

Environmental and Social Management Plan (ESMP)

SOUTHERN AFRICAN CENTER FOR INFECTIOUS DISEASE SURVEILLANCE (SACIDS) – AFRICAN CENTER OF EXCELLENCE FOR INFECTIOUS DISEASES OF HUMANS AND ANIMALS IN SOUTHERN AND EAST AFRICA [TANZANIA]

(15th JANUARY 2016)

PART I: Activity Description

1. INTRODUCTION

In 2008, concerned by the burden of infectious diseases in Africa, academic and research institutions in epidemiologically linked southern and East African countries (Tanzania, DRC, Zambia, Mozambique and South Africa) embarked on a pathway towards developing Africa's capacity for training and research in infectious diseases. We formed a One Health partnership of medical and veterinary institutions (i.e. Southern Africa Center for Infectious Disease Surveillance - SACIDS) with an ambition for an African-led Center with progressive relevance to the wider Sub-Saharan region. We have worked closely with UK institutions, namely the London School of Hygiene and Tropical Medicine (LSHTM), the Royal Veterinary College (RVC), the London International Development Center (LIDC) and the Pirbright Institute (TPI), with wider international collaboration on a project-by-project basis. Our Center will develop from this platform to provide regional leadership for excellence in postgraduate training and research on infectious diseases.

We will strength postgraduate training and student-based research, developing competence in molecular biology and analytical epidemiology, testing innovative approaches, and working across sectors, institutions and borders, in partnership with internationally renowned centers of training and research excellence. SACIDS is led by Sokoine University of Agriculture (SUA), with core collaboration by the Muhimbili University of Health and Allied Sciences (MUHAS) and the National Institute for Medical Research (NIMR) to consolidate the inter-sectoral partnership. We will train 42 MSc, 10 MPhil/Res MSc and 15 PhD students, 30% of who will be from outside Tanzania and 40% female. We will also offer 2 Postdoctoral Fellowships. We will run short courses through our tested Summer School Program. We will collaborate with our established regional and UK partners to develop skills, research capacity and contact networks. We will introduce a novel Research Leadership and Management Training program tailored to different levels ranging from PhD students right through to senior academic staff. We will build on existing videoconference and server capacity to expand the role of ICT in learning.

Our facilities, students and scientists will serve as a source of authoritative expertise for

infectious diseases in diagnosis, surveillance, pathogen characterization, epidemiological modeling, and the definition of cost-effective disease risk management measures.

2. PROJECT OBJECTIVES

The objectives of SACIDS – ACE for Infectious Diseases of Humans and Animals in Southern and East Africa are in two strands: The training strand, which focuses on developing competence for a dynamic community of African researchers in the application of molecular biology and epidemiology to the understand and manage infectious diseases, through a tiered postgraduate training program; and the research strand which focuses on developing world-class students and fellows, addressing capacity gaps and the convergent needs in science and technology that make linking medical and veterinary research efficient and effective in the resource poor setting of southern and East Africa. Accordingly, the Center will aim to develop researchers with skills in new technologies to interrogate the natural history of disease at source and within endemic African settings. Both strategies will lead to African-led development of world-class researchers and research leaders to address the burden of infectious disease in Africa through the One Health approach based on core competencies of molecular biology and epidemiology.

3. PROJECT DESCRIPTION

Background

The SACIDS – African Centre for Infectious Diseases of Humans and Animals stems from the concern for a high burden of infectious diseases in Africa and yet a low capacity for its risk management. It arises out of a consortium of academic and research institutions in southern and East African countries (Tanzania, DRC, Zambia, Mozambique and South Africa) that was formed in 2008 as a One Health partnership of medical and veterinary institutions, with Sokoine University of Agriculture (SUA) in Tanzania as the Lead Institution. The Center will be located in the Department of Veterinary Microbiology and Parasitology of the Faculty of Veterinary Medicine (FVM) at SUA within the academic zone of the University.

The Vision and Mission of the Center are rooted in the quest for enhancing Africa's capacity for the science evidence based risk management of infectious diseases through the One Health approach. The SACIDS focus is to address infectious diseases in the African endemic settings through a collaborative effort between natural and social sciences to advance the understanding of interactions between humans, animals and the environment to improve public and animal health.

Postgraduate Training

Our training strategy focuses on developing students who can apply principles of molecular biology or epidemiology in a One Health context to the understanding and management of infectious diseases, through a tiered postgraduate training program. Emphasis will be on self-driven learning, aiming at developing critical thinking skills and retaining knowledge that leads to self-actualization. Training will be in seven strands, i.e. (i) Taught Master's Program involving 1 year course work plus 1 year guided research; (ii) MPhil/MSc-Research involving based on by 2 years research; (iii) PhD development; (iv) Postdoctoral program; (v) Structured short courses for students and practicing professionals covering a variety of disciplines including bioinformatics, biosafety, statistics; (vi) annual One Health driven 1 week summer schools; (vii) a novel program for research leadership and management for PhD students, supervisors and senior academic staff. Course delivery modes will include: fully face-to-face, web enhanced, flipped, blended/hybrid and fully online (e-books, e-resources, e-journals). Laboratory training will provide knowledge of both the strengths and limitations of each method to empower students to interpret experimental data.

SACIDS will train 40 MSc, 25 MPhil/Res MSc and 10 PhD students, 30% of who will be from outside Tanzania and 40% female and will offer 3 Postdoctoral Fellowships. It will have a rigorous selection and performance appraisal system for students and supervisors. It will offer short courses for students and in-service practitioners (100 trainees) and biennial One Health Summer Schools (50 trainees), as well as Research Leadership and Management, including equity issues such as gender and marginalized communities (60 trainees).

