GARID
GREATER ACCRA RESILIENT AND INTEGRATED DEVELOPMENT

GREATER ACCRA RESILIENT AND INTEGRATED DEVELOPMENT PROJECT

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) OF THE DISPOSAL AND MANAGEMENT OF NEWLY DREDGED MATERIAL FROM THE ODAW CHANNEL TO THE FINAL DISPOSAL SITE AT POKUASE, IN THE GA WEST MUNICIPALITY

20 OCTOBER, 2023

EXECUTIVE SUMMARY

Project description and alternative considerations

The Government of Ghana is implementing the World Bank-funded the Greater Accra Resilient and Integrated Development (GARID) Project. The project aims to improve flood risk management and solid waste management in the Odaw River Basin of the Greater Accra Region, and improve access to basic infrastructure and services in targeted communities within the Basin.

Deferred and routine maintenance dredging works of the Odaw River Basin combined with the re-use and environmentally-safe disposal of the dredged material is an activity under Component 1 of the Project.

SAL Consult Limited, an environmental consultancy firm based in Accra, Ghana, was contracted by the Ministry of Works and Housing in July 2021 to carry out the Environmental and Social Impact Assessment (ESIA) for the Disposal and Management of the newly dredged material from the Odaw Channel at final disposal sites at Pokuase and Anyaa, both in the Greater Accra Region. This ESIA covers the Pokuase site only, while the ESIA for Anyaa site is covered in a separate document, which is under revision.

The Pokuase disposal sites are two adjoining disused quarry sites. Site 1 (0.99 hectares) has the capacity to receive about 50,000m^3 of material, whiles Site 2 (5.68 hectares) can receive between 800,000 – 1,500,000m^3 of dredged material.

The specific scope of works to be carried out by the contractor under this project include the following:

- Rehabilitation /reshaping of access road;
- Handling of de-silted material at temporary handling/holding site;
- Transportation of desilted material from temporary holding site to final disposal site;
- Disposal and management of de-silted material at the final disposal sites; and
- Fumigation exercises.

The proposed holding sites are located along the Odaw Channel for the handling of dredged material before evacuation to final disposal sites. The holding sites are:

i. Korle-na (2.73 acres);
ii. Lavender hill (2.47 acres);
iii. Odaw-na (0.75 acres), and
iv. Pasico (1.18 acres).

Purpose of the ESIA and Compliance with relevant laws and regulations

The purpose of the ESIA study is to identify and address possible direct, indirect significant adverse environmental and social impacts that will arise from the proposed project for

acceptability and sustainability; and to satisfy both legal and institutional obligations specified under the Environmental Protection Agency Act 1994 (Act 490), Environmental Assessment Regulations 1999 (LI 1652) in order to obtain an environmental permit from the EPA for project implementation.

The project will also ensure compliance with all relevant national laws and regulations as well as the World Bank Operational Policies. Good international industry practice will be adopted for project implementation to ensure sustainability of the project.

The following gives the policy, legal and administrative framework relevant to the project.

Policy, Legislative and Institutional/Administrative Framework

Policy Framework	
1	National Environmental Policy, 2013
2	National Land Policy, 1999
3	National Environmental Sanitation Policy,June 2010
4	National Health Policy, June 2007
5	National Water Policy, July, 2006
6	National Environmental Sanitation Strategy and Action plan, (NESSAP) 2010.
7	District Environmental Sanitation Strategies and Action Plans (DESSAPs)
8	Manual for the Preparation of District Waste Management Plans in Ghana (July 2002)
Relevant legal framework	
9	Environmental Protection Agency (EPA) Act 1994, (Act 490)
10	Lands Commission Act, 2008 (Act 767)
11	The Land Act, 2020
12	Environmental Assessment Regulations 1999, LI 1652
13	The Fees and Charges (Amendment Instrument), 2019 (LI 2386)
14	Local Governance Act 2016 (Act 936)
15	The Labour Act 2003 (Act 651)
16	Workmen's Compensation Law 1987
17	Land Use and Spatial Planning Act (Act 924), 2016
18	Factories, Offices, and Shops Act, 1970 (Act 328)
Institutional Framework	
19	Ministry Of Works And Housing (MWH)
20	Environmental Protection Agency
21	Hydrological Services Department
22	Metropolitan, Municipal and District Assemblies (MMDAs)
23	Department of Urban Roads (DUR)
24	Lands Commission

ESIA Approach and Methodology

The approach and methodology adopted for the study included:

- Field inspections and trekking;
- Review of available literature;
- Specialists studies for baseline information;
- Stakeholder Consultations;
- Data analysis and assessment of potential environmental and social risks and Impacts;
- Development of Impact Mitigation and Control Measures;
- Development of a provisional environmental management plan; and
- Reporting.

