EMERGENCY RISK AND DISASTER MANAGEMENT PLAN FOR THE PROPOSED ARUA AIRPORT LOCATED IN ARUA DISTRICT – WEST NILE, UGANDA

SUBMITTED BY:

Uganda Civil Aviation Authority

Entebbe International Airport

P.O BOX 5536 Kampala, Uganda

Phone: +256 414352000

Email: aviation@caa.co.ug

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Acronyms

- AERIC — Airport Emergency Response and Interaction Centre
- AfDB — African Development Bank
- AGI — Above Ground Installation
- AO — Airport Operations
- ATF — Aviation Turbine Fuel
- CEMP — Construction Environmental Management Plans
- CMC — Crisis Management Centre,
- DMP — Disaster Management Plan,
- DRC — Democratic Republic of the Congo
- ECC — Emergency Coordination Centre
- ENVID — Environmental aspects identification studies
- ERMP — Emergency and Risk Management Plan
- ESIA — Environment and Social Impact Assessment
- FEED — Front End Engineering Design
- FRRC — Friends and Relatives Reception Centre
- H3SE — Health, Safety, Security, Society and Environment
- HAZID — Hazard identification
- HAZOP — Hazard operability
- HSD — High-Speed Diesel
- ICAO — International Civil Aviation Organization
- MCP — Mobile Command Post
- MSIHC — Manufacture, Storage and Import of Hazardous Chemicals
- RA — Reunion Area.
- RAMS — Risk assessments, method statements
- SRC — Survivors Reception Centre
- TA — Triage Area,
- TRSMP — Transport and Road Safety Management Plan
- UCAA — Uganda Civil Aviation Authority

1. INTRODUCTION

Arua airport is strategically located at an elevation of 1,204 meters above sea level in the tri-state border of Uganda, DRC and South Sudan, and is one of the busiest airports in the country. The airport is approximately 20kms from Uganda's border with the Democratic Republic of the Congo (DRC) at Vurra Border post and about 71 kms from the border between Uganda and South Sudan at Oraba border post. It is approximately 520 kilometers from Kampala, Uganda's Capital City.

Currently, the runway is of length 1800m by 30m width, taxiways & apron are of murram surface. A new terminal building with a capacity of 200Pax was constructed, and a total of 73.6Ha of land were recently acquired for future development.

Arua Airport, as a key aviation hub in the West Nile region of Uganda, requires a robust Emergency and Risk Management Plan (ERMP) to ensure preparedness for potential incidents, hazards, and emergencies that may disrupt safe and efficient airport operations. This Plan outlines the framework for identification and management of risks and disasters in accordance with international best practices and national regulatory requirements.

1.1. Scope

The ERMP covers:

- The proposed Construction works
- Airport infrastructure (runways, terminals, navigation systems)
- Airside and landside operations
- Passenger and cargo handling
- Emergency services and mutual aid agreements
- Communication and command structure
- Environmental, health, and security-related emergencies

This ERDMP plan provides information on how the project will respond to emergency situations. As such, it describes:

- the project emergency response organization, based on defined accident scenarios
- functions and responsibilities of key personnel
- the resources required emergency procedures.

The emergency response plan is comprised of several management plans and procedures, such as an oil spill contingency plan and spill management and response plan. The project will also prepare a community, health, safety and security plan which will include:

- control of preventable diseases
- transport management and road safety
- community safety and security.

1.2. RISK ASSESSMENT

This section provides a high-level assessment of the hazards and risks to people and airport operations that may be associated with the Arua Airport Expansion Project (the Project).
This risk assessment would provide the basis for future risk management as the Project progresses. The focus of future risk management will transition through design, construction and into operations. The form of the risk processes will be dependent on the procurement approach adopted but will be necessary to address safety in design risks, construction risks and operational risks, which will be addressed through the processes.

Hazard Analysis involves the identification and quantification of various probable hazards (unsafe conditions) that may occur at the Arua Airport. On the other hand, risk analysis deals with the identification and quantification of risks, the equipment/facilities and personnel exposed, due to accidents resulting from the hazards present at the Arua Airport.
Hazard occurrence at the Arua airport may result in on-site implications, like:

- Fire and/or explosion at the storage of ATF and filling of ATF in aircraft;
- Leakage of flammable materials, like, ATF and HSD followed by fire;
- Bomb threat at terminal building, cargo terminal and aircraft; and
- Natural calamities like, earthquake, heavy rainfall, cyclone/cross winds, flood, etc.
- Short circuiting of power lines or explosion of nearby sub stations

Other incidents, which can also result in a disaster at the existing Arua airport, are:

- Staff/worker demonstrations
- Agitation/forced entry by external group of people; and
- Sabotage;
- Air raids; and
- Crashing of aircrafts i.e. while landing or take-off.

Risk analysis follows an extensive hazard identification and analysis. It involves the identification and assessment of risks to the people exposed to hazards present. This requires a thorough knowledge of failure probability, credible accident scenario, vulnerability of populations, etc. For emergency response planning, risk analysis is carried out for worst case scenarios.

1.2.1. Risk Management Approach

This risk assessment was completed for all aspects of the project delivery and operations. All phases of the project were considered, including:

a) preconstruction
b) civil works
c) Runway and taxiway pavements
d) operations.

This risk assessment considered only risks that are considered to be project-specific. General site safety risks, for example, construction worker exposure to loud noise or sun, were not considered. It is expected these would be addressed in the contractor's health and safety management plan.

The risk was determined based on the consequence and likelihood, as shown in **Table 1 below**.

Table 1 Risk Assessment Matrix

	Consequence			
	Safety	**No Injury**	**Injury**	**Fatality**
	Airport operations	**Minor**	**Moderate**	**Major**
Likelihood	Almost Impossible	Negligible (N)	Negligible (N)	Low (L)
	Unlikely	Negligible (N)	Low (L)	Medium (M)
	Possible	Low (L)	Medium (M)	High (H)
	Likely	Medium (M)	High (H)	Extreme (E)

Risk involves the occurrence or potential occurrence of various type accidents consisting of an event or sequence of events. The risk analysis study covers the following:

- Identification of potential hazard areas;
- Identification of representative failure cases;
- Visualization of the resulting scenarios in terms of fire and explosion;
- Assess the overall damage potential of the identified hazardous events and the impact zones from the accidental scenarios;

- Assess the overall suitability of the site from hazard minimization and disaster mitigation points of view;
- Furnish specific recommendations on the minimization of the worst accident possibilities; and
- Preparation of disaster management plan (DMP), on-site and off-site emergency response plan.

Additional risk assessment will be undertaken during detailed engineering and construction planning. This will include updates to hazard identification (HAZID), hazard operability (HAZOP) and environmental aspects identification studies (ENVID). Construction planning will also include risk assessment for high-risk construction activities such as traffic movement, heavy lifting, and spills. The additional risk assessment will also inform the environmental and social management planning for the project.

Mitigation measures were determined for each risk, and the risk was re-assessed to determine the residual risk rating. All risks retained a residual medium or lower risk rating. The Environment and Social Commitment Plan being prepared includes a summary of the measures, plans and programmes including the preparation of an emergency response plan for the project in concordance with African Development Bank Safeguards requirements as well as International Finance Corporation performance standards.

1.2.2. Risk Reduction

The project will reduce risk through:

- design and construction mitigation during the construction phase
- health, safety, security, society and environment systems and procedures and emergency response planning shall reduce risks during the operational phase of the project.
- Implementation of a regular inspections of the construction site to identify and address any safety hazards promptly. This includes checking for proper signage, barriers, and the condition of equipment.
- Provide comprehensive training to all construction personnel on airport safety procedures, hazard awareness, and emergency response protocols. Regular safety briefings should be conducted to reinforce safety messages and address any emerging concerns

1.2.2.1. Design and Construction Phase

The project has incorporated design and construction mitigation measures to reduce risk during construction and operation, throughout the design process.
The following are risk reduction design and construction mitigation measures:

- Constructability risk was one of the main criteria evaluated during site selection and siting of facilities. This included:
    - route refinements to reduce the degree of front and side slopes to ensure safe access for construction activities, increase the probability of reinstatement success and reduce the risk of landslide potential.
    - safe access to work sites to reduce the risk of accidents during transport of materials, equipment or people to the works sites.
    - construction methodologies that were evaluated to identify the options with lower risks. This included considering the number of construction spreads to be used and options to reduce road traffic during construction.
- The HAZID undertaken at the FEED stage identified the main construction hazards (including loss of containment and mitigation measures), which require further development during later project phases.

- Additional constructability reviews will be undertaken for construction facilities, which will include the development of construction environmental management plans (CEMPs) and risk assessments, method statements (RAMS) for construction. The intention of these documents is to ensure that appropriate mitigation measures are identified and implemented throughout construction.

1.2.2.2. Operational Phase

Operational hazards and unplanned events are being determined in the early design stages of the project especially the siting of project facilities. This will be undertaken to avoid or reduce the risks of unplanned events occurring during the operational phase. This will include avoidance of, as much as possible:

- socially sensitive features (including residential populations)
- environmentally sensitive areas
- flooding and landslide hazards
- seismic activity (such as active rift regions and volcanoes)
- security risks.

Additionally, the following are risk reduction design and operation mitigation measures:

- The layout of the project will be developed in accordance with established best practice and hazard mitigation principles, including:
    - selection of simple process designs to remove equipment complexity and reduce risk levels at above ground installation (AGIs) equipment grouped by nature or homogeneous levels of risk
    - sufficient spacing is provided to prevent transfer of hazardous consequences from a source to neighbouring equipment
    - restricted areas are defined for internal areas permanently affected by operations.

a) Health, Safety, Security, Society and Environment Systems and Procedures

The project will establish an H3SE management system for construction and operation. The HSE management system will include safe systems of work and monitoring and training of personnel to ensure that the likelihood of unplanned events occurring during construction and operations are minimised.

The system will include:

- developing focused management plans, including:
    - a reinstatement plan;
    - a stakeholder engagement plan;
    - a labour management plan;
    - a procurement and supply chain management plan;
    - a community health, safety and security plan;
    - an occupational health, safety and security plan;
    - a transport and road safety management plan; and
    - etc .

- undertaking planned maintenance to maintain optimal operating performance
- regularly inspecting facilities and safety critical activities to ensure they are within the intended design conditions
- monitoring areas of geotechnical instability, erosion potential and flood prone areas
- conducting active fibre-optic monitoring for intrusion or leak through the analysis of noise, vibration and temperature change, thus allowing for early detection of any leak, construction or other external activities near the pipeline putting in place a security system to provide layers of

passive technical and physical measures to detect, deter and defend personnel and the installations against identified threats
- reviewing project operational performance and industry case studies to identify opportunities for enhanced performance
- delivering training to provide process knowledge and tools to diagnose the causes of process deviations should they occur and how to respond appropriately
- installing equipment to ensure the protection of personnel working at the facilities
- in the case of an unplanned event, reinstating and compensating for third-party damage off the right-of-way (RoW), where appropriate.

b) Wildlife Hazard Management Plan and Aerodrome Operations Manual

Arua Airport is being operated in accordance with a Wildlife Hazard Management Plan and Aerodrome Operations Manual. These documents provide the framework to manage and mitigate operational risks at the airport. Both of these documents will be redrafted prior to the commissioning of Code 4E Airport capable of handling a Boeing 777-300ER as part of the formal process for implementing the changes to airspace and aircraft management. The formal airspace change process is required to obtain certification to operate the new runway and will provide opportunity for Commonwealth and State agencies to contribute to the agreed plans.

c) Emergency Response Planning

A detailed emergency preparedness and response plan (EPRP) will be prepared to identify possible emergency scenarios, set out actions to be taken in the event of an emergency, and define resources that will be made available to respond to an emergency event. This plan will be developed in coordination with stakeholders including local communities where they could potentially be affected by emergency situations.