Developing Applied Research Excellence

Student based research will be in three strands: (i) Addressing Viral Disease Threat to Human Health, Food Security and Livelihoods – including emerging diseases e.g. Ebola and vector-borne diseases e.g. Rift Valley fever, Dengue, Chikungunya, Zika; livelihoods and food security diseases such as foot-and-mouth disease; (ii) Addressing Neglected Tropical Infectious Diseases, with a focus on those that cause chronic disease and disability, with severe health, economic and social consequences that impact on the quality of life and livelihoods in low income or marginalized communities, especially women, children and people with disability; (iii) Addressing Community Level One Health Security, with a focus on rural, remote, cross-border and marginalized communities.

Academic and Research Partnerships

The core partnership for the Center is SUA, Muhimbili University of Health and Allied Sciences (MUHAS) and the Tanzania National Institute for Medical Research (NIMR). National Partners will be the Catholic University for Health and Allied Sciences (CUAHAS), Tanzania Veterinary Laboratory Agencies (TVLA) and Tanzania Wildlife Research Institute (TAWIRI). Regional Partners will be the South African National Institute for Communicable Diseases (NICD); the University of Zambia (UNZA), Eduardo Mondlane University (UEM/EMU); University of Kinshasa (UNIKIN), the Biomedical Research Institute, Kinshasa; the ARC-Onderstepoort Veterinary Institute

(ARC-OVI), South Africa; the Uganda Virus Research Institute (UVRI); (ix) the Kenya Medical Research Institute (KEMRI); and (x) the International Livestock Research Institute –Biosciences Eastern and Central Africa (BecA) hub in Nairobi, Kenya.

Beyond Africa partners will be the London School of Hygiene and Tropical Medicine (LSHTM), the Royal Veterinary College (RVC), the London International Development Center (LIDC), The Pirbright Institute (TPI), Ranmore Consulting (UK) and the Policy Institute of King’s College, University of London plus a wider international collaboration on a tactical basis.

Partnership with Industry and Private Sector

Industry partners will be ZENUFA Tanzania Ltd and the Botswana Vaccine Institute (BVI). The Tanzania Food and Drug Agency (TFDA) as a regulatory body, and the of Pharm Access Foundation will provide interface expertise. We are developing in-house capability for biologicals (vaccine and diagnostics) development and trials through a USAID collaborative grant with the University of Texas El Paso and link with a Moroccan commercial company (MCI). A conceptual framework for developing a SACIDS Innovation Hub for partnership with industry and the private sector is described.

4: COST OF THE ACTION

Total cost of the project is estimated at \$6,000,000 (six million USD).

5. IMPACT ON THE ENVIRONMENT

- i. The project activities are not expected to impact on the environment negatively.
- ii. There will be no displacement of human population as there will be no any construction. Instead there will be refurbishment of the student laboratory at the Faculty of Veterinary Medicine (FVM), Sokoine University of Agriculture (SUA).

6. POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK

The management and coordination of environment issues in Tanzania is mandated to the National Environmental Management Council (NEMC), which was enacted by the Parliament of the United Republic of Tanzania (The Environmental Management Act, 2004). Among the provisions of the NEMC establishment is: To provide for legal and institutional framework for sustainable management of environment; to outline principles for management, impact and risk assessments, prevention and control of pollution, waste management, environmental quality standards, public participation, compliance and enforcement; to provide basis for implementation of international instruments on environment and to provide for implementation of the National Environment Policy. Sokoine University of Agriculture adheres to, and observes, not only the provisions stated in the Act that established the NEMC, but also implements all projects and activities in accordance to the National Environmental Policy.

7. RELEVANT WORLD BANK POLICIES RELATED TO IMPLEMENTATION

OF THE PROJECT

The project aims at utilizing technologies, which are environmentally friendly and therefore not disruptive or destructive to the environment or environmental processes. Furthermore, there are activities to be implemented that have positive impact on the environment as well on people's welfare. Thus the project implementation process will ensure that all activities are environmentally sound and sustainable. This is in line with World Bank Policy on Environmental Assessment (OP 4.01), which takes into account the natural environment (air, water, and land); human health and safety; social aspects (involuntary resettlement, indigenous peoples, and physical cultural resources); and trans-boundary and global environmental aspects.

8. IMPLEMENTATION ARRANGEMENTS

SACIDS – ACE for Infectious Diseases of Humans and Animals in Southern and East Africa has regional, international and national partners who will be involved in project implementation. There will be a large number of individuals, including students, who will access project funds to implement planned and approved activities. To access the funds, all individuals will have to submit a request that details the nature of activities and a certificate of approval from the SUA's Research and Publications Ethical Committee, which, among others, will have to approve that the activities have been carefully checked/assessed for Environmental Impact. Furthermore, all research involving human subjects will have to be submitted for ethical clearance by the Tanzania Medical Research Coordinating Committee of the National Institute for Medical Research.

9. ENVIRONMENTAL SCREENING, ASSESSMENT AND MANAGEMENT

(i) Site location and Accessibility

The project will be based within SUA main campus at the Department of Veterinary Microbiology and Parasitology, FVM, which is accessible via main entry tarmac road to the SUA campus.

(ii) Land Tenure

The Center will be on land that is legally owned by Sokoine University of Agriculture. SUA land is within Morogoro Municipality according to the SUA Land Use Plan.

(iii) Project components

(a) Road infrastructure

The Center can be accessed through the SUA main campus tarmac road, 3km from the Center of Morogoro Municipality. There are also other paved roads within the University that enable accessibility from other zones of the campus to the Center.

(b) Water supply

The water which will be used for the entire period of the project and beyond, at FVM is supplied by SUA's independent water source which is drawn from Mzingira River. SUA possesses a water use permit for abstraction of 725.902 m³ per day. The water is used for sanitary, cleaning and maintaining the landscaping.

(c) Storm Water Management

Storm water drainage system to direct surface runoff into the environment is already in place at FVM. Rainwater is collected by rain gutters connected to open drainage system that collects storm water from the campus to the University farm.