Overview of the Project Area of Influence

The project area (the Pokuase disposal sites) is located to the North-East of Accra in the Ga North Municipality of the Greater Accra Region, about 4km off the main Accra – Kumasi road through the Pokuase by-pass. There are two proposed final disposal sites, site 1 and site 2. The two (2) sites which are about 600m apart are situated in a newly developing residential area; with a few immediate residential neighbours to the site.

Baseline conditions

Air quality, noise, surface water and ground water quality assessment were carried out at the project sites to ascertain the baseline conditions.

Air quality

All particulate matter concentrations measured were all within the Ghana Standards for their respective permissible limit. SO_2 and NO_2 gases were also within the Ghana Standards at site 1 but above the standards at Site 2. All CO concentrations measured were within the Ghana Standards.

Noise

The daytime ambient noise levels (LEQ) recorded ranged from 47.8 to 57.8 dB(A), while the nighttime ambient noise levels (LEQ) recorded ranged from 49.3 to 55.0 dB(A) which were all within the EPA permissible level for noise, except night time noise recorded at site 1 which was just at the threshold. The sources of noise within and around the sites include, moving and honking of vehicles, motor bikes and tractors, hustling of leaves, and chirping of birds.

Surface water quality analysis

Laboratory results of the surface water quality, upstream and downstream of the Nsaki River, which is about 1.5km from the project sites, indicate exceeded levels of turbidity, colour, iron and microbial contamination. The results Ghana Standards for Drinking water, GS 175:2017 and the WHO 4th Edition Guideline value (2011).

Groundwater

Laboratory results of groundwater at both Site 1 and Site 2 indicates exceedances in turbidity levels, iron and microbial contamination.

Flora and Fauna

The vegetation in the project area is mostly shrubs and weeds with a few Neem, Panic veldt grass, Johnson grass, Banana, Tropical almond, Guanacaste and Beach sheoak. These species are classified as of least concern by the IUCN categorization.

Socio economic and cultural heritage

The disposal sites are located at Pokuase, a coummunity in the Ga North Municipality. The land use in the project are are predominantly residential with pockets of undeveloped lands and a few still under construction. The project sites are abandoned quarry sites, except for some individuals earning a living by engaging in artisanal stone mining at site 2.

From the site surveys and field inspections conducted, there were no culturally sensitive or cultural heritage sites detected at the project area, and no chance find of archaeological importance. There are no forest reserves or wildlife protected area existing at the project sites. There are no significant wetlands (of national and international importance) identified at the disposal sites which would be impacted. The project activities will also not occur within any recreational parks. There are no shrines or cemeteries on the proposed disposal sites. However, a chance find procedure will be adopted and implemented to ensure any archaeological chance find encountered during the implementation of the project is first preserved and documented and appropriate national and regulatory processes followed for its protection and preservation.

Major Potential Impacts

The direct potential positive impact of the project isthe creation of employment opportunities/jobs.

Preparatory and Planning Phase

- Land Acquisition;
- Anxiety on the part of potentially affected persons/ institutions, and
- Occupational Health & Safety.

Site preparation Phase

- Air quality deterioration;
- Noise and vibration nuisance;
- Loss of flora/destruction of natural habitat/displacement of fauna
- Visual intrusion/Aesthetic impacts
- Increased sediment load and risk to erosion
- Generation and disposal of solid waste/sanitation issues
- Occupational health and safety concerns and labour issues;
- Public health, safety and traffic impacts;
- Impact on cultural heritage, and
- Socioeconomic disruptions (Economic displacement)

Disposal and Management/Operations Phase

- Air quality deterioration;
- Noise and vibration nuisance
- Contamination of surface water
- Contamination of groundwater
- Greenhouse Gas Emissions and Impact on Climate Change

- Waste storage and disposal
- Occupational health and safety concerns and labour issues Public health & safety issues
- Socioeconomic disruptions (Economic displacement)

Post Construction Decommissioning Phase

The significant adverse impacts during the post-construction decommissioning phase will be similar to the construction phase impacts in general, in addition to loss of jobs.