The emergency response plan will provide for:

- a combination of warning and communication equipment at project facilities
- essential and emergency power at AGIs
- emergency shutdown, pressure protection and relief systems that will shut down a facility to a safe state in case of an emergency, thus protecting personnel, communities, the environment and the facility
- a fire and gas detection system to detect the presence of abnormal concentrations of flammable gas and the existence of fire at the AGIs
- a fire protection and firefighting system to reduce the effect that fire can cause to the personnel and facilities at AGIs based on the following components: o passive fire protection - for example, spacing equipment, containment and fireproofing
    - active fire protection – for example firewater pumps, deluge, foam, hydrants and monitoring equipment
    - escape, evacuation and rescue provisions to ensure the safety of personnel who survive the initial effects of a hazardous event
- emergency pipeline repair system: The objective is to return the pipeline to pre-incident condition while ensuring an effective, comprehensive response that will prevent injury or damage to workers and the public and reduce impacts on the environment
- community protection measures where required.

In addition to the emergency evacuation and rescue facilities provided at the AGIs, the emergency response plan and water management plan include procedures for managing emergencies to affect a coordinated and safe response to emergencies. They include spill response procedures, requirements for the storage of hazardous materials, and refuelling procedures.

1.2.3. Hazard Identification

Preliminary hazards analysis is based on the philosophy *"Prevention is better than cure"*. Identification of hazards at the Arua airport is of primary significance in the risk analysis, quantification and cost-effective control of accidents. A classical definition of – hazard states that hazard is in fact the characteristic of system that presents potential for an accident. Hence, all the components of a system need to be thoroughly examined to assess their potential for initiating or propagating an unplanned event/sequence of events, which can be termed as an accident.

1.2.3.1. Construction Risks

Unplanned events during the construction phase include:

- traffic accidents
- fires
- security related issues
- damage to third-party assets
- release of diesel from fuel storage tanks at the MCPYs and construction sites

Traffic accidents and fires are a risk during construction, commissioning and operation. Owing to the intensity of activity, the likelihood of an accident and fire occurring is greatest in the construction phase and they are therefore considered in this document as construction activities. It is noted that many of the control measures described will also apply during the operational phase of the project.

1.2.3.1.1. Traffic Accidents

One of the most frequent causes of injuries or death in the construction industry is accidents involving vehicles. This includes journeys on public roads as well as onsite accidents. Project related journeys will include:

- delivery of machinery, material, fuel and chemicals from where it is sourced, imported or distributed to sites, using public roads
- site workers commuting to their workplace using public roads
- distribution of machinery, materials, fuel, chemicals and workers to new work areas using the roads network
- movement of machinery, materials, fuel, chemicals and workers to new work areas
- deliveries, service call-outs, waste management collections and project visitors, using public roads.
- reinstatement of the degraded sites after construction.

Road traffic accidents can be attributed to several causes, including:

- driver fatigue
- driver behaviours and behaviour of other road users
- inappropriate level of driving experience for the vehicles being driven
- road conditions
- weather conditions
- vehicle maintenance
- congestion in town centres.
- drugs

Road safety is a key consideration for the project. The right to life[1] and the right to health[2] are the main human rights at risk. The UN has proclaimed 2011–2020 the International Decade of Road Safety and has developed documents to address the issue.[3] The project is committed to adhering to the highest standards of road safety. All road traffic accidents are considered significant and can result in impacts to several VECs. Pedestrians, specifically children, as well as cyclists, are considered particularly vulnerable road users. If they are involved in a road traffic accident, the consequences are likely to be severe. Table 3 shows different types of road traffic accident can affect different VECs.

Table 2 VECs Affected by Potential Road Traffic Accidents

Type of Road Traffic Accident	**VEC Most Affected**	**Mechanism of Effect**
Vehicle collision with member of the public (pedestrian, cyclist or driver)	Community safety, security and welfare	Injury or mortality to member of the public
Vehicle collision with member of the workforce (pedestrian, cyclist or driver)	Workers health, safety and welfare	Injury or mortality to member of the workforce
Vehicle collision with livestock	Land based livelihoods	Injury or mortality to livestock and consequent impact on livelihoods
Vehicle collision with community asset or structure	Social infrastructure and service	Physical damage to structure
Vehicle collision with project asset or structure	N/A	Physical damage to structure
Vehicle collision causing spillage of transported fuel or chemical	Soil, surface water, groundwater, flora and fauna	Contamination of soil or water, toxicity affecting living organisms

1.2.3.1.1.1. Preventive and Mitigation Measures for Traffic Accidents

To reduce the likelihood of traffic accidents, the project has adopted several management controls and mitigations based on the hierarchy of risk management:

- design measures
- mitigation measures
- emergency response planning.

During the construction phase, the following measures have been, or will be implemented:

[1] Universal Declaration of Human Rights, article 3; International Covenant on Civil and Political Rights, article 6; African Charter on Human and Peoples' Rights, article 4.

[2] International Covenant on Economic, Social and Cultural Rights, article 12; African Charter on Human and Peoples' Rights, article 16. The right to health is an international human rights law standard in itself and is also a component of the right to an adequate standard of living: Universal Declaration of Human Rights, article 25. OHCHR, Fact Sheet on the Right to Health: http://www.ohchr.org/Documents/Publications/Factsheet31.pdf Guidance on human rights and health from the World Health Organization: http://www.who.int/mediacentre/factsheets/fs323/en/

[3] The United Nations and Road Safety: http://www.un.org/en/roadsafety/documents.shtml

a) Design Measures

Design measures are intended to avoid, eliminate or reduce the probability that unplanned events and their impacts may occur. The following are design measures intended to reduce the risk of traffic accidents:

- completion of a traffic risk assessment as part of the engineering, procurement and construction management logistics study and assessment
- assessment of the potential to use alternative transportation modes to transport materials and chemicals (including rail transport for bulky equipment to some AGIs and construction facilities)
- identification of potential upgrades of road infrastructure to improve safety, especially at key junctions
- rest areas will be identified to allow drivers to comply with rest stop requirements and maximum daytime driving hours
- mandatory rest stops every two hours when on long journeys
- maximum daily hours of operation: 12 h/d
- maximum speed limits
- developing a strategy to minimise road movements by bulking up materials and by use of convoys
- site layout at construction facilities to segregate pedestrians and vehicles and reduce the requirement for reversing and operating a one-way system that separates in-coming traffic from exiting traffic
- developing traffic management measures that, where possible, avoid sensitive areas (e.g. schools or congested areas like town centres) or actively slow traffic.

b) Mitigation Measures

The potential impacts will be managed by the preparation of a transport and road safety management plan (TRSMP) which will be updated following completion of site-specific traffic risk assessments.

The TRSMP will include measures to limit vehicle speed, restrict the routes used, ensure drivers are appropriately trained and are not fatigued or under the influence of drugs or alcohol when driving. The TRSMP also includes measures that will be taken to inform and educate local communities about expected traffic movements, and the risks they pose.

c) Emergency Response Planning

The emergency response planning framework will include measures to manage construction and operational phase traffic related accidents, including loss of hazardous materials as a result of traffic accidents, and will describe the response required for managing traffic accident-related unplanned events.

Additional studies to identify specific traffic risks because of local road conditions will be undertaken. The findings will be used to develop additional local mitigation measures prior to the commencement of construction.

1.2.3.1.2. Fires

Fires can be caused by accidental ignition of dry vegetation/waste materials during certain operations involving hot work (e.g. welding, grinding, cutting, fitting and etc.). Fires could also be caused by inappropriate human behaviour, such as workers not properly discarding cigarettes, as well as actions by third-party activities and by lightning strikes.

Fires can spread and cause environmental and social impacts. In view of the sensitivity of some of the habitats, it is important that stringent measures are enforced to minimise fire risks and the associated potential significant effects.

Fires can impact upon local community assets such as properties and local infrastructure and the health of community residents. In the unlikely event of a fire, fire and smoke may cause both environmental and health effects.

Fire risk associated with project activities will be minimised through the definition and enforcement of strict control measures, including the adoption of a “permit to work” system for hot works. This will include use of dedicated fire waters, mobile fire protection measures (fire trucks and mobile firefighting measures). Smoking shall be strictly controlled by providing designated smoking areas for workers during all phases of the project, and other ignition sources (such as welding and cutting systems) will only be used under controlled conditions.

With appropriate control measures and monitoring in place, the likelihood of fires occurring during construction, commissioning or operation is expected to be low, however the magnitude of impact on the environment and communities will vary depending on the scale and location of the incident. While the impact of a minor fire will not be significant, the impact of a major fire resulting in harm to the personnel, the community, wildlife or loss of critical habitat would be significant.

1.2.3.1.3. Damage to Third-Party Assets

Large mobile construction machinery items, such as excavators, dozers, and construction vehicles have the potential to cause damage to third-party property. The risk is considered low given the chosen pipeline route, although in some locations the pipeline may cross buried utilities and some impacts such as vibration may affect properties set slightly further back from the site preparation and enabling works activities. Impacts caused by vibration during construction are assessed in the ESIA.

Third-party assets will be identified by a pre-commencement survey and delineated by temporary fencing to prevent accidental intrusion on third-party land. Transport routes will be pre-planned and described as per the TRSMP mentioned in the ESIA.

Before construction, local and national utilities companies will be consulted and utilities maps reviewed by the contractors. Local and national utilities companies to be consulted will include, but are not limited to:

- Ministry of Information and Communications Technology and National Guidance
- Ministry of Energy and Mineral Development
- Uganda Civil Aviation Authority
- Uganda Communications Commission
- National Information Technology Authority
- Uganda Telecom Limited (national fixed line mobile and internet provider)
- National Water and Sewerage Corporation
- Uganda Electricity Transmission Company Limited, Electricity Regulatory Authority, Rural Electrification Agency
- Uganda Electricity Distribution Company Limited
- Ministry of Works and Transport
- Uganda Railways Corporation
- Arua City.

Should any utilities be identified or suspected, certain equipment may be prevented from using the RoW to avoid accidental damage. Procedures to stop work will also be implemented until the nature of the services can be established and the risk deemed safe. Project construction activities would restart following the definition of appropriate working methods, which would avoid impacting upon the integrity of the subject services or the health and safety of the workers.

With appropriate control measures and monitoring in place, the probability of damage to third party assets occurring is low. However, if damage to third party assets were to occur, the impacts are expected to be local to the site of the unplanned event and short in duration.

