318,232,910	44,019,503,039
Estimated Capital Expenditure	46,892,393,661	42,792,624,000	43,437,024,000	89,825,793,000	171,327,334,000
Total Cash Outflow	69,470,687,853	70,056,234,265	73,092,225,658	122,144,025,910	215,346,837,039
Increase/ Decrease in Cash	(38,361,987,703)	(39,453,839,245)	(40,210,973,195)	(83,088,373,793)	(162,930,603,884)
Self Financing Ratio*	0.66	0.72	0.76	0.43	0.31

Note: * Receipts from Operations/ Capital Payments

TAA should be allowed to increase its commercial revenues at most, if not all, of its airports and, by inference, decrease its dependence on aeronautical fees and charges. Improvements to commercial rental space in the passenger terminal, advertising indoors within the terminal and outdoors on landside, passenger terminal facilities for well-wishers and meters/greeters could improve the TAA non-aeronautical revenues. It is understood that TAA has made allocation of about 30% of terminal space for commercial purposes at the new Terminal 3. Once the international traffic is transferred to the new Terminal 3, it is recommended that a review be made of the present floor plan of the Terminal 2 to increase commercial space and improve passenger flows and routing especially for the domestic passengers. Advertising activities can also be expanded for the airport area, within and outside the new and old airport terminals. There is a significant opportunity for commercial revenue enhancement provided that a commercially-focused strategy is implemented.

Rates and Charges

TAA is not able to set its own rates and charges as the MOF, through the TCAA, regulate the rates and charges that TAA can apply, including the Passenger Service Charge and Landing and Parking charges. TCAA has conducted a thorough cost allocation exercise via a study completed with IOS Partners Inc. in 2009. However, the study focused on the TCAA cost structure and charges and unfortunately, did not include TAA. On that note, it is not immediately clear what basis has been used to date for the calculation of landing, parking, and passenger service charge charged by TAA itself and if these charges are sufficient to cover the cost of providing the relevant services. Going forward, a proper cost allocation exercise should be undertaken for each of these fees in compliance with ICAO guidelines. The determination and allocation of costs can be a time-consuming, but essential, exercise that involves a series of basic steps.

At the very least, and this is recommended, TAA should be able to review and propose revision to its own rates and charges structure. As a continuation, it is also recommended that regular reviews of the current fee structure be undertaken, and that detailed cost allocation studies be carried out so that an appropriate scheme of charges can be determined and applied, in accordance with ICAO recommendations. ICAO recommends that airport charges should cover the full cost of providing the airport services and essential ancillary services, including the cost of capital and loss of value due to use of assets, as well as costs of maintenance, operations, management and administration. Cost allocation and determination of rates and charges can be time consuming, but is essential. ICAO Doc 9562 Airport Economics Manual, 2nd edition – 2006 can be used to provide guidance for the determination of costs. ICAO recognises that airport charges should cover the full cost of providing the airport and its essential ancillary services including the cost of capital and depreciation of assets, as well as the costs of maintenance, operation, management and administration. While it is important that TAA make every effort to identify and control costs associated with the provision of each

service, it is equally important that the charges be set so as to generate sufficient revenue to ensure the operation is at least self-sufficient.

Asset Management and Register

For an organization like TAA, the asset management function is critical in order to document, plan and effectively manage the assets owned by TAA, in order to maximize their service lifespan and maximize their revenue generation potential. By analyzing and tracking of assets, TAA should be able to sufficiently and effectively manage the assets and their use. One of the audit findings in the audited report of TAA for FYE 2010, is that TAA does not maintain a fixed asset register. As a consequence, there is no record of an itemized asset book value and if there has been any previous valuation exercise conducted, or even if any valuation exercise is required.

From the Audited Reports of TAA, it was found that the Audited Accounts FYE 2010/11 understated the asset value, whereby depreciation has been charged to accumulate for more than the asset value itself. The total value for Property, Plant and Equipment should be Tshs 162,126,933,000 and not Tshs 161,970,573,855. The asset category “household furniture” and “computers” should be at zero value at the FYE 2011. For that year, both asset categories were found to carry a negative Net Book Value when they should only be, at most, at a zero value (fully depreciated). This mistake affects the following year assessment where the total accumulated depreciation charge should be Tshs 23,243,190 and not 23,399,610. Therefore, for FYE 2012, the Fixed Asset value was then understated by Tshs 156,420 of which is the over-charged depreciation amount from the mistake of the previous year.

These errors and issues may be prevented with a detailed Asset Register where there is an itemized asset record where depreciation is also itemized to for that asset. It is noted that TAA has a plan and fund set aside to employ consultants in year 2014/15 to set up a fixed asset register.

Separation of TAA Finance Functions

Currently, TAA’s Finance Division is structured within the Finance and Business Department, together with Planning and Business divisions as well as the Commercial and Marketing Division. There is a crossover of financial tasks amongst these divisions of which:

- 1) Finance Division: responsible for the management of TAA’s finances and accounts.
- 2) Planning and Business Division: part of this Division’s responsibility is to ascertain passenger numbers for the PSC collection.
- 3) Commercial and Marketing Division: part of this Division’s responsibility is for the invoicing and collection of commercial revenues.

Apart from that, the collection of Landing and Parking charges for foreign registered aircraft is currently carried out by IATA while the collection of Passenger Service Charges is made by the Tanzania Revenue Authority. Currently, Aircraft Landing and Parking charges are collected by IATA, with TAA incurring a fee for that service, and this revenue is remitted to TCAA before distribution between TAA, TCAA and the Tanzania Meteorological Agency (TMA) at rates of 60%, 30% and 10% respectively. The main reason behind the sharing of that revenue is that the different agencies share some facilities and information in providing these services. It is also preferred by all parties to have IATA collecting the revenue, as past experience shows that IATA is able to collect most, if not all, revenues owed, compared to only 30% to 40% successful collection by TAA and TCAA themselves. Passenger Service Charges are the most important revenue generator among the aeronautical charges, accounting for almost 74% of the total Passenger Service Charge collected by airlines and travel agents and remitted to Tanzania Revenue Authority. This arrangement is designed by the government under an Act of Parliament. Not all 100% of the PSC is being transferred to the TAA as a portion of the revenue has been retained within the Revenue Authority. There is no set percentage for the retention but it is understood that about 10%-20% of the PSC is always retained. As air traffic increases in Tanzania, it may be worthwhile for TAA to consider taking back all of the revenue collection functions into its own finance division.

All of the finance functions, including the revenue collection and planned asset management functions should be consolidated under one division for better management of TAA's finances and accounts. This will mean that finance-related tasks of the Planning and Statistics Division and Commercial and Marketing Division should be segregated out from their respective divisions and arranged to become functions of the Finance Division. Thereafter, the restructured two new divisions can concentrate and focus on strategic planning of TAA's operations and its future. With the consolidation of all finance functions under a single "manager", there can be better financial information collection, consolidation, reporting and analysis to enable a better understand of the financial performance of TAA itself.

Management Information System

Currently, there is no comprehensive information management system and network between each division within TAA. The divisions and sections of TAA are compartmentalised in their operations where there are limited communications between the divisions and sections. An IT facility has been implemented separately for each division / section on a stand-alone basis, and this limits the use of computers for daily work and for secretarial tasks of each section. In addition, there is no centralized storage of data collected and dissemination of information. Any data sharing is done manually through requests for information. This is one of TAA's critical weaknesses which render TAA unable to properly manage its financial and business operations. As a result, TAA is not able to provide correct and timely information on its

financial and business activities, even to its own management, rendering decision-making difficult and often without proper supporting analysis and documentation, rather than through application of accurate information. A centralised MIS is required to overcome this deficiency.

A Management Information System (MIS) integrates various functional information systems in order to be able to provide information and support necessary to manage an organization effectively. Provision of an MIS is critical to TAA business planning and decision making, as well as to enabling staff to access real time data whenever required. Staff in TAA will require extensive training in the use of MIS and computers generally. Much of the paperwork can be managed far more efficiently on-line while the MIS is used to accumulate, store and share data across the organization, and provide the necessary information in the form of various reports. This is important especially when TAA has offices distributed in different geographical locations in Tanzania. The MIS implemented should be able to support all TAA business processes and needs, and also to incorporate appropriate internal control systems which should cover various functions across the organization such as the finance, human resources management, operations, engineering and maintenance, and other functions deemed necessary. In order to implement a MIS, a detailed analysis of TAA's business processes and data requirement will have to be conducted. If possible, the MIS should link into the Epicor system used by TAA's Finance Division. Another aspect of airport operations that would benefit from an integrated solution such as MIS, is for billing and collection of aeronautical revenues. For example, there should be a linkage between the aeronautical activities recorded by TAA and the billing of charges to the airlines and other parties. Information on aircraft landings can be imported from a variety of sources, such as FIDS systems or flight logs, ownership and aircraft registration information is retrieved and invoice processing produces customer invoice data suitable for export to the accounting system. Once collected, this data can then be used for activity monitoring and reporting, and statistical analysis. This would also facilitate the collection of revenues by providing timely and accurate invoices (as recommended by ICAO) that can be produced on a regular schedule, such as monthly, and facilitate the tracking of overdue accounts.

Financial and Accounting System

One of the subsets of MIS (mentioned above) is the financial information management system necessary to handle financial aspects of the business processes, such as payroll, inventory control, accounts payable, accounts receivables, financial statements, other accounting reports and applications. The financial and accounting system to be implemented will be able to support centralized accounting and financial functions in TAA. In terms of commercial activities, the revenue sharing arrangement with TCAA and TMA should also be taken into account where necessary data input from outside organizations should be included. With proper financial systems implemented, revenue data collection and debt administration can be managed in a more efficient and

effective manner. The implementation of a financial and accounting system will also enable accurate financial information and analysis to be produced on time, and annual financial statements should then be able to be produced in conformity with national and international accounting standards.

The TAA Finance Division currently uses a computerized accounting system, known as "Epicor", which is also widely used in governmental agencies in Tanzania. However, it seems that the current systems implemented can only support daily data entry and is not flexible enough to be used to generate various formats of end user reports for decision making purposes. This was experienced during the data collection for the CAMP where a very long time was found to be required to obtain required financial information in a requested format. This may be because the Epicor software currently in used (2000 version) is not fully automated and is out of date. It is understood that there is currently an effort by TAA to update to the new version of Epicor which will be web-based.

8.1.2 Tanzania Civil Aviation Authority

The Tanzania Civil Aviation Authority (TCAA) currently encompasses all regulatory functions as well as operational functions of air navigation and traffic service monitoring within a single authority. TCAA was established by the enactment of the Tanzania Civil Aviation Authority Act, 2003. The Authority is fully owned by the Government through the Treasury Registrar.

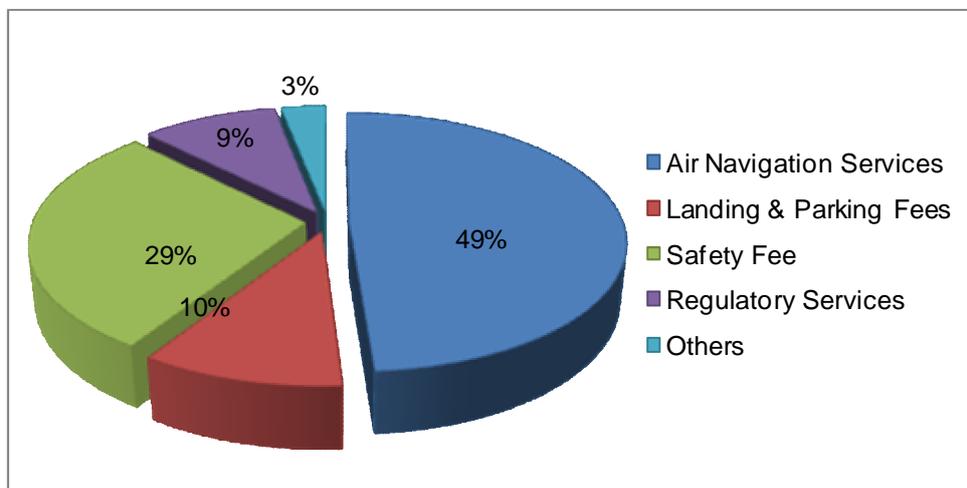
TCAA is responsible for regulating the civil aviation operations and to provide air navigation services and aeronautical airport services in Tanzania. The regulated services fall in three categories: air transport services, aeronautical airport services (airside airport operations, ground handling, in-flight catering and aviation refuelling) and air navigation services. TCAA provides air traffic control services in the Dar es Salaam Flight Information Region and at 14 airports in Tanzania, including the airspace above 24,500 feet over the territories of Burundi and Rwanda.

Revenue

Accounts obtained for the financial year 2006/07 to 2012/13 were used for the financial analysis of TCAA and all are audited financial information.

The total charges received for Civil Aviation Services in 2012/13 was approximately Tshs 37 billion. As illustrated in **Exhibit 8-10**, revenue sources for TCAA consist primarily of the air navigation fee (49%), safety fee (29%), fees for regulatory services such as inspections, personnel licensing and the issuing of air operator's certificates and airport certification and renewal (9%) a 30% share of the landing & parking (10%) and other revenue (2%).

Exhibit 8-10: Composition of TCAA Revenues for FYE 2012/13



Air Navigation Charges

TCAA Air Navigation Charges are charged as follows for both foreign and local registered aircraft.

A newly revised Air Navigation Charge arrangement for foreign registered aircraft has been implemented with effect from 1 January 2014. The charge per journey is based on weight and distance factors to determine the charge unit, R, as in **Exhibit 8-11** below and is charged in US dollars.

Exhibit 8-11: Foreign Registered Aircraft Air Navigation Charges

R= Weight factor x Distance factor	Charge (USD)
Up to 1	\$ 48.00
Above 1 up to 2	\$ 72.00
Above 2 up to 4	\$ 120.00
Above 4 up to 8	\$ 180.00
Above 8 up to 12	\$ 210.00
Above 12 up to 15	\$ 252.00
Above 15 up to 20	\$ 288.00
Above 20 up to 25	\$ 330.00
Above 25	\$ 360.00

For locally-registered aircraft, air navigation charges are charged on the basis of aircraft gross take-off weight and are charged in US dollars. The pricing structure for this air navigation charge has five weight-bands, reflecting different charge rates for aircraft with different weights, as in **Exhibit 8-12** which follows.

Exhibit 8-12: Locally Registered Aircraft Air Navigation Charges

Aircraft Weight	Charges per day (USD)
Aircraft weigh 5,670 kg (12,860 lbs) or less	\$ 60
Aircraft weight 5,671 kg up to 22,680 kg (12,501 up to 50,000 lbs)	\$ 80
Aircraft weight 22,681 kg up to 90, 718 kg (50,001 up to 200,000 lbs)	\$ 350
Aircraft weight 90, 719 kg up to 181,437 kg	\$ 550
Aircraft weight above 181, 437 kg	\$ 700

Safety Fee

A Safety Fee has been revised effective from 1 January 2014 whereby USD 9 is levied on an international passenger ticket and Tshs 3,000 (approximately USD 1.80) on a domestic passenger ticket for those embarking from Tanzanian airports.

Landing and Parking Fee

TCAA has a 30% share in the Landing and Parking fee collected from airlines, with the charge basis detailed in section above.