10. POTENTIAL ENVIRONMENTAL IMPACTS

SACIDS – ACE for Infectious Diseases of Humans and Animals in Southern and East Africa is not expected to have a significant negative environmental impact. However, it in accordance with the university regulations and the National Environmental Policy and guidelines, there will be a periodic evaluation of the activities of the Center to ensure the criteria for protection of the environment are met and where shortfalls in achieving these occur, mitigating factors will be put in place to comply with the national guidelines and World Bank Operational Policies.

11. ENVIRONMENTAL MANAGEMENT APPROACH

SUA adheres to guidelines provided by the National Environmental Management Council in implementing its activities, to reduce impact on the environment. A solid framework for environmental impact assessment (EIA) is in place. During operation of SACIDS – ACE for Infectious Diseases of Humans and Animals in Southern and East Africa, the following will be strictly observed because of their potential adverse impact on the environment:

(a) Sanitation facilities

Wastewater management system is connected to the campus wastewater systems/waste water stabilization ponds where final effluent is discharged for treatment before being released to the environment.

(b) General waste disposal

Waste to be generated includes: waste water, laboratory waste, sanitary waste, tissue paper etc. With exclusion of wastewater, other wastes will be collected in waste bins within the building for final disposal. All laboratory wastes including animal tissues will be handled properly according to laboratory safety procedures and incinerated.

(c) Health and safety services

Students, laboratory staff and researchers will be provided with Personal Protective Equipment (PPE) such as N95 air mask, gloves, goggles, laboratory coats/gowns and

boots for use in situations of handling human or animal patients. For specimen and pathogen manipulation in the laboratories, PPE will be provided in accordance with the requirements of WHO/OIE for Categories 1 or 2 or 3 pathogens. The laboratory working environment will also meet the WHO/OIE requirements for handling Categories 2 or 3 pathogens including but not limited to use of class II biological safety cabinets and biosafety level 3 (BSL-3) isolation chambers (IsoArk) equipped with High-Efficiency Particulate Arrestance (HEPA) filters to safeguard workers and environment. Accordingly, the facilities and procedures in the microbiological/molecular biology laboratories of the Center will be implemented to conform to the WHO Laboratory Biosafety Manual and the OIE Terrestrial Manual Chapter 1.1.3 (2015 Version for Biosafety and Biosecurity).

To take care of accidental splashes to personnel, laboratories will be fitted with well marked and easy to access overhead showers, eyewashes and first aid kits. FVM buildings dedicated to the Center will be equipped with the necessary fire fighting equipment. Fire assembly point will be identified and proper signs will be put in place. The building hygiene and sanitation will be contracted to ensure safe working environment. The Center will keep a register of all accidents of potential health and safety at work implications.

Furthermore, students and laboratory personnel will undergo special training in biosafety. A specific biosafety, health and safety manual will be developed for SACIDS ACE Center staff.

University Auxiliary Police and private security operators will be contracted to ensure safety and protection of property. Students and staff will be provided with firefighting training every academic year.

12. MONITORING AND REPORTING

The Center will be located in the area designated for academic and research activities (Academic Zone) in accordance with the Land Use Master Plan of SUA and will adhere to the environment protection requirements stipulated therein as described above in this document. As a Center we undertake additional center specific environment and biosafety actions, with special focus on microbial and chemical biosafety and containment as described in this document and Annexes.

As described in the SUA Corporate Strategic Plan 2011-2020, the university does not yet have a formal system for structured environmental monitoring and reporting.

Our Center Implementation Plan for Year 1 will include commissioning a specialist consultancy to develop a Center specific Environment and Social Monitoring and Reporting Plan, using, as benchmark, the experience of NIMR, which is currently in the process for developing such a plan with consultancy advice. We will also be recruiting a Laboratory Manager in Year 1, whose responsibility will include ensuring implementation of the biosafety and environmental requirements, staff training in the

same and monitoring in collaboration with both the university (Mr. Richard Massawe, Chief Planning Officer) and NIMR.

The overall responsibility for monitoring of implementation of the Center ESMP has been assigned to Mr. Richard L. Massawe, Chief Planning Officer, SUA Planning Unit, P.O. Box 3000, Chuo Kikuu, Morogoro. Telephone: + 255 23 2613868, E-mail: planning@suanet.ac.tz

Table 1: Monitoring of implementation of EMPs

| Institution | EMP monitoring arrangements (name, title, contact information) |
|---|---|
| Sokoine University of Agriculture (SUA) | Mr. Richard L. Massawe, Chief Planning Officer, SUA Planning Unit, P.O. Box 3000, Chuo Kikuu, Morogoro. Telephone: + 255 23 2613868, E-mail: planning@suanet.ac.tz |

Part II: EMP Checklist for Activities

| PART A: (a) INSTITUTIONAL & ADMINISTRATIVE FOR THE AFRICA CENTERS OF EXCELLENCE PROJECT | | | | | |
|--|---|--|--|--|--|
| Country | TANZANIA | | | | |
| Project title | SACIDS – ACE for Infectious Diseases of Humans and Animals in Southern and East Africa | | | | |
| Scope of project and activity | The main objective of this Center is to train a critical mass of students and research fellows (MSc, MPhil/Res MSc., PhD & Postdocs) in the region to undertake research and development of technologies for detection and identification of pathogens causing infectious diseases using a One health approach. | | | | |
| Institutional arrangements (names and contacts) | Project Oversight: WB (Project Team Leader) | Project Management: Prof. Gerald Monela, Vice-Chancellor -SUA (Oversight) (vc@suanet.ac.tz) Prof. Gerald Misinzo (ACE Leader) (gmsinzo@gmail.com) Prof. M. Rweyemamu (ACE Deputy Leader and PI) (mark.rweyemamu@sacids.org) Bursar, SUA (Finance) (bursar@suanet.ac.tz) Director of Research and Postgraduate Studies, SUA (Postgraduate Students) (drpgs@suanet.ac.tz) Center Project Operations Manager (Dr. Filomena Namuba) (Filomena.namuba@sacids.org) | | Local counterpart and/or recipient MUHAS: Prof. Mecky Matee, Professor of Microbiology & Immunology. Center Coordinator MUHAS (mateemecky@yahoo.com) NIMR: Dr. Leonard Mboera, Chief Research Scientist and Director , Information & Communication. Center Coordinator, NIMR (lmboera@nimr.or.tz) | |
| Implementation arrangements (name and contacts) | Safeguard supervision Deputy Vice Chancellor (Administration and Finance) | Local counterpart supervision Planning Unit, SUA | Local Inspectorate supervision Estates Department, SUA | Contractor | |