1.2.3.1.4. Fuel Storage Tank Release – Main Camp Pipe Yards and Construction

1.2.3.1.4.1. Sites

The construction phase will require the use of large mobile equipment, power generation equipment and vehicles. It is therefore envisaged that bulk fuel storage facilities will be required at each of the MCPYs and construction sites to support construction spread activities. Most oil or chemical spillage incidents are likely to be limited inventory during the construction phase (typically less than 100 L). However, there is potential for larger scale spillages from the bulk fuel storage (typically between 100 L and 10 m^3), resulting from a larger tank rupture, human error or equipment failure during fuel transfer activities.

An indicative inventory for fuel storage during construction will be determined.
The likelihood of fuel storage releases is considered medium owing to the level of activity and the frequency of fuel transfer operations during construction. There is the potential for acute and chronic impacts caused by larger fuel spillages depending on the type of fuel, the volume spilled, location, mobility and receptor sensitivity.

During the construction phase, the following measures will be implemented by the project.

a) Design Measures

- All fuels shall be stored within secondary containment providing appropriate containment in the event of a spill. Such facilities will be designed in accordance with best practices.
- Fuels will be supplied in vehicles specifically designed for the transportation of fuel oils and be made of sufficiently robust construction to prevent leaks and spills.
- All fuel storage tanks will be fitted with accurate level measurement.
- Ancillary equipment, e.g. valves, filters, sight gauges, vent pipes and fill points will be located within the secondary containment system.
- Pipework will be made of suitable material for use with fuel, supported and protected against corrosion and damage by impact or collision.
- Pumps used for refuelling will be equipped with automatic shut off and fuel storage will be fitted with electronic or mechanical overfill protection devices.
- Underground pipework will be avoided wherever practical.

b) Mitigation Measures

The potential impacts will be managed by implementation of measures in the pollution prevention plan, water management plan and emergency preparedness and response plan. These plans specify storage requirements for hazardous materials, define refuelling procedures, and specify actions to be taken in the event of an unplanned release of fuel. They also require the development, maintenance and testing of emergency response plans.

1.2.3.2. Operational Risks

1.2.3.2.1. Identification of Hazards Due to Storage of HSD and ATF

At the airport HSD and ATF is stored and handled. It is essential to have comprehensive information on High-Speed Diesel (HSD) and Aviation Turbine Fuel (ATF) being handled at the Arua airport. An understanding of their physico-chemical properties of HSD and ATF will help for hazard identification.

1.2.3.2.1.1. High Speed Diesel (HSD)

High speed diesel is a mixture of straight run product (150 °C and 350 °C) with varying amount of selected cracked distillates and is composed of saturated hydrocarbons (primarily paraffins including iso, and cycloparaffins), and aromatic hydrocarbons (including napthalenes and alkylbenzenes). Its exact composition depends on the source of crude oil from which it is produced and the refining methods used.
Physical properties of high-speed diesel are as given below:

Boiling point/Range	215 – 376 °C
Physical state	Liquid
Appearance	Yellowish Brown
Vapour pressure	2.12 to 26mm Hg at 21 °C
Odour	Perceptible odour
Solubility in water @ 30 deg.C	Insoluble
Specific gravity	0.86 - 0.90 at 20 °C
Pour Point	6 - 18 °C
Flammability	Yes
LEL	0.6%
UEL	6%
Flash point (deg C)	32 (°C)
TDG Flammability	Class 3
Auto Ignition Temp	225 °C

HSD presents a moderate fire hazard. On heating, it can cause pressure rise with risk of bursting and subsequent explosion. It also forms explosive mixture with air particularly in an empty container

1.2.3.2.1.2. Aviation Turbine Fuel (ATF)

Aviation Turbine Fuel (ATF) is clear colourless to yellow liquid with slight petroleum odor. It is flammable liquid and highly flammable in presence of open flame and spark. The flammability of ATF is ranked as 2 by National Fire Protection Association (NFPA).

Physical and chemical properties of ATF are as given below:

Boiling Point	160°C
Specific Gravity	0.81 (Water = 1) at 15.6 °C
Vapor Pressure	: 1 kPa (@ 37.8°C)
Vapor Density	5.7 (Air = 1)
Auto-Ignition Temperature	210°C
Flash Points	38°C
Flammable Limits	Lower: 0.7% Upper: 5 %
Viscosity	8 cSt @ -20.0 °C
Solubility	Low PPM range in water

1.2.3.2.1.3. Identification of Hazards Based on MSIHC Rules, 1989 & 2000

Manufacture, Storage, Import of Hazardous Chemicals Rules, 1989 (amended in 2000) has been enforced by Govt. of India under Environment (Protection) Act, 1986. This could also be adopted for Uganda. For the purpose of identifying hazard installations the rules employ certain criteria based on toxic, flammable and explosive properties of chemicals. MSIHC Rules is applicable for storage of HSD and ATF at the existing Arua airport.

1.2.3.2.1.4. Hazardous Conditions

An accidental release of HSD for DG operation and ATF from tanks or piping during unloading and filling in aircraft may result in formation of fixed or spreading pool of released qualities. In case of immediate ignition, a pool fire will result. Delayed ignition may result in explosion or flash fire, if quantity of explosive mass is sufficient and some confinement is present.

a) **Pool Fire**

A leak or spill of sufficient quantities of petroleum product will result in an accumulation of petroleum product on the ground. If ignited, the resulting fire is known as spreading or fixed pool fire. In case any object comes in contact with the flame above the pool, it will be severely damaged or destroyed and

personnel exposed to flame will suffer extensive burn injuries. Objects and personnel outside the actual flame volume may also be affected or injured by radiant heat. The extent of damage or injury depends on the heat flux and duration of fire and exposure. If a large area of the body receives second- and third-degree burns, it can result in fatalities.

The extent of injury to people depends on the heat flux and duration of exposure. The extent of damage to personnel and property depends on the size of the pool and the duration of fire.

b) Thermal Effects

In case of fire, thermal effect is likely to cause injury or damage to people and objects. A substantial body of experimental data exists and forms the basis for thermal effect estimation. The consequence caused by exposure to heat radiation is a function of:

- Radiation energy onto the human body [kW/m2];
- Exposure duration [sec];
- Protection of the skin tissue (clothed or naked body).

The following damage distances for thermal radiation have been used:

- 37.5 kW/m2 : Damage to process equipment. 100% fatality in 1 min. 1% fatality in 10 sec.
- 12.5 kW/m2 : First degree burns for 10 sec. exposure
- 4.0 kW/m2 : First degree burns for 30 sec. exposure

c) Vapour Cloud Explosion/Flash fire

Vapour cloud explosion scenarios have been considered for confined (over pressure scenario) as well as non-confined scenario (flash fire).

If the released HSD and ATF are not ignited directly, the vapour cloud will spread in the surrounding area towards wind direction. The drifting cloud will mix with air. As long as the vapour concentration is between the lower and upper explosion limits, the vapour cloud may be set on fire by an ignition source. In case of delayed ignition of a vapour cloud, two physical effects may occur: a flash fire (non-confined) over the whole length of the flammable vapour cloud; a vapour cloud explosion (confined) which results in blast wave, with typical peak overpressures circular around the ignition source. For generation of overpressure effects, some degree of confinement of the flammable cloud is required. The extent of injury to people & damage to property or environment depends on the cloud size, explosive mass in the cloud and the degree of confinement at the time of ignition.

d) Delayed Ignition & Explosion

In case of delayed ignition of a natural vapour cloud, two physical effects may occur:

- A flash fire (non confined explosion) over the whole length of the explosive vapour cloud;
- A vapour cloud explosion (confined explosion) that results in blast wave, with typical peak overpressures circular around the ignition source. For generation of overpressure effects, some degree of confinement of the flammable cloud is required.

Table 4 gives damage criteria with respect to the peak overpressures resulting from a blast wave:

Table 3 Damage Effects due to Overpressures

Peak Overpressure	Damage Type
0.830 bar	Total Destruction
0.350 bar	Heavy Damage
0.170 bar	Moderate Damage
0.100 bar	Minor Damage

T**able 5** below gives an illustrative listing of damage effects caused by peak overpressure.

Table 4 Illustrative Damage Effects due to Overpressures

Peak Overpressure (Bar)	Failure
0.005	5 % Window Shattering
0.02	50 % Window Shattering
0.07	Collapse of a roof of a tank
0.07-0.14	Connection failure of panelling
0.08-0.1	Minor Damage to Steel Framework
0.15-0.2	Concrete block wall shattered
0.2	Collapse of Steel Framework
0.2-0.3	Collapse of self-framing Steel panel building
0.2-0.3	Ripping of empty oil tanks
0.2-0.3	Deformation of a pipe bridge
0.2-0.4	Big trees topple over
0.3	Panelling torn off
0.35-0.4	Piping failure
0.35-0.8	Damage to Distillation Column
0.4-0.85	Collapse of pipe bridge
0.5	Loaded Train Wagon overturned
0.5	Brick walls shattered
0.5-1.0	Movement of round tank, failure of connecting piping

(Source: TNO)

1.2.4. Risk Mitigation Measures

The risk mitigation measures that should be undertaken at Arua Airport are as given below:

- Prompt action in the event of an accidental release of HSD or ATF is essential.
- Where there is a possibility of a flammable liquid spill, provisions should be made to ensure as follows: (i) the spread of the spill is limited; (ii) non-flammable absorbent material is available for immediate use; (iii) ignition sources can be quickly removed; and (iv) the area is well ventilated.
- Routine testing and inspection should be carried out for storage area, hoses and fuelling tanker and record will be maintained.
- Leakages from tanker should be prevented by a suitable regime of preventive maintenance and inspection.
- Heat and smoke detectors should be provided at strategic locations.
- Adequate fire-fighting facilities should be provided near storage and handling of HSD and ATF.
- Fire-fighting facilities should be tested as per schedule.
- Ground staff near aircraft should be trained to take measure in the event of spillage and during fire emergency.
- Fuelling in Aircraft and DG sets ‘day tank’ should be done under the supervision of trained operators.
- Open vents should be provided of goose neck type, covered with a 4 to 8 mesh screen to discharge the vapours of hydrocarbons from storage tanks,
- Every storage tank and tanker, including all metal connections, should be electrically continuous and should be effectively earthed.

- Static grounding of aircraft should be ensured whenever the aircraft is parked; including during refuelling and defueling.
- Check list for operators for checking safety system and equipment should be prepared and check records kept in safe custody.
- The critical operating steps should be displayed on the board near the location where applicable.
- Standard Operating Procedure (SOP)" should be followed while unloading or fuelling the aircraft.
- Mock drills should be conducted every three months involving all concerned agencies.
- All concerned agencies should be provided with this ERDMP and regular trainings and interactions are made.

1.2.4.1. Risk Mitigation Measures for Fuelling of Aircrafts

- Earthing and bonding connections should be attached and mechanically firm.
- Equipment performing aircraft servicing function should not be positioned within 3 m radius of aircraft fuel vent openings.
- Equipment other than that performing aircraft servicing functions should not be positioned within 15 m of aircraft during fuel servicing operations.
- The accessibility to the aircraft by fire vehicles should be established during aircraft fuel servicing.
- Handheld intrinsically safe communication devices should be used within 3 m from the fuel vent.
- For open hose discharge capacity of the aircraft fueling system, at least put in place one listed wheeled extinguisher having a rating of not less than 80-B.
- Put in place at least 2 x 9kg ABC dry powder fire extinguishers at both sides of the refueling browser / dispenser.
- Spark plugs & other exposed terminal connections should be insulated.
- All vehicles, other than those performing fuel servicing, should not be driven or parked under aircraft wings.
- Electric tools, drills or similar tools likely to produce sparks or arcs should not be used.
- The ground service activities should not impede the egress should there be an emergency.
- A clear area for emergency evacuation of the aircraft should be maintained at the rear (or front) aircraft exit door.