Impact Mitigation and Management

The mitigation and management measures for the identified significant adverse impacts are provided in the table labelled *Summary of potential impacts and mitigation measures* below. The application of the mitigation measures is expected to reduce major and moderate impacts to minor or negligible impacts that may not require further mitigation.

Provisional Environmental Management Plan

A Provisional Environmental Management Plan (PEMP) is developed for the project in accordance with the Environmental Assessment Regulations of 1999, LI 1652 to assist the project to be carried out in an environmentally safe and sustainable manner. The provisional EMP addresses issues related to the following:

- Environmental Health and Safety Management Structuring;
- Staff Information and Training;
- Public and community participation;
- Environmental and social monitoring programmes;
- Audits and Reviews;
- Grievance Redress Mechanism;
- Environmental Reporting;
- Emergency Response Planning; and
- Environmental and social management budgeting.

A detailed EMP will be prepared and submitted to the EPA within 24 months of commencement of operations as required by law (LI 1652 of 1999).

Summary of potential impact and mitigation measures

Anticipated Environmental & Social Impacts	Receptor(s)	Proposed Mitigation And Management Measures
Preparatory and Planning phase		
Anxiety on the part of potentially affected persons	Potentially affected persons	• Stakeholder interactions to educate all on proposed project activities, impacts and proposed mitigation measures. • Implement grievance mechanism as a part of a wider Stakeholder Engagement Plan enabling concerns to be documented and resolved in a timely fashion. • The Pokuase Traditional Council will be consulted prior to the commencement of work to ensure that all the necessary customary rites are performed and a mechanism found/agreed with the stool to ensure peaceful coexistence. Prepare and implement an Abbreviated Resettlement Action Plan with an effective grievance redress mechanism in place
Occupational health and safety	Consultants	• The Contractor will be required provide first Aid Kits on site to treat minor ailments and cuts. • The contractors will be required to provide the appropriate personal protective equipment such as safety boots and coats, hand gloves, earplugs and nose masks when carrying out their studies. Supervisors will be mandated to ensure the use of these protective devices and implement sanctions when necessary. Ensure that well-trained workers will be engaged for the various construction roles.
Site Preparation Phase Impacts		
Air Quality Deterioration	Workers/ Local communities	• Ensure that equipment such as machines and vehicles with atmospheric emissions do not exceed emission standards imposed by industry and the EPA. • Regular servicing of trucks and equipment in accordance with manufacturer's specification to reduce emissions. • The Project will implement a dust emissions control program including measures such as wet sweeping and covering to minimize atmospheric dust from site preparation activities. • All excavation activities would be closely supervised to ensure minimal dust generation. Ensure that all construction personnel use approved PPE during construction activities
Noise and vibration nuisance	Workers/ Local communities	• The contractor shall employ standard noise abatement measures and engineering best practices to ensure that the impacts are minimized to acceptable limits. • All equipment to be operated and maintained in accordance with appropriate industry and equipment standards including specifications for noise levels and manufacturer's specifications (including regular checks and maintenance). Machines in intermittent use to be shut down in the intervening periods between works or throttled down to a minimum.

Anticipated Environmental & Social Impacts	Receptor(s)	Proposed Mitigation And Management Measures
Loss of vegetation and impacts on flora and fauna	Terrestrial Flora, Fauna	• The Terrestrial ecological studies for the ESIA assessment showed the project sites lacks any biological or ecological significance to be impacted. However, measures will be put in place to ensure minimum impact to biodiversity and will includelimiting site preparation activities to only designated places.
Soil erosion and sediment transport	Soil. Water	• The period of exposure of excavated soils to weather conditions will be limited to minimise the possibility of sediment transport as a result of storm water/run-off. Site preparation works will be scheduled to take place during the dry season • Disturbed soils will be compacted; • A monitoring program shall be implemented to evaluate the effectiveness of the control measures put in place.
Surface water contamination	Nsaki river	• Diversions will be created to minimize erosion and sediment transport into the Nsaki river. • Exposure of excavated soils to weather conditions will be limited to minimise the possibility of sediment transport as a result of storm water/run-off. • A monitoring program shall be implemented to evaluate the effectiveness of the control measures put in place.
Sanitation/Waste management	Land, Public, Workers on site	<u>General Waste</u> • The contractor to appoint an environmental officer who shall prepare and implement a Waste Management Plan which specifies procedures for the project. • Waste will be reduced to the minimum • Adequate waste bins will be provided at the site to minimize littering.
Occupational Health and Safety Concerns and Labour Issues	Workers	• Project activities will be carried out in accordance with relevant national and international laws and regulations on occupational health and safety. This includes Labour Act, 2003 (Act 651), and ILO Convention 152, 155 and 160; • In accordance with ILO Convention persons under 15 years old will not be employed. • Workers should be free from discrimination of any kind (gender, race, ethnicity, religion etc) in employment or working conditions working conditions, and social benefits. • All work will be carried out under conditions with appropriate work safety standards.