Regulatory Services Charges

These charges are TCAA’s fees and are levied on regulated suppliers. TCAA charges fees for the following:

- aviation security licenses, certification, approvals and issuance of certificates for AVSEC operations
- issuance of technical documents
- aerodrome licensing/ certification process
- licenses, ratings and certificates for flight crew, cabin crew and flight operations officer
- certificates of airworthiness of an aircraft
- licenses for maintenance organization and engineers
- certificate for air operators
- aircraft registration
- approval of aerial map

Others

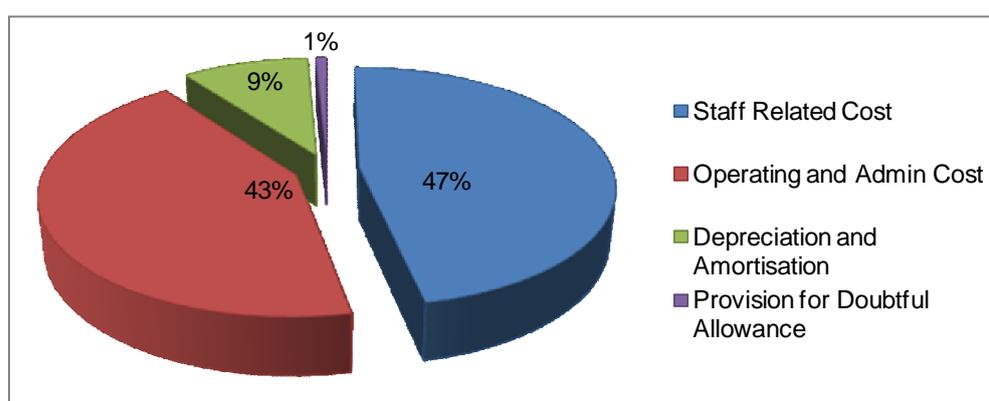
Other receipts include document sales, and revenue from Civil Aviation Training Centre operations.

Expenses

Operating Expenses

The largest expense items are employee costs which accounted for 50% of total operating costs (as shown in **Exhibit 8-13**), followed by the operating and admin cost at 39%. Depreciation and amortization was estimated at 10% and provision for bad debts was about 1% of total cost.

Exhibit 8-13: Composition of TCAA Expenses for FYE 2012/13



Capital Expenses

The capital expenditures that TCAA incurred include mainly the following types:

- Land and Buildings
- Telecommunication and Navigation Aids Equipment
- Furniture and Fittings
- Office equipment
- Motor Vehicles
- Computer and MIS Project
- Plant and Equipment

Currently, most major capital works are financed by income from operations and funds from a “Special Account”. The budgeted capital programme for assessed year 2012/13 is shown in **Exhibit 8-14**, together with the budgeted capital programme for the next year 2013/14. Capital expenditures detailed below are incurred mainly for purchase of Air Navigation Aids (VHF, NDB and AMHS) equipment (about 61% of the total budget for FYE 2012/13 and 56% for FYE 2013/14).

Exhibit 8-14: TCAA Budgeted Capital Programme for Financial Year 2012/ 13 and 2013/14 (Tshs)

Description	FYE 2012/13	FYE 2013/14
Buildings	164,725,800	570,000,000
Motor Vehicles	300,000,000	350,000,000
Telecommunication & Navigation aids	2,042,329,174	2,150,000,000
Furniture & Fittings	80,800,000	175,700,000
Computers & ICT	237,200,000	270,000,000
Office Equipment	159,690,000	195,000,000
Others	351,165,061	101,500,000
Total	3,335,910,035	3,812,200,000

Financial Analysis

Under the Civil Aviation Authority Act, 2003 Section 44(1), TCAA is to ensure its revenue is sufficient to meet its expenditure. TCAA is therefore obliged to operate on commercial principles and to charge and collect fees or levies for provision of any goods or services to enable it meet its expenditure, including proper allocations to general reserve and provisions as well as to secure an annual return on the value of fixed assets invested. **Exhibit 8-15**, which follows, shows the summary of the financial statements for FYE 2008/09 to 2012/13. Since its formation eleven years ago, TCAA has been handling increased air traffic volumes and has been generating a healthy growth in revenues from its own operations. However, it is to be noted that the net profit has declined over the years as growth in revenues was inadequate to cover an increasing growth in operating costs. It is understood that TCAA has recently revised its salary structure, which of course also contributes to the higher operating cost.

Exhibit 8-16 provides an analysis of the performance of TCAA, expressed in terms of financial ratios. Financial ratios are indicators of past performance and financial positions over the 5 year period for which financial statements have been provided. Three types of ratio have been chosen to demonstrate the ability to address short and long term obligations.

Exhibit 8-15: Summary of TCAA Financial Statement for FYE 2008/09 to 2012/13 (Tshs)

Description	FYE 2008/09	FYE 2009/10	FYE 2010/11	FYE 2011/12	FYE 2012/13
Net Operating Rev	17,534,639,000	18,486,873,000	22,497,084,000	27,854,664,000	30,980,315,000
Total Other Income	582,913,000	591,192,000	251,758,000	415,317,000	1,330,376,000
Total Revenue	18,117,552,000	19,078,065,000	22,748,842,000	28,269,981,000	32,310,691,000
Total Expenses	15,166,924,000	17,576,911,000	20,919,946,000	26,605,379,000	30,788,972,000
Net Operating Profit/ Loss	2,887,684,000	1,501,154,000	1,607,764,000	1,165,745,000	1,876,037,730
Net Profit margin Ratio	15.94%	7.87%	7.07%	4.12%	3.58%

Exhibit 8-16: Summary of TCAA Financial Statement for FYE 2008/09 to 2012/13 (Tshs)

Financial Ratio	FYE 2008/09	FYE 2009/10	FYE 2010/11	FYE 2011/12	FYE 2012/13
Liquidity					
Current Asset	18,488,907,000	14,708,259,000	12,744,902,000	12,960,916,000	8,537,549,000
Current Liabilities	1,981,203,000	4,468,701,000	2,944,884,000	3,559,818,000	4,800,543,000
Current Ratio	9.33	3.29	4.33	3.64	1.78
Profitability					
Net Profit	2,887,684,000	1,501,154,000	1,607,764,000	1,165,745,000	1,876,037,730
Total Revenue	18,117,552,000	19,078,065,000	22,748,842,000	28,269,981,000	32,310,691,000
Net Profit Ratio	15.94%	7.87%	7.07%	4.12%	3.58%
Debt (Long Term Solvency)					
Total Liabilities	9,818,235,000	13,232,131,000	11,386,590,000	9,454,213,000	6,561,543,000
Total Assets	33,683,058,000	38,676,109,000	38,184,688,000	38,940,919,000	36,240,691,000
Debt Ratio	29.15%	34.21%	29.82%	24.28%	18.11%

The current ratio, which measures liquidity, compares current assets to current liabilities and represents the Authority's ability to meet its short term obligations. A high value indicates stability and low risk. For TCAA the current ratio decreased over the years from 9.33 in FYE 2008/09 to 1.78 in 2012/13. Even with the downward trend, TCAA has a healthy ratio (above 1) generally, although the high ratio may indicate that TCAA have problems with collecting accounts receivable or be carrying too much inventory.

Profitability is measured simply by net profit to total revenue and measures the profit returned on sales, or in this case the provision of air navigation and regulatory services. This is a simple measure of the ability to generate revenue and to control costs. Net profit to TCAA, as previously explained, has declined but has managed to still maintain a positive position.

The debt ratio, which compares total liabilities against total assets, provides an indication of long term solvency and measures the extent to which an entity is using long term debt. The ratio for TCAA has remained reasonably stable over the 5 year period and it is within the 'acceptable' range.

8.2 TAA Projected Cash Flow

The objective of this financial analysis has been to assess the viability of the proposed capital expenditure programme, based on the capacity of TAA to generate sufficient revenues to cover the capital costs of projects and necessary operational costs. The model's main parameters and assumptions are the following:

- i) The financial projections are based on actual audited accounts provided from TAA from year 2006/067 and 20012/13 and an unaudited account for year 2013/14.
- ii) Financial projections are based on the air traffic forecasts developed as part of this project. TAA's fiscal year begins in July each year and ends at the end of June in the subsequent year. Therefore, an adjustment has been made to reflect the average revenues taken in from two years of air traffic forecasts based on calendar years from January to December.
- iii) Future staff requirements are based on the current organizational structure with adjustments to meet the requirements of the proposed new development (including the absorption of KADCO into its organisation). It is assumed that TAA will be able to achieve its ultimate staffing requirements within the next 5 years.
- iv) All financial projections are shown in year 2014 nominal dollars with adjustment for inflation of 7% per annum.

- v) There would be a no changes in the TAA rates and charges applicable for Tanzania aeronautical activities, and no new charge applied for cargo activities.
- vi) It is assumed that TAA would be able to retain 100% of the Passenger Service Charge collected by Tanzania Revenue Authority.
- vii) Expenses are based on the expansion of TAA operations and adjusted to take into account the additional costs associated with the additional staffing necessary to operate and maintain the airport development projects.
- viii) For this analysis, capital costs are based on the proposed capital expenditure plan for TAA financing for JNIA, KIA, Mwanza, Arusha, Kigoma, Mtwara, Dodoma and Songwe Airports, as defined in the CAMP. The total additional investment needed is assessed at US\$ 2.858 billion (including price contingency and design and supervision fees). The following table (**Exhibit 8-17**) outlines the proposed capital expenditure programme for the TAA governed airports to be funded by government.

Exhibit 8-17: Proposed TAA Airport Development Project Costs for the Individual Airports

Airport	Phase	Investment (USD million)*
JNIA	Phase 1	51.745
	Phase 2	305.987
	Phase 3	596.934
	Total	954.667
KIA	Lump Sum	242.371
Mwanza	Lump Sum	114.451
Arusha	Lump Sum	96.279
Mtwara	Lump Sum	117.862
Songwe	Lump Sum	102.438
Kigoma	Lump Sum	85.708
Dodoma / Msalato	Lump Sum	189.560

Note: Amount excludes the ANS related projects but includes the contingency amount of 15% and design and site supervision fees of 10%

- ix) The existing CRDB loan will be absorbed by the government, that being the original intention from the start, as with the existing EIB loan, rendering TAA free from long term loan liabilities.
- x) Assumes no additional loan is to be undertaken by TAA, all capital programmes will still continue to be funded by the government.
- xi) Assumes that there is no government subvention

Aeronautical revenue projections are derived from the air traffic forecast, using future traffic as the main variable affecting this revenue category. The air traffic forecasting model is unconstrained by JNIA or other Airports in terms of passenger traffic and aircraft movements. Although there is cargo activity forecast, it is assumed that no charge for cargo processing would be applicable.

Staff salary and benefits, and travel and training expenses are directly related to the number of staff employed by TAA. With an increase in staffing, these expenses would also be impacted. The same applies to the cost of office and other supplies, which also escalates in accordance with the number of staff employed by TAA.

It is assumed that there will be no revision to the current TAA salary structure while other expenses are forecast to increase in line with the rate of inflation, which is expected to average about 6.5% per annum over the planning period.

Maintenance, Operating and Admin expenses include maintenance and utilities expenses as well as other miscellaneous costs. Maintenance costs are inherently variable, and depend mostly on the size and operations of the airports. Escalation of utilities costs for communications, water, power, waste management, lubricants, etc., is also linked to the size of the airport. Therefore, with the development of the airports anticipated, the operating and maintenance expenses of TAA should increase in relation to the number and size of the airports.

All revenues and expenses in relation to TAA's operations have been summarized in a Projected Cash Flow statement shown in **Exhibit 8-18**. TAA's financial sustainability has been assessed by where net cash flow is calculated after taking into account all revenue sources and operating costs assuming all the proposed 'projects' are implemented for the selected airports. The analysis shown is based on air traffic forecasts prepared for the CAMP and adjusted for additional staffing recommended for TAA development, including the absorption of KADCO into TAA as a department by itself. The table in Exhibit 8-18 indicates the projected costs and revenues that have been estimated for TAA operations after absorption of KADCO for the first five years, and the middle and last year of the projection.

It is evident from the results that, as an independent agency, TAA would be able to cover its own operating costs with the proposed increase in revenues resulting from growth of international operations and the development of regional and domestic air service operations. Even with the positive cash flow from operations, TAA could also consider additional revenue sources in order to improve its financial performance. These might be;

- i) A levy on the processing of air cargo;
- ii) Charges for using aerobridges in the terminal; and
- iii) Airfield Lighting charges;

Exhibit 8-18: Projected Cash Flow Statement for a Restructured TAA (Tshs)

	2014/15	2015/16	2016/17	2017/18	2018/19	2022/23	2032/33
<u>Revenues</u>							
Aeronautical	103,755,870,241	110,922,917,388	118,607,955,425	127,092,373,077	135,774,663,817	176,898,878,625	321,849,684,220
Non-Aeronautical	14,164,170,484	15,413,962,149	16,791,070,686	21,914,073,531	23,828,026,806	33,568,570,385	142,966,496,048
	117,920,040,725	126,336,879,537	135,399,026,110	149,006,446,608	159,602,690,623	210,467,449,010	464,816,180,267
<u>Expenses</u>							
Staff Cost	25,349,453,892	28,561,219,797	31,997,866,652	35,587,475,124	39,408,405,061	47,331,430,160	67,937,726,729
Maintenance Cost	10,225,856,954	10,941,666,941	11,707,583,627	14,174,194,682	15,166,388,310	19,880,041,283	93,004,123,092
Operating and Admin Exp	24,387,334,290	26,773,134,471	29,411,532,524	33,983,469,188	37,255,378,815	49,626,209,927	126,751,074,056
	59,962,645,136	66,276,021,209	73,116,982,802	83,745,138,994	91,830,172,186	116,837,681,370	287,692,923,878
Operating Surplus/ (Deficit)	57,957,395,590	60,060,858,328	62,282,043,308	65,261,307,613	67,772,518,437	93,629,767,640	177,123,256,389

8.3 TCAA and TANSA Projected Cash Flow

8.3.1 Separation of Regulatory and Operational Functions

Based on the institutional study detailed above, TCAA is proposed to be restructured to create TCAA into an exclusive regulatory authority, and establish a new autonomous organization, the Tanzania Air Navigation Services Authority (TANSA), as a government-owned commercialized authority responsible for operating the air navigation system.

This section analyses the financial sustainability of both TCAA (as a regulator) and TANSA should the proposed restructuring take place. Financial projections have been prepared for the first five years of operations for TCAA and TANSA from 2014/15, as the earliest date assumed for establishment of TANSA, through to 2019/20.

The following assumptions have been used to develop these projections of financial performance:

- i) The fiscal year for TANSA will correspond to the TCAA's fiscal year. Both TCAA's and TANSA's fiscal year would therefore begin in July of each year and end at the end of June in the subsequent year.
- ii) All financial projections are shown in year 2013 nominal dollars with annual adjustments made for inflation of 7%.
- iii) Financial projections are based on annual reports for year 2006/07 to 2012/13 provided by TCAA.
- iv) Revenue projections are based on existing revenue sources for regulatory and air navigation services revenues. Although there would not be any introduction of any new forms of charges, it is assumed that the existing charges would be levied on all operators in Tanzania at its current rate, including TCAA's 30% portion of Landing and Parking revenues collected by TAA.
- v) The air traffic forecast prepared under Volume I of CAMP has been used for the purposes of developing financial projections.
- vi) It is assumed that TANSA would start operations in 2014/2015 with the staff complement proposed in this report. For TANSA, expenses have been adjusted to take into account only costs associated with the air navigation services functions or staff performing those functions.
- vii) Both TCAA and TANSA Is assumed to achieve optimum staffing proposed in the section above within 5 years, with no change to the salary scales.