1.2.4.2. Risk register

The risks identified for each project phase are provided in Annex 1. Risks have been identified as safety risks (S) or airport operations risks (AO) in the risk type column.

1.2.4.3. Change in risk profile

The development of the new runway would reduce the operational risk for the airport, owing to the following:

- The new runway is fully compliant with MO S 139 for Code 4E aircraft, including compliance for:
  - Runway length and width
  - Runway graded strip and flyover area
  - Recommended 240 m runway and safety area.
  - There are considerably fewer residences in the Public Safety Area of the new runway compared with RWY 18/36
  - The alignment of the new runway significantly reduces the occurrence of cross-winds compared with RWY 18/36.

1.2.4.4. Communication Channel

All communication, both within and outside the organization, will be coordinated througha control room on site manned by a designated person in conjunction with the HSE & Project Engineer

Communications shall follow the emergency communication flow that shall be developed by the contractor

1.3. DISASTER MANAGEMENT PLAN

1.3.1. Introduction

A disaster is a natural or man-made (or technological) hazard resulting in an event of substantial extent causing significant physical damage or destruction, loss of life, or drastic change to the environment. It is a phenomenon that can cause damage to life and property and destroy the economic, social and cultural life of people.

Natural disasters and manmade disasters like aircraft accidents, fires, terror attack & aircraft hijacking do occur at airports and therefore, it is required to prepare Disaster Management Plan (DMP). Airport emergency planning is the process of preparing an airport to cope with an emergency occurring at the airport or in its vicinity. The object of airport emergency planning is to minimize the effects of an emergency, particularly in respect of saving lives and maintaining aircraft operations. The airport emergency plan sets forth the procedures for coordinating the response of different airport agencies (or services) and those agencies in the surrounding community that could be of assistance in responding to the emergency.

The emergency arising out of the incidents whose effects are confined to the airport premises is termed as on-site emergency and those with effects extending beyond the airport premises is termed as off-site emergency. This chapter identifies possible disasters that could occur at the existing airport and draws a disaster management plan, which includes the emergency control measures, plan of coordination and interaction with various agencies including administrative agencies, rescue and relief operations, training and awareness to minimize the severity of disasters.

1.3.1.1. Purpose

The purpose of a DMP is to spell out the procedures for coordinating the response of different agencies and services, both on and off the airport, to cope with various aircraft related and non-aircraft related emergencies anticipated at the airport.

1.3.1.2. Objective of DMP

The objectives of the emergency planning are to describe the airport's emergency response organization, the resources available and applicable response actions. Thus, the objectives of emergency response plan can be summarized as follows:

- Rapid control and containment of the hazardous situation;
- Minimizing the risk and impact of an event/accident; and
- Effective rehabilitation of the affected persons, and prevention of damage to property.

The DMP plan should be prepared in accordance with the Civil Aviation requirement laid down by the UCAA, The National Policy for Disaster Preparedness and Management 2011, the Physical Planning Act, the National Building Code as well as various code provisions of the International Civil Aviation Organization (ICAO) Airport Service Manual, Part-7.

1.3.2. Types of Disasters

1.3.2.1. Natural Disasters

Natural Disasters are often sudden & intense and results in considerable destruction, injuries & death disrupting normal life as well as the process of development. Disasters due to natural calamity could be as follows

- Earthquake

- Flood
- Storm/ Cyclone
- Cloud burst/ lightning/ extreme weather conditions
- Fire
- Disease outbreaks/Epidemics

1.3.2.2. Aircraft Accident-Related Disasters

Aircraft accident occurs near and within the airport during landing/take off/taxing due to malfunctioning of some mechanism like undercarriage, failure of hydraulic power supply, non-functioning of one or more engines, malfunctioning of landing gear, sudden fire in aircraft while en-routing, unforeseen circumstances in which pilot loses control over aircraft and improper signaling by air traffic control tower (ATC). Disasters due to emergencies could be as follows:

- Aircraft accident at airport
- Aircraft accident off airport
- Hazardous material emergency, hydrocarbon spills (ATF) followed by pool fire
- Fire

1.3.2.2.1. Categorization of Emergencies

Emergencies at airports can be classified under several broad headings. These headings are listed below together with a description of the type of emergency.

i. Local Standby

Local standby will be declared when an aircraft approaching the airbase is known or is suspected to have developed some defect but the trouble does not normally involve any serious difficulty in effecting a safe landing.

ii. Aircraft Disabled/Immobilized on Runway/Taxiway

An incident such as bursting of tyres, hydraulic leakage/failure, undercarriage failure or any other technical problems, the aircraft can be disabled or immobilized on the runway or taxiway. Situation like this may require the pilot to disembark the passengers onboard in situ before the aircraft is removed or towed to its parking bay. To specifically deal with such a situation, a plan should be developed.

iii. Full Emergency

Full Emergency will be declared when an aircraft approaching the airbase is known or is suspected to be in such trouble that there is a possibility of an accident.

iv. Crash Action

Crash Action will be declared for aircraft accidents on the airbase as well as off the airbase. There are two types of Crash Action – for aircraft accidents that occur within the Airport Fire Service Turnout Area and for that which occur outside the Airport Fire Service Turnout Area.

v. In-Flight Mass Casualties

Part 1 of ICAO Annexure 6 stipulates that the pilot-in-command shall be responsible for notifying the nearest appropriate authority by the quickest available means of any accident involving his aircraft, which results in serious injury or death to any person or substantial damage to the aircraft or property. Mass casualties onboard will usually result from incidents such as an encounter with air turbulence during flight and mass food poisoning.

vi. Fires on the Ground

Fires on the ground can be aircraft related and non-aircraft related. Fires involving aircraft can be at any location on the runway, taxiway or apron area where the aircraft is parked.

Non-aircraft related fires involve mainly the airport buildings and installations.

vii. Natural Disasters

The natural disasters to which airport are likely to be subjected to are earthquake, flood, thunder and storms. Depending on the intensity, such acts of nature may cause severe destruction to the aircraft, airport buildings and installations, and even loss of life. While nothing can be done to avert them,

there are actions that can be taken at design stage to minimize the impact and expedite restoration of airport operations during emergency using the emergency plan.

1.3.2.3. Terror Attack, Plane Hijack, Sabotage

The threat of bombing vital installations by enemy action or sabotage cannot be ruled out near and within the airport. Since airports are vital facilities prone to terror attack/sabotage or plane hijacking, the threat to an airport could be from ground as well as from the air. Disasters due to external factors are on account of unlawful seizure, sabotage and bomb threat.

1.3.3. Disaster Management Plan

1.3.3.1. Local Standby

Local Standby is declared when an aircraft approaching the airbase is known or is suspected to have developed some defect but the trouble is not such as would normally involve any serious difficulty in effecting a safe landing. The decision to declare Local Standby for an aircraft emergency rests with the Air Traffic Control; and the Air Traffic Control shall use the standard text and format for the declaration of Local Standby as follows:

AIRPORT LOCAL STANDBY:

- Aircraft Operator:
- Aircraft Type & Flight Number; Nature of Trouble;
- Number of Persons on Board (POB); Fuel on Board;
- Planned Runway;
- Estimated Time of Arrival (ETA); and
- Any dangerous goods on board including quantity and location, if known

1.3.3.2. Full Emergency

Full Emergency is declared when an aircraft approaching the airbase is known or is suspected to be in such trouble that there is a possibility of an accident. The decision to declare Full Emergency rests with the Air Traffic Control.

AIRPORT LOCAL STANDBY:

- Aircraft Operator:
- Aircraft Type & Flight Number; Nature of Trouble;
- Number of Persons on Board (POB); Fuel on Board;
- Planned Runway;
- Estimated Time of Arrival (ETA); and
- Any dangerous goods on board including quantity and location, if known

1.3.3.3. Aircraft Crash within Airport Fire Service Turnout Area

The Airport Fire Service turnout area shall include the entire airport area as well as the areas in the vicinity of the airport up to an arc of a circle centered at the runway threshold of 3 km radius, and 1 km from the perimeter of the airport. Crash action is declared for aircraft accidents on the airbase as well as off the airbase.

The Air Traffic Controller shall activate the crash alarm immediately if one of the following events occurs:

a) When the aircraft accident/ crash is sighted by the Air Traffic Controller or the sighting is reported to the Air Traffic Control by any of the reliable sources such as the "Follow-Me" vehicles plying in the aircraft movement area;

b) During poor visibility- when the Air Traffic Controller is unable to sight the runway, and the aircraft, which has been cleared for take-off or land, fails to respond to the Air Traffic Control's repeated calls or the inputs from the Advanced Surface Movement Guidance and Control System (A-SMGCS) and other radar have indicated that the aircraft might have crashed; or

c) When the aircraft has been cleared to land and fails to land within 5 minutes of the estimated time of landing and the communication with the pilot is not able to be re-established. Or the inputs from A-SMGCS and other radar have indicated that the aircraft might have crashed.

If the crash is within the Airport Fire Service Turnout Area, the Air Traffic Control shall activate the crash alarm for at least one minute continuously, and the "Crash" message shall be broadcast over the Crash alarm communication system. The "Crash" message shall also be relayed to the Airport Fire Watch Tower.

The standard text and format used for the "Crash Action" message for aircraft crash within the airport Fire Service Turnout Area shall be as follows:

CRASH, CRASH, CRASH:

- Aircraft Type & Flight Number; Location of Accident;
- Grid Map Location [*SQUARE (Alpha-Numeric)]; Time of Accident;
- Number of Persons On Board (POB);
- Fuel On Board;
- Aircraft Operator;
- Any dangerous goods on board including quantity and location, if known

*The 'Square' is the alpha -numeric grid reference indicated on the Crash Map.

If the aircraft accident occurs on the runway, the Air Traffic Control shall give clearance for the responding airport fire vehicles to enter the runway as soon as possible.

1.3.3.4. Aircraft Crash outside Airport Fire Service Turnout Area

If an aircraft accident occurs outside the Turnout Area, the procedures for Crash Action outside the Airport Fire Service Turnout Area shall be as followed. The decision to declare the Crash Action rests with the Air Traffic Control. If it is clear to the Air Traffic Controller that the aircraft has crash and landed outside the Airport Fire Service Turnout Area, the standard text and format used for the "Crash Action" message shall be as follows:

AIRCRAFT CRASH OUTSIDE TURNOUT AREA;

- Aircraft Type & Flight Number; Location of Accident (approximate);
- Time of Accident;
- Number of Persons on Board (POB); Fuel on Board;
- Aircraft Operator;
- Any dangerous goods on board including quantity and location, if known

UCAA/Arua City Authorities will be overall in charge of all ground operations at the scene. All the other agencies and services involved will activate their respective emergency operations plans to support the UCAA/Arua City Authorities in the mitigation of the aircraft accident. Local Fire Service will be fully in charge and resume command of the aircraft fire-fighting and rescue operations at the crash site.