Anticipated Environmental & Social Impacts	Receptor(s)	Proposed Mitigation And Management Measures
		<u>Adoption of Health and Safety Policies</u> • The contractor shall establish and maintain high standards of occupational health, safety and environmental protection to prevent personal injury or illness, property damage, fires, security losses and environmental pollution. • The contractor is required to prepare and implement health, safety and environmental protection policy at the workplace to guide the project activities. The responsibility for implementing this policy lies directly and personally with the contractor through its workers. The policy objectives shall include the following: • Conduct activities in accordance with relevant national and international laws and regulations on occupational health and safety. This includes Labour Act, 2003 (Act 651), the Fire Service Act, 1997 (Act 537), ILO Convention 152, 155 and 160; • maintain safe machinery and equipment; • maintain safe and healthy work place for all users; • maintain incident and injury-free working environments; • prevent occupational related diseases/ illness among workers; and • promote and maintain a clean, healthy and hygienic environment. <u>The Contractors OHSP</u> • The contractor is required to develop an Occupational Health and Safety Plan to international standards, including requirements for PPE, task risk assessment, mandatory training, audit and monitoring, incident reporting etc. • The Contractor will apply the hazard hierarchy when planning work to avoid/eliminate risks and reduce risk to as low as reasonably practical. • The contractor will educate workers on its health and safety policy. The adoption of the health and safety policy at site will serve as a precautionary measure to prevent/ minimize the possibility of accidents and reduce health associated risks. • The contractor shall train selected workers as first aid givers and provide adequate first aid kits at the site to treat minor ailments and cuts. However, major cases will be referred to the Pokuase Health Centre for treatment or referral to the Ga-West Municipal Hospital. • Use of Experienced Personnel

Anticipated Environmental & Social Impacts	Receptor(s)	Proposed Mitigation And Management Measures
		• The contractor is to ensure that well-trained workers will be engaged for the various roles. Only drivers with the requisite licenses will be allowed to handle vehicles and earth-moving equipment into the site. Initial training and testing in machine/ equipment handling and safe working procedures will be given to all new drivers, operators and other field workers to help minimize the occurrence of accidents on site. • The contractor is to ensure that regular defensive driving training sessions are organized for the drivers to ensure their safety and the safety of the general public. • The contractor to ensure that workers are provided with the appropriate personal protective equipment such as safety boots and coats, hand gloves, earplugs and nose masks. Supervisors will be mandated to ensure the use of these protective devices and implement sanctions when necessary. <u>Worker Rights and Wellbeing</u> The Contractor to develop and implement a Human Resource Policy and plan that adheres to standard international requirements, including requirements for workers to have contracts, Workers Grievance Mechanism and develop retrenchment plans if there is a requirement for collective dismissals.
Public Health Safety and Security Impacts	Project vehicles, commercial and private vehicles, residents and passers by.	<u>Restriction of Access</u> (a) The contractor shall maintain security at the proposed site to ensure that only authorised persons are allowed into the project area. (b) The contractor shall hoard the site to provide safety, security, and protection for the public and workers <u>Use of warning signs</u> Warning and caution signs will be displayed at vantage points around the site to alert other site users and vehicles of the project activities. <u>Scheduling of Work</u> The contractor will analyse traffic flows and ensure that the transport of equipment is carried out during low peak periods. <u>Announcement and Notification of Work</u> The Ga-North Municipal Assembly, the Pokuase Traditional Council and the Pokuase residents association will be informed at least seven days before start of work. The contractor will make