- viii) For TANSAs, any proposed air navigation aids equipment capital expenditure is assumed to be fully funded by the government. Throughout the forecast period, it is assumed that the only capital projects required is for nav aids and ATC tower equipment for JNIA amounting to Tshs 11,538,520,000 (including contingency and design and site supervision fees) in fiscal year 2014/15 for the proposed Phase 1 project.
- ix) In terms of asset division, it is assumed the TCAA HQ Building will remain within TCAA, while all navigation and telecommunications equipment will be transferred to TANSAs. The other asset categories will be divided in accordance to its current users.

After restructuring, the projected cash flow statement for TCAA's first five years of operations is shown in **Exhibit 8-19** below. For the proposed Tanzania Air Navigation Services Authority, the projected cash flow statement is provided in **Exhibit 8-20**.

Revenues have been projected based on the existing scheme of charges without additions or significant adjustment to the current fee schedule. In addition to the expenses shown in the tables above, there are expenses that the TANSAs would incur but for which it was not possible to obtain reasonable estimates at this time. For instance, it will be necessary for the TANSAs to purchase both liability and property insurance. This will require both a risk assessment and a valuation of the replacement cost of the assets. Once the TANSAs is created as a separate entity from TCAA, it will be expected to pay rent for the office space it requires at JNIA and at other airports. However, the analysis above is sufficient to provide an estimate of the financial position for both organizations should the restructuring take place.

Based on the results above, it is evident that both TCAA and TANSAs will be able to achieve self-sufficiency in the initial stages of their operations. This indicates that it is financially feasible for the restructuring of the current TCAA into two separate organizations - TCAA and TANSAs. There will be no need for any government intervention to support the organizations operations and management, except for the funding of capital projects for TANSAs.

Exhibit 8-19: Projected Cash Flow Statement for a Restructured TCAA (Tshs)

	2014/15	2015/16	2016/17	2017/18	2018/19
<i>Revenues</i>					
Safety Fees	23,095,041,302	24,775,949,616	26,581,677,219	28,521,671,829	30,515,396,411
Regulatory Revenue	2,923,385,977	3,094,469,627	3,275,729,176	3,470,324,510	3,655,108,134
	26,018,427,278	27,870,419,242	29,857,406,395	31,991,996,338	34,170,504,544
<i>Expenses</i>					
Staff Cost	5,711,204,507	5,248,133,871	4,785,063,236	4,321,992,600	3,858,921,964
Maintenance and Repair Cost	957,379,672	1,024,396,249	1,096,103,987	1,172,831,266	1,254,929,454
Operating and Admin Exp	6,074,088,853	6,381,821,984	6,703,486,717	7,040,388,859	7,370,496,619
	12,742,673,032	12,654,352,105	12,584,653,939	12,535,212,725	12,484,348,038
Operating Surplus/ (Deficit)	13,275,754,246	15,216,067,137	17,272,752,456	19,456,783,614	21,686,156,507

Exhibit 8-20; Projected Cash Flow Statement for Restructured TANSA (Tshs)

	2014/15	2015/16	2016/17	2017/18	2018/19
<i>Revenues</i>					
ANS Revenue	12,664,564,623	13,381,447,444	14,164,926,197	15,000,686,091	15,844,282,202
Aircraft Landing and Parking Revenue	8,461,969,797	8,880,051,444	9,321,518,208	9,896,561,483	10,471,521,474
	21,126,534,419	22,261,498,887	23,486,444,405	24,897,247,575	26,315,803,676
<i>Expenses</i>					
Staff Cost	8,695,437,493	9,518,674,179	10,341,910,864	11,165,147,550	11,988,384,236
Maintenance and Repair Cost	864,971,397	925,519,394	990,305,752	2,005,340,329	2,145,714,152
Operating and Admin Exp	6,046,012,635	6,610,297,628	7,230,019,801	7,931,551,480	8,681,454,208
	15,606,421,524	17,054,491,201	18,562,236,417	21,102,039,359	22,815,552,596
Operating Surplus/ (Deficit)	5,520,112,895	5,207,007,686	4,924,207,988	3,795,208,215	3,500,251,080

8.4 Conclusions of the Financial Performance Analysis

8.4.1 Financial Performance of the TCAA

TCAA, in its current form, is profitable and has healthy financial ratios from its operations. However, it must be noted that TCAA's profitability is declining over the years as its operating costs are increasing at a faster pace than revenues.

TCAA, once restructured into an exclusive regulatory authority, is financially viable. Tansa, the air navigational operations separated from TCAA, is projected to be self sustainable once established, due to the forecast increase in air traffic activity and increasing air navigation charges.

8.4.2 Financial Performance of the TAA

In its current state and without government support, the TAA, has not been consistently profitable over recent years. In terms of cost recovery, TAA's operating cash inflow is sufficient to cover its operating costs, but revenues cannot support the capital requirements for upgrading and expansion projects at the airports. It must be noted, however, that the 'true' operating cost of the TAA is higher than is reported because the cost of airport fire and rescue services (ARFFS) and the cost of the airport security function provided by the military, are not included.

In the future, under a restructured and expanded TAA organisation, the TAA would be able to cover its own operating costs, including the additional ARFFS staff taken over from the Ministry of Home Affairs, however their operating profitability would be reduced by approximately 20% to cover the additional staff costs. Nevertheless, TAA would not be able to cover its own capital costs for airport upgrading and expansion, and will still require government support, or external funding from donor agencies or possibly the private sector, in order to finance the airports improvement programme.

9.0 ECONOMIC ANALYSIS OF PROPOSED CAPITAL DEVELOPMENT PROJECTS

9.1 Introduction

This report addresses the economic assessment of the proposed capital upgrading and expansion projects described in Volume III of the CAMP reports. This economic evaluation has been prepared to quantify and understand the economic benefits that could arise from the proposed airport projects.

The economic evaluation follows generally accepted procedures and includes analysis and quantification of economic benefits from developing airport facilities at nine airports in Tanzania.

Information on the airports considered in this report is provided in **Exhibit 9-1** below.

Exhibit 9-1: Primary International & Mainline Regional Airports

Airport	Location	Runway Length (m)
Julius Nyerere International Airport	Dar es Salaam	3,000
Abeid Amani Karume International Airport	Unguja Island, Zanzibar	3,007
Kilimanjaro International Airport	Kilimanjaro	3,600
Mwanza Airport	Mwanza	3,010
Arusha Airport	Arusha	1,620
Mtwara Airport	Mtwara	2,260
Songwe (Mbeya) Airport	Mbeya	1,569
Kigoma Airport	Ujiji	1,794
Dodoma Airport	Dodoma	2,020

Source: TAA / TCAA

Assumptions and results of the economic impact analysis are outlined in this section. The primary inputs used in the analysis are the costs of the planned capital works projects for the airports, the constrained and unconstrained forecasts of airline passenger traffic related to the airports and their projects, airport costs and revenues, and assumed tourism spend associated with the airport passenger forecasts.

9.2 General Considerations

Airport development projects are a prime candidate for public funding due to the many positive externalities created by airports that may not be quantified as a direct net financial benefit to an airport developer. Airports fit the type of public investment sought by development agencies where a public good can help create conditions under which a larger number of goods can be produced as private goods.

Many of the benefits of airport development go beyond the revenues earned by an airport through aeronautical and concession operations. When an airport is developed or expanded, other surrounding businesses are strengthened or enabled to be established. New businesses develop and grow such as those serving the tourism industry that directly benefit from the passengers arriving at the airport, as well as other businesses that support airport and tourism operations. Airports provide one of the best ways to increase the efficiency of transport in a country, both for the transport of citizens between communities, as well as for opening up areas to increased tourism.

Because tourism in most areas is tied to the beauty and characteristics of the surrounding environment, airport transportation infrastructure facilitates tourism industry development with incentives to protect the local environment as an alternative to other industries that may be less sustainable or may have characteristics that damage natural resources or the environment. Airport transportation infrastructure meets sustainability goals because of their permanent nature. Airport capital investment projects are rarely abandoned at a later date, unless they are replaced by new facilities in a more efficient location, and the existing facilities are transformed into an economically beneficial project, such as a downtown airport being redeveloped into a business park while a new airport is built in a less congested area with more room for future expansion.

The forecasts included in the analysis are for the period from 2014 to 2033. It is expected that the projects evaluated in this study will be a foundation for providing value through the end of the forecast period and beyond.

9.3 Study Methodology

The methodology used to complete this economic impact analysis measures the sum of direct and induced economic impacts (or multiplier effects). These impact areas and assumptions that drive them are defined and described in the sections below.

9.3.1 Direct Impacts

The direct economic impacts considered for this study are increases in regional tourism and international tourism generated by the new airports, and revenues collected by the airports associated with the unconstrained forecasts of passengers relative to constrained forecasts of passengers.

9.3.2 Induced Impacts

The induced impact of an airport project is the off-airport impact above and beyond the direct impacts, where successive rounds of spending create additional income – also known as the “multiplier” effect. Spending resulting from direct activities is spent again by the recipient employees and local businesses.

Tourism brings additional spend to an area. Businesses make additional purchases and hire employees, who also spend their salaries and wages throughout the local and regional economies. Residents who do not work at the airport or in the tourism industry may still be impacted by growth in the number of employees who do work in those areas as the economic growth generated by those areas increases the need for goods and services in all surrounding industries.

9.3.3 Multipliers

Induced impacts are calculated based on multipliers that are derived from economic and statistical models of the general economy of an area and are sensitive to the distribution of employment, payroll, and economic impact among industries. Typical multipliers range from 1.5 to 3.0.

A conservative 1.5 multiplier has been used for the purposes of this study. The results of this multiplier are that for all direct benefits at the airport due to tourism revenues and airport revenues, another 1.5 times those benefits will be assumed to be experienced in the economy as the direct impact revenues are spent and generate other new business and employment revenues.

9.3.4 Economic Internal Rate of Return

The output of the economic impact model is an economic internal rate of return (EIRR). An EIRR with a discount rate of 10%~12% is generally considered a good investment. An EIRR differs from an IRR in that it includes all economic benefits to all parties, rather than just to the party of investors or operators of a project.

Due to the developing nature of the study airport areas, a strong EIRR was expected. The costs of completing the airport projects are relatively low compared to the expected long-term benefits of the projects. This is due to the general long-term value of airport development projects and the impacts tourism can have on different regions in a country where tourism infrastructure is already established.

9.4 Input Data Used for the Economic Analysis

9.4.1 Proposed Capital Projects

The proposed projects and costs for each of the airports are listed in the tables that follow. **Exhibits 9-2, 9-3 and 9-4** list out the proposed projects and costs for capital works for JNIA proposed under the Airport Master Plan. Projects proposed for upgrading and expansion of AAKIA and KIA are listed in **Exhibit 9-5**, and **Exhibit 9-6**, while those for the airports of Mwanza, Arusha, Mtwara, Songwe, Kigoma and Dodoma/Msalato are listed in **Exhibits 9-7, 9-8, 9-9, 9-10, 9-11 and 9-12** respectively. It is assumed that with the completion of these projects, aircraft movement levels and air passenger traffic will be able to reach the levels presented in the unconstrained forecasts of passengers presented in Volume I and discussed in the next section.

9.4.2 Forecasts of Aviation Activity

Air traffic in Tanzania is expected to continue grow as the country's economy develops and matures and as income continues to increase toward a level at which airline travel is affordable for a larger portion of the population.

Growth is expected to continue to be based on the solid foundation of tourism traffic and the symbiotic relationship between tourism and the local economy as Tanzania's unique natural resources result in increased growth in tourism that supports other local economic growth and development.

Tourism growth will directly affect growth in international traffic as global economic growth occurs, with particularly strong growth expected from developing nations such as China and other African countries as their economies expand in size and their share of international tourism increases.

At the same time, increasing domestic prosperity arising from improved domestic economic conditions will positively affect the domestic air services, particularly the main line domestic routes between Dar es Salaam and the growing centres along the northern, western and southern borders of the country where convenient alternative transportation is lacking. Mining activities in the north of the country, and the emergence of an oil and gas industry in the south, can also be expected to create an increase in domestic air travel between Dar es Salaam and those centres catering to these industries.

Exhibit 9-13 shows the unconstrained forecast of passengers for the Primary International and Mainline Regional Airports for which economic analysis has been carried out. **Exhibit 9-14** shows the constrained forecast of passengers for these airports which would reflect the constrained traffic levels assuming that no upgrading or expansion of the airport infrastructure takes place.

**Exhibit 9-2: Proposed Airport Projects
 JNIA Phase 1 Upgrading & Expansion Projects**

Item	Description	Area	Cost Unit Rate	Cost
		m ²	USD	USD (Million)
1	Site clearance and grading		0.70	
2	Earthworks		10.00	-
3	Aircraft Pavement (Runway/Taxiway)	22,646	175.00	3.963
4	Aircraft pavement (Apron)	112,636	96.00	10.813
5	Passenger Terminal Building	5,000	2,500.00	12.500
6	Cargo Building		1,800.00	-
7	ATC Building Including Tower		2,000.00	-
8	Meteorological Building		2,000.00	-
9	RFFS Building		1,800.00	-
10	RFFS Equipment	LS		2.000
11	Roads and Car/Bus Parks	21,604	75.00	1.620
12	Utilities (water/power/telecoms/drainage)	LS		4.000
13	Airport Maintenance		1,800.00	-
14	Operations / Maintenance Equipment	LS		0.750
15	Electrical Substation	LS		2.750
16	Nav aids and ATC Tower equipment	LS		3.750
17	Airfield Ground Lighting	LS		2.500
18	Police / Security Facilities	250	2,000.00	0.500
	Total Cost Before Contingency			45.146
19	Nav aids	LS		3.500
20	Contingency @ 15%			6.771
21	Design and Site Supervision Fees @ 10%			4.514
	Total			56.433

**Exhibit 9-3: Proposed Airport Projects
 JNIA Phase 2 Upgrading & Expansion Projects**

Item	Description	Area	Cost Unit Rate	Cost
		m ²	USD	USD (Million)
1	Site clearance and grading	9,835,640	0.70	6.884
2	Earthworks	2,210,336	10.00	22.103
3	Aircraft Pavement (Runway/Taxiway)	499,934	175.00	87.488
4	Aircraft pavement (Apron)	541,608	96.00	51.994
5	Passenger Terminal Building	10,990	2,500.00	27.475
6	Cargo Building		1,800.00	-
7	ATC Building Including Tower	3,850	2,000.00	7.700
8	Meteorological Building		2,000.00	-
9	RFFS Building	526	1,800.00	0.946
10	RFFS Equipment	LS		2.000
11	Roads and Car/Bus Parks	340,492	75.00	25.536
12	Utilities (water/power/telecoms/drainage)	LS		4.000
13	Airport Maintenance	1,200	1,800.00	2.160
14	Operations / Maintenance Equipment	LS		0.750
15	Electrical Substation	LS		2.750
16	Nav aids and ATC Tower equipment	LS		3.750
17	Airfield Ground Lighting	LS		2.500
18	Police / Security Facilities	250	2,000.00	0.500
	Total Cost Before Contingency			248.539
19	Nav aids	LS		3.500
20	Contingency @ 15%			37.280
21	Design and Site Supervision Fees @ 10%			25.853
	Total			310.174