1.3.3.5. Fires on the Ground (Aircraft Related Fires Occurring in Aircraft Movement Areas)

An aircraft can catch fire while it is taxing in the movement area or parked at an aerobridge or remote bay. Such a scenario can arise from a defect or malicious act, and may develop into a major disaster. The resources required to mitigate are thus identical to that of an aircraft crash within the Airport Fire Service Turnout Area. When the aircraft on the ground catches fire and is sighted by the Air Traffic Controller or reported to the Air Traffic Control by any reliable sources, the Air Traffic Controller shall activate the Airport Fire Service through the crash alarm communication system and provide details of the aircraft fire, for example:

- Location of aircraft;
- Nature of fire (e.g. undercarriage fire, engine fire);
- Number of Passenger On Board (POB); and Presence of dangerous goods, if known.

The Air Traffic Controller shall give clearance to the responding fire vehicles to enter the runway/taxiway as soon as possible. If the fire is large and has caused extensive damage to the aircraft and external resources are required to aid in the mitigation process, the Air Traffic Controller shall declare "Aircraft on Fire". The standard text and format used for the "Aircraft on Fire" message shall be as follows:

AIRCRAFT ON FIRE;

- Aircraft Operator;
- Aircraft Type & *Flight Number; Location of Aircraft;
- *Nature of Fire (e.g. undercarriage fire, engine fire);
- *Number of Persons on Board (POB);
- *Any Dangerous Goods on Board.

(*The information shall be provided if it is available and applicable.)

The Sequence of Activation for "Aircraft on Fire" shall be similar to that of "Aircraft Crash within the Airport Fire Service Turnout Area". The use of the phrase "Aircraft on Fire" is to give distinction and therefore avoid confusion between aircraft crash and aircraft on the ground on fire.

1.3.3.6. Fires on the Ground (Fires Involving Airport Buildings and Installations, i.e. Non-Aircraft Related Fires)

Fire may occur at any of the airport installations and buildings. If out of control, such a fire may cripple the key airport facilities and disrupt the normal airport operations. During a fire occurrence, however small it may appear to be, person who discovers it shall:

- Raise the fire alarm via the nearest manual call point. If no manual call point is readily available, raise the alarm by other available means;
- Inform the Airport Fire Service immediately of the exact location of the fire; and
- Operate a suitable fire extinguisher where readily available, or any water hose reel within range.

On receipt of a structural fire call, the Fire Watch Tower operator shall request the caller to provide the following details:

- Location of fire;
- Type of fire;
- Name of caller; and
- Telephone number of callers.

1.3.3.7. Dangerous Goods Accidents/Incidents

Dangerous goods accidents/incidents may occur:

- During an "Aircraft Crash" in which the aircraft concerned is carrying dangerous goods;
- During a "Full Emergency" in which the aircraft concerned is carrying dangerous goods;
- During a "Local Standby" in which the aircraft concerned is carrying dangerous goods;
- During "Fires on the Ground" in which the aircraft is carrying or in the process of loading/unloading dangerous goods; or
- When consignments of dangerous goods are damaged during loading or unloading from the aircraft or during delivery or collection from cargo terminals/warehouses within the airport.

1.3.3.8. Emergency Response for enemy action or sabotage

Bomb alert on aircraft

a) Any aircraft that is suspected of carrying a bomb should be parked in Isolated Bay Area.
b) All passengers should be evacuated immediately by the fastest means while the local or airport police arrange for bomb disposal experts to attend and search the aircraft. All baggage should be left on board until it has been searched and cleared. Airport rescue and fire services should be standby at point no less than 300m from air craft and

predetermined procedure for bomb alerts should take into account the calling of local authority services of fire, police, ambulance and hospitals.

c) These types of incidents may occur on the ground or in the air including the seizure of an aircraft unlawfully, the placement of bomb on board or suspected bomb on board or armed attack on the aircraft which may include taking of hostage in such cases airport normally have contingency plan which firstly demand positioning the aircraft away from the main runway and terminal building and secondly police and law enforcement agencies are contact as necessary.

The Air traffic control must

- Maintain continuous communication with the rescue and fire-fighting services to ensure that they are kept updated in relation to any change in distressed aircraft condition.
- Attend to bomb threat calls received to aircraft, terminal building, vital installations and arising from unclaimed observed insides/outside the airport and safe neutralization of explosives devices found.
- Conduct regular training of airport security police and staff, airline agencies working at the airport. This training is based for identification of explosives.

1.3.3.9. Emergency response for medical cases

Medical emergencies shall be responded to as follows;

- Call medical emergency phone number (paramedics/ambulance/fire department etc.) provided in the emergency contact list. Provide the following information:
    - Nature of medical emergency;
    - Location of the emergency (address, building, room number); and
    - Your name and phone number from which you are calling.
- Do not move victim unless absolutely necessary.
- Call a trained in First Aider to provide the required assistance prior to the arrival of the professional medical help
- If personnel trained in First Aid are not immediately available, as a minimum, attempt to provide the following assistance:
    - Stop the bleeding with firm pressure on the wounds (note: avoid contact with blood or other bodily fluids).
    - Clear the air passages using the Heimlich maneuver in case of choking.
- In case of rendering assistance to personnel exposed to hazardous materials, consult the Material Safety Data Sheet (MSDS) and wear the appropriate PPE. Attempt first aid ONLY if trained and qualified.

1.3.4. Role and Responsibility in Handling Emergencies

The following table summarizes the key functions for the existing Airport and other supporting organizations/ agencies/ services during a crisis

Table 5 Key Roles and responsibility

SN	Organization/ Agencies/Services	Key Function/Responsibility
1	Airport Fire Service	▪ Aircraft rescue and fire-fighting operation ▪ Post-accident fire protection Support for triage activities ▪ Evacuate injured passengers to hospitals ▪ Support for structural fire-fighting and evacuation ▪ Support for mitigation and dangerous floods, accidents/ incidents

2	Airside Management/ Operation	▪ Activate key officials and ground handling agent concerned ▪ Muster airline's and ground handling agent's resources ▪ Provide and direct ground service supports ▪ Provide inputs to air traffic control in regard to runway and taxiway closure ▪ Coordinate aircraft recovery and salvage operation.
3	Air Terminal Management	▪ Activate key officials and other external agency/services such as hospitals, panel doctors, ambulance services, bureau of civil aviation security, immigration and customs Activate the Emergency Response and Interaction Centre (ERIC) Group ▪ Setup the Emergency Co-ordination Centre (ECC), ▪ Survivors Reception Centre (SRC), Friends and Relatives ▪ Reception Centre (FRRC) and Re-union Area (RA) ▪ Passengers' facilitation and business recovery at terminal buildings ▪ Support terminal building evacuation.
4	Engineering	▪ Provide technical support and assistance ▪ Support recovery efforts
5	Corporate Communication.	▪ Media management ▪ Facilitate press releases and ▪ Organization of press conferences
6	Air Traffic Service	▪ Activation and Termination of Crash Action, Full Emergency, Local standby, etc. ▪ Air traffic management including issuing NOTAM (notices to airman)
7	Police	▪ Guarding of aircraft wreckage and preservation of evidence at the accident site including eye-witness accounts and photography ▪ Custody of flight data and cockpit voice recorders, cargoes onboard including dangerous goods, and baggage/passenger belongings ▪ Investigation and management of dead bodies including their identity establishment, mortuary arrangements, and release of the bodies. ▪ Arrange medical examinations of the crew members alive and passengers as well as post-mortem examinations of the deceased crew members and passengers mob control.
8	Airlines	▪ Support overall crisis mitigation efforts e.g. accountability of passengers, management of Next of Kin (NOK), aircraft accident investigation, etc. ▪ Support media management ▪ Passenger and NOK facilitation ▪ Facilitate reunions of survivors and NOK ▪ Prepare and provide passenger and cargo manifests. ▪ Report the aircraft accident or serious incident to the authorities concerned as stipulated under Aircraft Rules, 1937, Part X Investigation of Accidents.

		▪ Salvage/removal of crashed or disabled aircraft
9	Ground Handling Agent	▪ Provide ground service staff and facilities including passenger steps, coaches, and aircraft towing equipment.
10	UCAA	▪ Set standards and directions for dealing with all aviation related emergencies ▪ Aircraft accident/ incident investigation ▪ Authorize release of cargoes, onboard including dangerous goods, baggage and removal of crashed/ disabled aircraft

1.3.5. Operation and Management Control

1.3.5.1. Airport Emergency Managing Committee

To ensure coordinated action, an Airport Emergency Managing Committee will be constituted for Arua Airport. The Airport Director (Head of Operations) will be the chairman of this committee. The committee will comprise of members from various airport departments including the following

- Airport Administration
- Air Traffic Control
- Airport Rescue and Fire Fighting
- Airport Security Services
- Safety Department
- Airport Medical Services
- Maintenance Department
- Environment Management Cell
- Representative from Airlines
- Transportation Department
- Cargo Facility
- Department of Information and Publicity
- Representative from local NGO's and Social Group
- A member from Arua City

Airport emergency managing committee will design the procedure, the emergency action plan, evacuation plan and procedures for implementation based on local needs and facilities available. For effective implementation of emergency action, coordination among the various agencies involved in Emergency Control Centre will be expected. Emergency control centre will be established as the supreme command post for emergency action. For direct action and coordination at ground level mobile command post will be established.

Emergency action committee will select officers in charge for emergency control centre.

1.3.5.2. Airport Emergency Operation/ Coordination Centre

During a major airport disaster such as an aircraft crash or a severe fire outbreak at terminal building, the various emergency operations and coordination centers will be established immediately to mitigate the disaster. The Emergency Control Centre will be the top command for coordination and communication centre for all kinds of emergencies. The Chairman of Emergency Managing Committee will be the head of emergency control centre. Under his direction, chief officer will operate and regulate all emergency operation. The centre will operate under the directions of Airport Emergency Managing Committee. Its location will be fixed, as per the requirement emergency situations. The main features of this unit will be

- Its fixed location
- It acts to guide and support to the on-scene commander in the mobile command post for aircraft accidents/ incidents

- It will be operated by a specialized trained staff from Fire, Safety, Health and Environment department personnel of airport
- It will be the command, co-ordination and communication centre for unlawful seizure of aircraft and bomb threats
- It is operationally available 24 hours a day
- The location of the emergency operations centre should provide a clear view of the movement area and isolated aircraft parking position, wherever possible.

The Airport emergency operation centre should contain:

- Emergency alert and communication system.
- Adequate number of external telephones. The latest telephone directories with a list of important numbers.
- Adequate number of internal telephones and a P.A. system.
- Radio equipment, hot-lines and walkie-talkie.
- Plans of the airport to show various areas of airport
- Sources of sirens and safety equipment including fire, explosion, spill and gas controls.
- Stock of other fire extinguishing materials.