Anticipated Environmental & Social Impacts	Receptor(s)	Proposed Mitigation And Management Measures
		announcements and give notices for work schedule through the Assemblyman and Unit Committee leaders. <u>Public Health /Toilet facilities/ Corona virus pandemic</u> • The contractor to provide mobile toilet facilities for workers during site preparation. As part of the measures against the spread of the Corona Virus, the contractor will partner the Municipal Assembly to implement appropriate measures as specified by the WHO and national guidelines to educate the community as well as assist in providing facilities to deal with the introduction/ spread of the virus.
Traffic Impacts	Road users, residents and pedestrians	The traffic impacts for the project have been analysed in detail in the Environmental and Social Management Plan (ESMP) for the Handling and Transportation of the dredge materials, under a different contract. A summary of the mitigation measures are indicated below; • Deployment of banksmen at entry and exit points to/from the site. • Adherence to 30km/hr speed limit on-site. • Installation and use of reverse alarm on all machinery/vehicles. • Wearing of conspicuous reflector jackets by on-site workers. • Spot improvement and surface dressing of sections of the access routes to the disposal sites. •
Loss of livelihood and access to land	PAPs	• Ensure that compensation/ livelihood assistance arrangements are implemented and documented prior to the start of the project as required • Appropriate compensation value for affected person will be paid. Monitoring will be undertaken to determine potential compensation/livelihood assistance measures have been implemented and verify that they have been effective
Disposal and Management/Operations Phase		
Air Quality Deterioration	Workers, Public	• Make use of equipment, machines and vehicles with atmospheric emissions meeting standards imposed by the EPA. • Ensure that all equipment and engines are maintained and operated as originally designed.

Anticipated Environmental & Social Impacts	Receptor(s)	Proposed Mitigation And Management Measures
		• Prohibit the use of poorly maintained equipment for operations. • Ensure that all equipment is properly operated according to standard operating procedure that will ensure safe operation of equipment/vehicles while meeting environmental emission best practices. • Monitor dust emissions, exhaust gases and fumes at onsite and offsite locations (preferable same sample sites monitored during the ESIA) to assess atmospheric pollution performance of operational activities. • Ensure that workers and persons on site always use the approved PPE to minimize effect of inhalation of dust and noxious fumes on worker health. <u>Fugitive Emissions</u> Fugitive dust emissions control shall be achieved via good housekeeping and the use appropriate equipment
Noise and Vibration	Workers, Neighbouring communities	• Night-time operations will be limited to trucks carting materials to the site and depositing them. Spreading and compaction of the materials in the pits, which will involve the use of heavy duty equipment such as graders, which generate high level noise will be carried out during the day (i.e 8am – 5pm). No heavy duty equipment will be operated at the site during the night. • The installation of speed ramps, enforcement of speed limits, warning notices and drivers' training will help in limiting speeding and its associated noise. • Develop work guidelines for truck operators that specify noise emission limits and provide guidance for minimizing noise from activities. • Schedule works to be carried out during daytime, i.e. 8am – 5pm • Provide workers with appropriate PPE such as ear plugs/muff • Carry out regular monitoring of noise levels at the established sampling sites. Should noise exceed the specified noise criteria, corrective measures will be taken including operational controls and use of sound baffling devices or techniques • Monitor public complaints about noise and take corrective measures where required. Provide appropriate PPEs for workers use.