| (b) SITE DESCRIPTION | |
|---|-----------------------------------|
| Name of site: Department of Veterinary Microbiology and Parasitology, Faculty of Veterinary Medicine, Sokoine University of Agriculture | |
| Describe site location: Morogoro Municipality, Morogoro region, Eastern- and Central Tanzania | Attachment 1: Site Map [X]Y [] N |
| Who owns the land? Sokoine University of Agriculture | |
| Geographic description: | |

The Center is located within the Academic Zone at the main campus of Sokoine University of Agriculture, which is 3.0 km from the center of Morogoro town and about 200 km west of Dar es Salaam.

(c) LEGISLATION

Identify national & local legislation & permits that apply to project activity:

The Center will be a constituent of Sokoine University of Agriculture and thereby protected by the Act of Parliament (Act #14/1984) that established the Sokoine University of Agriculture and by the Sokoine University of Agriculture Charter of 2007.

(d) PUBLIC CONSULTATION

Identify when / where the public consultation process took place:

January 13th, 2016 at Sokoine University of Agriculture (Annex A)

(e) INSTITUTIONAL CAPACITY BUILDING

Will there be any capacity building?

N or Y if Yes, Attachment 2 includes the capacity building program

Section B: ENVIRONMENTAL & SOCIAL SCREENING

Will the site activity include/involve any of the following potential issues and/or impacts:

| Activity and potential issues and/or impacts | Status | If Y refe |
|--|---|--------------------|
| 1. Building rehabilitation <input type="checkbox"/> Site specific vehicular traffic <input type="checkbox"/> Increase in dust and noise from demolition and /or construction <input type="checkbox"/> Construction waste | <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO | Act |
| 2. New construction <input type="checkbox"/> Excavation impact and soil erosion <input type="checkbox"/> Increase sediment loads in receiving waters <input type="checkbox"/> Site specific vehicular traffic <input type="checkbox"/> Increase in dust and noise from demolition and /or construction waste | <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO | Act |
| 3. Individual wastewater treatment system <input type="checkbox"/> _Effluent and / or discharges into receiving waters | <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO | Act |
| 4. Historic building(s) and districts <input type="checkbox"/> Risk of damage to known/unknown historical or archaeological sites | <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO | Act |
| 5. Acquisition of land / involuntary resettlement ¹ <input type="checkbox"/> Encroachment on private property <input type="checkbox"/> Relocation of project affected persons | <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO | If Y elig AC |

| | | |
|--|----------------|---------------------|
| <input type="checkbox"/> Negative impacts on livelihood incomes | | |
| 6. Indigenous People ² <input type="checkbox"/> Adversely effect on indigenous peoples, as they themselves would determine through consultations on the project conceptualization and design | [] YES [X] NO | If Y elig AC. |

| | | |
|---|----------------|-----|
| <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Hazardous or toxic materials <input type="checkbox"/> <input type="checkbox"/> Removal and disposal of toxic and/or hazardous demolition and / or construction waste <input type="checkbox"/> storage of machine oils and lubricants _ <input type="checkbox"/> Procurement or use of pesticides – or formulated products that are in the World Health Organization (WHO) Classes IA and IB, or formulation so products in Class II4 | [X] YES [] NO | Act |
| 8. Impacts on forests, natural and/or protected areas <input type="checkbox"/> Conversion of forested land, protected areas or natural habitats for biofuel crops <input type="checkbox"/> Encroachment on designated forests, buffer and /or protected areas <input type="checkbox"/> Disturbance of locally protected biodiversity habitat | [] YES [X] NO | Act |
| 9. Handling / management of medical waste <input type="checkbox"/> Clinical waste, sharps, pharmaceutical products (cytotoxic and hazardous chemical waste), radioactive waste, organic domestic waste, non-organic domestic waste <input type="checkbox"/> On site or off-site disposal of medical waste | [X] YES [] NO | Act |
| 10. Traffic and Pedestrian Safety <input type="checkbox"/> Site specific vehicular traffic <input type="checkbox"/> Site is in a populated area | [] YES [X] NO | Act |
| 10. General land and water issues <ul style="list-style-type: none"> • Contributes to irreversible land degradation and /or siltation in waterways • Includes impoundments in waterways (generally for water extraction) • Groundwater extraction | [] YES [X] NO | Act |

| ACTIVITY BOX | PARAMETER | GOOD PRACTICES MITIGATION MEASURES |
|-----------------------|------------------------------|---|
| A. General Conditions | Notification & Worker Safety | (a) Consult with the Regional Steering Committee and to discuss activities and the due diligence requirements (b) The local construction and environment inspectors have been notified of upcoming activities (c) The public has been notified of the works through |