**Exhibit 9-4: Proposed Airport Projects
 JNIA Phase 3 Upgrading & Expansion Projects**

Item	Description	Area	Cost Unit Rate	Cost
		m ²	USD	USD (Million)
1	Site clearance and grading		0.70	-
2	Earthworks	3,937,475	10.00	39.374
3	Aircraft Pavement (Runway/Taxiway)	852,972	175.00	149.270
4	Aircraft pavement (Apron)	244,914	96.00	23.511
5	Passenger Terminal Building	89,750	2,500.00	224.375
6	Cargo Building		1,800.00	-
7	ATC Building Including Tower		2,000.00	-
8	Meteorological Building		2,000.00	-
9	RFFS Building	1,052	1,800.00	1.893
10	RFFS Equipment	LS		2.000
11	Roads and Car/Bus Parks	354,969	75.00	26.622
12	Utilities (water/power/telecoms/drainage)	LS		4.000
13	Airport Maintenance		1,800.00	-
14	Operations / Maintenance Equipment	LS		0.750
15	Electrical Substation	LS		2.750
16	Nav aids and ATC Tower equipment	LS		3.750
17	Airfield Ground Lighting	LS		2.500
18	Police / Security Facilities	250	2,000.00	0.500
	Total Cost Before Contingency			481.297
19	Nav aids	LS		3.500
20	Contingency @ 15%			72.194
21	Design and Site Supervision Fees @ 10%			48.129
	Total			601.622

**Exhibit 9-5: Proposed Airport Projects
 Abeid Amani Karume International Airport**

Item	Description	Area	Cost Unit Rate	Cost
		m ²	USD	USD (Million)
1	Site clearance and grubbing	633,000	0.70	0.443
2	Earthworks	544,700	10.00	5.447
3	Aircraft Pavement (Runway/Taxiway)	79,120	175.00	13.846
4	Aircraft pavement (Apron)	184,830	96.00	17.743
5	Passenger Terminal Building	29,150	2,500.00	72.875
6	Cargo Building	600	1,800.00	1.080
7	ATC Building Including Tower	300	2,000.00	0.600
8	Meteorological Building	400	2,000.00	0.800
9	RFFS Building	526	1,800.00	0.946
10	RFFS Equipment	LS		2.000
11	Roads and Car/Bus Parks	273,500	75.00	20.512
12	Utilities (water/power/telecoms/drainage)	LS		4.000
13	Airport Maintenance	600	1,800.00	1.080
14	Operations / Maintenance Equipment	LS		0.750
15	Electrical Substation	LS		2.750
16	Nav aids and ATC Tower equipment	LS		3.750
17	Airfield Ground Lighting	LS		2.500
18	Police / Security Facilities	250	2,000.00	0.500
	Total Cost Before Contingency			151.624
19	Nav aids	LS		3.500
20	Contingency @ 15%			22.743
21	Design and Site Supervision Fees @ 10%			15.162
	Total			193.030

**Exhibit 9-6: Proposed Airport Projects
 Kilimanjaro International Airport**

Item	Description	Area	Cost Unit Rate	Cost
		m ²	USD	USD (Million)
1	Site clearance and grubbing	3,666,600	0.70	2.566
3	Earthworks	3,666,600	10.00	36.666
3	Aircraft Pavement (Runway/Taxiway)	428,600	175.00	75.005
4	Aircraft pavement (Apron)	149,600	96.00	14.361
5	Passenger Terminal Building	10,400	2,500.00	26.000
6	Cargo Building	600	1,800.00	1.080
7	ATC Building Including Tower	300	2,000.00	0.600
8	Meteorological Building	400	2,000.00	0.800
9	RFFS Building	526	1,800.00	0.946
10	RFFS Equipment	LS		2.000
11	Roads and Car/Bus Parks	297,220	75.00	22.291
12	Utilities (water/power/telecoms/drainage)	LS		4.000
13	Airport Maintenance	600	1,800.00	1.080
14	Operations / Maintenance Equipment	LS		0.750
15	Electrical Substation	LS		2.750
16	Nav aids and ATC Tower equipment	LS		3.750
17	Airfield Ground Lighting	LS		2.500
18	Police / Security Facilities	250	2,000.00	0.500
	Total Cost Before Contingency			197.647
19	Nav aids	LS		3.500
20	Contingency @ 15%			29.647
21	Design and Site Supervision Fees @ 10%			19.764
	Total			250.559

**Exhibit 9-7: Proposed Airport Projects
 Mwanza Airport**

Item	Description	Area	Cost Unit Rate	Cost
		m ²	USD	USD (Million)
1	Site clearance and grubbing	1,045,000	0.70	0.731
2	Earthworks	1,045,000	10.00	10.450
3	Aircraft Pavement (Runway/Taxiway)	183,900	175.00	32.182
4	Aircraft pavement (Apron)	63,420	96.00	6.088
5	Passenger Terminal Building	7,500	2,500.00	18.750
6	Cargo Building	600	1,800.00	1.080
7	ATC Building Including Tower	n/a	2,000.00	-
8	Meteorological Building	400	2,000.00	0.800
9	RFFS Building	n/a	1,800.00	-
10	RFFS Equipment	n/a		-
11	Roads and Car/Bus Parks	131,983	75.00	9.898
12	Utilities (water/power/telecoms/drainage)	LS		4.000
13	Airport Maintenance	600	1,800.00	1.080
14	Operations / Maintenance Equipment	LS		0.750
15	Electrical Substation	LS		2.750
16	Nav aids and ATC Tower equipment	LS		3.750
17	Airfield Ground Lighting	LS		2.500
18	Police / Security Facilities	250	2,000.00	0.500
	Total Cost Before Contingency			95.311
19	Nav aids	LS		3.500
20	Contingency @ 15%			14.296
21	Design and Site Supervision Fees @ 10%			9.531
	Total			122.638

**Exhibit 9-8: Proposed Airport Projects
 Arusha Airport**

Item	Description	Area	Cost Unit Rate	Cost
		m ²	USD	USD (Million)
1	Site clearance and grubbing	854,700	0.70	0.598
2	Earthworks	590,000	10.00	5.900
3	Aircraft Pavement (Runway/Taxiway)	90,650	175.00	15.863
4	Aircraft pavement (Apron)	88,800	96.00	8.524
5	Passenger Terminal Building	7,500	2,500.00	18.750
6	Cargo Building	600	1,800.00	1.080
7	ATC Building Including Tower	200	2,000.00	0.400
8	Meteorological Building	400	2,000.00	0.800
9	RFFS Building	526	1,800.00	0.946
10	RFFS Equipment	LS		2.000
11	Roads and Car/Bus Parks	141,070.0	75.00	10.580
12	Utilities (water/power/telecoms/drainage)	LS		4.000
13	Airport Maintenance	600.0	1,800.00	1.080
14	Operations / Maintenance Equipment	LS		0.750
15	Electrical Substation	LS		2.750
16	Nav aids and ATC Tower equipment	LS		3.750
17	Airfield Ground Lighting	LS		2.500
18	Police / Security Facilities	250	2,000.00	0.500
	Total Cost Before Contingency			80.773
19	Nav aids	LS		3.500
20	Contingency @ 15%			12.116
21	Design and Site Supervision Fees @ 10%			8.077
	Total			104.467

**Exhibit 9-9: Proposed Airport Projects
Mtwara Airport**

Item	Description	Area	Cost Unit Rate	Cost
		m ²	USD	USD (Million)
1	Site clearance and grubbing	1,924,080	0.70	1.346
2	Earthworks	1,294,400	10.00	12.944
3	Aircraft Pavement (Runway/Taxiway)	203,800	175.00	35.665
4	Aircraft pavement (Apron)	46,587	96.00	4.472
5	Passenger Terminal Building	4,000	2,500.00	10.000
6	Cargo Building	600	1,800.00	1.080
7	ATC Building Including Tower	200	2,000.00	0.400
8	Meteorological Building	408	2,000.00	0.816
9	RFFS Building	526	1,800.00	0.946
10	RFFS Equipment	LS		2.000
11	Roads and Car/Bus Parks	171,451	75.00	12.858
12	Utilities (water/power/telecoms/drainage)	LS		4.000
13	Airport Maintenance	600	1,800.00	1.080
14	Operations / Maintenance Equipment	LS		0.750
15	Electrical Substation	LS		2.750
16	Nav aids and ATC Tower equipment	LS		3.750
17	Airfield Ground Lighting	LS		2.500
18	Police / Security Facilities	250	2,000.00	0.500
	Total Cost Before Contingency			97.859
19	Nav aids	LS		3.500
20	Contingency @ 15%			14.678
21	Design and Site Supervision Fees @ 10%			9.785
	Total			125.824

**Exhibit 9-10: Proposed Airport Projects
 Songwe Airport**

Item	Description	Area	Cost Unit Rate	Cost
		m ²	USD	USD (Million)
1	Site clearance and grubbing	727,340	0.70	0.509
2	Earthworks	727,340	10.00	7.273
3	Aircraft Pavement (Runway/Taxiway)	150,870	175.00	26.402
4	Aircraft pavement (Apron)	68,680	96.00	6.593
5	Passenger Terminal Building	4,000	2,500.00	10.000
6	Cargo Building	600	1,800.00	1.080
7	ATC Building Including Tower	-	2,000.00	-
8	Meteorological Building	400	2,000.00	0.800
9	RFFS Building	-	-	-
10	RFFS Equipment	LS		2.000
11	Roads and Car/Bus Parks	209,500	75.00	15.712
12	Utilities (water/power/telecoms/drainage)	LS		4.000
13	Airport Maintenance	600	1,800.00	1.080
14	Operations / Maintenance Equipment	LS		0.750
15	Electrical Substation	LS		2.750
16	Nav aids and ATC Tower equipment	LS		3.750
17	Airfield Ground Lighting	LS		2.500
18	Police / Security Facilities	250	2,000.00	0.500
	Total Cost Before Contingency			85.700
19	Nav aids	LS		3.500
20	Contingency @ 15%			12.855
21	Design and Site Supervision Fees @ 10%			8.570
	Total			110.625

**Exhibit 9-11: Proposed Airport Projects
 Kigoma Airport**

Item	Description	Area	Cost Unit Rate	Cost
		m ²	USD	USD (Million)
1	Site clearance and grubbing	248,100	0.70	0.173
2	Earthworks	379,380	10.00	3.793
3	Aircraft Pavement (Runway/Taxiway)	128,265	175.00	22.446
4	Aircraft pavement (Apron)	31,695	96.00	3.042
5	Passenger Terminal Building	5,000	2,500.00	12.500
6	Cargo Building	600	1,800.00	1.080
7	ATC Building Including Tower	200	2,000.00	0.400
8	Meteorological Building	400	2,000.00	0.800
9	RFFS Building	526	1,800.00	0.946
10	RFFS Equipment	LS		2.000
11	Roads and Car/Bus Parks	130,713	75.00	9.803
12	Utilities (water/power/telecoms/drainage)	LS		4.000
13	Airport Maintenance	600	1,800.00	1.080
14	Operations / Maintenance Equipment	LS		0.750
15	Electrical Substation	LS		2.750
16	Nav aids and ATC Tower equipment	LS		3.750
17	Airfield Ground Lighting	LS		2.500
18	Police / Security Facilities	250	2,000.00	0.500
	Total Cost Before Contingency			72.316
19	Nav aids	LS		3.500
20	Contingency @ 15%			10.847
21	Design and Site Supervision Fees @ 10%			7.231
	Total			93.896

**Exhibit 9-12: Proposed Airport Projects
 Dodoma/Msalato Airport**

Item	Description	Area	Cost Unit Rate	Cost
		m ²	USD	USD (Million)
1	Site clearance and grubbing	3,769,000	0.70	2.638
2	Earthworks	2,895,900	10.00	28.959
3	Aircraft Pavement (Runway/Taxiway)	286,500	175.00	50.137
4	Aircraft pavement (Apron)	128,000	96.00	12.288
5	Passenger Terminal Building	10,000	2,500.00	25.000
6	Cargo Building	600	1,800.00	1.080
7	ATC Building Including Tower	200	2,000.00	.0400
8	Meteorological Building	400	2,000.00	.0800
9	RFFS Building	526	1,800.00	0.947
10	RFFS Equipment	LS		2.000
11	Roads and Car/Bus Parks	210,920	75.00	15.819
12	Utilities (water/power/telecoms/drainage)	LS		4,000
13	Airport Maintenance	600	1,800.00	1.080
14	Operations / Maintenance Equipment	LS		0.750
15	Electrical Substation	LS		2.750
16	Nav aids and ATC Tower equipment	LS		3.750
17	Airfield Ground Lighting	LS		2.500
18	Police / Security Facilities	250	2,000.00	0.500
	Total Cost Before Contingency			155.398
19	Nav aids	LS		3.500
20	Contingency @ 15%			23.309
21	Design and Site Supervision Fees @ 10%			15.539
	Total			197.748

Exhibit 9-13
Unconstrained Air Passenger Traffic Forecast for the International & Mainline Regional Airports

Airport	Forecast Annual Passengers By Year (Moderate Forecast)						Growth
	2013	2015	2020	2025	2030	2033	2014-2033
JNIA	2,348,819	2,902,937	4,126,663	5,704,921	7,796,529	9,403,795	6.8%
KIA	824,848	943,702	1,309,002	1,773,717	2,369,876	2,819,971	6.3%
AAKIA	768,898	875,076	1,198,258	1,603,392	2,116,325	2,500,366	6.0%
Mwanza	439,128	549,576	780,328	1,075,663	1,466,154	1,765,727	6.7%
Arusha	187,911	226,401	306,591	405,726	529,643	621,652	5.8%
Mtwara	53,062	62,158	90,508	127,544	174,817	211,299	7.1%
Songwe	46,572	49,899	72,675	102,454	140,448	169,713	7.1%
Kigoma	28,626	33,107	48,253	64,628	88,750	113,368	7.1%
Dodoma /Msalato	13,577	14,972	54,337	153,533	191,659	306,646	17.5%

Sources: Consultant Analysis

Exhibit 9-14
Constrained Passenger Traffic Forecast for the International & Mainline Regional Airports

Airport	Forecast Constrained Annual Passengers By Year						Growth
	2013	2015	2020	2025	2030	2033	2014-2033
JNIA	2,438,819	2,610,368	3,352,519	4,185,001	5,163,247	5,856,933	4.6%
KIA	734,279	806,562	966,079	1,025,210	1,025,210	1,025,210	1.5%
AAKIA	768,898	788,276	832,285	851,288	851,288	851,288	0.5%
Mwanza	439,128	428,110	595,124	631,550	631,550	631,550	1.6%
Arusha	187,911	204,432	241,329	256,184	256,184	256,184	1.4%
Mtwara	53,062	59,452	73,357	77,847	77,847	77,847	1.7%
Songwe	46,572	52,175	64,367	68,307	68,307	68,307	1.7%
Kigoma	28,626	32,084	39,608	42,032	42,032	42,032	1.7%
Dodoma / Msalato	13,577	14,363	16,254	17,249	17,249	17,249	1.1%

Sources: Consultant Analysis

9.4.3 Tourism Data

Passenger activity at the new airports will be driven partly by tourism activity. Tourism will, in turn, create benefits through spend in the region of each airport. Tourism visitor activity has grown substantially during the last two decades in Tanzania, as shown in **Exhibit 9-15** below.