Anticipated Environmental & Social Impacts	Receptor(s)	Proposed Mitigation And Management Measures
Surface water contamination	Nsaki river	• The dredge materials will undergo treatment, dewatering, aeration, and separation to remove all biological materials. Consequently, the leachate from the dredge material as a result of rainfall will be free from any contaminants. However, continuous surface water quality monitoring will be conducted for early detection of any surface water impact. Exposure of excavated soils to weather conditions will be limited to minimise the possibility of sediment transport as a result of storm water/run-off.
Groundwater contamination	Aquifer/residents depending on groundwater for domestic purposes	• The dredge materials will undergo treatment, dewatering, aeration, and separation to remove all biological materials. Consequently, the leachate from the dredge material as a result of rainfall will be free from any contaminants. • The floor of the pits at the disposal sites will be sealed with clay to prevent contamination of underground water • Continuous groundwater water quality monitoring will be conducted for early detection of any groundwater impact.
Waste Management	Workers, Public	<u>General Waste</u> • The environmental officer shall implement a Waste Management Plan for the project. • The contractor shall provide adequate waste bins at the work sites to minimise littering and indiscriminate dumping. Good site practices to be implemented to avoid waste generation and promote waste minimisation. <u>Hazardous Waste</u> • All hazardous waste (e.g. oil waste from equipment and machinery) generated will be appropriately stored as per manufacturer's instructions. For onward recycling, treatment or disposal, EPA approved hazardous waste collectors will be engaged for collection and disposal of all hazardous waste
Impact on Climate Change	Public	• Regular servicing of trucks and equipment to improve efficiency in fuel combustion to reduce emissions; • Educate the drivers on road transport effects contributing to GHG emissions for sustainable development. Reduce Carbon footprint by monitoring Energy use.
Occupational Health and Safety Concerns and Labour Issues	Workers	• Project activities will be carried out in accordance with relevant national and international laws and regulations on occupational health and safety. This includes Labour Act, 2003 (Act 651), and ILO Convention 152, 155 and 160; • In accordance with ILO Convention persons under 15 years old will not be employed. Employment of a young person must be suitable for his or her physical, emotional and developmental capacity.

Anticipated Environmental & Social Impacts	Receptor(s)	Proposed Mitigation And Management Measures
		• Workers should be free from discrimination of any kind (gender, race, ethnicity, religion etc) in employment or working conditions working conditions, and social benefits. • All work will be carried out under conditions with appropriate work safety standards. Adoption of Health and Safety Policies • The contractor shall establish and maintain high standards of occupational health, safety and environmental protection to prevent personal injury or illness, property damage, fires, security losses and environmental pollution. • The contractor is required to prepare and implement health, safety and environmental protection policy at the workplace to guide the project activities. The responsibility for implementing this policy lies directly and personally with the contractor through its workers. The policy objectives shall include the following: o Conduct activities in accordance with relevant national and international laws and regulations on occupational health and safety. This includes Labour Act, 2003 (Act 651), the Fire Service Act, 1997 (Act 537), ILO Convention 152, 155 and 160; o maintain safe machinery and equipment; o maintain safe and healthy work place for all users o maintain incident and injury-free working environments; o prevent occupational related diseases/ illness among workers; and o promote and maintain a clean, healthy and hygienic environment. The Contractors Occupational Health and Safety Plan (OHSP) • The contractor is required to develop an Occupational Health and Safety Plan to international standards, including requirements for PPE, task risk assessment, mandatory training, audit and monitoring, incident reporting etc. • The Contractor will apply the hazard hierarchy when planning work to avoid/eliminate risks and reduce risk to as low as reasonably practical. • The contractor will educate workers on its health and safety policy. The adoption of the health and safety policy at site will serve as a precautionary measure to prevent/ minimize the possibility of accidents and reduce health associated risks.

Anticipated Environmental & Social Impacts	Receptor(s)	Proposed Mitigation And Management Measures
		• The contractor shall train selected workers as first aid givers and provide adequate first aid kits at the construction areas to treat minor ailments and cuts. However, major cases will be referred to the Pokuase Health Centre for treatment or referral to the Ga-West Municipal Hospital. • Use of experienced personnel • The contractors to ensure that well-trained workers will be engaged for the various operational roles. Only drivers with the requisite licenses will be allowed to handle vehicles and earth-moving equipment into the site. Initial training and testing in machine/ equipment handling and safe working procedures will be given to all new drivers, operators and other field workers to help minimize the occurrence of accidents on site. • The contractors to ensure that regular defensive driving training sessions are organized for the drivers to ensure their safety and the safety of the general public. • The contractor to ensure that workers are provided with the appropriate personal protective equipment such as safety boots and coats, hand gloves, earplugs and nose masks. Supervisors will be mandated to ensure the use of these protective devices and implement sanctions when necessary. Worker Rights and Wellbeing The Contractor is to develop and implement a Human Resource Policy and plan that adheres to international standards such as the WB Operational Procedures, including requirements for workers to have contracts, Workers Grievance Mechanism and develop retrenchment plans if there is a requirement for collective dismissals. The Project shall install adequate lighting for night time operations at the handling and final disposal sites
Public Health and safety	Residents, General Public	• The contractor shall maintain security at the proposed site to ensure that only authorised persons are allowed into the project area. • The contractor shall hoard the site to provide safety, security and protection for the public and workers • Conduct safety awareness and education programs for neighbouring community.