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| | | <p>in the media and/or at publicly accessible sites (including the internet)</p> <p>(d) All legally required permits (to include not limited to air quality, water quality, wetlands, resource use, dumping, sanitary inspection permit) have been obtained for the proposed activity</p> <p>(e) All work will be carried out in a safe and disciplined manner to minimize impacts on the environment and neighboring communities</p> <p>(f) Workers' personal protective equipment (PPE) will be provided in accordance with international good practice (always hardhats, as needed safety glasses, harnesses and safety boots)</p> <p>(g) Appropriate signposting of the sites will inform workers and the public of regulations to follow.</p> |
|--|--|--|

| ACTIVITY BOX | PARAMETER | GOOD PRACTICES MITIGATION MEASURES |
|--|------------------|--|
| B. General Rehabilitation and /or Construction Activities | Air Quality | <p>(a) During interior demolition use debris-chutes above ground level</p> <p>(b) Keep demolition debris in controlled area and spray water to reduce debris dust</p> <p>(c) Suppress dust during pneumatic drilling/wall destruction by spraying and/or installing dust screen enclosures at site</p> <p>(d) Keep surrounding environment (sidewalks, roads) clean to minimize dust</p> <p>(e) There will be no open burning of construction / waste materials</p> <p>(f) There will be no excessive idling of construction vehicles</p> |
| | Noise | <p>(a) Construction noise will be limited to restricted times of day</p> <p>(b) During operations the engine covers of generators and other powered mechanical equipment should be closed and located as far away from residential areas as possible</p> |
| | Water Quality | <p>(a) The site will establish appropriate erosion and sediment control measures such as e.g. hay bales and / or silt fences to prevent sediment from leaving site and causing excessive turbidity in nearby streams</p> |
| | Waste management | <p>(a) Waste collection and disposal pathways and sites for all major waste types expected from demolition and construction</p> <p>(b) Mineral construction and demolition wastes will be stored in appropriate refuse, organic, liquid and chemical wastes by on-site storage in appropriate containers.</p> <p>(c) Construction waste will be collected and disposed of by licensed collectors</p> <p>(d) The records of waste disposal will be maintained and made available for management as designed.</p> <p>(e) Whenever feasible the contractor will reuse and recycle materials</p> |

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| | | viable materials (except asbestos) |
| C. Individual wastewater treatment system | Water Quality | (a) The approach to handling sanitary wastes and wastewater treatment sites (installation or reconstruction) must be approved (b) Before being discharged into receiving waters, effluent from wastewater systems must be treated in order to meet the quality criteria set out by national guidelines on effluent quality and wastewater treatment (c) Monitoring of new wastewater systems (before/after) |
| D. Historic building(s) | Cultural Heritage | (a) If the building is a designated historic structure, monument, or structure, or located in a designated historic district, must obtain approval/permits from local authorities and address all requirements in line with local and national legislation (b) Ensure that provisions are put in place so that artifacts and “chance finds” encountered in excavation or construction are identified, contacted, and works activities delayed or modified to |

| ACTIVITY BOX | PARAMETER | GOOD PRACTICES MITIGATION MEASURES |
|------------------------|------------------------------------|---|
| E. Acquisition of land | Land Acquisition Plan/Framework | (a) If expropriation of land was not expected and is required, the income of legal or illegal users of land was not expected, must consult with Task Team Lead and /or Regional Safeguards Specialist (b) The approved Land Acquisition Plan/Framework will be implemented |
| F. Toxic Materials | Asbestos management | (a) If asbestos is located on the project site, mark clearly (b) When possible the asbestos will be appropriately removed to minimize exposure (c) The asbestos prior to removal (if removal is necessary) must be wetted with wetting agent to minimize asbestos dust (d) Asbestos will be handled and disposed by skilled workers (e) If asbestos material is to be stored temporarily, the waste must be enclosed inside closed containments and marked appropriately (f) The removed asbestos will not be reused |
| | Toxic / hazardous waste management | (a) Temporary storage on site of all hazardous or toxic substances in containers labeled with details of composition, proper handling, and disposal (b) The containers of hazardous substances should be |

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| | | <p>container to prevent spillage and leaching</p> <p>(c) The wastes are transported by specially licensed c licensed facility.</p> <p>(d) Paints with toxic ingredients or solvents or lead-b</p> |
| | Pesticides | <p>(a) Follow recommend and minimum standards as de Food and Agriculture Organization (FAO) Internation Distribution and Use of Pesticides (Rome, 2003)</p> <p>(b) Promote use of ecologically based biological or en management practices (integrated pest management I</p> |
| G. Affects forests and/or protected areas | Protection | <p>(a) All recognized natural habitats and protected areas the activity will not be damaged or exploited, all staff from hunting, foraging, logging or other damaging ac</p> <p>(b) For large trees in the vicinity of the activity, mark large trees and protect root system and avoid any dam</p> <p>(c) Adjacent wetlands and streams will be protected, with appropriate erosion and sediment control feature hay bales, silt fences</p> <p>(d) There will be no unlicensed borrow pits, quarries areas, especially not in protected areas</p> <p>(e) Forested areas/natural areas and protected will not crop production.</p> |
| H. Disposal of medical waste | Infrastructure for medical waste management | <p>(a) In compliance with national regulations the contra constructed and/or rehabilitated health care facilities i infrastructure for medical waste handling and disposa limited to:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Special facilities for segregated healthcare waste (i “sharps”, and human tissue or fluids) from other wast a. Clinical waste: yellow bags and containers b. Sharps – Special puncture resistant containers/boxe c. Domestic waste (non-organic): black bags and cont <input type="checkbox"/> Appropriate storage facilities for medical waste are <input type="checkbox"/> If the activity includes facility-based treatment, app <p>in place and operational</p> |

| ACTIVITY BOX | PARAMETER | GOOD PRACTICES MITIGATION MEASURES |
|--------------|-----------|------------------------------------|
|--------------|-----------|------------------------------------|