Exhibit 9-15: Tanzania Visitor Arrivals

Year	Visitor Arrivals	Annual Change
1995	295,312	-
1996	326,188	10.5%
1997	359,096	10.1%
1998	482,331	34.3%
1999	627,325	30.1%
2000	501,669	-20.0%
2001	525,000	4.7%
2002	575,000	9.5%
2003	576,000	0.2%
2004	582,807	1.2%
2005	612,754	5.1%
2006	644,124	5.1%
2007	719,031	11.6%
2008	770,376	7.1%
2009	714,367	-7.3%
2010	782,699	9.6%
2011	867,994	10.9%
2012	1,077,058	24.1%
CAAGR (1995-2012)		7.9%

Source: TAA Annual Statistical Report for 2012

According to the Tanzania Tourist Board, tourism accounts for 17.2% of the Tanzania GDP and about 25% of total export earnings.

Although many tourists come from Europe and other international origins outside Africa, the region with the largest share of visitors to Tanzania is Africa, as shown in **Exhibit 9-16**, followed by Europe which is served by direct international air service.

Exhibit 9-16: Tourist Arrivals by Type

Region	2011 Share of Visitors	Total
Africa	450,782	52%
Europe	248,940	29%
Americas	92,503	11%
East Asia and Pacific	39,867	5%
South Asia	20,621	2%
Middle East	15,281	2%
Total	867,994	100%

Source: TAA Annual Report, 2011

It is assumed in this economic analysis study that the nearly half of the arrivals at the project airports will be tourists based on TAA historical visitor and passenger data.

9.5 Economic Analysis of Project Benefits

The direct and induced economic benefits found from this analysis to be associated with the new airports are quantified and explained below.

9.5.1 Costs

For the economic analysis, the project costs listed in the above exhibits are the primary initial cost. The operation and maintenance costs and aeronautical revenue of the project facilities have been estimated on the basis of actual airport cost and revenue data supplied by each airport.

9.5.2 Benefits

Economic benefits are derived from the potential increase air traffic capacity in the unconstrained forecasts relative to the constrained forecasts as a result of the proposed projects, comparing scenarios that reflect a “with project” situation against a “without project” situation. Improved airport infrastructure will improve accessibility to the different regions in the country and will support efforts to increase tourist arrivals. Domestic passengers will benefit from improved access to each airport region, while business and government travellers will benefit in terms of productivity. Increased air connectivity is expected to contribute to increases in international tourist arrivals representing a benefit to the economy through the additional export of tourist services, consisting of spending on goods and services such as lodging, food, arts and crafts and related tourist services.

Benefits to passengers are captured in their willingness to pay for aeronautical services and are derived from aeronautical and commercial revenues received by the airports from landing charges, passenger facility charges, and other fees and charges for airport services. The wider economy benefits from the increase in tourism expenditures. According to the World Bank, tourists in Tanzania spend an average of \$1,600 per person per visit. It is assumed that with improved air connectivity, tourism will increase in the project airport regions. For quantification of benefits, it is assumed that 49% of incremental passengers will be tourists and that 50% of the average spending level will be spent at each specific region (it is assumed for simplicity that the other 50% will be spent at another airport area such as JNIA given that most tourists visit more than one area during a trip to Tanzania)

In addition to the above direct benefits, benefits from induced impact are also considered using the assumed multiplier of 1.5.

9.5.3 Distribution of Benefits

The benefits quantified in this study are expected to have significant positive effects upon the poor in the regions where the airports will be developed. Some will benefit from the direct benefits in terms of new spending and employment opportunities at the airport and airlines serving the regions.

Many others will benefit from the induced benefits calculated as support industries and companies are developed in response to the new airport operations and tourism induced by new airline service.

9.5.4 Net Benefits and Economic Internal Rate of Return (EIRR)

Net benefits and EIRR are calculated by taking the costs of the projects during the current period as well as ongoing costs associated with the increase in passengers in the “with project” scenario, then adding the benefits into the future that will be derived from the projects. The EIRR includes all economic benefits and is the economic rate of return from the investment in the projects.

The cost and benefit streams have been estimated for a 20-year period. The residual value after 20 years is assumed to be zero. All costs and benefits used for the analysis are in nominal 2014 values. The benefits are assumed to be the same beyond year 2033 as additional investment will be needed to meet incremental demand beyond 2033. The economic internal rate of return (EIRR) for all the proposed project investments is estimated at 50.63%.

The cost-benefit stream and EIRR calculations for all of the projects proposed for JNIA, KIA and the six Mainline Regional Airports are presented in **Exhibit 9-17**, while the same information is presented in separate tables for JNIA (**Exhibit 9-18**), AAKIA (**Exhibit 9-19**), KIA (**Exhibit 9-20**) and for each of the six Mainline Regional Airports (**Exhibits 9-21 to 9-26**).

Exhibit 9-17: Economic Internal Rate of Return for the Projects (USD)
Total of All Projects at JNIA, KIA, AAKIA & 6 Mainline Regional Airports

Year	Costs			Benefits			Net benefits
	Project costs	Operations costs (staff)	Maintenance costs	Tourism revenue	Aeronautical revenue	Induced benefits	
2014							
2015	1,255,223,478						(1,255,223,478)
2016		948,426	1,281,640	165,630,854	3,432,286	253,594,710	420,427,784
2017		1,352,849	1,839,018	233,860,253	4,862,920	358,084,759	593,616,065
2018	310,674,483	1,815,493	2,482,863	310,067,072	6,464,648	474,797,580	476,356,462
2019		2,542,904	3,433,139	412,142,854	8,610,902	631,130,635	1,045,908,349
2020		3,366,255	4,517,373	525,286,923	10,978,957	804,398,819	1,332,781,071
2021		4,302,395	5,753,535	651,252,878	13,596,095	997,273,460	1,652,066,503
2022		5,366,000	7,151,684	791,883,256	16,491,177	1,212,561,649	2,008,418,398
2023		6,445,081	8,503,458	941,058,293	19,606,350	1,440,996,964	2,386,713,067
2024	601,622,336	7,522,157	9,723,209	1,098,639,769	23,046,580	1,682,529,524	2,185,348,170
2025		8,674,525	11,044,551	1,267,355,454	26,744,085	1,941,149,307	3,215,529,769
2026		9,907,344	12,473,020	1,448,001,323	30,717,318	2,218,077,962	3,674,416,239
2027		11,225,868	14,014,214	1,641,414,941	34,985,860	2,514,601,202	4,165,761,921
2028		12,635,949	15,674,548	1,848,516,485	39,570,908	2,832,131,090	4,691,907,987
2029		14,144,300	17,461,479	2,070,340,170	44,495,670	3,172,253,760	5,255,483,821
2030		15,758,749	19,383,645	2,308,072,570	49,785,836	3,536,787,609	5,859,503,621
2031		17,488,747	21,451,237	2,563,125,750	55,470,433	3,927,894,274	6,507,550,472
2032		19,346,224	23,676,581	2,837,262,559	61,583,259	4,348,268,726	7,204,091,737
2033		21,806,085	26,530,811	3,182,317,298	68,708,423	4,876,538,581	8,079,227,406
						EIRR	59.95%
						ENPV	\$12,852,052,021

Exhibit 9-18: Economic Internal Rate of Return for the Projects (USD)
JNIA – Phases 1, 2 & 3

<u>Year</u>	<u>Costs</u>			<u>Benefits</u>			<u>Net benefits</u>
	<u>Project costs</u>	<u>Operations costs (staff)</u>	<u>Maintenance costs</u>	<u>Tourism revenue</u>	<u>Aeronautical revenue</u>	<u>Induced benefits</u>	
2014							
2015	56,433,008						(56,433,008)
2016		254,566	510,899	68,781,579	2,100,166	106,322,618	176,438,899
2017		361,501	725,512	97,674,590	2,982,381	150,985,456	250,555,414
2018	310,674,483	481,288	965,918	130,040,112	3,970,624	201,016,105	22,905,154
2019		611,678	1,227,603	165,270,433	5,046,342	255,475,162	423,952,656
2020		755,579	1,516,406	204,151,450	6,233,529	315,577,467	523,690,461
2021		914,134	1,834,615	246,991,566	7,541,602	381,799,752	633,584,171
2022		1,088,571	2,184,701	294,123,073	8,980,708	454,655,671	754,486,180
2023		1,280,215	2,569,321	345,903,913	10,561,776	534,698,534	887,314,686
2024	601,622,336	1,485,227	2,980,769	401,296,542	12,253,126	620,324,502	427,785,837
2025		1,708,703	3,429,271	461,677,782	14,096,797	713,661,868	1,184,298,473
2026		1,952,057	3,917,670	527,430,212	16,104,472	815,302,025	1,352,966,981
2027		2,216,808	4,449,010	598,963,714	18,288,665	925,878,567	1,536,465,127
2028		2,504,580	5,026,552	676,717,346	20,662,782	1,046,070,192	1,735,919,188
2029		2,817,113	5,653,789	761,161,346	23,241,182	1,176,603,791	1,952,535,417
2030		3,156,271	6,334,461	852,799,264	26,039,240	1,318,257,755	2,187,605,526
2031		3,524,051	7,072,574	952,170,243	29,073,418	1,471,865,491	2,442,512,527
2032		3,922,587	7,872,413	1,059,851,451	32,361,339	1,638,319,185	2,718,736,975
2033		4,354,166	8,738,569	1,176,460,673	35,921,867	1,818,573,809	3,017,863,614
						EIRR	330.97%
						ENPV	\$5,006,377,019

**Exhibit 9-19: Economic Internal Rate of Return for the Projects (USD)
Abeid Amani Karume International Airport (AAKIA)**

<u>Year</u>	<u>Costs</u>			<u>Benefits</u>			<u>Net benefits</u>
	<u>Project costs</u>	<u>Operations costs (staff)</u>	<u>Maintenance costs</u>	<u>Tourism revenue</u>	<u>Aeronautical revenue</u>	<u>Induced benefits</u>	
2014							
2015	193,030,100						(193,030,100)
2016		164,184	159,892	52,541,273	360,778	79,353,077	131,931,052
2017		227,133	221,196	72,685,967	499,103	109,777,605	182,514,346
2018		294,683	286,981	94,302,961	647,537	142,425,748	236,794,582
2019		367,402	357,799	117,573,949	807,329	177,571,917	295,227,995
2020		444,953	433,323	142,391,602	977,741	215,054,015	357,545,082
2021		527,647	513,855	168,854,667	1,159,451	255,021,178	423,993,795
2022		615,810	599,714	197,068,137	1,353,181	297,631,978	494,837,773
2023		709,791	691,239	227,143,649	1,559,696	343,055,019	570,357,334
2024		809,250	788,098	258,971,874	1,778,247	391,125,182	650,277,955
2025		914,415	890,513	292,626,080	2,009,336	441,953,124	734,783,612
2026		1,025,614	998,807	328,211,639	2,253,686	495,697,988	824,138,892
2027		1,143,198	1,113,317	365,840,034	2,512,064	552,528,147	918,623,731
2028		1,267,533	1,234,402	405,629,217	2,785,279	612,621,745	1,018,534,306
2029		1,399,011	1,362,443	447,703,988	3,074,188	676,167,264	1,124,183,987
2030		1,538,043	1,497,842	492,196,390	3,379,698	743,364,133	1,235,904,336
2031		1,685,067	1,641,022	539,246,136	3,702,768	814,423,356	1,354,046,171
2032		1,840,544	1,792,435	589,001,052	4,044,413	889,568,198	1,478,980,684
2033		2,004,963	1,952,557	641,617,555	4,405,708	969,034,894	1,611,100,637
						EIRR	97.39%
						ENPV	\$3,193,873,727

**Exhibit 9-20: Economic Internal Rate of Return for the Projects (USD)
 Kilimanjaro International Airport (KIA)**

<u>Year</u>	<u>Costs</u>			<u>Benefits</u>			<u>Net benefits</u>
	<u>Project costs</u>	<u>Operations costs (staff)</u>	<u>Maintenance costs</u>	<u>Tourism revenue</u>	<u>Aeronautical revenue</u>	<u>Induced benefits</u>	
2014							
2015	250,559,400						(250,559,400)
2016		392,623	392,623	20,735,072	785,246	32,280,477	53,015,549
2017		554,348	554,348	29,276,034	1,108,696	45,577,095	74,853,130
2018		733,798	733,798	38,753,106	1,467,596	60,331,053	99,084,158
2019		1,086,734	1,086,734	57,392,245	2,173,468	89,348,570	146,740,816
2020		1,468,623	1,468,623	77,560,463	2,937,247	120,746,564	198,307,027
2021		1,881,463	1,881,463	99,363,228	3,762,927	154,689,232	254,052,460
2022		2,327,383	2,327,383	122,912,974	4,654,765	191,351,609	314,264,583
2023		2,808,651	2,808,651	148,329,550	5,617,302	230,920,277	379,249,826
2024		3,426,938	3,426,938	180,982,334	6,853,876	281,754,315	462,736,649
2025		4,082,151	4,082,151	215,585,204	8,164,301	335,624,258	551,209,462
2026		4,776,495	4,776,495	252,254,707	9,552,990	392,711,547	644,966,254
2027		5,512,311	5,512,311	291,114,360	11,024,622	453,208,472	744,322,832
2028		6,292,076	6,292,076	332,295,065	12,584,152	517,318,826	849,613,891
2029		7,118,418	7,118,418	375,935,555	14,236,836	585,258,586	961,194,141
2030		7,994,120	7,994,120	422,182,859	15,988,240	657,256,649	1,079,439,507
2031		8,922,133	8,922,133	471,192,799	17,844,267	733,555,599	1,204,748,398
2032		9,905,585	9,905,585	523,130,518	19,811,170	814,412,531	1,337,543,049
2033		10,947,789	10,947,789	578,171,035	21,895,577	900,099,918	1,478,270,952
						EIRR	50.79%
						ENPV	\$2,187,284,489

**Exhibit 9-21: Economic Internal Rate of Return for the Projects (USD)
 Mwanza Airport**

<u>Year</u>	<u>Costs</u>			<u>Benefits</u>			<u>Net benefits</u>
	<u>Project costs</u>	<u>Operations costs (staff)</u>	<u>Maintenance costs</u>	<u>Tourism revenue</u>	<u>Aeronautical revenue</u>	<u>Induced benefits</u>	
2014							
2015	122,638,806						(122,638,806)
2016		56,875	70,747	13,493,087	109,935	20,404,534	33,879,934
2017		80,768	100,467	19,161,447	156,118	28,976,347	48,112,677
2018		107,533	133,760	25,511,238	207,853	38,578,637	64,056,435
2019		163,186	202,987	38,714,496	315,426	58,544,883	97,208,632
2020		223,597	278,133	53,046,616	432,197	80,218,220	133,195,303
2021		289,111	359,626	68,589,196	558,830	103,722,040	172,221,329
2022		360,095	447,923	85,429,498	696,037	129,188,303	214,505,820
2023		436,942	543,513	103,660,840	844,577	156,758,126	260,283,088
2024		535,984	666,712	127,157,799	1,036,018	192,290,725	319,281,846
2025		641,370	797,802	152,159,701	1,239,721	230,099,133	382,059,384
2026		753,506	937,288	178,763,158	1,456,473	270,329,447	448,858,283
2027		872,827	1,085,712	207,070,996	1,687,111	313,137,160	519,936,729
2028		999,793	1,243,645	237,192,654	1,932,527	358,687,772	595,569,515
2029		1,134,896	1,411,699	269,244,613	2,193,670	407,157,425	676,049,114
2030		1,278,657	1,590,525	303,350,848	2,471,551	458,733,599	761,686,816
2031		1,431,634	1,780,813	339,643,312	2,767,243	513,615,833	852,813,942
2032		1,594,418	1,983,300	378,262,449	3,081,893	572,016,512	949,783,136
2033		1,767,639	2,198,770	419,357,741	3,416,717	634,161,687	1,052,969,736
						EIRR	60.35%
						ENPV	\$1,560,102,886