The airport emergency operations and coordination centers at the airport comprise Crisis Management Centre (CMC), Airport Emergency Response and Interaction Centre (AERIC), Emergency Coordination Centre (ECC), Mobile Command Post (MCP), Triage Area (TA), Survivors Reception Centre (SRC), Friends and Relatives Reception Centre (FRRC) and reunion Area (RA). Each of them has its own functions and roles to perform during the crisis are as described below:

1.3.5.3. Crisis Management Center (CMC)

Established by the airport operator, the CMC is to function as an overall overseeing and controlling authority of the crisis mitigation process during an emergency. The committee of the CMC comprises the following permanent and supporting members:

Permanent members of CMC are:

- Arua Airport Chief Operating Officer
- Head (Engineering/Maintenance)
- Head (Utility)
- Head (Security)
- Head (Airside Management)
- Terminal Manager

Supporting members of CMC are:

- Ministry of Works and Transport representative
- Office of the Prime Minister representative
- UCAA representative
- Arua City representative
- Airline's concerned representative
- UPDF representative
- Police representative
- Any other agencies required for proper handling of the crisis.

The Functions of the CMC include:

- Formulate strategic plans and policies, as well as engage in high level decision making for the mitigation of crisis;
- Control, coordinate and support operations during an aircraft accident;
- Oversee the work and progress of protracted fire-fighting & rescue, and salvage operations;

- Liaise with the airline concerned, local authorities, ministries, and governmental departments for support;
- Arrange and provide welfare to the staff involved in the mitigation of crisis;
- Regulate the release of information to the public on the facts of the disaster;
- Authorize the release of official passenger manifest and information pertaining to the aircraft accident;
- Issue press releases and organize press conferences; and
- Ensure that the post-accident operations are completed expeditiously so that the airport can resume normal operations in the shortest possible time.

1.3.5.4. Emergency Response and Interaction Centre (ERIC)

When an accident occurs beyond the normal office hours, the CMC Committee may take longer-than-usual time to convene. As an interim arrangement, ERIC will be activated and its members will be notified as per the roster and convene within one hour of activation. The ERIC group will carry out the general functions of the CMC until the latter comes into operation. When the CMC is operational, the ERIC will cease functioning and play the supporting roles as directed by the CMC. Before standing down the ERIC operations, the head of the ERIC group shall brief the CMC on the progress. The ERIC Group comprises Officials on duty. The members are on a weekly rotation basis. All officials on the duty are required to have their mobile phones switched on at all times and be in a position to reach the airport within one hour of activation.

1.3.5.5. Emergency Coordination Centre (ECC)

Located at the airport, the ECC will be established by the airport operator, in the event of a major disaster to coordinate the response and functions of the external supporting organizations, agencies, and services involved in the mitigation of the emergency.
Functions of the ECC include:

- Support crash site fire-fighting and rescue operations through liaison and coordination with the external organizations/agencies/ services;
- Facilitate mobilization of external resources to the crash site, such as issuing emergency passes and arranging with Apron Control for "Follow-me" vehicles;
- Friends and relatives' facilitation at the airport; and
- Arrange and facilitate visits by the VVIPs to the crash site.

1.3.5.6. Mobile Command Post (MCP)

The MCP will be established at the accident site to serve as an on-scene command, coordination and communication centre for the accident. It is a point where the co-operating agencies heads/ representatives assemble to receive and disseminate information and make decisions pertinent to the rescue operations. The MCP will be deployed to the accident site by the Airport Fire Service and be positioned at a distance of not less than 90 m upwind from the aircraft. The MCP will be headed by Head (Airside Operations), and Chief Airport Fire Service will be the alternate Head. When it is beyond the office hours, Duty Airport Manager (Shift-In-Charge) shall proceed to manage the MCP for the first hours until Head (Airside operations) or Chief Airport Fire Service arrives. The Functions of the Mobile Command Post include:

- Establish communication with CMC and ECC.
- Establish contact with other agencies reporting at the crash site. Establish a staging area for all ground services equipment such as tow tractors, passenger steps, and coaches reporting to the crash site;
- Establish an Assembly Area for the uninjured survivors;
- Secure and provide any assistance required by the doctors at the Triage Area;
- Arrange speedy evacuation of injured casualties to the hospitals;
- Liaise with the airline concerned to transport the uninjured and casualties; and

- Maintain and update a record of casualty evacuation status including:
    - Number of casualties evacuated from the aircraft; and
    - Number of casualties evacuated to the Emergency Medical Centre, hospitals, and Survivors Reception Centre.

1.3.5.7. Triage Area (TA)

Triage area is a location established usually near to the accident site, where triage operations (i.e. sorting and classification of casualties to determine the order of priority for treatment and transportation) are performed. In an aircraft crash accident, the triage area is normally established at a distance of not less than 100 m upwind from the aircraft. In triaging, casualties are classified into four categories given below and explain in the Table below:

Priority I Immediate care
Priority II Delayed care
Priority III Minor care
Priority IV Deceased

Medical Priorities in Triage Area

Category (priority)	Status	Arm band or identification	Description
P-I	Immediate Case	Red	Serious injuries, hemorrhage, asphyxia, facial injuries open and compound fracture, extensive burns, crash injuries and sever shock symptoms
P-II	Delayed Care	Yellow	Simple fracture, limited burns, cranial trauma, rapidly progressive shock. Injuries to sort parts burns less than 30%
P-III	Minor Care	Green	Minor injuries-need only first aid on the spot
P-IV	Dead	Black	Declared dead by the doctor

1.3.5.8. Assembly Area (AA)

The Assembly area is an area set up near the accident site to temporarily receive the survivors until the arrangements to transport them to the Survivors Reception Centre are made. Depending on the doctors' assessments of their medical condition, most priority III casualties will also join them and bring to the Survivors Reception Centre.

1.3.5.9. Survivors Reception Centre (SRC)

The Survivors Reception Centre (SRC) is a designated area set up for receiving the survivors (except for the flight crew and flight attendants) involved in an aircraft accident, for the associated documentation designed to account for the survivors and for interviews by the police officers and accident investigators. Upon receiving the "Crash" message, Terminal Manager will set up the SRC which shall be manned by the airline staff with the police taking charge of the security of the area, i.e. no unauthorized persons shall be allowed in this area.

At the SRC, the airline staff shall:

- Perform head count, briefing and documentation;
- Provide care and comfort including refreshments;
- Arrange accommodations;
- Facilitate the survivors who plan to continue their journey; and
- Arrange for doctors and/or officers through ECC on need basis.

1.3.5.10. Friends and Relatives Reception Centre (FRRC)

The FRRC serves as a secure area, away from the attentions of the media, for the friends and relatives of those involved in an aircraft accident. The documentation process within the FRRC helps to confirm who was on the aircraft and facilitates the reunion. On receiving the "Crash" message, the Terminal Manager will set up the FRRC.

The airline staff shall man the FRRC, and the police shall take charge of the security of the area. At the FRRC, the airline staff shall:

- Attempt to verify the identity of the visitors on entry;
- Conduct documentation and briefing;
- Update Next to Kin (NOK) with the latest information including passenger manifest, that has been officially cleared;
- Provide care and comfort including refreshments;
- Facilitate the NOK's requests or needs;
- Break the news of fatalities to the NOK concerned in the presence of the police; and
- Arrange for doctors and/or officers through ECC on a need basis.

1.3.6. Training and Education

Regular training would be provided to all personnel who have a role in planning and operational response to an emergency. The training objectives are:

- To familiarize personnel with the contents and manner of implementation of the plan and its procedures;
- To train personnel in the performance of the specific duties assigned to them in the plan and in the applicable implementation procedures;
- To keep personnel informed of any changes in the plan and the implementing procedures;
- To maintain a high degree of preparedness at all levels of the Emergency Response Organization;
- Train new personnel who may have moved within the facility/ organization;
- Test the validity, effectiveness, timing and content of the plan; and
- Update and modify the plan on the basis of experience acquired through exercises and drills.

1.3.6.1. Mock Drills and Exercises

Mock drills constitute another important component of emergency preparedness and refer to the re-enactment, under the assumption of a mock scenario, of the implementation of response actions to be taken during an emergency. Mock drills and integrated exercises have the following objectives.

- To test, efficacy, timing, and content of the plan and implementing procedures;
- To ensure, that the emergency organization personnel are familiar with their duties and responsibilities by demonstration;
- Provide hands-on experience with the procedures to be implemented during emergency; and
- Maintain emergency preparedness.

The frequency of the drills would vary depending on the severity of the hazard. However, drills would be conducted once in a year. Scenarios may be developed in such a manner as to accomplish more than one event objective. Drills and exercises will be conducted as realistically as is reasonably practicable. Planning for drills and exercises would include:

- Basic objectives;
- Dates, times and places;
- Participating organizations;
- Events to be simulated;
- Approximate schedule of events;
- Arrangements for qualified observers; and
- An appropriate critique of drills/exercises with participants.

Evaluation of drills and exercises would be carried out which include comments from the participants and observers. Discrepancies noted by the drill observers during the drill shall be pointed out. The individual responsible for conducting the drill or exercise would prepare a written evaluation of the drill or exercise. The evaluation would include assessments and recommendations on:

- Areas that require immediate correction;
- Areas where additional training is needed;
- Suggested modifications to the plan or procedures; and Deficiencies in equipment, training, and facilities.
- Records of drills, exercises, evaluations, and corrective actions would be duly maintained.

1.3.7. Management of visitors in disaster situations

- If a disaster or an emergency involves a visitor, contractor or staff members, all less-than essential services will be temporarily modified or discontinued until the situation allows for resumption of full program ability.
- The Operations Manager will determine whether these less-than-essential services are to be effected and, if so, when.
- Staff members will make themselves available for other duties. These duties may include helping move the injured/suddenly-taken-ill from the affected area to an unaffected section. These staff members will also be responsible for providing any needed transportation devices, such as wheelchairs, carts, and so forth, to facilitate the movement or evacuation of injured/suddenly-taken-ill.
- Facilitation of the injured/suddenly-taken-ill movements, including admissions, transfers and control of their information, will be directed by the individual assigned by the Operations Manager or appointed person(s). Information concerning the injured/suddenly-taken-ill will be released only at the direction of the Operations Manager and/or the Human Resources manager.
- All staff members will be made familiar with the Arua Airport Emergency Preparedness and Response Plan.

1.3.8. Updating of Disaster Management Plan

The Disaster Management Plan and implementing procedures would be reviewed and updated to ensure compliance with relevant regulations and applicable state and local emergency plans.
The need for updating will be based on following aspects:

- Written evaluations of mock drills exercises which identify deficiencies or more desirable methods, procedures, or organizations;
- Changes in key personnel involved in the organization;
- Changes in the facility organization structure;
- Changes in regulations;
- Recommendations received from other organizations and state agencies.