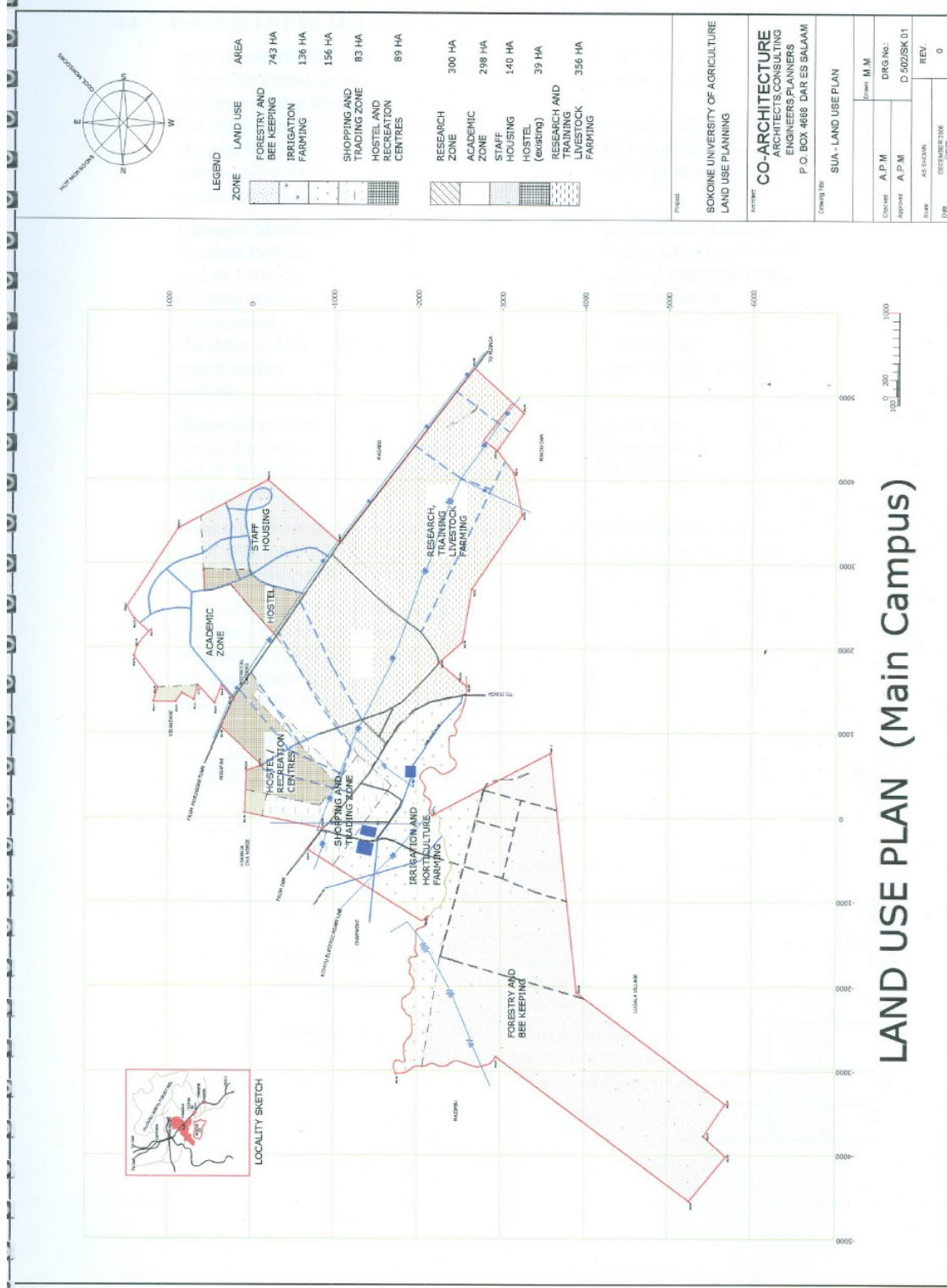
| | | |
|--|--|--|
| <p>I. Traffic and Pedestrian Safety</p> | <p>Direct or indirect hazards to public traffic and pedestrians by construction activities</p> | <p>(a) The contractor shall provide the University with a plan including temporary loss of roadway, blockage due to construction activities, including a description of the anticipated safety information plan, and traffic control strategy to be implemented to minimize the impact to the surrounding community. This plan shall include planned disruptions, and shall include consideration for emergency situations such as medical, disaster evacuation, and other critical situations. The plan shall be approved by the participating university and RFU.</p> <p>(b) In compliance with national regulations the contractor shall ensure the construction site is properly secured and construction activities shall include but is not limited to</p> <ul style="list-style-type: none"> ☐☐ Signposting, warning signs, barriers and traffic diversion to ensure traffic is visible and the public warned of all potential hazards ☐☐ Traffic management system and staff training, especially during periods of near-site heavy traffic. Provision of safe passages and alternative routes where construction traffic interferes. ☐☐ Adjustment of working hours to local traffic patterns to avoid transport activities during rush hours or times of live events ☐☐ Active traffic management by trained and visible staff to ensure safe and convenient passage for the public. ☐☐ Ensuring safe and continuous access to office facilities during renovation activities, if the buildings stay open |
| <p>J. Land and Water</p> | <p>General land and water uses</p> | <p>(a) Under no circumstances shall the contractor permit any discharge of water as a consequence of contractor activities without the approval of the University.</p> <p>(b) Internationally accepted good land use practices in order to prevent degradation, and /or siltation in waterways</p> <p>(c) Minimize excessive groundwater extraction and promote the conservation of water measures which can contribute to the sustainability of the project</p> |

Section C: Monitoring Plan

| <p>Phase</p> | <p>What (Is the parameter to be monitored?)</p> | <p>Where (Is the parameter to be monitored?)</p> | <p>How (Is the parameter to be monitored?)</p> | <p>When (Define the frequency / or continuous?)</p> | <p>Why (Is the parameter being monitored?)</p> | <p>Control (if applicable, include proposed control measures)</p> |
|--|--|---|---|--|---|--|
| <p>During activity preparation</p> | <p>Notification and workers safety</p> | <p>At the laboratory internal refurbishment site</p> | <p>Notification of staff and students on nature of activity</p> | <p>Display of safety measures to be observed</p> | <p>To ensure safety of workers, staff and students</p> | <p>Incorporate into the project plan</p> |
| <p>During activity implementation</p> | <p>Waste management</p> | <p>Construction site</p> | <p>Record waste and dispose properly</p> | <p>Daily</p> | <p>Construction workers, staff and students</p> | <p>Incorporate into the project plan</p> |

| | | | | | | |
|---------------------------------------|---------------------|---|--|-------|--|------------|
| | | | | | safety | |
| During activity supervision | Waste management | Student and Research Laboratories | Biosafety and Biosecurity training | Daily | Good Laboratory Practices (Biosafety Laboratory Procedures) | Par cos |

