



Kwame Nkrumah
University of Science
and Technology

ENVIRONMENTAL ASSESSMENT

PROPONENT

CONSTRUCTION OF FOUR STOREY BUILDING TO HOUSE THE REGIONAL WATER AND ENVIRONMENTAL SANITATION CENTRE, KUMASI (RWESCK)

ADDRESS OF CORRESPONDENCE

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1. Introduction

The Kwame Nkrumah University of Science and Technology (KNUST) established the Regional Water and Environmental Sanitation Centre, Kumasi (RWESCK) with funding from the World Bank through the Ghana Government. The Centre's mandate is to be a higher education Centre of Excellence for water and environmental sanitation in the sub-region and beyond. Among others, the Centre will deliver postgraduate trainings in Water and Environmental Sanitation related disciplines leading to Masters and PhD degrees.

In order to create a conducive environment for research, teaching and learning, the World Bank has approved the use of funds for the construction of a four storey building to house the Centre. The building is to be sited on the KNUST campus.

This environmental assessment document describes the project and highlights the potential environmental impact of the construction on the environment as well as mitigation measures.

2. Proposed undertaking/Development and Description

The project involves the construction of a complex housing lecture rooms, video conferencing facilities, laboratories and offices. Mainly, the lecture room will be fitted with class room furniture, computers and projectors for teaching. Offices will be fitted with office furniture as well as computers and other basic office equipment. Video conferencing facilities will have ultra-modern equipment for video conferencing which would be connected to a high speed internet facilities. Laboratories will be installed with basic to high-tech laboratory equipment for analyses of water and soil samples. It is perceived that the main waste generated from the building will be paper, waste water and liquid waste.

3. Scope of proposal

It is expected that the equipment to be used for construction include earth moving equipment, hauling and hoisting equipment, graders, bulldozers, aggregate and concrete production equipment, cranes and other heavy duty machines. Post construction, the facility will be equipped with a power generating plant.

4. Location

Location: Kumasi (site plan/map annexed)

Street/Area name: KNUST campus

Town: Kumasi

District: Oforikrom District

District: Kumasi, Ashanti Region

Major Landmark: New Faculty of Art and Built Sciences building complex

Current zoning: N/A

5. Distance to nearest residential facilities

The Centre building is about five hundred metres (500 m) from the nearest residential facility (student hostel). Additionally, it about eighty metres (80 m) from the New Faculty of Art and Built Sciences building complex and two hundred metres (200 m) from the Central Laboratory.

6. Adjacent land uses

The immediate environment is cultivated as farm lands by itinerant farmers. Illegal poaching of game is practiced alongside. Adjacent lands are proposed to also house the Graduate school of business as well as the Faculty of Social Science complex.

7. Site description

Basically, the site is currently uncultivated and exist in its natural agricultural state, as such there are no on-going activities. Immediate activities pending construction will be grading, hauling and hording the site.

8. Structures

A four storey building complex will be constructed on the site. The structure will be mainly used for research, teaching and learning. In that regard it is expected to house lecture rooms, offices, laboratories and conference and meeting rooms.

8.1. Access to water

The main source of water to the structure will be treated piped water supplied by the Ghana Water Company Limited from the headworks. Water from GWCL will be augmented with a borehole to be drilled on site.

8.2. Access to Power

The main source of power supply to the structure will be from the Electricity Company of Ghana. This will be supplemented by a stand-by diesel generator (200-600 kVA) in case of power failure. Solar energy may be explored in rare circumstances.

8.3. Drainage provision

Wastewater from the complex will be connected and channeled through the sewerage system on KNUST campus. The sewerage system is a combined system that conveys both waste water and black water to a treatment scheme. Storm water will be channeled through tertiary drains into the weve stream that runs through campus.

Laboratory equipment for waste water treatment will also be installed in the building.

8.4. Nearness to water body

The project site is about five hundred metres (500 m) from the Wewe stream, freshwater source.

8.5. Access to project site

The currently exist an easy access road to the site. This road stretches from the college of Engineering junction through the business school junction.