ANNEXES

1. Risk Register

Aspect	Impact	Risk type	Likelihood	Consequence	Risk	Mitigation	Likelihood	Consequence	Residual risk
Construction phase risks									
Upgrade of runway - installation of traffic lights	Working at an active intersection could lead to a traffic accident	S	Possible	Fatality	H	Implement traffic controls & the management plan during construction	Unlikely	Fatality	M
Closure of Runway	Aircraft may land on the closed runway	AO	Possible	Major	H	Implement closure in Per the Civil Aviation Directorate of Safety, Security and Economic Regulation requirements.	Unlikely	Major	M
Airside fence realignment	Breaches in the airside fence may lead to a breach of security	AO	Possible	Major	H	Prescribe construction sequencing and security requirements during perimeter fence modifications	Unlikely	Major	M
	Works on the airside fence realignment close to the Runway may extend into the Obstacle Limitation Surfaces	AO	Possible	Moderate	M	Issue Notice to Airmen (NOTAM) and/or schedule works to avoid aircraft movements	Possible	Minor	L
Upgrade/ construction of airport roads	Road works in airside areas may impinge on the Obstacle Limitation Surfaces or introduce	AO	Possible	Major	H	Limit the height of equipment used for airside road work and/ or schedule	Unlikely	Major	M

	foreign object damage to the Runway					works to avoid aircraft movement. Implement dust control and clean-up procedures			
Site clearing	Removal of vegetation may increase wildlife activity through dispersal of disturbed wildlife and potentially attract raptors, which could lead to bird strikes	AO	Likely	Moderate	H	Stage clearing to minimize fauna movement into open areas (i.e., clear towards the remaining vegetation). Implement bird surveillance and dispersal techniques to discourage birds near the existing runway	Unlikely	Moderate	L
Earthworks	Earthworks for site infrastructure (such as internal haul roads) could generate dust, which could present a hazard to aircraft movements.	AO	Likely	Moderate	H	Implement a dust management plan with strict requirements within the runway	Unlikely	Moderate	L
Construction of drainage systems	The presence of standing water in the partially constructed drain could attract birds, which could lead to bird strikes	AO	Likely	Moderate	H	Implement bird surveillance and dispersal techniques to discourage birds	Unlikely	Moderate	L
	The use of large earthmoving machinery	AO	Likely	Major	E	It's not clear whether Arua Airport has a radar.	Almost Impossible	Major	L

	would affect radar performance					But in case it is present, the radar would need to be relocated before construction activities occur			
Construction of the perimeter reclamation bund wall	The presence of site runoff within the bund could attract birds, which could lead to bird strikes	AO	Possible	Moderate	M	Implement bird surveillance and dispersal techniques to discourage birds	Unlikely	Moderate	L
Pipeline installation works	Public safety at the construction site during pipeline assembly	S	Possible	Fatality	H	Provision for alternative public and emergency vehicle access would be provided around the active construction site	Unlikely	Injury	L
	The pipeline could inhibit access by Airport Rescue & Fire Fighting Service vehicles to the site of an incident at the airport	AO	Possible	Major	H	An access ramp over the pipeline would be provided to ensure access to all areas of the airport.	Unlikely	Moderate	L
Airport Construction	Delivery of construction to the site would increase the movement of large vehicles between the source quarry and the airport site, which could introduce a traffic hazard	S	Possible	Fatality	H	Implement a traffic management plan, which would consider haul routes and approved travel times.	Unlikely	Fatality	M

	Stockpiling and preparing construction Materials could generate dust, which could present a hazard to aircraft Movements.	AO	Likely	Moderate	H	Locate materials stockpiling and the batching area away from the Runway. Implement a dust management plan, with strict requirements	Unlikely	Moderate	L
Airport Construction Within the runway	Construction activities within the runway strip present an obstacle and a dust hazard to the aircraft	AO	Likely	Major	E	Construction activities would be managed under a 'Method of Working Plan which will be prepared in conjunction with Airport operations and personnel	Unlikely	Moderate	L
Apron extension and taxiway changes at the General Aviation area	Construction of the apron expansion and changes to the Runway and taxiways introduce conflicts for the existing General Aviation facilities of the terminal	AO	Likely	Moderate	H	The project phasing would need to consider providing access from the General Aviation the works. This may include the construction of temporary taxiways around the construction area construction of temporary taxiways around construction	Unlikely	Moderate	L

						Areas.			
Terminal Upgrade	Public access to an active construction site presents safety hazards.	S	Possible	Injury	M	Cordon off construction areas and divert the public around unsafe areas. Erect appropriate warning signs.	Unlikely	Injury	L
	Works in airside areas could introduce dust and Foreign Object Debris hazards for aircraft.	AO	Possible	Moderate	M	Construction activities would be managed under a 'Method of the Working Plan' which will be Prepared in conjunction with Airport operations and personnel	Unlikely	Moderate	L
	Unauthorized airside access presents a Security hazard.	AO	Possible	Major	M	Maintain and implement airside security measures. Only authorized construction workers to have airside access.	Unlikely	Moderate	L
Operations									
Implementation of new operating procedures	Improper implementations of flight procedures present aircraft operations hazards.	AO	Possible	Major	H	Undertake commissioning and Introduction of new procedures by established	Unlikely	Major	M

						guidelines and in liaison with UCAA, including the update of management plans to obtain Runway certification. Issue appropriate NOTAM in the lead-up to runway opening. Fire control tower			
Environmental, Health, and Safety Issues	Ecosystem, labour and safety issues,	AO	Possible	Fatality	H	Implement Biodiversity, EHS Management plans	Unlikely	Moderate	L

SUMMARY OF RISKS AND POTENTIAL MITIGATION MEASURES

A. The construction Risks

Risk	Mitigation Measure
1. Leakage/contamination by Hazardous materials (Fuel, lubricants, chemicals)	• Flashing
2. Fires and explosions	• Fire emergency services • UCAA, Aviation Rescue & Fire Service • Police fire brigade • assembling point
3. Exposure to toxic substances	• regular inspection • provision of PPEs • proper disposal • first aid (port health) • Ambulance • hospitals
4. Abrupt closure of operational access	• Timely and adequate communications • Notam • Proper planning
5. heavy machinery	• Cordon off the machinery • Ensure proper parking • Enhance communication
6. Community relations risks - sabotage	• sensitization • engagements • Local content and community involvement • The community should be informed of project benefits
7. Environmental concerns Pollution, Dust, noise, debris, borrow sites, etc	• Develop and implement Arua environmental and social management plan • Issue appropriate PPEs • Sensitization • communication
8. Construction accidents like sliding, FOD, and collision	• PPEs • Communication • Notam • Flashing • First aid • ambulance
9. Drainage /Floods	• Proper drainage plan
10. Destruction of habitats, Wild animals, Snake bites, and Bird strikes	• Implement Biodiversity management plans • Stand by bird hazard and wild animal management and control services • First aid
11. Natural disaster, lightning strikes	• Install Lightning conductors
12. Electrical hazards, power shocks	• Aviation rescue and fire service, sensitization, signage,
13. Sanitation risks	• Put in place appropriate health facilities, e.g, toilets, bathrooms, etc

	• Enhance the capacity of the MoH to manage port health, health sensitization
14. Theft	• security • CCTV cameras • Sensitization
15. HIV and other STDs	• Condoms • Sensitization • Educational & information materials
16. Security risks, terrorism, sabotage	• Security presence, patrols, CCTV cameras, deployments • Use of a temporal watch tower • Restricted and controlled structures around the airport • Involvement of city leadership and all stakeholders

B. Operational risks

RISKS	MEASURES
1. Knowledge gaps to operate the improved airport (lack of a competent team)	• Capacity building, • Establish a fire control tower • Continuous training of staff
2. Sabotage and terrorism	• Enforcing strict protocols, i.e., security
3. Cyber attacks	• Procurement of sophisticated systems • Enhance the capacity of staff in IT and AI
4. Climatic/ natural disasters, i.e., Flooding, earthquakes, lightning	• Establish robust Early warning systems
5. Increased crimes, i.e, illicit drugs, smuggling	• Enhance security, Alertness, vigilance, & training
6. Anti-social behaviours as a result of population increase	• Public sensitization • Enforce the code of conduct for workers • Work with the city Authority
7. Public health risks	• Conduct robust screening • Provide adequate PPE
8. Fire outbreak	• Training, firefighting equipment • Implement Emergency response plans
9. Collusion risk due to bad weather	• Training on emergency management & avoidance
10. Runway incursions by intruders at the airport 11. Air traffic control risks	• Strict security, i.e., CCTV cameras • Surveillance & patrols • Equipment, especially communication • Sensitization of staff and communities
12. Noise pollution	• Abatement plans for flight landing
13. Air quality 14. Fuel spillage	• Public sensitization • Strengthening air quality control plans
15. Maintenance Errors	• Quality control measures
16. Equipment failures (Radio communication failures)	• Backup plans

17. Telecommunication towers & tall buildings	• Avoid approving buildings near the airport • Stakeholder engagements • Liaison with various authorities • Engagement with various stakeholders
18. Emergency response gaps	• Robust emergency response systems • Develop and implement an emergency response plan
19. Bird strikes	• Arua City to enhance the approval of physical & development/plans • Consult UCAA before approval of plans • Stakeholder engagement • Share the master plan of the airport with the city authority to ensure the plan's implementation • Restrict activities around the runway
20. Traffic-related risks due to a high number of people at the same time	• Proper Traffic management

2. Record of Engagements

MINUTES FOR EXPANSION OF ARUA CITY AIRPORT MEETING HELD AT ARUA CITY.		
DATE: 12th/ 06/2025	**TIME: 09:50 am**	**VENUE: ARUA AIRPORT.**
MEETING CONVENED BY	Operations Manager Arua Airport	
TYPE OF MEETING	Stakeholders Engagement	
CHAIRPERSONs	Operations Managers, Arua City Town clerk, Mayor Ayivu, LC1's	
SECRETARY	Gloria Anzoyo Titi	
MEMBERS PRESENT	**Attendance list attached**	

AGENDA:

1. Opening Prayer
2. Self-Introductions
3. Opening Remarks and Communication from the Operations Manager Arua
4. Meeting with the Arua city Town Clerk
5. Meeting with Mayor Ayivu town
6. Meeting with the LC1's of Arua Ci
7. Reactions and Responses
8. Closing remarks

Minutes	**Proceedings**
Minute 1: Opening Remarks	The meeting started with an Opening remark led by Joseph Asiimwe to assess the emergency risks that may disrupt safe and efficient airport operations. Objectives assess the risks and hazards that could affect Airport operations, define the roles and responsibilities of stakeholder in managing emergencies. Scope: The airport structure involves Cargo handling, communication and command structure. He said all these can be achieved through engagement and sharing documents, talking to key stakeholders, trainings and workshops
Minute 2: Self-Introductions	The Members introduced themselves according to their various Job positions.
Minute 3: Opening remarks and Communication from the Operations Manager of Arua Airport	The Operations Manager welcomed the team and was so delighted that Arua Airport would boost income in the area. She said the Operations day was 7:00am to 6:59pm where the runaway is mar rum, no lights, no security system. She continued to say that the various stakeholders operating at the Airport were as follows: Aim Air, (Samaritan Plan) but they left since they were not able to be given houses or hospitable. She also said Aim Air might leave because they don't have support(hanger) she emphasised when there was hunger other airports are able to come for service. MAF Operations comes for 5 days based in Kajjansi, Eagle Air operates throughout the week, Bar Aviation came and left the market operating in Congo. Furthermore, Pamela said the runaway was small that operates on Mondays, Wednesdays and Fridays. Operations of fuel had no security called the Aerotic information publication in the area has hindered