Attachment 1: Site Map



Attachment 2: The SACIDS ACE II Capacity building program

| Objective | Indicator | Baseline (2014) | Baseline (2015) | Annual Targets (2016) | Annual Targets (2017) | Annual Targets (2018) | Annual Targets (2019) |
|--|--|--------------------------------|---------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
| 1. Strengthen Education Capacity excellence – quality and productivity | Number of new students in ACE courses (30% must be regional students*): | | | | | | |
| | • New PhD students (% female) (% regional) | 5 (20% female) (80% regional) | 2 (100% female) (50% regional) | 5 (40% female) (20% regional) | 5 (40% female) (40% regional) | 0 | 0 |
| | • New Master students (% female) (% regional) | 31 (29% female) (33% regional) | 11 (36% female) (57% regional) | 15 (40% female) (30% regional) | 15 (40% female) (30% regional) | 10 (40% female) (30% regional) | 10 (40% female) (30% regional) |
| | • New short term (min. 40 hours) (% female) (% regional) | 37 (27% female) (54% regional) | NIL | 25 (40% female) (30% regional) | 25 (40% female) (30% regional) | 25 (40% female) (30% regional) | 25 (40% female) (30% regional) |
| 2. Strengthen Education Capacity & Development Impact | No. of academic staff with at least 1 month internship in a private sector company or a local institution relevant to their field/ sector (% female) | 0 | 0 | 5 (40% female) | 5 (40% female) | 5 (40% female) | 5 (40% female) |
| | No. of Students with at least 1 month internship in a private sector company or a local institution relevant to their field/ sector (% female) | | | | 12 (40% female) | 12 (40% female) | 8 (40% female) |
| | No. of internationally accredited education programs including sub-regional accreditation | 0 | 0 | 0 | 2 | 3 | 3 |

| | | | | | | | |
|---|---|--|--|---------------|---------------|---------------|---------------|
| | No. of students employed by industry | 0 | 0 | 3 | 3 | 4 | 4 |
| | No. of students who create/ start businesses | 0 | 0 | 3 | 3 | 4 | 4 |
| | No. of students employed by universities as faculty members | 2 | 2 | 0 | 1 | 1 | 1 |
| 3.Strengthen Research Capacity excellence – quality and productivity | Number of internationally peer reviewed research publications in disciplines supported by the ACE Program | 34 | 19 | 25 | 30 | 35 | 40 |
| | No. of new research collaboration in region | 11 (Existing collaborations, including 5 national) | 11 (Existing collaborations, including 5 national) | 3 | 2 | 1 | 1 |
| | No. of students employed by research organizations | 0 | 0 | 0 | 1 | 5 | 5 |
| | No. of patents, invention disclosures, trademarks and copyrights | | | | | | 1 |
| 4.Strengthen education and research capacity (through increased financial sustainability) and demonstration of value to students and partners | Amount of externally generated revenue by the ACEs | USD 1,531,415 | USD 3,444,221 | USD 2,000,000 | USD 2,000,000 | USD 2,000,000 | USD 2,000,000 |

Annex A : Public consultations

On the 13th January 2016, the project team convened public consultation at Sokoine University of Agriculture to explain the objectives, structure and activities of the proposed SACIDS ACE for Infectious Diseases of Humans and Animals in Southern and East Africa. Participants were from Sokoine University of Agriculture (SUA), Muhimbili University of Health and Allied Sciences (MUHAS), National Institute for Medical Research (NIMR), Morogoro Urban Water and Sewerage Authority (MORUWASA) and Catholic University of Health and Allied Sciences. In addition, the project team consulted National Environmental Management Council (NEMC), Vice President’s Office (VPO) – Environment, Government Chemist Laboratory Agency (GCLA) and Tanzania Occupational Safety and Health Authority (OSHA). During both the meeting and the consultations, the Center team emphasized on the regional nature of the Center and the need for exemplary performance not in terms of number of students trained but also the necessity for environment and social protection. Morogoro Urban Water and Sewerage Authority (MORUWASA) and Catholic University of Health and Allied Sciences (CUHAS). Representatives of NEMC, VPO – Environment, GCLA and OSHA were satisfied with the mitigations measures described by the Center team and the SUA Chief Planning Officer as being satisfactory. They also recommended additional mitigation measures, which have been incorporated in this EMSP. Overall all the participants and consulted officials welcome the initiative and viewed it positively in terms of its capacity development strategy including realization that the Center is intended to be leading technical scientific authority in infectious diseases of importance both locally at the community level and regionally.

| Country – Center of Excellence | Date of consultative meeting | Stakeholders present | Issues raised | Response to the issues |
|--|--------------------------------|--|---|---|
| Tanzania - Southern African Center for Infectious Disease Surveillance (SACIDS) - African Center of Excellence for Infectious Diseases of Humans and Animals in | 13 th January, 2016 | Sokoine University of Agriculture (SUA) (Prof. Gerald Misinzo, Prof. Mark Rweyemamu, Prof. Eson Karimuribo, Dr. Huruma Tuntufye, Dr. Christopher Kasanga, Dr. Kenneth Bengesi, Dr. Filomena Namuba, Eng. Eric Beda, Mr. Emanuel Mkilalu, Mr. | <ol style="list-style-type: none"> 1. Handling / management of medical waste <ul style="list-style-type: none"> • Clinical waste, sharps, pharmaceutical products (cytotoxic and hazardous chemical waste), organic domestic waste, non-organic domestic waste | <p><i>Infrastructure for medical waste management</i></p> <p>We will comply with the national regulations -The Environmental Management (Hazardous Waste Control and Management) Regulations, 2009 and Guidelines for Management for Hazardous Wastes, 2013. We will ensure sufficient infrastructure for medical</p> |