**Exhibit 9-22: Economic Internal Rate of Return for the Projects (USD)
 Arusha Airport**

Year	Costs			Benefits			Net benefits
	Project costs	Operations costs (staff)	Maintenance costs	Tourism revenue	Aeronautical revenue	Induced benefits	
2014							
2015	104,467,363						(104,467,363)
2016		27,001	26,313	5,576,389	39,152	8,423,311	13,985,538
2017		37,937	36,971	7,834,887	55,009	11,834,844	19,649,833
2018		49,973	48,700	10,320,687	72,462	15,589,723	25,884,199
2019		71,277	69,462	14,720,482	103,353	22,235,752	36,918,849
2020		94,228	91,828	19,460,519	136,633	29,395,729	48,806,825
2021		118,934	115,905	24,562,906	172,457	37,103,045	61,603,569
2022		145,507	141,802	30,051,099	210,990	45,393,134	75,367,914
2023		174,070	169,637	35,950,015	252,407	54,303,632	90,162,346
2024		211,555	206,168	43,691,716	306,762	65,997,716	109,578,470
2025		251,106	244,712	51,860,009	364,112	78,336,181	130,064,483
2026		292,838	285,381	60,478,611	424,623	91,354,851	151,679,866
2027		336,870	328,292	69,572,546	488,472	105,091,528	174,487,384
2028		383,333	373,572	79,168,243	555,844	119,586,131	198,553,314
2029		432,360	421,350	89,293,610	626,935	134,880,817	223,947,652
2030		484,094	471,767	99,978,119	701,951	151,020,105	250,744,313
2031		538,687	524,969	111,252,895	781,112	168,051,010	279,021,360
2032		596,296	581,112	123,150,809	864,648	186,023,186	308,861,234
2033		657,091	640,359	135,706,579	952,802	204,989,072	340,351,002
					EIRR		38.03%
					ENPV		\$479,161,917

**Exhibit 9-23: Economic Internal Rate of Return for the Projects (USD)
 Mtwara Airport**

<u>Year</u>	<u>Costs</u>			<u>Benefits</u>			<u>Net benefits</u>
	<u>Project costs</u>	<u>Operations costs (staff)</u>	<u>Maintenance costs</u>	<u>Tourism revenue</u>	<u>Aeronautical revenue</u>	<u>Induced benefits</u>	
2014							
2015	125,824,791						(125,824,791)
2016		9,830	24,511	1,528,680	10,733	2,309,120	3,814,192
2017		14,015	33,199	2,179,503	15,302	3,292,209	5,439,801
2018		18,733	42,157	2,913,296	20,454	4,400,626	7,273,486
2019		29,847	63,810	4,641,681	32,589	7,011,406	11,592,019
2020		41,989	85,279	6,529,943	45,847	9,863,685	16,312,206
2021		55,240	106,582	8,590,681	60,316	12,976,495	21,465,669
2022		69,688	127,735	10,837,455	76,090	16,370,317	27,086,440
2023		85,425	148,752	13,284,850	93,274	20,067,185	33,211,132
2024		103,647	171,458	16,118,668	113,170	24,347,758	40,304,491
2025		123,054	193,384	19,136,773	134,360	28,906,700	47,861,394
2026		143,724	214,573	22,351,149	156,928	33,762,117	55,911,898
2027		165,737	235,067	25,774,563	180,964	38,933,291	64,488,015
2028		189,182	254,903	29,420,609	206,564	44,440,759	73,623,847
2029		214,152	274,120	33,303,768	233,827	50,306,394	83,355,718
2030		240,745	292,752	37,439,462	262,864	56,553,489	93,722,318
2031		269,068	310,834	41,844,115	293,790	63,206,857	104,764,860
2032		299,233	328,397	46,535,222	326,726	70,292,922	116,527,240
2033		331,360	345,472	51,531,414	361,805	77,839,827	129,056,213
						EIRR	18.53%
						ENPV	\$93,503,196

**Exhibit 9-24: Economic Internal Rate of Return for the Projects (USD)
 Songwe Airport**

<u>Year</u>	<u>Costs</u>			<u>Benefits</u>			<u>Net benefits</u>
	<u>Project costs</u>	<u>Operations costs (staff)</u>	<u>Maintenance costs</u>	<u>Tourism revenue</u>	<u>Aeronautical revenue</u>	<u>Induced benefits</u>	
2014							
2015	110,625,710						(110,625,710)
2016		12,445	28,718	1,231,819	8,202	1,860,031	3,058,888
2017		17,745	38,901	1,756,380	11,695	2,652,112	4,363,541
2018		23,721	49,401	2,347,884	15,633	3,545,276	5,835,672
2019		37,814	74,815	3,742,849	24,922	5,651,656	9,306,797
2020		53,213	100,016	5,266,989	35,070	7,953,088	13,101,918
2021		70,020	125,025	6,930,499	46,146	10,464,968	17,246,569
2022		88,345	149,859	8,744,351	58,224	13,203,862	21,768,232
2023		108,309	174,537	10,720,350	71,381	16,187,596	26,696,481
2024		131,423	201,196	13,008,172	86,614	19,642,180	32,404,348
2025		156,043	226,942	15,445,012	102,840	23,321,778	38,486,645
2026		182,266	251,826	18,040,580	120,122	27,241,053	44,967,663
2027		210,197	275,896	20,805,219	138,531	31,415,624	51,873,280
2028		239,948	299,199	23,749,949	158,138	35,862,130	59,231,069
2029		271,637	321,777	26,886,506	179,022	40,598,292	67,070,406
2030		305,391	343,672	30,227,392	201,268	45,642,990	75,422,586
2031		341,343	364,925	33,785,926	224,962	51,016,332	84,320,952
2032		379,637	385,572	37,576,294	250,200	56,739,740	93,801,025
2033		420,427	405,649	41,613,606	277,082	62,836,033	103,900,646
						EIRR	17.49%
						ENPV	\$66,765,334

**Exhibit 9-25: Economic Internal Rate of Return for the Projects (USD)
 Kigoma Airport**

Year	Costs			Benefits			Net benefits
	Project costs	Operations costs (staff)	Maintenance costs	Tourism revenue	Aeronautical revenue	Induced benefits	
2014							
2015	93,896,050						(93,896,050)
2016		7,807	10,454	701,707	6,651	1,062,537	1,752,635
2017		11,134	14,610	1,000,701	9,485	1,515,280	2,499,723
2018		14,886	19,143	1,337,953	12,682	2,025,952	3,342,557
2019		23,762	29,947	2,135,762	20,244	3,234,008	5,336,305
2020		33,462	41,328	3,007,648	28,508	4,554,234	7,515,599
2021		44,052	53,320	3,959,479	37,530	5,995,513	9,895,150
2022		55,602	65,953	4,997,569	47,370	7,567,408	12,490,793
2023		68,186	79,263	6,128,718	58,091	9,280,214	15,319,574
2024		82,755	94,274	7,438,127	70,502	11,262,944	18,594,544
2025		98,275	109,716	8,833,161	83,725	13,375,329	22,084,225
2026		114,811	125,613	10,319,428	97,813	15,625,861	25,802,678
2027		132,429	141,990	11,902,902	112,822	18,023,586	29,764,892
2028		151,198	158,872	13,589,950	128,813	20,578,144	33,986,836
2029		171,196	176,287	15,387,356	145,849	23,299,807	38,485,530
2030		192,501	194,262	17,302,348	164,001	26,199,523	43,279,109
2031		215,201	212,826	19,342,631	183,340	29,288,957	48,386,901
2032		239,386	232,009	21,516,415	203,944	32,580,537	53,829,501
2033		265,153	251,843	23,832,445	225,896	36,087,513	59,628,858
						EIRR	13.26%
						ENPV	\$11,141,560

**Exhibit 9-26: Economic Internal Rate of Return for the Projects (USD)
 Dodoma / Msalato Airport**

<u>Year</u>	<u>Costs</u>			<u>Benefits</u>			<u>Net benefits</u>
	<u>Project costs</u>	<u>Operations costs (staff)</u>	<u>Maintenance costs</u>	<u>Tourism revenue</u>	<u>Aeronautical revenue</u>	<u>Induced benefits</u>	
2014							
2015	197,748,250						(197,748,250)
2016		23,095	57,482	1,041,246	11,423	1,579,005	2,551,097
2017		48,269	113,815	2,290,742	25,131	3,473,810	5,627,600
2018		90,878	203,004	4,539,834	49,806	6,884,461	11,180,218
2019		151,204	319,983	7,950,958	87,229	12,057,280	19,624,280
2020		250,609	502,435	13,871,693	152,185	21,035,817	34,306,651
2021		401,795	763,144	23,410,656	256,836	35,501,237	58,003,790
2022		615,001	1,106,615	37,719,100	413,812	57,199,368	93,610,663
2023		773,491	1,318,546	49,936,408	547,847	75,726,381	124,118,599
2024		735,378	1,187,597	49,974,537	548,265	75,784,203	124,384,030
2025		699,408	1,070,061	50,031,731	548,892	75,870,936	124,682,091
2026		666,033	965,367	50,151,839	550,210	76,053,074	125,123,724
2027		635,491	872,620	50,370,607	552,610	76,384,826	125,799,932
2028		608,305	791,327	50,753,451	556,810	76,965,392	126,876,022
2029		585,519	721,596	51,423,428	564,161	77,981,383	128,661,857
2030		568,925	664,243	52,595,888	577,023	79,759,367	131,699,110
2031		561,563	621,140	54,647,692	599,534	82,870,838	136,935,360
2032		568,538	595,758	58,238,349	638,926	88,315,914	146,028,894
2033		1,057,496	1,049,803	114,026,250	1,250,969	172,915,828	286,085,748
						EIRR	22.54%
						ENPV	\$253,841,893

9.5.5 Sensitivity Analysis

A sensitivity analysis was carried out to test the effects alternative values of key parameters that determine the project costs and benefits. This analysis indicated that the economic viability of the project would remain satisfactory even under some adverse scenarios. Switching values also were calculated under which the project EIRR would fall below the opportunity cost of capital with the sensitivity cases. Based on the analysis, it was estimated that it would require a cost increase of 614% or a decrease in benefits of 85% to 89% to reach a cut-off EIRR of 12%, giving a high confidence level on the economic viability of the proposed project.

Exhibit 9-27 summarizes the EIRRs for the base case and sensitivity cases.

Exhibit 9-27: Sensitivity Analysis Results

Item	Change	EIRR (%)	Switching Value
Initial Base Case Economic Analysis	-	59.95%	-
Initial capital costs 50% higher	- 13.96 pts	45.99%	614%
Total benefits decrease by 25%	- 10.39 pts	49.56%	-85%
Passenger forecast 10% higher	+ 3.98 pts	63.93%	-89%
Passenger forecast 10% lower	- 4.05 pts	55.90%	-87%

Sources: Consultants Analysis and Estimates

9.6 Conclusions of the Economic Analysis

The Economic Analysis of the proposed upgrading programme has assessed the economic impact of implementing the capital works to upgrade and expand the capacity of the three international airports of JNIA, KIA and AAKIA, and the 6 Mainline Regional Airports, so as to meet forecast future air traffic demand within the CAMP study period to 2033. Required capital improvements applicable to these airports are described in Volume III of the CAMP reports and relate to meeting forecast air traffic demand described in Volume I of the CAMP reports.

The Economic Analysis undertaken for the CAMP followed the input-output method of quantifying benefits from the projects using inputs of passenger forecasts and project costs. These inputs were combined with basic assumptions on future airport benefits, average tourist spend rates, and induced multipliers to determine total net benefits and the Economic Internal Rate of Return of the proposed investment in each airport. Taken into account were the operating costs and revenues of the airports and the impact of proposed capital expenditures, as well as the value of the economic benefits to the nation expected to be derived from carrying out the capital works at the airports. Analysis of these factors has then been expressed in terms of the economic net present value (ENPV) to the nation arising from implementation of the capital projects, as well as the economic internal rate of return expected

from the capital expenditures and the resulting effects that these might have in terms of their economic return on the capital investments proposed.

The results of the economic analysis are summarised in **Exhibit 9-28**, provided below.

Exhibit 9-28
Results of Economic Analysis of Capital Projects

Airport	EIRR (%)	ENPV (USD billion)
JNIA	330.97	5.006
AAKIA	97.39	3.193
KIA	50.79	2.187
Mwanza	60.35	1.560
Arusha	38.03	0.479
Mtwara	18.53	0.093
Songwe	17.49	0.066
Kigoma	13.26	0.011
Dodoma	22.54	0.253
Total for All Airports	59.95	12.852

The Economic Net Present Value (ENPV) resulting from the analysis of upgrading and expanding the three international and six Mainline Regional airports is positive in all cases, and considerable in the cases of JNIA, KIA, AAKIA and Mwanza Airports, as shown in Exhibit 9-27. The Economic Internal Rate of Return on the projects described in this economic analysis is also high and signifies that the value the proposed investment in these projects to the country is high, and consequently worthwhile in an economic sense.

An overall EIRR of 59.95% was determined for the proposed airports upgrading and expansion investment on the basis of the Baseline (Moderate) air traffic forecast. The EIRR calculated for this investment was therefore well above the typical target rate of 10%~12%.

Sensitivity analyses were also performed on the project cost inputs and air traffic forecast inputs in the analysis. This found that significant changes to the assumptions of forecast air traffic and airport costs did not have large effects on the EIRR, demonstrating the economic value to the nation of moving forward with the proposed investment in the proposed airport development projects.

10.0 POTENTIAL PRIVATE SECTOR ROLE IN CIVIL AVIATION INFRASTRUCTURE DEVELOPMENT

10.1 Private Sector Investment in Civil Aviation Development Projects

Private sector investment can be applied to upgrade and expand the civil aviation infrastructure, including the airlines, airports and other supporting infrastructure where revenues are earned from users.

While there is a potential role for the private sector to invest in expanding the existing airlines of Tanzania, and in establishing new airlines, these are essentially already in the hands of the private sector, with the exception of Air Tanzania. For those airlines already owned by the private sector any such investment is within the realm of the private sector to encourage, and to seek out investors, and there are few impediments to prevent the private sector from investing in a new airline. The emergence of Fastjet is an example of what might be achieved in the airline industry of Tanzania with the initiative of the private sector. As regards Air Tanzania, discussion in Volume I of the CAMP reports has addressed the potential for resuscitating Air Tanzania using private sector investment, and these opportunities should be explored with the encouragement of the Government.