9. Environmental Impacts

The potential negative impacts as a result of pre-construction and operational phases include;

9.1. Effects on geomorphology, land stability, landscape and biota

It is perceived that construction will initiate alterations that may reduce the ecosystem services which may negatively impact the natural ecology through reductions in suitable habitats, biodiversity and nutrient cycling.

9.2. Effects on drainage and water quality (surface and ground)

There shall be effluent and/ or discharges into receiving waters during the operational phase of the complex.

9.3. Effects on access and transport systems

The site is not in a populated area and vehicular traffic is minimal

9.4. Effects on existing community facilities

There shall be no relocation of project affected persons or encroachment of private property as the site is solely owned by the institution.

9.5. Effect on emission (gas, dust, noise, heat)

It is supposed that there shall be an increase in dust and noise levels from the construction of the complex. Also, the use of the power plant during the operational phase shall contribute to the increase in heat levels and fumes in the immediate environment.

9.6. Management of solid and fluid waste and storm water

Wastewater from the laboratory shall be pretreated. Storm water will be channeled into appropriate drains. Cleared labelled bins would be used to receive solid waste. Collection and disposal will be managed by the KNUST estate department.

9.7. Impact on adjacent land uses including any conservation and recreation aspects

There shall be no encroachment on any designated forest, buffer or protected area.

9.8. Visual Impact

The complex shall enhance the aesthetic value of the institution

9.9. Social Impact

The project shall provide employment during the construction and operational phases.

10. Consultations with adjoining neighbours and relevant stakeholders

- (a) The local construction and environment inspectorates and communities have been notified of upcoming activities
- (b) The public has been notified of the works through appropriate notification in the media and/or at publicly accessible sites (including the site of the works)

- (c) All legally required permits (to include but not limited to land use, resource use, dumping, sanitary inspection permit) have been acquired for construction and/or rehabilitation
- (d) All work will be carried out in a safe and disciplined manner designed to minimize impacts on neighbouring residents and environment.

11. Management of impacts and environmental enhancement measures

ACTIVITY	PARAMETER	GOOD PRACTICES MITIGATION MEASURES CHECKLIST
A. General Conditions	Notification and Worker Safety	<ul style="list-style-type: none"> (a) Workers’ PPE will comply with international good practice (always hardhats, as needed masks and safety glasses, harnesses and safety boots) (b) Appropriate signposting of the sites will inform workers of key rules and regulations to follow.
B. General Rehabilitation and /or Construction Activities	Air Quality	<ul style="list-style-type: none"> (a) During interior demolition debris-chutes will be used above the first floor (b) Demolition debris will be kept in a controlled area and sprayed with water mist to reduce debris dust (c) Dust will be suppressed during pneumatic drilling/wall destruction by ongoing water spraying and/or installation of dust screen enclosures at site (d) Surrounding environment (sidewalks, roads) will be kept free of debris to minimize dust (e) Crude burning of construction / waste material at the site will not be permitted (f) Excessive idling of construction vehicles at sites will not be permitted
	Noise	<ul style="list-style-type: none"> (a) Construction noise will be limited to restricted times agreed to in the permit (b) During operations, the engine covers of generators, air compressors and other powered mechanical equipment

		would be closed, and equipment placed as far away from residential areas as possible
	Water Quality	(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 moving off site and causing excessive turbidity in nearby streams and rivers.
	Waste management	(a) Waste collection and disposal pathways and sites will be identified for all major waste types expected from demolition and construction activities. (b) Mineral construction and demolition wastes will be separated from general refuse, organic, liquid and chemical wastes by on-site sorting and stored in appropriate containers. (c) Construction waste will be collected and disposed properly by licensed collectors (d) The records of waste disposal will be maintained as proof for proper management as designed. (e) Whenever feasible the contractor will reuse and recycle appropriate and viable materials (except asbestos)
C. Individual wastewater treatment system	Water Quality	(a) The approach to handling sanitary wastes and wastewater from building sites (installation or reconstruction) would be approved by the local authorities (b) Before being discharged into receiving waters, effluents from individual wastewater systems will be pre-treated in order to meet the minimal quality criteria set out by national guidelines on effluent quality and wastewater treatment (c) Monitoring of new wastewater systems (before/after) will be carried out