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| Southern and East Africa | | Richard L. Massawe) | <ul style="list-style-type: none"> On site or off-site disposal of medical waste | waste handling and disposal; this includes and not limited to: <ul style="list-style-type: none"> Special facilities for segregated healthcare waste (including soiled instruments “sharps”, and human tissue or fluids) from other waste disposal: <ol style="list-style-type: none"> Clinical waste: yellow bags and containers Sharps – Special puncture resistant containers/boxes Domestic waste (non-organic): black bags and containers Appropriate disinfection and storage facilities for medical waste are in place; and If the activity includes facility-based treatment, appropriate disposal options are in place and operational. | |
| | | Muhimbili University of Health and Allied Sciences (MUHAS) (Prof. Mecky Matee) | | 2. Refurbishment of teaching laboratories at the Department of Veterinary Microbiology and Parasitology | <i>Noise</i> <ol style="list-style-type: none"> Construction noise will be limited to restricted times agreed to in the permit. During operations, powered mechanical equipment will be closed, covered and placed as far away from working areas and classrooms. |
| | | National Institute for Medical Research (NIMR) (Dr. Leonard Mboera) | | <ul style="list-style-type: none"> Increase in dust and noise from construction. Construction waste. | <i>Water Quality</i> <p>The site will establish appropriate erosion and sediment control measures, in line with the environment guidelines mentioned above.</p> |
| | | Catholic University of Health and Allied Sciences (CUHAS) (Prof. Stephen Mshana) | | Morogoro Urban Water and | <i>Waste Management</i> <ol style="list-style-type: none"> Waste collection and disposal pathways and sites will be identified |
| | National Environmental Management Council (NEMC) (Ms. Amina Kibola) | Vice President's Office (VPO) – Environment (Mr. Deogratius Paul Nyangu) | | | |
| | Government Chemist Laboratory Agency (GCLA) (Ms. Glory Machuve) | | | | |

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| | | <p>Sewerage Authority (MORUWASA) (Eng. Julius Tanika)</p> <p>Tanzania Occupational Safety and Health Authority (OSHA) (Mr. Joshua Matiko)</p> | | <p>for all major waste types expected from refurbishment activities.</p> <p>ii. Wastes from refurbishment will be separated from general refuse, organic, liquid and chemical wastes by on-site sorting and stored in appropriate containers.</p> <p>iii. Refurbishment waste will be collected and disposed properly according to the National regulations.</p> <p>iv. The records of waste disposal will be maintained as proof for proper management as designed.</p> |
| | | | <p>3. Hazardous or toxic materials</p> <ul style="list-style-type: none"> • Removal and disposal of toxic and/or hazardous demolition and / or construction waste • Storage of machine (standby generator) oils and lubricants. | <p><i>Toxic / hazardous waste management</i></p> <p>i. Temporarily storage on site of all hazardous or toxic substances will be in safe containers labeled with details of composition, properties and handling information.</p> <p>ii. The containers of hazardous substances will be placed in an leak-proof container to prevent spillage and leaching.</p> <p>iii. Responsible authorities will be notified to make arrangements for appropriate disposal.</p> |
| | | | <p>4. Biohazardous waste including pathological (e.g. blood, tissue samples and body fluids) and microbiological waste (e.g. cultures and stocks of infectious etiological agents)</p> | <p><i>Biohazardous waste</i></p> <p>i. Pathological waste will be excluded from disposal with the normal waste stream and must be provided for incineration.</p> <p>ii. Microbiological waste will be treated through incineration, autoclaving or chemical treatment. If the waste is decontaminated, it will be disposed with the general normal waste.</p> <p>iii. Waste to be incinerated will be placed in plastic biohazard bags and then placed in appropriate containers.</p> <p>iv. Personnel and students will be</p> |

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| | | | | <p>trained on biosafety and appropriate handling of infectious waste. Specific biosafety training will be offered to ALL research students that are likely to be handling pathogens (or samples) of Category 2 and Category 3 risk.</p> <p>v. Exposure control training requirements apply to all employees that generate and/or handle biohazardous or pathological waste. Training will be provided on initial assignment of the employee to a task involving the generation or handling of biohazardous waste and refresher training as often as necessary to assure compliance.</p> <p>vi. Biohazardous materials will be handled according to their respective biological safety levels based on risk assessment.</p> <p>vii. Laboratory infrastructures and biosafety equipment at SUA, NIMR and MUHAS are graded for Category 2 and category 3. SUA and NIMR have Biosafety Category 3 containment facilities with High-Efficiency Particulate Arrestance (HEPA) filtering of exhaust air for safe handling dangerous pathogens protecting both the laboratory operators and the environment. In addition, NIMR has mobile laboratory for safe field sampling of dangerous pathogens including Ebola.</p> <p>viii. Risk of exposure to viable pathogens will be minimized by adopting molecular biology technologies, which are based on operations with extracted and non-infective genetic material (nucleic</p> |
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| | | | | <p>acids) and thereby can be carried out at relatively low risk biosafety levels.</p> <p>ix. Our relationship with National Institute for Communicable Diseases (NICD) offers us additional mitigation both in terms of training in Biosafety to WHO recognised levels and also access to the unique biosafety level 4 (BSL-4) facilities of the NICD. This will allow us to plan for safe handling of pathogens for humans and animals through strong partnership between SUA-MUHAS-NIMR and NICD.</p> |
| | | | 5. Monitoring and compliance | <p><i>Monitoring</i></p> <p>i. ESMP is integrated in the work plan and budget.</p> <p>ii. Regulatory authorities will be engaged throughout the project life cycle.</p> |