Aside from the airlines, the airports of Tanzania, and various aviation support services and facilities, represent an opportunity for the private sector to participate, either directly or in partnership, with government. A substantial capital upgrading and expansion programme has been proposed in the Civil Aviation Master Plan which may, in some cases, be beyond the capability of the TAA, TCAA and the government to fund, given the resources available, and other competing demands for capital funding in the country. The possibility of financing some of the proposed projects using the resources of the private sector as investors, and financial partners, has been mooted and the government, particularly, has been keen to explore this possibility.

There are, however, some fundamental requirements for attracting the private sector as an investor in civil aviation infrastructure development, and foremost among these are:

- The project in which private sector investment is sought must be financially viable in its own right, and generate a return to the private sector from revenues accruing from that investment that would be considered to be worthwhile and equal to, or better than, the return that the private sector investor might obtain from investing elsewhere;
- The legal empowerment for the Government or an agency of government to enter into partnership agreements with the private sector for investment in government-owned facilities must be in place through legislation;

- The contractual arrangements between the private sector investor and the Government (or government agency) must be secure, and the contracts guaranteed to be upheld by the Government, and;
- The period of time for recovery of the investment by the private sector investor must be sufficiently long to enable an acceptable return on the investment to be made by the private sector.

With the above conditions satisfied, the opportunity does exist for the government to attract private sector investors in the development of the civil aviation infrastructure, particularly for airports. This investment may relate to a single revenue-generating project at an individual airport, multiple projects at one or several airports, or investment on a system-wide basis, such as for a national air navigation system and its operation. The type of arrangement between the private sector and the government may also take a number of forms, which might involve the private sector as a financial partner in an investment, or the private sector as a developer with the rights to build a proposed facility, operate it for a specified period of time, and then transfer it back to the public sector after a suitable return on the investment has been realised. There are several models for private sector investment in public sector projects, and no single model may suit all situations and needs, and different packages of private sector investment opportunities can be structured according to what might appear to be attractive to the private sector and to the government.

An extensive study of the prospects for private sector involvement in the upgrading and expansion of the airports under the jurisdiction of the TAA was undertaken for the TAA and the World Bank by Nathan Consultants Inc of the U.S. in 2013 and published in January 2014. This study, whose final report is entitled “*Development of Financing Options Analysis for the Tanzania Airports Authority*”, examined the legal and financial situation of the TAA, determined the relative levels of attractiveness of the airports for private sector investment, and then described a strategy for private sector participation in the airports development through grouping airports under individual concessions so as to enable a cross-subsidisation between airports having ‘good’ and ‘less good’ levels of attractiveness for private sector investment.

The essential conclusions of the Nathan Study were that there were three levels of attractiveness for private sector investment among the TAA airports, based on their ability to provide an adequate return to the private sector as individual airports. These were:

1. Airports with a High Level of Attractiveness for Private Sector Investment
 - Julius Nyerere International Airport
 - Kilimanjaro International Airport
2. Airports with a Low Level of Attractiveness for Private Sector Investment
 - Arusha

- Mwanza
- Lake Manyara
- Kigoma
- Mafia
- Songwe

3. Airports with No Attractiveness for Private Sector Investment

- Mtwara
- Tabora
- Dodoma / Msalato

It is to be expected that the airports having the highest air traffic levels, and forecast to have high levels of air traffic in the future, would be rated as being attractive for private sector investment. The low attractiveness for private sector involvement in development of Mwanza Airport was surprising, but because of when it was prepared, the Nathan analysis would not have been able to take into account the proposed major upgrading of this airport and its developing role as a Mainline Regional Airport. Also significant in the Nathan analysis is that the proposed new airport for Dodoma (Msalato Airport), for which private sector interest has been shown, albeit under rather doubtful assumptions regarding the ability to divert air traffic away from JNIA, has been rated as unattractive for private sector investment, which is a conclusion that has also been reached in the CAMP project.

Because the Nathan Study of the potential for private sector involvement has explored the whole area of private sector financing, the principles of private sector financing of civil aviation development are not described further in the CAMP report. Rather, reference should be made to the Nathan Study as this does provide a good description of the analysis of PPP and the options open to the TAA and the Government for obtaining private sector involvement in development of the nation's airports.

For the CAMP study, however, a financial analysis has been undertaken of the prospects for private sector financial investment in the upgrading and expansion of the civil aviation infrastructure, with emphasis on investment in the upgrading and expansion of the national airports. This has been based on the financial performance of the TAA and its airports, on the air traffic forecasts prepared for the CAMP in Volume I, on forecast costs and revenues, and on the levels of capital investment required for the proposed upgrading projects. From this financial analysis it has been possible to establish whether these airports upgrading projects are financially viable. In addition, the analysis of financial viability has assessed the effect on the financial viability of each airport in the light of the specific airport upgrading and expansion programme proposed in the CAMP, and described in Volume III of the CAMP reports. From the analysis undertaken, it has been possible to conclude whether individual airports might be financially viable under future air traffic levels and revenues, future operating costs, and future capital expenditures, and therefore attractive for the purposes of private sector investment. This analysis is described in the following sections.

10.2 Financial Analysis of Current Airports Operations

Further analysis has been carried out for the international airports of JNIA and KIA as well as the 6 Mainline Regional Airports at which significant capital expenditure is proposed in the future. The aim of this analysis is to determine whether such proposed capital expenditure on airport upgrading and expansion might be sourced from the private sector under Public-Private Participation arrangements. The financial viability of the airports is a key factor in this analysis, as to attract private sector investment in airport capital projects will require that the cash flows generated from revenues from increased air traffic at the airports, once the projects have been constructed, would provide a sufficient return to be made on the investment by the private sector in funding specific projects.

The essential financial viability analysis has been based on the income and expenditure statements provided by TAA and KADCO and the operating surplus/ deficit trend from FYE 2009/2010 to FYE 2013/14 for each airport. The result of this analysis is shown in **Exhibit 10-1**. The analysis compared the total income attributed to each airport with the allocated direct costs of operations to establish which of the airports have been operating profitably and which have been operating at a loss to TAA.

**Exhibit 10-1: Financial Analysis for Selected Individual Airports
for FYE 2009/10 to 2013/14 (Tshs)**

Airport	Operating Surplus/ (Deficit) in Tshs				
	FYE 2009/10	FYE 2010/11	FYE 2011/12	FYE 2012/13	FYE 2013/14
International Airports					
JNIA	18,093,835,231	19,001,737,391	17,412,661,721	18,579,351,503	46,942,956,877
KIA	1,461,023,000	1,545,569,000	1,875,435,000	(814,109,000)	1,544,364,000
Mainline Regional Airports					
Mwanza	(305,429,835)	(376,283,471)	87,673,935	4,486,352	1,395,882,030
Arusha	(109,889,408)	(109,103,880)	360,881,478	373,137,762	1,567,445,925
Mtwara	(451,173,580)	(637,654,714)	(592,715,030)	(547,000,576)	(257,452,802)
Dodoma	(481,237,923)	(548,055,682)	(638,424,164)	(752,261,817)	(755,783,965)
Kigoma	(140,991,499)	(327,853,373)	(232,363,055)	(258,322,527)	(294,399,385)
Songwe	(214,119,830)	0	0	(49,042,140)	(769,821,872)

Note:

1. This analysis is based on the information provided by TAA and KADCO for each airport.
2. Operating Surplus/ Deficit calculated before depreciation, bad debts and exclude the income tax.

As may be noted from Exhibit 10-1, only the airports of JNIA, KIA, Mwanza and Arusha can be considered to have operated profitably in the recent three financial years. From this analysis, other than JNIA, KIA, Mwanza and Arusha, all other Mainline Regional Airports can be expected to experience operating losses from the start throughout the forecasting period to 2030. The analysis of cash flow for TAA operations at the domestic airports does not produce a surprising result as the traffic forecast for these airports is quite low. These airports cannot be regarded as being financially viable. If development projects are implemented at these airports for social and political reasons, it would be expected that the Government would have to subsidize directly the loss-making operations of the loss-making airports.

Currently, TAA will have to support the losses incurred by these airports with receipts from other profitable airports, notably JNIA, Mwanza and Arusha. This highlights the need for TAA to carefully analyse the financial implications of proceeding with airport development projects that are not financially viable, and emphasizes that the Government should bear the consequences for capital investment decisions that otherwise place a financial burden on the TAA. This analysis also gives an indication of which airports under the jurisdiction of TAA might attract private sector interest in capital investment.

10.3 Financial Feasibility Analysis for Proposed Airport Development Projects

This section analyses the operating surplus / deficit for selected airports currently under the jurisdiction of TAA with the proposed capital projects implemented. This is to assess the viability of the required investment based on the capacity of the individual airports to generate sufficient revenues to cover the capital costs of projects and all necessary operational costs. Private sector involvement can then be considered for the future development of airports that are demonstrated to be financially viable.

The capital costs estimated for the airport development projects at JNIA, KIA and the 6 Mainline Regional Airports, as proposed in Volume III of the CAMP reports, have been applied for this analysis and these costs are listed in **Exhibit 10-2**.

This analysis has been done from the viewpoint of the potential investor and therefore the total revenues and costs that arise as a result of implementing the proposed projects are taken into account, as if the airport operations are taken over as a whole by the private sector in exchange for the proposed investment. The forecast air traffic and passengers, as well as revenue-generating spaces and facilities to be constructed, and proposed future staffing are the main revenue and cost drivers for the projected cash flow analysis. The values of these elements are consistent with the assumptions used in the financial analysis above.

Exhibit 10-2: Proposed Airport Development Project Costs for the Individual Airports

Airport	Phase	Investment (USD million)*
JNIA	Phase 1	51.745
	Phase 2	305.987
	Phase 3	596.934
	<i>Total</i>	<i>954.667,</i>
KIA	Lump Sum	242.371
Mwanza	Lump Sum	114.451
Arusha	Lump Sum	96.279
Mtwara	Lump Sum	117.862
Songwe	Lump Sum	102.438
Kigoma	Lump Sum	85.708
Dodoma / Msalato	Lump Sum	189.560
Total Costs		1,903.336

Note: The Amounts exclude the ANS related projects but includes the contingency amount of 15% and design and site supervision fees of 10%

As may be noted above, the capital programme proposed for JNIA is directed to the development of the airport in three phases with the first phase commencing in 2015 for the period to 2017, followed by the second phase in 2018 to 2013, and the final phase from 2023 to 2033. Unlike JNIA, the capital programme proposed for the other airports is regarded as lump sum investment in the initial year of development.

Exhibits 10-3 to 10-10 show the projected cash flows for each individual airport for first five years, middle year and the last projected year. Financial projection is made for 18 years of operations from fiscal year 2014/15 to 2032/33. Net Present Value (NPV) and Financial Internal Rate of Return (FIRR) analysis is used to evaluate the financial viability of the proposed projects. The discount rate employed to determine the net present value (NPV) of the projects has been 12% (commonly used as a rate of return for private sector investments) and the results of the analysis are shown in the exhibits that follow.

Exhibit 10-3: Projected Operating Surplus/ Deficit for JNIA (Tshs)

	2014/15	2015/16	2016/17	2017/18	2018/19	2022/23	2032/33
<i>Revenues</i>							
Aeronautical	66,589,936,170	71,336,489,261	76,426,108,097	82,090,467,823	87,872,590,311	114,615,269,006	212,184,329,094
Non-Aeronautical	10,226,602,920	11,076,141,671	12,005,344,834	16,626,269,304	17,983,919,722	24,721,650,318	78,930,958,247
	76,816,539,090	82,412,630,932	88,431,452,931	98,716,737,127	105,856,510,033	139,336,919,325	291,115,287,341
<i>Expenses</i>							
Staff Related Exp	6,552,231,131	6,950,120,832	7,363,882,996	7,794,952,227	8,244,886,196	8,896,561,884	11,554,749,564
Maintenance & Utility	5,153,638,904	5,375,238,247	5,612,349,543	8,194,825,278	8,581,589,615	10,419,006,039	33,737,011,047
Other exp	3,320,080,277	3,613,972,851	3,933,094,386	4,547,760,100	4,940,559,827	6,489,116,568	14,254,598,404
	15,025,950,313	15,939,331,930	16,909,326,926	20,537,537,606	21,767,035,638	25,804,684,492	59,546,359,015
Operating Surplus/ Deficit	61,790,588,778	66,473,299,002	71,522,126,005	78,179,199,521	84,089,474,395	113,532,234,833	231,568,928,326
Capital Investment	82,354,010,096			486,984,879,844			
NPV	79,924,589,050						
FIRR	17.4%						

Note: Phase 3 investment amounting to Tshs 950,033,730,589 is to be incurred in year 2023/24.

Exhibit 10-4: Projected Operating Surplus/ Deficit for KIA (Tshs)

	2014/15	2015/16	2016/17	2017/18	2018/19	2022/23	2032/33
<i>Revenues</i>							
Aeronautical	23,862,861,933	25,453,389,988	27,151,138,743	28,988,673,885	30,876,550,586	39,758,086,449	69,986,511,881
Non-Aeronautical	880,558,167	946,728,856	1,018,186,550	1,095,396,045	1,178,616,224	3,504,063,635	7,165,249,869
	24,743,420,099	26,400,118,843	28,169,325,292	30,084,069,930	32,055,166,810	43,262,150,084	77,151,761,750
<i>Expenses</i>							
Staff Related Exp	5,046,950,096	4,897,046,926	4,772,664,913	4,613,760,820	4,480,379,118	4,697,821,053	6,743,072,877
Maintenance & Utility	3,375,104,430	3,591,104,720	3,822,225,031	4,069,523,763	4,334,133,406	15,436,728,087	29,704,912,627
Other exp	5,516,086,562	5,823,974,514	6,155,879,701	6,502,718,886	6,863,726,799	9,108,162,370	16,502,314,964
	13,938,141,089	14,312,126,160	14,750,769,645	15,186,003,468	15,678,239,323	29,242,711,510	52,950,300,468
Operating Surplus/ Deficit	10,805,279,010	12,087,992,683	13,418,555,647	14,898,066,461	16,376,927,487	14,019,438,574	24,201,461,282
Capital Investment	385,739,726,288						
NPV	(266,364,863,850)						

Exhibit 10-5: Projected Operating Surplus/ Deficit for Mwanza Airport (Tshs)

	2014/15	2015/16	2016/17	2017/18	2018/19	2022/23	2032/33
<i>Revenues</i>							
Aeronautical	4,420,275,060	4,740,894,528	5,084,977,441	5,454,251,042	5,826,417,569	7,474,201,983	13,472,412,844
Non-Aeronautical	437,717,185	476,023,036	518,168,513	564,597,390	615,181,825	12,358,192,769	24,788,009,168
	4,857,992,245	5,216,917,564	5,603,145,954	6,018,848,431	6,441,599,394	19,832,394,752	38,260,422,012
<i>Expenses</i>							
Staff Related Exp	1,775,388,328	1,790,010,939	1,805,657,134	1,822,398,561	1,840,311,889	1,925,413,434	2,272,542,967
Maintenance & Utility	448,333,175	472,230,418	497,800,467	525,160,419	554,435,569	693,514,163	8,119,411,281
Other exp	568,543,669	609,489,051	653,433,082	700,601,468	749,730,632	5,579,091,889	10,929,130,654
	2,792,265,172	2,871,730,408	2,956,890,682	3,048,160,449	3,144,478,090	8,198,019,486	21,321,084,903
Operating Surplus/ Deficit	2,065,727,072	2,345,187,156	2,646,255,272	2,970,687,982	3,297,121,304	11,634,375,266	16,939,337,109
Capital Investment	182,151,542,923						
NPV	(118,766,367,378)						
FIRR	0.9%						

Exhibit 10-6: Projected Operating Surplus/ Deficit for Arusha Airport (Tshs)

	2014/15	2015/16	2016/17	2017/18	2018/19	2022/23	2032/33
<i>Revenues</i>							
Aeronautical	1,501,161,153	1,592,909,448	1,690,472,093	1,794,092,729	1,899,545,650	2,366,638,784	3,932,477,986
Non-Aeronautical	190,390,708	206,630,319	224,412,611	243,902,229	265,111,160	2,650,204,810	5,376,499,841
	1,691,551,861	1,799,539,766	1,914,884,704	2,037,994,958	2,164,656,810	5,016,843,594	9,308,977,827
<i>Expenses</i>							
Staff Related Exp	517,959,515	522,880,527	528,146,010	533,780,077	539,808,529	568,448,129	685,269,170
Maintenance & Utility	172,593,295	183,241,575	194,635,236	206,826,452	219,871,054	4,219,390,643	8,103,148,274
Other exp	165,059,074	176,469,796	188,676,488	201,733,397	215,634,570	857,917,142	1,679,947,205
	855,611,883	882,591,899	911,457,734	942,339,927	975,314,152	5,645,755,913	10,468,364,649
Operating Surplus/ Deficit	835,939,977	916,947,867	1,003,426,971	1,095,655,031	1,189,342,658	(628,912,319)	(1,159,386,823)
Capital Investment	153,231,326,766						
NPV	(152,288,323,090)						

Exhibit 10-7: Projected Operating Surplus/ Deficit for Kigoma Airport (Tshs)

	2014/15	2015/16	2016/17	2017/18	2018/19	2022/23	2032/33
<i>Revenues</i>							
Aeronautical	233,412,667	251,887,487	271,685,138	293,049,431	315,358,795	411,567,252	767,191,415
Non-Aeronautical	6,742,088	7,214,034	7,719,017	8,259,348	8,837,502	79,806,558	156,991,579
	240,154,756	259,101,521	279,404,155	301,308,778	324,196,297	491,373,810	924,182,994
<i>Expenses</i>							
Staff Related Exp	222,588,280	223,633,884	224,752,680	225,949,792	227,230,702	233,315,971	258,137,804
Maintenance & Utility	109,909,210	116,785,255	124,142,623	132,015,006	140,438,457	3,591,328,541	6,986,863,231
Other exp	107,396,666	115,123,005	123,393,077	132,259,709	141,693,257	452,069,562	885,146,622
	439,894,156	455,542,143	472,288,379	490,224,508	509,362,416	4,276,714,073	8,130,147,657
Operating Surplus/ Deficit	(199,739,401)	(196,440,622)	(192,884,225)	(188,915,729)	(185,166,119)	(3,785,340,263)	(7,205,964,662)
Capital Investment	136,406,871,496						
NPV	(155,593,420,091)						

Exhibit 10-8: Projected Operating Surplus/ Deficit for Mtwara Airport (Tshs)

	2014/15	2015/16	2016/17	2017/18	2018/19	2022/23	2032/33
<i>Revenues</i>							
Aeronautical	228,164,239	242,110,303	260,040,151	279,310,122	299,303,462	395,525,138	716,195,419
Non-Aeronautical	163,196,710	175,359,810	188,489,438	202,671,175	217,962,384	1,788,666,307	3,565,500,671
	391,360,949	417,470,113	448,529,589	481,981,297	517,265,846	2,184,191,445	4,281,696,089
<i>Expenses</i>							
Staff Related Exp	345,742,594	351,631,996	357,933,656	364,676,432	371,891,203	406,166,696	545,976,563
Maintenance & Utility	236,113,580	249,945,663	264,745,991	280,582,342	297,527,238	5,182,101,789	9,946,887,191
Other exp	578,434,792	617,607,620	662,721,710	711,217,197	762,586,127	3,071,578,574	6,026,954,936
	1,160,290,966	1,219,185,279	1,285,401,357	1,356,475,972	1,432,004,568	8,659,847,058	16,519,818,691
Operating Surplus/ Deficit	(768,930,017)	(801,715,166)	(836,871,769)	(874,494,675)	(914,738,722)	(6,475,655,613)	(12,238,122,601)
Capital Investment	187,222,101,770						
NPV	(221,958,682,507)						

Exhibit 10-9: Projected Operating Surplus/ Deficit for Dodoma / Msalato Airport (Tshs)

	2014/15	2015/16	2016/17	2017/18	2018/19	2022/23	2032/33
<i>Revenues</i>							
Aeronautical	111,520,357	121,940,537	144,175,577	169,294,582	208,508,888	1,026,253,375	3,051,488,381
Non-Aeronautical	13,661,760	14,618,083	15,641,349	16,736,243	17,907,780	455,765,293	896,559,315
	125,182,117	136,558,620	159,816,926	186,030,826	226,416,668	1,482,018,668	3,948,047,696
<i>Expenses</i>							
Staff Related Exp	263,396,310	263,747,067	264,122,376	264,523,958	264,953,650	266,995,004	275,321,698
Maintenance & Utility	344,333,027	366,485,159	390,187,940	415,549,916	442,687,230	8,476,600,572	16,151,326,913
Other exp	292,699,438	315,956,359	352,580,722	393,174,622	449,674,912	2,975,428,788	6,946,737,475
	900,428,775	946,188,585	1,006,891,038	1,073,248,496	1,157,315,792	11,719,024,364	23,373,386,086
Operating Surplus/ Deficit	(775,246,659)	(809,629,964)	(847,074,112)	(887,217,670)	(930,899,124)	(10,237,005,696)	(19,425,338,391)
Capital Investment	301,689,724,840						
NPV	(354,693,050,686)						

Exhibit 10-10: Projected Operating Surplus/ Deficit for Songwe Airport (Tshs)

	2014/15	2015/16	2016/17	2017/18	2018/19	2022/23	2032/33
<i>Revenues</i>							
Aeronautical	303,108,664	326,990,737	352,663,066	380,361,048	409,430,486	545,737,118	1,028,546,801
Non-Aeronautical	22,638,213	24,530,666	26,603,518	28,876,863	31,357,962	142,343,968	299,556,247
	325,746,877	351,521,403	379,266,585	409,237,911	440,788,448	688,081,086	1,328,103,047
<i>Expenses</i>							
Staff Related Exp	445,835,080	454,703,240	464,192,171	474,345,328	485,209,205	536,820,651	747,343,940
Maintenance & Utility	304,045,512	321,950,764	341,109,384	361,609,106	383,543,810	4,627,316,767	8,915,597,352
Other exp	283,908,471	304,887,068	327,396,045	351,586,227	377,276,852	871,642,236	1,705,188,099
	1,033,789,063	1,081,541,072	1,132,697,600	1,187,540,661	1,246,029,867	6,035,779,654	11,368,129,391
Operating Surplus/ Deficit	(708,042,186)	(730,019,669)	(753,431,015)	(778,302,750)	(805,241,419)	(5,347,698,568)	(10,040,026,344)
Capital Investment	163,032,459,979						
NPV	(191,932,940,135)						

A summary of the capital investments and results of the financial analysis of projects for JNIA, KIA and the 6 Mainline Regional airports under the TAA is provided in **Exhibit 10-11**.

Exhibit 10-11: Summary of Results of Assessment of Private Sector Investment Opportunities

Airport	Proposed Capital Investment (USD Million)	Net Present Value (Tshs)	Internal Rate of Return IRR (%)
JNIA	954.667,	79,924,589,050	17.4
KIA	242.371	(266,364,863,850)	Cannot be determined
Mwanza	114.451	(118,766,367,378)	0.9
Arusha	96.279	(152,288,323,090)	Cannot be determined
Kigoma	117.862	(155,593,420,091)	Cannot be determined
Mtwara	102.438	(221,958,682,507)	Cannot be determined
Dodoma / Msalato	85.708	(354,693,050,686)	Cannot be determined
Songwe	189.560	(191,932,940,135)	Cannot be determined

Among the selected International and Mainline Regional Airports, only JNIA, KIA and Mwanza Airports show promise financially, and may possibly attract private sector interest, as these have positive net cash flows from the operations throughout the forecast period. However, only JNIA presents a positive Net Present Value (NPV) while KIA and Mwanza Airports each show a negative NPV, which means that the Financial Internal Rate of Return (FIRR) for the investment is below the discount rate (i.e. a target rate of 12%) that has been used to evaluate the projects. While possibly attractive for private sector investment this would be at lower levels of return to the investor.

Arusha Airport, although presenting an operating surplus for the first few years, its operation is expected to be loss-making from fiscal year 2019/20 onwards, therefore making it difficult to recover the investment made to upgrade and expand the airport. The remaining airports are all in loss-making positions throughout the forecasting period, and therefore cannot be considered attractive for private sector involvement. The cash flows generated at the airports from the airport revenues, even with the proposed projects implemented, are insufficient to cover the operating costs of the airport, let alone provide reasonable returns on any capital investments made.

In summary, from a private sector investment point of view, JNIA is an attractive package, being a profitable airport and being able to recover the extensive capital investment made for its facilities. Thus, TAA has the option to provide JNIA as one whole private sector investment package or to separate out individual facility development projects at JNIA for possible private sector investment under partnership or build-operate-transfer (BOT)

arrangements. Some of the individual projects that can be offered for private sector investment at JNIA include:

- Development of a new Passenger Terminal and aprons in the Midfield of the airport for International Passenger Traffic (to replace Terminal 3 which in the CAMP is proposed to be converted to a Domestic Passenger Terminal);
- Development of a Passenger Terminal for use by 3rd Level Air Carriers supporting tourism in the south of the airport;
- Development of new Air Cargo Facilities and Aprons in the Midfield of the airport;
- Development of Aircraft Maintenance Hangars and MRO Facilities in the Midfield of the airport;
- Development of new Aircraft Storage and Maintenance Hangars for 3rd Level air Carriers and General Aviation in the south of the airport;
- Development of Car Parks for commercial operation for Terminal 3 and future International Terminal (Terminal 4) and the 3rd Level Air Carrier Terminal

The expected total investment in these and other projects required at JNIA over the CAMP planning period amount to approximately USD 1 Billion including expenditures on necessary, but non-revenue generating, projects.

Kilimanjaro International Airport and Mwanza Airport show promise for private sector involvement, but at a lesser scale. However, the returns from lump sum capital investments in these airports do not appear to be sufficient to recover the investment costs within the CAMP planning period, but might do so over a longer recovery period. Promoting the KIA and Mwanza Airports development as a single airport concession package could be considered, as might private sector investment in specific individual projects at these airports, as listed in **Exhibit 10-12**.

Also shown in Exhibit 10-12 are the potential private sector investment projects noted above for JNIA, as well as for KIA and AAKIA and the 6 Mainline Regional Airports.

Exhibit 10-12
Potential Projects for Private Sector Investment in Tanzanian Airports

Airport	Potential Projects for Private Sector Investment
JNIA	New International Terminal Building (Replace T3)
	3 rd Level Air Carrier & GA Terminal Building
	Air Cargo Centre (Midfield)
	Aircraft Maintenance / MRO (Midfield)
	3 rd Level & GA Hangar Complex
	Passenger Terminal Car Parks for Commercial Operation
KIA	Passenger Terminal Building
	Air Cargo Facility
AAKIA	Option for Development of New Airport Site under PPP
	New Domestic Terminal Building
Mwanza	New Passenger Terminal Building
	Cargo Facility / Cold Storage Facility
Arusha	New Passenger Terminal Building and Aprons
	3 rd Level Air Carrier & GA Hangars
	Light Aircraft MRO Facility
Mtwara	Full Airport Site Upgrading & Expansion
	New Passenger Terminal Building
	Helicopter Storage & Maintenance Facility
	Air Cargo Handling Facility
Kigoma	Passenger Terminal Building
Dodoma / Msalato	New Passenger Terminal Building and Apron
Songwe	New Passenger Terminal Building and Apron

As demonstrated in the analysis of private sector prospects carried out in this Section of Volume IV, projects cited for JNIA are all attractive for private sector investment, while projects at KIA and Mwanza are also feasible for private sector involvement, but would generate lower rates of return on investment, or require recovery of investment possibly over longer periods of time than 20 years. Other opportunities for private sector investment are also present at the other airports listed in Exhibit 10-12, however the level of attractiveness is presently low, even though the air traffic forecast, and the airport revenues, have taken into account the possible expanded role of the airport. This is particularly relevant for the airports of Dodoma/Msalato and Mtwara, where the expected future role of the airports, in supporting the national capital in the case of Msalato and in supporting the oil and gas industry in the case of Mtwara, has been assumed, and for which the air traffic forecast assumes an increased level of air traffic for these airports. Despite these expected improvements in the role and prospects of these airports, their attractiveness for private investment remains low, and below the level of return required to attract the private sector as an investor. Nevertheless, over time, some of the projects at the airports may become more attractive to the private sector as air traffic develops, and this prospect will need to be re-visited from time to time if circumstances change.

It is to be noted that the opportunity exists for TAA, and for the government, to combine as a package for private sector investment those projects that are attractive, along with some that are less attractive so that a cross-

subsidisation might occur between the attractive projects and the return that they generate, and the less attractive projects. In this way, the combined effect might result in a package that, on balance, is attractive to the private sector for consideration as an investment. Projects required for the upgrading and development of airports such as at Arusha, Mtwara, Songwe etc. could therefore be combined into packages so that the low returns on investment expected at these airports might be offset by higher returns from other more profitable airports.

This is, in effect, the concept for private sector participation suggested by Nathan Consultants Inc. in 2013 as an appropriate strategy for consideration by the Government for the airports of Tanzania. Naturally, each project would have to be analysed on its own merits in order to develop the private sector involvement concept of packages proposed by Nathan Consultants, assuming that the proposed airport upgrading and expansion programme of the CAMP is endorsed by the government and implemented by the Ministry of Transport and the TAA and ZAA.

10.4 Conclusions of Analysis of Privatisation Opportunities

10.4.1 Financial Performance of Airports

Financial analysis of current airports operations has indicated that out of the 8 main airports, only the airports of JNIA, KIA, Mwanza and Arusha can be considered to be operating profitably.

10.4.2 Prospects for Privatization Based on Financial Analysis

From the viewpoint of the potential investor, only JNIA, KIA and Mwanza Airports show promise financially, and may possibly attract private sector interest. However, only JNIA presents a positive Net Present Value (NPV) while the other three airports are projected to be unable to recover their cost of operations as well as proposed capital investments within a reasonable recovery period and may require a longer recovery period and/or a lower rate of return on investment.

In terms of privatisation prospects, and based on the financial analysis undertaken, the Consultant has proposed the following options for projects to be considered to attract possible private sector investment in the aviation sector in Tanzania:

- 1) JNIA offered as a single private sector investment package; or
- 2) Various individual facility development projects proposed for JNIA offered under PPP partnerships, or as a build-operate-transfer (BOT), concessions.