Anticipated Environmental & Social Impacts	Receptor(s)	Proposed Mitigation And Management Measures
		• Continuous monitoring of underground water resources for early detection any possible contamination • Measures will be implemented to minimise noise and vibrations as well as du from the sites • Warning and caution signs will be displayed at vantage points around the si to alert other site users and vehicles of the project activities. • The contractor to provide mobile toilet facilities for workers at the sites. • As part of the measures against the spread of the Corona Virus, the contract will partner the Municipal Assembly to implement appropriate measures specified by the WHO and national guidelines to educate the community as we as assist in providing facilities to deal with the introduction/ spread of the viru
Traffic impacts	Road users, residents and pedestrians	The traffic impacts for the project have been analysed in detail in the Environmental and Social Management Plan (ESMP) for the Handling and Transportation of the dredge materials, under a different contract. A summary of the mitigation measures are indicated below; • Deployment of banksmen at entry and exit points to/from the site. • Installation and use of reverse alarm on all machinery/vehicles. • Wearing of conspicuous reflector jackets by on-site workers. • Adoption of night-time waste haulage to avoid traffic congestion and minimize emissions. • Transportation of waste at intervals of 30 minutes to avoid convoy movement of waste trucks. • Adherence to 50km/hr speed limit for haulage trucks. • Inscription of appropriate phone contacts on trucks for reporting careless/inconsiderate driving. • Towing system with a third party contracted to remove breakdown trucks with 30min of reporting. • To prevent accidents on the access road to the site during the night, the Project will install street lights to provide illumination for night time movement of dredged material to the site
Decommissioning Phase		
Occupational Health and Safety	Workers	• In addition to all occupational health and safety mitigation measures instituted during the operation phase, decommissioning activities will be carried out in accordance with relevant national and international laws and regulations on occupational health and safety.

Anticipated Environmental & Social Impacts	Receptor(s)	Proposed Mitigation And Management Measures
Public health and safety	Residents, public	• The contractor shall maintain security at the proposed site to ensure that only authorised persons are allowed into the project area. • The contractor shall hoard the site to provide safety, security and protection for the public and workers
Surface water	Nsaki river	• The filled pits will be capped, and the site will be revegetated to reduce soil erosion that could result in siltation of the Nsaki river.
Air Quality	Public, Workers	• Dust suppression measures such as water dousing of exposed surfaces will be adhered to.
Noise	Public, Workers	• Noise measures instituted during the operation phase will be applied. The Ghana Standards for noise monitoring will be a guide.
Waste Disposal	Land, Public, Workers	• The contractor to ensure that waste generated is disposed off appropriately and at approved Municipal Assembly dumpsites.

Conclusion

The implementation of the dredging activities in the Odaw channel will help curb flooding of the central business district and other parts of Accra and improve upon the lives of the people living around the Odaw drain and its environs. The disposal and management of the dredged material at two proposed final disposal sites in Pokuase will ensure that siltation of the channel is reduced. All stakeholders have therefore given their full commitment to help ensure that this project is implemented in the earliest possible time to the benefit of the people.

The major potential environmental and social risks and impacts associated with the proposed disposal and management of dredged material project have been identified and duly assessed in this Environmental and Social Impact Statement. The major environmental, social, health and safety risks and impacts associated with the Project during both site preparation and operation stages include noise nuisance, air pollution, water pollution, erosion, occupational health and safety risks, public health and safety risks, sanitation problems, traffic impacts, and solid waste generation/disposal problems.

Mitigation and management measures for the identified impacts have been recommended and will be implemented in order to minimise significant adverse effects. An ESMP to guide the implementation of the mitigation measures have been developed.

Generally, stakeholders are willing to participate in project implementation where necessary to help ensure that the project is implemented in an environmentally friendly and socially acceptable manner to the benefit of the country. The local communities however expect that appropriate measures will be put in place to address the potential risks identified during the engagement.

By way of recommendation, dredged material disposal and management could commence at site 2 because: it is about 100m from the nearest residential facility and has the capacity to receive more waste than site 1, which is too close to residential facilities.

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https://garid-accra.com/wp-content/uploads/2023/11/Disposal-pokuase.pdf