<p>E. Acquisition of land</p>	<p>Land Acquisition Plan/Framework</p>	<p>(a) If expropriation of land was not expected and is required, or if loss of access to income of legal or illegal users of land was not expected but may occur, the bank task Team Leader will be consulted.</p> <p>(b) The approved Land Acquisition Plan/Framework (if required by the project) will be implemented</p>
<p>F. Toxic Materials</p>	<p>Asbestos management</p>	<p>(a) If asbestos is located on the project site, it will be marked clearly as hazardous material</p> <p>(b) When possible the asbestos will be appropriately contained and sealed to minimize exposure</p> <p>(c) The asbestos prior to removal (if removal is necessary) will be treated with a wetting agent to minimize asbestos dust</p> <p>(d) Asbestos will be handled and disposed by skilled & experienced professionals</p> <p>(e) If asbestos material is to be stored temporarily, the wastes would be securely enclosed inside closed containments and marked appropriately</p> <p>(f) The removed asbestos will not be reused</p>
	<p>Toxic / hazardous waste management</p>	<p>(a) Temporary storage of all hazardous or toxic substances will be in safe containers clearly labelled with details of composition, properties and handling information</p> <p>(b) The containers of hazardous substances would be placed in a leak-proof container to prevent spillage and leaching</p> <p>(c) The wastes will be transported by specially licensed carriers and disposed in a licensed facility.</p> <p>(d) Paints with toxic ingredients or solvents or lead-based paints will not be used</p>
<p>G. Affects forests and/or</p>	<p>Protection</p>	<p>(a) All recognized natural habitats and protected areas in the immediate vicinity of the activity will not be damaged or</p>

protected areas		<p>exploited, all staff will be strictly prohibited from hunting, foraging, logging or other damaging activities.</p> <p>(b) For large trees in the vicinity of the activity, it will be marked and cordoned off with a fence large trees and protect root system and avoid any damage to the trees</p> <p>(c) Adjacent wetlands and streams will be protected from construction site run-off, with appropriate erosion and sediment control features to include but not limited to hay bales, silt fences</p> <p>(d) There will be no unlicensed borrow pits, quarries or waste dumps in adjacent areas, especially not in protected areas.</p>
H. Disposal of medical waste	Infrastructure for medical waste management	<p>(a) In compliance with national regulations the contractor will ensure that newly constructed and/or rehabilitated health care facilities include sufficient infrastructure for medical waste handling and disposal; this includes and not limited to:</p> <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: <ul style="list-style-type: none"> a. Clinical waste: yellow bags and containers b. Sharps – Special puncture resistant containers/boxes c. Domestic waste (non-organic): black bags and containers ▪ Appropriate storage facilities for medical waste are in place; and ▪ If the activity includes facility-based treatment, appropriate disposal options are in place and operational

<p>I Traffic and Pedestrian Safety</p>	<p>Direct or indirect hazards to public traffic and pedestrians by construction activities</p>	<p>(b) In compliance with national regulations, the contractor will insure that the construction site is properly secured and construction related traffic regulated. This includes but is not limited to</p> <ul style="list-style-type: none"> ▪ Signposting, warning signs, barriers and traffic diversions: site will be clearly visible and the public warned of all potential hazards ▪ Traffic management system and staff training, especially for site access and near-site heavy traffic. Provision of safe passages and crossings for pedestrians where construction traffic interferes. ▪ Adjustment of working hours to local traffic patterns, e.g. avoiding major transport activities during rush hours or times of livestock movement ▪ Active traffic management by trained and visible staff at the site, if required for safe and convenient passage for the public.
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12. Conclusion

It is expected that once the mitigation measures outlined are executed strictly and on timely basis, the construction will not pose adverse impacts to the environment