	many clients coming to the area. She added that any pilot to come to Arua has to get permission from Entebbe. **Note:** She informed members for any new development there was need for a contractor in place, like city link was a client but due to lack of control tower lost clients. **Break down of the Arua Airport weekly schedule** Mondays, Wednesday and Friday the Airport was always congested they were 200 passengers in place. She told members that in the new development there was need to expand the place since cargo planes are bigger that cannot land in the run ways like clients from Sudan would like to land with Cargo. He informed the team that increase in length, size of the 260 hectares would be of great development in the place where Arua was not far from Congo and planes used to come from Kajjansi, land in Arua and go to South Africa. More still Civil Aviation Authority acquired land of 73.6 hectares where currently runway was (1.8kms) 1081 meters long and width 30 meters but she said they had planned it to be expanded to 3000kms. **Summary of the Statistics to Passengers** 2023- 2300 international passengers, around 6300 domestic passengers, Transit passengers were 700, International were 6033, domestic- She said the issue of emergency landing was due to weather problems. 2025 Jan- June a total of 1700, disembarked – 1666, Embarked- 1163, transit passengers- 893. She noted that Hanger would be included that's what the clients had requested. The operations Manger communicated that in terms of management system what would guide were as follows**:** Body of ICAAO- International Civil Aviation Authority organisation Emergency plan, Risk Management Plan, Risk register where the Operations Manager is Secretary to risk registry and champions, Arua Elado Manual, Arua Security programme of the Airport is guided by the Civil Aviation Manual, National civil Aviation Manual, ISO security organs, UPDF detach organs. Emergency Committee is place, Health and Safety Plan is in place with the Ministry of health where the operations manager Chairs the meeting, Ministry of Health (Port Health) Team, Safety committee in place. She emphasised that inters of emergency Safety committee was different, Emergency was under fire and Risk, Occupational Health was managed by the Operations Manager of Arua while Civil Aviation Authority handles the Occupational documentation. **Qn:** The period of construction at the airport will bring a number of challenges like break ways, dust and the operations Manager said a proper plan will be put in place**. (Risk)** Notam this gives information on how planes with land because it has a communication centre where any one coming to Arua would know.

	She also communicated that redevelopment was critical and is at a greater risk to development, operations must go on seamlessly while construction team must work with the Operations Manager. Arua is in charge of the regional generation manager in charge of Air ports headed by Samuel Oneka. **Community Relations** • The operations Manager informed the team that before the environment was hostile because those days, they used to vandalise but what she did was to offer facilitation, engagement with her phone 24 seven on. • Attended funerals of the people or the community in the neighbourhood. • Community engagement door to door • All the fences of the airport are not fenced • Droppings of cigarettes • No access road around the Airport • The buffer around the airport • Physical planning around the Airport was still a problem **Question:** How Receptive is the city plan about the airport? The operations Manager said Physical building around the Airport should be low for security reasons to the Airport and need for a continuous sensitisation was important. Amin family where it should be handled by high Authority but the operations Manager promised to engage the family once again before. **Risk**: Monitoring of seas mistic like earthquakes where mostly Arua is the lightening. **Note:** She said West Nile risk is high but gave example that Kabale is near but strategic advantage of Arua is better because it's a commercial area while Kabale is tourist. Also said Congolese do a lot of trading in South Sudan. A member asked about the cost of a flight which was 250 dollars one way from Entebbe to Arua **The engagement ended at 11:00am and followed by Tor around the Airport** During the Inspection there were encroachers on the land that involved numerous activities like mining of Marram, extraction of stone aggregates, rearing animals there ie cows, goats and cultivation. In most cases she said once one was got in the land they would be arrested but the land was enough for expansion of the airport. A building near the Airport where the owner constructed a storeyed flat called Ben Garage was a risk to the Airport because it would be a security threat to the flights landing and leaving. She also told members that around 2012 all stakeholders were involved in engagements though there were still three PAPS not compensated namely Obote, Azaati and Amin Family and concluded that documentation was needed for everything.
Minute 4: Meeting with Arua City Town Clerk	The Chairperson who was the Deputy Town clerk Arua city welcomed members and requested the meeting to start with a word of prayer led by Judith, then followed by self-introduction of staff both for MOWT and Arua city.

	There after requested team to give a brief of the meeting before he proceeded, led by the Environmental Engineer Philip were mentioned that the Airport once upgraded with Aircraft around will be of great achievement for Arua City. Furthermore, he said Arua Airport will be funded by African Development Bank where there was need for the physical plan, Civil aviation plan, climate change plan. The chairperson who was the Deputy Town clerk then proceeded with the Discussions where he mentioned about the Guest of Eden whether they were still there? He continued to say that Physical development plan explains everything in the city but there is need for a detailed plan in the city. Project affected persons unsettled some were settled where some people moved with everything and some have not moved with their property/ everything. However, he said compensation money was received but not enough where home of Idi Amin was to be used as a museum and works as a tourist attraction. He was informed that terms of reference for the assignment will be got from Entebbe. Response from Operations Manager Arua Airport, she said that Guest of Eden were not in the picture since they did not meet the requirements and many investors came and left. More to this the Ben Garage the building has a watch tower next to the Airport fence and added that the issue of grave yard was given to RCC, where the grave yard was relocated only two families were not relocated. **Note:** people are compensated but some not relocated so there was need for improvement. She gave an example of Azaati had three plots, two paid but one plot remaining which was not affecting the development of construction though government was handling it then Obote towards Amin. Amins building will be fenced off which was not a security problem. She continued to say halting operation by physical planner was until when the Town clerk looks at the Airport potential development being proposed in terms of Revenue and development opportunities where by people may not know the high risks for the airport. The physical planner Moses responded that he had never received any written document on paper because they only had a city security meeting and requested Civil Aviation Authority to write directly to the physical planner or town clerk so that they can be approved. He said the development of the Ben garage was not approved but the structure was built in the district by then it was a city. Addition to this he communicated approving development around airport was waiting because its costly. Consequences either it would be hard to dislocate some one when plan was approved but when not yet approved government stands at a higher chance to relocate such a person. The Arua town clerk at his office said that Arua is Busiest second to Entebbe and welcomed the expansion of the Arua airport that would boost the economy in the area.

Minute 5: Meeting with Division Mayor Ayivu and Town Clerk Ayivu	The operations Manager of the Arua airport welcomed members for the meeting and thanked the mayor and his town clerk for sparing time to meet the MOWT team and led the meeting with an opening prayer. She informed members that Arua Airport was directly under Ayivu, to be upgraded from 1.8m to 3500 meters and said social risks were housing, HIV, environment noise, water pollution, gender issues and others. Communication from the Town Clerk Ayivu, he said they had moved to central government and government of Uganda to upgrade the place where cost of Air flight to Arua was high that clients are limited with the cost of the transport. He encouraged the CDO's and sociologists to be in the meetings since they are key stakeholders in the various stakeholder's engagements. Important to note that the community did not have any serious issues as a town clerk his primary role was tax collection, he mentioned if there was viable business then there was serious income/money, fuel costs all these were sources of revenue. Further the mayor said for sustainability purposes the Mayor and town clerk requested to be informed early in order to provide good service since he had moved to over thirty countries and he added that while designing projects they should capture the culture of the Lugbara i.e. the Leopard. The mayor added his contribution where he first communicated that he has been away for 3 months due to medical issues. He said they had been there for 101 years and had not seen better facilities so Arua was God chosen location that was strategic, products can be got within 20 minutes from the border of DRC, South Sudan. According to him upgrading the facility government will not make any lose since Arua was a business HUB. He talked about the expectations of the local leaders where opportunity of a LOP but incidence of Eden should not happen, he emphasised that MOWT should expertise the issue of boundary opening of the Airport as soon as possible where the issue of Azaati and Obote will be handled. He told the team since the Ministry wanted to acquire more land for expansion the community was ready awaiting response. The property tax collected they have bought a grader carter for Ayivu town. The issue of social risk - HIV was girls look for people or workers to get opportunity in marriage, to them nearest person was near than one who's far. More to this the entire 401.3 physical development plan framework was out however he noted that warehouse and neighbourhood would be adjacent building but not affect what was around the airport. The mayor informed the members that he would give support on what was required. Example: They said the issue of Harriet, didn't have an account and the brother had put in his names until she got the necessary documents was paid. **Qn: What way was community affecting development negatively?** The mayor commented that depends how the project was introduced to the community, if badly they will perceive negatively and if possible, things would be done well like first engaging the community LC1's

	before doing any work their results will be positive more still**, he emphasised the issue of boundary opening to be a priority.** He also said tall trees can be an obstacle to the air crafts which the air pilot can report. He recommended that the Amin family should be connected to the president after meeting with CAA Entebbe and forward to higher authorities. He concluded the meeting and requested the LC1's recommend people from their community to work.
Minute 6: Meetings with the LC1's	The Operations Manager of Arua Airport chaired the meeting which was opened by a word of prayer led by the Mayor Ayivu, followed by self-introduction of all the members present. The chair communicated that this day was Christmas once she retires she wants to leave a legacy though it was an abrupt call but thanked the LC1's for responding in time. More to that Arua was a welcoming place, the people once people leave, they come in tears. Remarks from the Environment Engineer, he said the proposed expansion will cater for bigger aeroplanes and the funder was African development bank who brought in the budget, all these involve social and environment since the area was known by the LC1's anything to be done would be with the support and cooperation of the LC1's. He continued to say construction will move with the operation of the Airport which cannot be stopped where as any issue that may cause alarm the responsible people be informed
Minute 7: Reactions and Responses from the LC1's	• The area counsellor said that anything needed the operations Manager should not leave the local leaders out because the project belongs to the community people. • Another member Patrick thanked everyone for the opportunity since 2016 up to now he was happy why the project was there and abled people should be selected to work, local people to be considered in case there are local investors, if possible, to be provided projects to do. He also said that there are people in his community who are skilled with papers when the chance comes, they should not be left out while some are unskilled but energetic. Additional he said local investors could go for bidding and the process should be transparent as well as employ people with in instead of bringing from a far. • The mayor complemented that some projects are restricted to donor conditions. • LC1 Abavu said that the community was wondering whether the Airport would be upgraded but he confirmed that the project will be done. • LC1 Alyomi-Adrovu cell he said since P.5 up to today he waited for this project but since he's still alive he would see the works. • LC1 Muceva cell he said the place was called Air field and now Airport though many things were missing but he's happy since construction will be done for the community. • LC1 Airfield Cell he complained that the Civil Aviation had not tasked his MPS and his people had never benefited like staff

	houses advocated to be built in the area such as the community can benefit. He said in case of storage he advocated for the local community to build ware houses so that people can benefit. • LC1 Kariyo cell he thanked the team for coming and he promised to give full support to the people. • LC1 Ongolo commented that they have drivers, grader operators that he was grateful for the services brought to the area. He also said more vehicles like special hires will be in place, the whole airport will be fenced, people will put up lodges, tourist attraction by putting up hotels that will provide income, and Vehicles transport people as well as boda bodas. • Senior environmental officer said there was need for cultural uniqueness that symbol was for Arua people they replied that Ayivu would be the Bull but Arua town was the leopard. The mayor said there was need to do more analysis by the cultural leaders. Like the remembrance of the Momentum of Mubuku Sesseseko
10. Closing remarks	The chairperson thanked the team and the local community for attending the various meetings to the benefit of ARUA airport.
	The last meeting ended at 7:00 pm.

No.	Action point	Responsibility
1.	Meeting minutes to be shared with the team to the amendments	Meeting Secretary.

Meeting Chairperson
Name:

Signature:

Meeting Secretary
Name:

Signature: