



Kitchener Drain Depollution Project:

- Drain Rehabilitation
- Solid Waste

Non-Technical Summary

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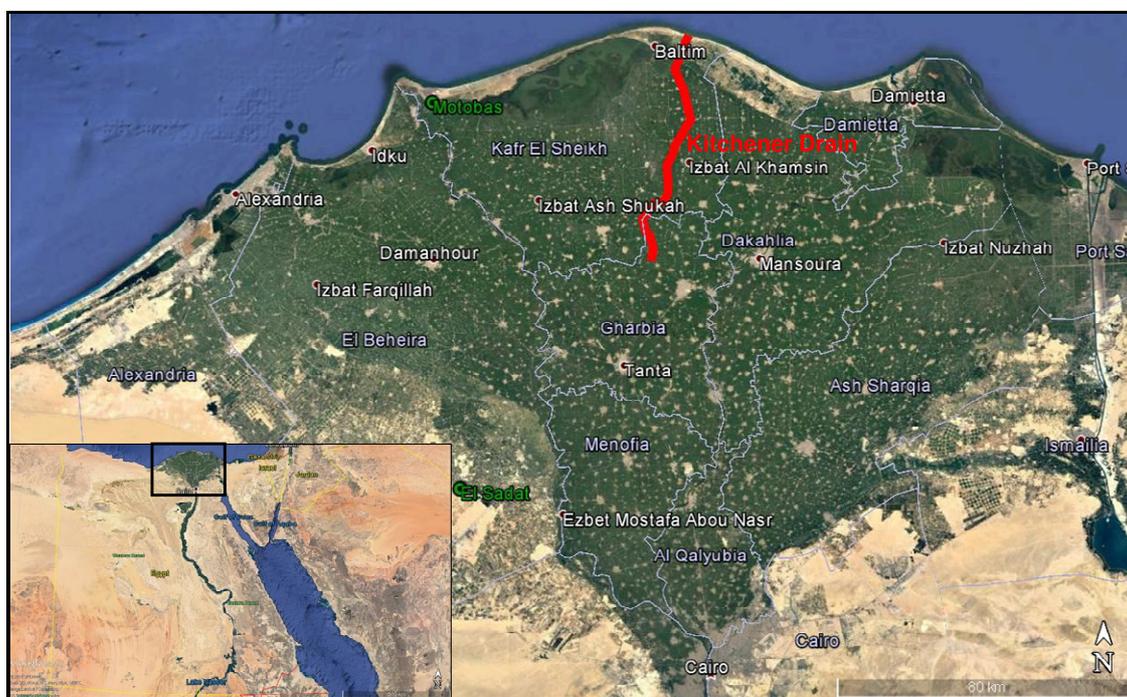
1 INTRODUCTION

The Kitchener Drain, also called the Main Gharbeia Drain, is one of the main agricultural drains in the Nile Delta. It is over 69 kilometres in length and passes through three Governorates – Kafr El Sheikh, Gharbeia and Dakhalya. The drain is the main source of irrigation water for approximately 460,000 feddan (193,000 hectares) of agricultural land. The drain, however, is highly polluted due to domestic wastewater discharge (poorly treated and/or untreated); uncontrolled municipal solid waste disposal into and along the banks of the drain; industrial wastewater discharges; and agricultural runoff.

The Kitchener Drain Depollution Project has been proposed with an objective of depolluting the Kitchener Drain and its catchment area (the Project area) and thereby improving health and environmental conditions in the three Governorates and supporting the depollution of the Mediterranean. The Project has three components, namely: (1) wastewater treatment, (2) municipal solid waste management and (3) drain rehabilitation. The European Bank for Reconstruction and Development (EBRD) is considering investments in the solid waste management (2) and drain rehabilitation (3) components of the Project.

The location of the Kitchener Drain is shown in Figure 1.

Figure 1: Location of Kitchener Drain



This Non-Technical Summary (NTS) provides a description of the Project and describes the potential benefits and impacts associated with the Project phases, including any relevant construction and operational components. It also describes how these impacts will be mitigated and managed through all phases of the Project. In addition, it also provides a summary of the public consultation activities and the approach to future stakeholder engagement.

2 WHAT DOES THIS PROJECT INCLUDE?

The European Bank for Reconstruction and Development (EBRD) is considering investments in the solid waste management and drain rehabilitation components of the Project. These investments include:

2.1 REHABILITATION OF THE KITCHENER DRAIN

- Construction of new pumping stations at Sega'aia (km 69), Samatay (km 57.5) and Hamoul (km 2.5) to replace the existing pumping stations;
- Rehabilitation of Pumping Stations Number 3 and 4;
- Protection and side support works for the embankments of Kitchener Drain and Drain 4;
- Rehabilitate the drain banks and pave the right and left banks roads of Kitchener Drain from km 10 to km 69 and to remove any transgressions and violations on the bank agricultural lands;
- Rehabilitation of the existing bridges on the Kitchener Drain;
- Dredging and Cleaning of Kitchener Drain and subsidiary Drains Sections – this will mainly involve lowering the depth of the drain;
- Diversion of the Omar Bek Drain to Zifta Bahary Drain and implementation of modern irrigation techniques in the Omar Bek Drain catchment area – currently the Omar Bek drain discharges drain water to the Nile during high flow periods due to infrastructure (existing culvert and syphon) capacity limitations near Mahalla City. The implementation of modern irrigation techniques such as drop irrigation and better control of irrigation water use will limit surface water run-off and reduce water flow in the Omar Bek drain to within the design parameters of existing infrastructure. This will result in water savings and avoid the need to discharge drain water to the Nile.

2.2 UPGRADE OF SOLID WASTE MANAGEMENT PROVISIONS

Current solid waste management facilities in the three Governorates comprise the following site types.

- Waste Treatment Facilities (WTF) – these receive domestic and commercial mixed wastes and separate them to recover recyclable materials, combustible materials (for sale to industrial facilities such as cement plants) and organic material (for compost production);
- Waste Transfer Stations (WTS) and Dump Sites (DS) – WTS are sites where waste is collected for transfer to dump sites and landfills. Dump Sites are sites which receive wastes from the transfer stations or directly from villages;
- Landfill (LF) Sites – there are no engineered landfill sites located in the three Governorates. The Al Sadat Landfill serves Gharbeia Governorate but is located in Beheira Governorate;

The proposed EBRD investments include:

- Purchase of equipment for primary waste collection (containers and tractors);
- Development of up to five new engineered sanitary landfill sites where waste will be stored in lined cells. This may include the potential upgrade and expansion of the Al Sadat landfill site and a potential upgrade of the Motobas dumpsite into an engineered landfill site;
- Upgrade of existing and construction of new waste treatment facilities (up to six) and waste transfer stations (up to 10);
- Closure of dump sites.

The solid waste management improvements outlined in the tables below are currently proposed for the Project. However, as identification and securing land for new or expanded waste facilities can be difficult, finding appropriate locations and securing land for the proposals presents an ongoing challenge. Therefore, these proposals have yet to be finalised, and are likely to continue to evolve, and therefore the tables below represent the proposals at the time of this NTS.

Ongoing consultation with local communities and other stakeholders will be undertaken at all stages of the Project, as plans and site locations become better defined.

Table 1 – Proposals for Solid Waste Facilities in Gharbeia (Kitchener Drain Area)

Type of facility	Existing facilities	Proposed facilities
Landfills	Al Sadat	Al Sadat – upgrade to engineered landfill and expand at existing location
		North-East Tanta – construct new engineered landfill (location TBC)
Waste Treatment Facilities	Mahalla (WTF with adjacent DS)	Mahalla – upgrade WTF in existing location with potential expansion to adjacent dumpsite
	Defra Tanta	Defra Tanta – upgrade WTF in existing location Construct new WTS co-located on same site
Dump sites / Transfer Stations	Shubra Millis (Zifta) DS	Shubra Millis (Zifta) – Convert WTS or WTF
	Neshel (Qutur) WTS	Neshel (Qutur) – upgrade existing WTS
	Al Immah (Qutur) WTS	Al Immah (Qutur) – upgrade existing WTS
	Samanoud DS	Samanoud – convert to WTS
	Defra / Tanta DS	Defra / Tanta – convert to WTS
	Greater Mahalla WTS/DS	Greater Mahalla – close existing site and construct new WTS (location TBC)
	Al Rahbeen WTS/DS	Close site
		Santa – construct new WTS (location TBC)

Table 2 - Proposals for Solid Waste Facilities in Dakhalya (Kitchener Drain Area)

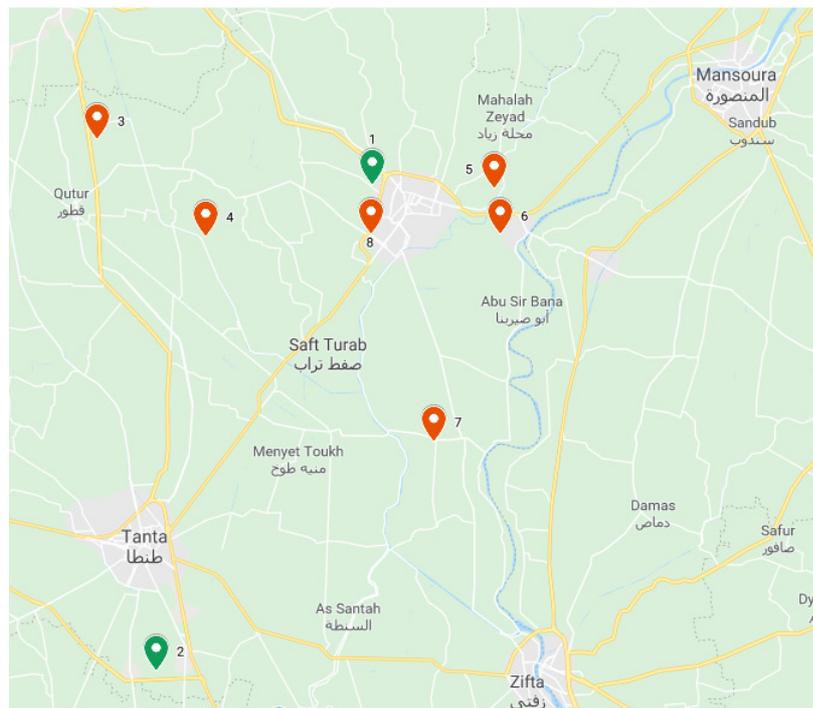
Type of facility	Existing facilities	Proposed facilities
Landfills		Qalabshu – new engineered landfill
Waste Treatment Facilities (includes capacities)	Qalabshu WTF	Qalabshu – upgrade WTF in existing location
		Nabaruh – construct new WTF (location TBC)
Dump sites / transfer stations	Qalabshu	Close site
	Nabaruh	Close site
		Construct new WTS (location TBC)

Table 3 - Proposals for Solid Waste Facilities in Kafr El Sheikh (Kitchener Drain Area)

Type of facility	Existing facilities	Proposed facilities
Waste Treatment Facilities	Kafr El-Sheikh WTF and DS	Kafr El-Sheikh – upgrade WTF in existing location
	Beyla WTF	Beyla – upgrade WTF in existing location
Dump sites / transfer stations	Motobas DS	Convert to engineered LF
	Al Shehabia DS	Convert to engineered LF
	Beyla WTS	Beyla – upgrade WTS in new location
	Al Hamoul DS	Al Hamoul – convert to WTF or WTS
	Kom Al Hajar DS	Close site
	Sedy Ghazy DS	Close site

The location of the existing solid waste sites in the Kitchener Project area is shown in Figures 2, 3, and 4, and the location of Al Sadat landfill site is shown in Figure 5.

Figure 2 - Existing Solid Waste Facilities in the Kitchener Project Area (Gharbeia Governorate)



- 1 Mahalla WTF
- 2 Defra (Tanta) WTF
- 3 Al Immah WTS
- 4 Neshel WTS
- 5 Al Rahbeen DS
- 6 Samanoud DS
- 7 Shubra Millis DS
- 8 Mahalla DS

Figure 3 - Existing Solid Waste Facilities in the Kitchener Project Area (Dakhalya Governorate)

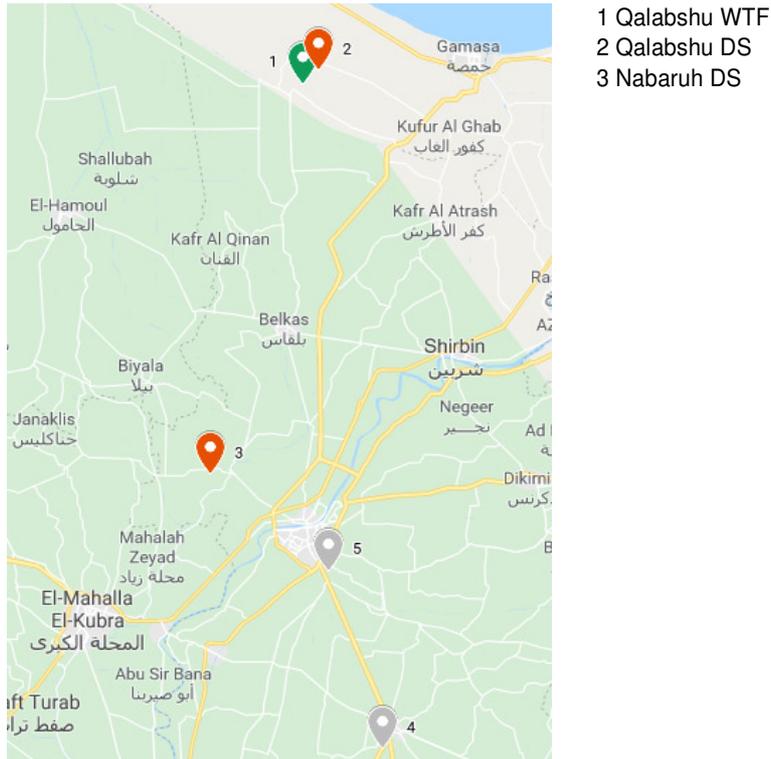


Figure 4 - Existing Solid Waste Facilities in the Kitchener Project Area (Kafr El Sheikh Governorate)

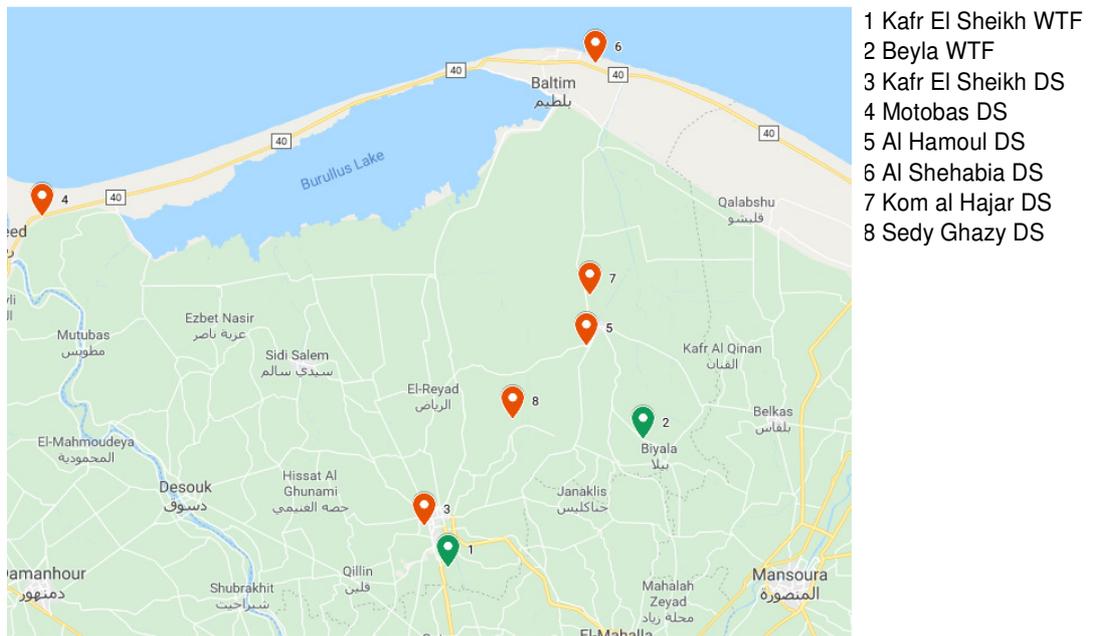


Figure 5 – Location of Al Sadat Landfill Site



3 WHY IS THIS PROJECT REQUIRED?

The Kitchener Drain and its sub drains are currently affected by pollution from dumping of solid waste in and around the drains, and also by sewage and other effluents.

This Project is required in order to clean up the drains and to develop solid waste management infrastructure so that there is a more appropriate method of disposing of solid wastes, therefore minimising the amount of waste being dumped in the drains and inappropriately managed in the Project area. The overall objective of the Project is depollution of the Kitchener Drain and improving health and environmental conditions in the three Governorates.

Improvements to sewage infrastructure are also proposed, but are the subject of other investment programme proposals from other lenders and are not considered by the proposed EBRD investments.

The Kitchener Drain Project supports depollution of the Mediterranean.

4 WHAT IS THE BENEFIT OF THE PROJECT TO THE LOCAL PEOPLE AND THE ECONOMY?

The Project will benefit the area surrounding the Kitchener Drain and sub-drains and, more broadly, the Nile Delta and its population as a whole. Anticipated benefits include:

- Improvements to solid waste processing capabilities will improve the management of solid wastes in the region. This will reduce the quantity of waste dumped in waterways and in other uncontrolled dumping locations and therefore reduce the potential for contamination of soils and waterways.
- Reduced potential for contamination of surface water, soils and groundwater due to leaching from uncontrolled waste dumping and inadequately designed / managed solid waste sites. Existing sites will be upgraded or closed, and managed to minimise potential for contamination post closure.
- Decreased potential for accumulation of contaminants in soils and the produce grown in them, and consequently reduced potential for exposure to those contaminants within the general population arising from the consumption of locally grown food (crops and fish).
- Improvements to amenity and reduction in nuisance dust, noise and visual impacts caused by current solid waste facilities.
- Improvements to air quality due to reduced generation and improved management of odour, biogas generated from wastes, and smoke from waste fires.
- Reduction in greenhouse gas generation due to reduced generation and improved management of biogas generated from wastes and of smoke from waste fires. Additionally, greenhouse gas generation will decrease due to reduced energy usage at upgraded Drain pumping stations.
- Improved recovery of compostable, recyclable and combustible materials from waste streams allowing them to be utilised for economically beneficial uses and reducing the area of land required for waste management.
- Improvements to water quality and visual amenity in the Kitchener Drain and sub-drains due to reduction in solid waste being dumped in and around the drains and the removal of existing solid waste and sediments.
- Improved water flows in the drains due to removal of solid waste and sediment that can impede flows, cause stagnation or create turbulence that damages banks and channels.
- Improved health and safety for workers, contractors and populations living near solid waste facilities and waste transportation routes.
- More directly, jobs will be created during the construction phases of the Project, mainly related to development of new solid waste facilities and upgrade of existing waste sites, but also related to drain rehabilitation and diversion. Skills will be required across the broad range of construction activities and priority would be given to the populations in the project affected area where possible. Future operation of the solid waste facilities would also generate longer term employment, mainly with waste contracting companies.

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- More efficient use of irrigation water.

5 POTENTIAL SOCIO-ECONOMIC IMPACTS OF THE PROJECT

5.1 LAND USE AND IMPACTS ON LIVELIHOOD

The Kitchener Drain rehabilitation component is not expected to involve any land acquisition.

Land acquisition for development and upgrade of solid waste facilities is not anticipated to be a significant concern, as it is anticipated that most proposed solid waste facilities will involve either redevelopment of existing solid waste locations or development in more remote parts of the Governorates where land is less valuable, such as the arid areas around Qalabshu and Motobas. However, the precise locations have yet to be finalised.

The livelihoods of waste pickers who recover materials from the wastes deposited at dumpsites, other solid waste facilities, and from around the Drain will be negatively impacted as access to source materials is reduced / removed.

In order to ensure that all land owners and users (including affected residents and waste pickers) are fairly and transparently compensated for any loss of land and/or loss of access or income, a Livelihood Restoration Framework (LRF) has been developed for each component of the Project (EBRD components). This LRF will, if necessary, be developed into a plan during detailed design and implementation to ensure that any physical and/or economic resettlement and impacts to livelihoods are appropriately addressed in line with the EBRD's environmental and social requirements.

Detailed stakeholder engagement plans have been developed for each component of the Project to manage consultation with affected communities and stakeholders during all stages of the Project, including allocation of Community Liaison Officers to interact / consult with local communities on a regular basis, and including the implementation of robust grievance/complaint management processes.

5.2 DISRUPTION DURING CONSTRUCTION

There are likely to be construction related impacts, including increased vehicles movements, noise, dust, visual impacts and disruption to access routes. However, these impacts will be temporary and short term. These impacts will be managed by development of implementation of robust construction environmental and social management plans for each component of the Project.

6 WHAT WILL BE THE KEY ENVIRONMENTAL AND SOCIAL IMPACTS OF THE PROJECT AND HOW WILL THEY BE MITIGATED?

The potential impacts of the Project and the key areas of mitigation for each aspect of the Project are presented below in series of tables.

Each project component will be subject to local permitting which may include local environmental impact assessments (EIAs). These EIAs will refine the assessment of impacts and the required mitigation measures. New landfills, once locations are confirmed and following agreement with the EBRD, will be subject detailed Environmental and Social Impact Assessments (ESIAs), which will be publically disclosed.

Table 1: Environmental and Social Impact Summary and Key Mitigation Measures – Rehabilitation and Expansion of Al Sadat Landfill

Environmental & Social Aspect	Impact Overview	Mitigation measures
Construction Phase		
Climate and Air Quality	Limited potential for impact, other than from dust that is local to construction operations.	Construction Environmental Management Plan, including general mitigation measures such as: <ul style="list-style-type: none"> • Dampening of roads and stockpile areas; • Speed control on access roads; • Minimising open excavation areas; • Re-seeding of open earthworks areas; • Maintenance of construction machinery; • Covering of vehicles carrying aggregates and soils; • General observation of dust levels and dust suppression measures if issues become apparent.
Odour	Limited potential for impacts	General mitigation measures will be considered at the detailed design stage.
Noise and Vibration	There will likely be a noise impact during the construction phase. However, the site is located in an industrial area, so impacts will be limited.	Construction Environmental Management Plan, including general mitigation measures such as: <ul style="list-style-type: none"> • General measures for reduction of equipment noise (e.g. silencers on pneumatic tools / acoustic enclosures on compressors, etc.) • Restriction of periods of operation. No night time or weekend construction unless specifically pre-agreed with local authorities. • Maintenance of construction machinery
Ecosystems and Flora & Fauna	The impact on biodiversity is expected to be minimal, though some localised impacts may occur during construction.	Key mitigation measures include: <ul style="list-style-type: none"> • Targeted ecological (biodiversity) surveys for any expansion beyond existing boundaries. • Construction activities completed outside the breeding bird season (March to July inclusive) in order to reduce potential impacts to birds. • Construction completed in a manner which reduces risk of harm to animals using the sites (e.g. securing excavations and machinery; preventing access to hazardous substances), during all construction

Environmental & Social Aspect	Impact Overview	Mitigation measures
		activities
Cultural Resources	The impact on cultural resources is expected to be minimal, though precautionary mitigation is required.	A Cultural Heritage Management Plan will be developed and implemented for construction and operational phases of the Project, including a chance find procedure, and monitoring and reporting requirements. A more detailed targeted cultural heritage assessment for any expansion beyond existing boundaries, including specialist stakeholder engagement prior to finalisation of any designs.
Visual and Landscape	Limited potential for impacts associated with construction activities, mainly from lighting and litter.	Construction Environmental Management Plan including general mitigation measures for litter and light glare.
Waste Management	Waste materials will be generated during construction. These will be mainly excavation waste, but also may include buried wastes and contaminated soils / sediments.	Appropriate disposal of all wastes generated during construction. Re-use of top-soils and excavated materials where possible.
Geology and Land	There is limited potential for impact, but care needs to be taken in the handling of fuels and hydrocarbons and implementation of general site arrangements for spill control.	Contaminated land survey will be undertaken to benchmark site soil conditions and identify any necessary remediation prior to construction. Appropriate management of fuels on construction sites.
Hydrology, Surface Water and Groundwater	There is limited potential for impact, but care needs to be taken in the handling of fuels and hydrocarbons and implementation of general site arrangements for spill control. Erosion of soils and sediment runoff into water courses needs to be controlled during construction	General mitigation measures on construction sites include: <ul style="list-style-type: none"> • Erosion and sediment control measures • Appropriate management of fuels • Spill response procedures and materials • Maintenance of construction machinery
Wastewater Management	The only impact areas are general water run-off during construction (see above) and domestic wastewater discharges.	General mitigation measures on construction sites include: <ul style="list-style-type: none"> • Provision of portable toilets with proper service contracts. • Other measures as for surface water (see above)
Geohazards / Seismic	The site is not located in a seismically active region.	Not applicable
Land acquisition	Significant land acquisition is not anticipated to be required for the landfill upgrade.	The preparation of a Livelihood Restoration Framework is required to manage land acquisition related impacts in line with national legislation and EBRD requirements.

Environmental & Social Aspect	Impact Overview	Mitigation measures
Social, Population and Human Health	Increased traffic movements during construction activities – low risk due to location in a dedicated industrial zone and no identified sensitive receptors near the site.	<p>Construction Environmental Management Plan including general mitigation measures such as:</p> <ul style="list-style-type: none"> • Speed control on access roads; • Maintenance of construction machinery; • Covering of vehicles carrying aggregates and soils; • Restriction of periods of operation. No night time or weekend construction unless specifically pre-agreed with local authorities. • Implementation of standard worker health and safety measures and controls.
Operational Phase		
Climate and Air Quality	<p>Landfill sites generate biogas, largely comprising methane and measures will be required to collect and manage this gas.</p> <p>There are existing air impacts, including uncontrolled biogas emissions and smoke from garbage fires. As the Project includes rehabilitation of the site, overall impacts are likely to be positive.</p>	<p>Landfill gas collection and management.</p> <p>Monitoring program for landfill gas emissions and dust.</p> <p>Development and implementation of documented operating procedures and management plan (including dust controls).</p> <p>Design, operation and closure of upgraded facility in line with EU Landfill Directive, including biogas management and monitoring.</p>
Odour	Solid waste facilities have the potential to create significant odours.	<p>Development and implementation of documented operating procedures and management plan (including odour controls), such as:</p> <ul style="list-style-type: none"> • Development and implementation of odour management procedures at all solid waste sites. • Odour monitoring at site boundaries. • Regular covering of wastes with inert materials at landfill sites. • Biogas management (see above)
Noise and Vibration	<p>Potential increase in vehicular activity and noise from site equipment (mobile machinery, pumps, etc.)</p> <p>However, the site is located in an industrial area, so impacts will be limited.</p>	<p>Development and implementation of documented operating procedures and management plan (including noise and vibration controls), such as:</p> <ul style="list-style-type: none"> • General measures for reduction of equipment noise (e.g. silencers on pneumatic tools / acoustic enclosures on compressors, etc.) • Maintenance of machinery
Ecosystems and Flora & Fauna	The impact on biodiversity is expected to be minimal, though precautionary mitigation is required. Most impacts are likely to be related to construction.	<p>Development and implementation of documented operating procedures and management plan, including pest management processes, and any measures identified as required during environmental impact assessment</p> <p>Repair and maintenance of site fencing to prevent access.</p>

Environmental & Social Aspect	Impact Overview	Mitigation measures
Cultural Resources	The impact on cultural resources is expected to be minimal, though precautionary mitigation is required.	A Cultural Heritage Management Plan will be developed and implemented for all phases of the Project, including a chance find procedure, and monitoring and reporting requirements.
Visual and Landscape	<p>Solid waste facilities have the potential to create visual disturbance although, given the location of the site, impacts are expected to be minimal.</p> <p>However, visual impacts will need to be minimised at new and upgraded facilities.</p>	General mitigation proposals will be considered at the detailed design stage.
Waste Management	<p>The site will not generate significant quantities of waste during operations.</p> <p>Wastes accepted at the site are non-hazardous wastes only and will need to be appropriately managed to prevent impacts to other environmental resources (see other sections of the table). Overall, the impact of the Project on waste management is anticipated to be positive.</p>	<p>Design, operation and closure of upgraded facility in line with EU Landfill Directive, including leachate and water management.</p> <p>Development and implementation of documented operating procedures and management plan for waste acceptance, handling and emplacement.</p>
Geology and Land	<p>There is potential for impacts to soil and groundwater, mainly associated with leachates from wastes.</p> <p>Additionally, there are likely to be legacy impacts from historical waste deposition.</p>	<p>Contaminated land survey to benchmark site soil conditions and identify any necessary remediation prior to construction.</p> <p>Ongoing groundwater monitoring programme.</p> <p>Design, operation and closure of upgraded facility in line with EU Landfill Directive, including leachate and water management.</p>
Hydrology, Surface Water and Groundwater	There is potential for impacts to surface and groundwater, mainly associated with leachates from wastes, but also from oils and fuels, and from sediment runoff into water courses.	<p>Contaminated land survey to benchmark site soil conditions and identify any necessary remediation prior to construction.</p> <p>Ongoing groundwater monitoring programme.</p> <p>Design, operation and closure of upgraded facility in line with EU Landfill Directive, including leachate and water management.</p> <p>Development and implementation of documented operating procedures and management plan, including</p> <ul style="list-style-type: none"> • Erosion and sediment control measures • Appropriate management of fuels • Spill response procedures and materials
Wastewater Management	The only impact areas are general water run off (see above) and domestic wastewater discharges to the on-site septic tank.	<p>Management of sanitary facilities and septic tank with proper service contracts.</p> <p>Other measures as for surface water (see above)</p>

Environmental & Social Aspect	Impact Overview	Mitigation measures
Geohazards / Seismic	The site is not located in a seismically active region.	Not applicable
Land acquisition	Significant land acquisition is not anticipated to be required for the Project.	Development of Livelihood Restoration Framework into a detailed plan and implementation thereof.
Social, Population and Human Health	<p>Traffic movements are not anticipated to increase significantly from current operations.</p> <p>Low risk due to location in a dedicated industrial zone and no identified sensitive receptors near the site.</p>	<p>Development and implementation of a Code of Conduct for truck drivers delivering waste at the sites.</p> <p>Implementation of standard worker health and safety measures and controls.</p>

Table 2: Environmental and Social Impact Summary and Key Mitigation Measures – Upgrade / Conversion of Existing Solid Waste Facilities

Environmental & Social Aspect	Impact Overview	Mitigation measures summary
Construction Phase		
Climate and Air Quality	Limited potential for impact, other than from dust very local to construction operations.	<p>Construction Environmental Management Plan including general mitigation measures such as:</p> <ul style="list-style-type: none"> • Dampening of roads and stockpile areas; • Speed control on access roads; • Minimising open excavation areas; • Re-seeding of open earthworks areas; • Maintenance of construction machinery; • Covering of vehicles carrying aggregates and soils; • General observation of dust levels and dust suppression measures if issues become apparent.
Odour	Odour impacts may occur due to disturbance of existing waste stockpiles during the construction phase.	<p>Construction Environmental Management Plan including general mitigation measures such as:</p> <ul style="list-style-type: none"> • Dampening of stockpile areas; • Minimising open excavation areas; • Covering of vehicles carrying wastes; • Odour monitoring at site boundaries and sensitive receptors.
Noise and Vibration	There will likely be a noise impact during the construction phase.	<p>Construction Environmental Management Plan including general mitigation measures such as:</p> <ul style="list-style-type: none"> • General measures for reduction of equipment noise (e.g. silencers on pneumatic tools / acoustic enclosures on compressors, etc.) • Restriction of periods of operation. No night time or weekend construction unless specifically pre-agreed with local authorities and local residents. • Maintenance of construction machinery
Ecosystems and Flora & Fauna	The impact on biodiversity is expected to be minimal, though some localised impacts may occur during construction.	<p>Key mitigation measures include:</p> <ul style="list-style-type: none"> • Targeted ecological (biodiversity) surveys for any expansion beyond existing boundaries. • Construction activities completed outside the breeding bird season (March to July inclusive) in order to reduce potential impacts to birds. • Construction completed in a manner which reduces risk of harm to animals using the sites (e.g. securing excavations and machinery; preventing access to hazardous substances), during all construction activities

Environmental & Social Aspect	Impact Overview	Mitigation measures summary
Cultural Resources	The impact on cultural resources is expected to be minimal, though precautionary mitigation is required.	<p>A Cultural Heritage Management Plan will be developed and implemented for construction and operational phases of the Project, including a chance find procedure, and monitoring and reporting requirements.</p> <p>A more detailed targeted cultural heritage assessment for any expansion beyond existing boundaries, including specialist stakeholder engagement prior to finalisation of any designs.</p>
Visual and Landscape	Limited potential for impacts associated with construction activities, mainly from lighting, litter and stockpiles.	<p>Construction Environmental Management Plan including general mitigation techniques for litter and light glare.</p> <p>Stockpile management.</p> <p>Covering of vehicles carrying wastes.</p>
Waste Management	Waste materials will be generated during construction. These will be mainly excavation waste, but also may include buried wastes and contaminated soils / sediments.	<p>Appropriate disposal of all wastes generated during construction, including any waste accumulations excavated during redevelopment.</p> <p>Re-use of top-soils and excavated materials where possible.</p>
Geology and Land	There is limited potential for impact, but care needs to be taken in the handling of fuels and hydrocarbons and implementation of general site arrangements for spill control.	<p>Contaminated land survey will be undertaken to benchmark site soil conditions and identify any necessary remediation prior to construction.</p> <p>Appropriate management of fuels on construction sites.</p>
Hydrology, Surface Water and Groundwater	<p>There is limited potential for impact, but care needs to be taken in the handling of fuels and hydrocarbons and implementation of general site arrangements for spill control.</p> <p>Erosion of soils and sediment runoff into water courses needs to be controlled during construction</p>	<p>General mitigation measures on construction sites include:</p> <ul style="list-style-type: none"> • Erosion and sediment control measures • Appropriate management of fuels • Spill response procedures and materials • Maintenance of construction machinery
Wastewater Management	The only impact areas are general water run off during construction (see above) and domestic wastewater discharges.	<p>General mitigation measures on construction sites include:</p> <ul style="list-style-type: none"> • Provision of portable toilets with proper service contracts. • Other measures as for surface water (see above)
Geohazards / Seismic	The Project is not located in a seismically active region.	Not applicable

Environmental & Social Aspect	Impact Overview	Mitigation measures summary
<p>Land acquisition</p> <p>Livelihood impacts</p>	<p>Significant land acquisition is not anticipated to be required for the Project, as most new waste facilities are proposed to be located on the sites of current waste facilities. However, construction of some waste sites may require development of additional land areas.</p> <p>Land acquisition processes needs to be fully compliant with the EBRD Performance Requirements.</p> <p>Impacts on waste pickers.</p>	<p>Develop of Livelihood Restoration Framework into a detailed plan and implementation thereof to manage land acquisition related impacts and impacts to waste picker livelihoods in line with national legislation and EBRD requirements.</p>
<p>Social, Population and Human Health</p>	<p>Increased traffic movements and risk of accidents as a result of increased vehicles.</p> <p>Disruption to access routes.</p> <p>Potential visual, odour, noise and dust impacts – see above.</p>	<p>Construction Environmental Management Plan including general mitigation measures such as:</p> <ul style="list-style-type: none"> • Speed control on access roads; • Maintenance of construction machinery; • Sheeting of vehicles carrying aggregates and soils; • Restriction of periods of operation. No night time or weekend construction unless specifically pre-agreed with local authorities. • Standard worker health and safety measures and controls. <p>Consultation with local communities and other stakeholders before and during construction activities, including accessible communications and grievance processes. Implementation of Stakeholder Engagement Plans.</p>
Operational Phase		
<p>Climate and Air Quality</p>	<p>Change in air quality due to fugitive gas (methane and bio-aerosols), odour and dust.</p> <p>Potential increase in emissions from traffic with the increase in capacity of facilities.</p> <p>There are existing air impacts, including uncontrolled biogas emissions and smoke from garbage fires. As the Project includes rehabilitation of the sites, overall impacts are likely to be positive.</p>	<p>Design, operation and closure of facilities in line with EU standards.</p> <p>Monitoring program for air emissions and dust.</p> <p>Development and implementation of documented operating procedures and management plan (including biogas and dust controls controls).</p> <p>Implementation of consultation and grievance processes set out in the Stakeholder Engagement Plan.</p>

Environmental & Social Aspect	Impact Overview	Mitigation measures summary
Odour	Solid waste facilities have the potential to create significant odours from site operations and transportation of waste.	<p>Development and implementation of documented operating procedures and management plan (including odour controls), such as:</p> <ul style="list-style-type: none"> • Development and implementation of odour management procedures at all solid waste sites. • Odour monitoring at site boundaries. • Regular covering of stockpiled wastes with inert materials. • Biogas management (see above)
Noise and Vibration	Potential increase in vehicular activity and noise from site equipment (mobile machinery, pumps, etc.)	<p>Development and implementation of documented operating procedures and management plan (including noise and vibration controls), such as:</p> <ul style="list-style-type: none"> • General measures for reduction of equipment noise (e.g. silencers on pneumatic tools / acoustic enclosures on compressors, etc.) • Maintenance of machinery • Restriction of periods of operation. No night time or weekend construction unless specifically pre-agreed with local authorities.
Ecosystems and Flora & Fauna	The impact on biodiversity is expected to be minimal, though precautionary mitigation is required. Most impacts are likely to be related to construction.	<p>Development and implementation of documented operating procedures and management plan, including pest management processes, and any measures identified as required during environmental impact assessment</p> <p>Repair and maintenance of site fencing to prevent access.</p>
Cultural Resources	The impact on cultural resources is expected to be minimal, though precautionary mitigation is required. Most impacts are likely to be related to construction.	A Cultural Heritage Management Plan will be developed and implemented for all phases of the Project, including a chance find procedure, and monitoring and reporting requirements.
Visual and Landscape	<p>Solid waste facilities have the potential to create visual disturbance, mainly related to visibility of stockpiles, and from lighting and litter.</p> <p>Visual impacts will need to be minimised at new and upgraded facilities.</p>	<p>Development and implementation of documented operating procedures and management plan (including consideration of litter control and visual amenity.</p> <p>Landscape and visual baseline assessment, within the scope of local EIA requirements or to EBRD standards.</p> <p>Design, operation and closure of upgraded facilities in line with EU standards.</p>

Environmental & Social Aspect	Impact Overview	Mitigation measures summary
Waste Management	<p>The site will not generate significant quantities of waste during operations.</p> <p>Wastes accepted will be non-hazardous wastes only and will need to be appropriately managed to prevent impacts to other environmental resources (see other sections of the table).</p> <p>Overall, the impact of the Project on waste management is anticipated to be positive.</p>	<p>Design, operation and closure of upgraded facilities in line with EU standards, including leachate and water management and containment of runoff where appropriate.</p> <p>Development and implementation of documented operating procedures and management plan for waste acceptance, handling and emplacement.</p> <p>Development and implementation of a site closure and aftercare plan for each facility.</p>
Geology and Land	<p>There is potential for impacts to soil and groundwater, mainly associated with leachates from wastes.</p> <p>Additionally, there are likely to be legacy impacts from historical waste deposition.</p>	<p>Contaminated land survey to benchmark site soil conditions and identify any necessary remediation prior to construction.</p> <p>Ongoing groundwater monitoring programme.</p> <p>Design, operation and closure of upgraded facilities in line with EU standards, including leachate and water management.</p> <p>Development and implementation of a site closure and aftercare plan for each facility.</p>
Hydrology, Surface Water and Groundwater	<p>There is potential for impacts to surface and groundwater, mainly associated with leachates from wastes, but also from oils and fuels, and from sediment runoff into water courses.</p>	<p>Design, operation and closure of upgraded facilities in line with EU standards, including leachate and water management and containment of runoff where appropriate.</p> <p>Development and implementation of a site closure and aftercare plan for each facility.</p> <p>Development and implementation of documented operating procedures and management plan, including</p> <ul style="list-style-type: none"> • Erosion and sediment control measures • Runoff controls • Appropriate management of fuels • Spill response procedures and materials
Wastewater Management	<p>The only impact areas are general water run off (see above) and domestic wastewater discharges.</p>	<p>Management of sanitary facilities, including septic tanks and portable toilets with proper service contracts.</p> <p>Other measures as for surface water (see above)</p>
Geohazards / Seismic	<p>The Project is not located in a seismically active region.</p>	<p>Not applicable</p>
Land acquisition Livelihood impacts	<p>Significant land acquisition is not anticipated to be required for the Project.</p> <p>Impacts to waste pickers</p>	<p>Ongoing implementation of the Livelihood Restoration Plan developed during the design phase.</p>

Environmental & Social Aspect	Impact Overview	Mitigation measures summary
Social, Population and Human Health	<p>Increased traffic movements and risk of accidents as a result of increased vehicles.</p> <p>Potential visual, odour, noise and dust impacts – see above.</p> <p>Changes in employment (potential job losses i.e. litter pickers)</p>	<p>Development and implementation of a Code of Conduct for truck drivers delivering waste at the sites.</p> <p>Implementation of stakeholder engagement plan and livelihood restoration plan.</p> <p>Development and implementation of documented operating procedures and management plan (including processes for management of pests, air emissions, dust, etc. and monitoring programmes).</p> <p>Design, operation and closure of upgraded facilities in line with EU standards.</p> <p>Implementation of standard worker health and safety measures and controls.</p>

Table 3: Environmental and Social Impact Summary and Key Mitigation Measures – Construction of New Solid Waste Facilities, including New Landfills.

Environmental & Social Aspect	Impact Overview	Mitigation measures
Construction Phase		
Climate and Air Quality	Limited potential for impact, other than from dust local to construction operations.	<p>Construction Environmental Management Plan including general mitigation measures such as:</p> <ul style="list-style-type: none"> • Dampening of roads and stockpile areas; • Speed control on access roads; • Minimising open excavation areas; • Re-seeding of open earthworks areas; • Maintenance of construction machinery; • Sheeting of vehicles carrying aggregates and soils; • General observation of dust levels and dust suppression measures if issues become apparent. •
Odour	Limited potential for odour impacts during construction	N/a
Noise and Vibration	There will likely be a noise impact during the construction phase.	<p>Construction Environmental Management Plan including general mitigation measures such as:</p> <ul style="list-style-type: none"> • General measures for reduction of equipment noise (e.g. silencers on pneumatic tools / acoustic enclosures on compressors, etc.) • Restriction of periods of operation. No night time or weekend construction unless specifically pre-agreed with local authorities and local residents. • Maintenance of construction machinery
Ecosystems and Flora & Fauna	The impact on biodiversity is expected to be minimal, though some localised impacts may occur during construction.	<p>Key mitigation measures include:</p> <ul style="list-style-type: none"> • Targeted ecological (biodiversity) surveys for any new areas of disturbance. • Construction activities completed outside the breeding bird season (March to July inclusive) in order to reduce potential impacts to birds. • Construction completed in a manner which reduces risk of harm to animals using the sites (e.g. securing excavations and machinery; preventing access to hazardous substances), during all construction activities
Cultural Resources	The impact on cultural resources is expected to be minimal, though precautionary mitigation is required.	<p>A Cultural Heritage Management Plan will be developed and implemented for construction and operational phases of the Project, including a chance find procedure, and monitoring and reporting requirements.</p> <p>A more detailed Targeted cultural heritage assessment for any new areas of disturbance, including specialist stakeholder engagement prior to finalisation of any designs.</p>

Environmental & Social Aspect	Impact Overview	Mitigation measures
Visual and Landscape	Limited potential for impacts associated with construction activities, mainly from lighting and stockpiles.	Construction Environmental Management Plan including general mitigation techniques for light glare. Stockpile management.
Waste Management	Waste materials will be generated during construction. These will be mainly excavation waste, but also may include contaminated soils / sediments.	Appropriate disposal of all wastes generated during construction. Re-use of top-soils and excavated materials where possible.
Geology and Land	There is limited potential for impact, but care needs to be taken in the handling of fuels and hydrocarbons and implementation of general site arrangements for spill control.	Contaminated land survey will be undertaken to benchmark site soil conditions and identify any necessary remediation prior to construction. Appropriate management of fuels on construction sites.
Hydrology, Surface Water and Groundwater	There is limited potential for impact, but care needs to be taken in the handling of fuels and hydrocarbons and implementation of general site arrangements for spill control. Erosion of soils and sediment runoff into water courses needs to be controlled during construction	General mitigation measures on construction sites include: <ul style="list-style-type: none"> • Erosion and sediment control measures • Appropriate management of fuels • Spill response procedures and materials • Maintenance of construction machinery
Wastewater Management	The only impact areas are general water run off during construction (see above) and domestic wastewater discharges.	General mitigation measures on construction sites include: <ul style="list-style-type: none"> • Provision of portable toilets with proper service contracts. • Other measures as for surface water (see above)
Geohazards / Seismic	The Project is not located in a seismically active region.	Not applicable
Land acquisition Livelihood impacts	Significant land acquisition is not anticipated to be required for the Project, as most new waste facilities are proposed to be located on the sites of current waste facilities. However, construction of some waste sites may require development of additional land areas. Land acquisition processes need to be fully compliant with the EBRD Performance Requirements. Impacts to waste pickers	Development of Livelihood Restoration Framework into a detailed plan and implementation thereof to manage land acquisition related impacts and impacts to waste picker livelihoods in line with national legislation and EBRD requirements.

Environmental & Social Aspect	Impact Overview	Mitigation measures
Social, Population and Human Health	<p>Increased traffic movements and risk of accidents as a result of increased vehicles.</p> <p>Disruption to access routes.</p> <p>Potential visual, noise and dust impacts – see above.</p>	<p>Construction Environmental Management Plan including general mitigation techniques such as:</p> <ul style="list-style-type: none"> • Speed control on access roads; • Maintenance of construction machinery; • Sheeting of vehicles carrying aggregates and soils; • Restriction of periods of operation. No night time or weekend construction unless specifically pre-agreed with local authorities. • Standard worker health and safety measures and controls. <p>Consultation with local communities and other stakeholders before and during construction activities, including accessible communications and grievance processes. Implementation of Stakeholder Engagement Plans.</p>
Operational Phase		
Climate and Air Quality	<p>Change in air quality due to fugitive gas (methane and bio-aerosols) and dust.</p> <p>Increase in emissions from traffic.</p>	<p>Design, operation and closure of facilities in line with EU standards.</p> <p>Monitoring program for air emissions and dust.</p> <p>Development and implementation of documented operating procedures and management plan (including biogas and dust controls controls).</p> <p>Implementation of consultation and grievance processes set out in the Stakeholder Engagement Plan.</p>
Odour	<p>Solid waste facilities have the potential to create significant odours from site operations and transportation of waste.</p>	<p>Development and implementation of documented operating procedures and management plan (including odour controls), such as:</p> <ul style="list-style-type: none"> • Development and implementation of odour management procedures at all solid waste sites. • Odour monitoring at site boundaries. • Regular covering of stockpiled wastes with inert materials. • Biogas management (see above)
Noise and Vibration	<p>Potential increase in vehicular activity and noise from site equipment (mobile machinery, pumps, etc.)</p>	<p>Development and implementation of documented operating procedures and management plan (including noise and vibration controls), such as:</p> <ul style="list-style-type: none"> • General measures for reduction of equipment noise (e.g. silencers on pneumatic tools / acoustic enclosures on compressors, etc.) • Maintenance of machinery • Restriction of periods of operation. No night time or weekend construction unless specifically pre-agreed with local authorities.

Environmental & Social Aspect	Impact Overview	Mitigation measures
Ecosystems and Flora & Fauna	The impact on biodiversity is expected to be minimal, though precautionary mitigation is required. Most impacts are likely to be related to construction.	Development and implementation of documented operating procedures and management plan, including pest management processes, and any measures identified as required during environmental impact assessment Repair and maintenance of site fencing to prevent access.
Cultural Resources	The impact on cultural resources is expected to be minimal, though precautionary mitigation is required. Most impacts are likely to be related to construction.	A Cultural Heritage Management Plan will be developed and implemented for all phases of the Project, including a chance find procedure, and monitoring and reporting requirements.
Visual and Landscape	Solid waste facilities have the potential to create visual disturbance, mainly related to visibility of stockpiles, and from lighting and litter. Visual impacts will need to be minimised at new and upgraded facilities.	Development and implementation of documented operating procedures and management plan (including consideration of litter control and visual amenity). Landscape and visual baseline assessment, within the scope of local EIA requirements or to EBRD standards. Design, operation and closure of new facilities in line with EU standards.
Waste Management	The site will not generate significant quantities of waste during operations. Wastes accepted will be non-hazardous wastes only and will need to be appropriately managed to prevent impacts to other environmental resources (see other sections of the table). Overall, the impact of the Project on waste management is anticipated to be positive.	Design, operation and closure of new facilities in line with EU standards, including leachate and water management and containment of runoff where appropriate. Development and implementation of documented operating procedures and management plan for waste acceptance, handling and emplacement. Development and implementation of a site closure and aftercare plan for each facility.
Geology and Land	There is potential for impacts to soil and groundwater, mainly associated with leachates from wastes. Additionally, there are likely to be legacy impacts from historical waste deposition.	Contaminated land survey to benchmark site soil conditions and identify any necessary remediation prior to construction. Ongoing groundwater monitoring programme. Design, operation and closure of facilities in line with EU standards, including leachate and water management. Development and implementation of a site closure and aftercare plan for each facility.

Environmental & Social Aspect	Impact Overview	Mitigation measures
Hydrology, Surface Water and Groundwater	There is potential for impacts to surface and groundwater, mainly associated with leachates from wastes, but also from oils and fuels, and from sediment runoff into water courses.	<p>Design, operation and closure of facilities in line with EU standards, including leachate and water management and containment of runoff where appropriate.</p> <p>Development and implementation of a site closure and aftercare plan for each facility.</p> <p>Development and implementation of documented operating procedures and management plan, including</p> <ul style="list-style-type: none"> • Erosion and sediment control measures • Runoff controls • Appropriate management of fuels • Spill response procedures and materials
Wastewater Management	The only impact areas are general water run off (see above) and domestic wastewater discharges.	<p>Management of sanitary facilities, including septic tanks and portable toilets with proper service contracts.</p> <p>Other measures as for surface water (see above)</p>
Geohazards / Seismic	The Project is not located in a seismically active region.	Not applicable
Land acquisition Livelihood impacts	<p>Significant land acquisition is not anticipated to be required for the Project.</p> <p>Impacts to waste pickers</p>	Ongoing implementation of the Livelihood Restoration Plan developed during the design phase.
Social, Population and Human Health	<p>Increased traffic movements and risk of accidents as a result of increased vehicles.</p> <p>Potential visual, odour, noise and dust impacts – see above.</p>	<p>Development and implementation of a Code of Conduct for truck drivers delivering waste at the sites.</p> <p>Implementation of stakeholder engagement plans.</p> <p>Development and implementation of documented operating procedures and management plan (including processes for management of pests, air emissions, dust, etc. and monitoring programmes).</p> <p>Design, operation and closure of facilities in line with EU standards.</p> <p>Implementation of standard worker health and safety measures and controls.</p>

Table 4: Environmental and Social Impact Summary and Key Mitigation measures – Closure of Dumpsites

Environmental & Social Aspect	Impact Overview	Mitigation measures
Construction Phase		
Climate and Air Quality	Limited potential for impact, other than from dust very local to construction operations.	<p>Construction Environmental Management Plan including general mitigation measures such as:</p> <ul style="list-style-type: none"> • Dampening of roads and stockpile areas; • Speed control on access roads; • Minimising open excavation areas; • Re-seeding of open earthworks areas; • Maintenance of construction machinery; • Covering of vehicles carrying aggregates and soils; • General observation of dust levels and dust suppression measures if issues become apparent. •
Odour	Odour impacts may occur due to disturbance of waste stockpiles.	<p>Construction Environmental Management Plan including general mitigation techniques such as:</p> <ul style="list-style-type: none"> • Dampening of stockpile areas; • Minimising open excavation areas; • Covering of vehicles carrying wastes; • Odour monitoring at site boundaries and sensitive receptors.
Noise and Vibration	There will likely be a noise impact during the construction phase.	<p>Construction Environmental Management Plan including general mitigation measures will be implemented including:</p> <ul style="list-style-type: none"> • General measures for reduction of equipment noise (e.g. silencers on pneumatic tools / acoustic enclosures on compressors, etc.) • Restriction of periods of works. No night time or weekend construction unless specifically pre-agreed with local authorities and local residents. • Maintenance of construction machinery
Ecosystems and Flora & Fauna	The impact on biodiversity is expected to be minimal, though some localised impacts may occur during construction.	<p>Key mitigation measures include:</p> <ul style="list-style-type: none"> • Works completed outside the breeding bird season (March to July inclusive) in order to reduce potential impacts to birds. • Construction completed in a manner which reduces risk of harm to animals using the sites (e.g. securing excavations and machinery; preventing access to hazardous substances), during all construction activities
Cultural Resources	The impact on cultural resources is expected to be minimal	A Cultural Heritage Management Plan will be developed and implemented for construction and operational phases of the Project, including a chance find procedure, and monitoring and reporting requirements.

Environmental & Social Aspect	Impact Overview	Mitigation measures
Visual and Landscape	Limited potential for impacts associated with construction activities, mainly from lighting, litter and stockpiles.	Construction Environmental Management Plan including general mitigation measures for litter and light glare. Stockpile management. Sheeting of vehicles carrying wastes.
Waste Management	Waste materials will be generated during construction. These buried wastes and contaminated soils / sediments.	Appropriate disposal of all wastes generated during construction, including any waste accumulations excavated during redevelopment.
Geology and Land	There is limited potential for impact, but care needs to be taken in the handling of fuels and hydrocarbons and implementation of general site arrangements for spill control.	Contaminated land survey will be undertaken to benchmark site soil conditions and identify any necessary remediation prior to construction. Appropriate management of fuels on construction sites.
Hydrology, Surface Water and Groundwater	There is limited potential for impact, but care needs to be taken in the handling of fuels and hydrocarbons and implementation of general site arrangements for spill control. Erosion of soils and sediment runoff into water courses needs to be controlled during construction	General mitigation measures on construction sites include: <ul style="list-style-type: none"> • Erosion and sediment control measures • Appropriate management of fuels • Spill response procedures and materials • Maintenance of construction machinery
Wastewater Management	The only impact areas are general water run off during construction (see above) and domestic wastewater discharges.	General mitigation measures on construction sites include: <ul style="list-style-type: none"> • Provision of portable toilets with proper service contracts. • Other measures as for surface water (see above)
Geohazards / Seismic	The Project is not located in a seismically active region.	Not applicable
Land acquisition	Land acquisition is not anticipated.	Not applicable
Livelihood impacts	Impacts on waste pickers.	Development of Livelihood Restoration Framework into a detailed plan and implementation thereof to manage impacts to waste picker livelihoods in line EBRD requirements.

Environmental & Social Aspect	Impact Overview	Mitigation measures
Social, Population and Human Health	<p>Increased traffic movements and risk of accidents as a result of increased vehicles.</p> <p>Disruption to access routes.</p> <p>Potential visual, odour, noise and dust impacts – see above.</p>	<p>Construction Environmental Management Plan including general mitigation techniques such as:</p> <ul style="list-style-type: none"> • Speed control on access roads; • Maintenance of construction machinery; • Sheeting of vehicles carrying aggregates and soils; • Restriction of periods of operation. No night time or weekend construction unless specifically pre-agreed with local authorities. • Standard worker health and safety measures and controls. <p>Consultation with local communities and other stakeholders before and during construction activities, including accessible communications and grievance processes. Implementation of Stakeholder Engagement Plans.</p>
Operational Phase		
Climate and Air Quality	<p>Air emissions from fugitive gas (methane and bio-aerosols), odour and dust.</p> <p>There are existing air impacts, including uncontrolled biogas emissions and smoke from garbage fires. As the Project includes rehabilitation of the sites, overall impacts are likely to be positive.</p>	<p>Closure of facilities in line with EU standards, including appropriate gas collection and management where appropriate.</p> <p>Where wastes are to remain in-situ, development and implementation of documented operating procedures and management plan (including biogas and dust controls controls).</p> <p>Monitoring program for air emissions and dust.</p> <p>Implementation of consultation and grievance processes set out in the Stakeholder Engagement Plan.</p>
Odour	<p>Odour due to fugitive gas (methane and bio-aerosols).</p> <p>There are existing air impacts, including uncontrolled biogas emissions and smoke from garbage fires. As the Project includes rehabilitation of the sites, overall impacts are likely to be positive.</p>	<p>Where wastes are to remain in-situ, development and implementation of documented operating procedures and management plan (including odour controls), such as:</p> <ul style="list-style-type: none"> • Odour monitoring at site boundaries. • Biogas management (see above)
Noise and Vibration	Significant noise is not anticipated post closure.	Not applicable
Ecosystems and Flora & Fauna	The impact on biodiversity is expected to be minimal.	Not applicable
Cultural Resources	The impact on cultural resources is expected to be.	Not applicable
Visual and Landscape	Final landforms have the potential to create visual disturbance.	<p>Landscape and visual baseline assessment, within the scope of local EIA requirements or to EBRD standards.</p> <p>Final landform design.</p> <p>Consultation with local community and other stakeholders during landform design processes.</p>

Environmental & Social Aspect	Impact Overview	Mitigation measures
Waste Management	<p>The site will not generate significant quantities of waste during operations.</p> <p>Where wastes remain in-situ after closure, these will require ongoing management.</p>	<p>Closure of facilities in line with EU standards, including leachate and water management and containment of runoff where appropriate.</p> <p>Development and implementation of a site closure and aftercare plan for each facility.</p>
Geology and Land	<p>There is potential for impacts to soil and groundwater, mainly associated with leachates from wastes.</p> <p>Additionally, there are likely to be legacy impacts from historical waste deposition.</p>	<p>Contaminated land survey to benchmark site soil conditions and identify any necessary remediation prior to construction.</p> <p>Ongoing groundwater monitoring programme.</p> <p>Closure of facilities in line with EU standards, including leachate and water management.</p> <p>Development and implementation of a site closure and aftercare plan for each facility.</p>
Hydrology, Surface Water and Groundwater	<p>There is potential for impacts to soil and groundwater, mainly associated with leachates from wastes.</p> <p>Additionally, there are likely to be legacy impacts from historical waste deposition.</p>	<p>Closure of facilities in line with EU standards, including leachate and water management and containment of runoff where appropriate.</p> <p>Development and implementation of a site closure and aftercare plan for each facility.</p>
Wastewater Management	<p>The only impact areas are general water run off (see above).</p>	<p>Measures as for surface water (see above)</p>
Geohazards / Seismic	<p>The Project is not located in a seismically active region.</p>	<p>Not applicable</p>
Land acquisition	<p>Land acquisition is not anticipated.</p>	<p>Not applicable</p>
Social, Population and Human Health	<p>Changes in employment (potential job losses i.e. litter pickers)</p> <p>Potential visual, odour, noise and dust impacts – see above</p>	<p>Implementation of stakeholder engagement plans and livelihood restoration frameworks.</p> <p>Closure of facilities in line with EU standards.</p>

Table 5: Environmental and Social Impact Summary and Key Mitigation Measures – Drain Rehabilitation Activities

Environmental & Social Aspect	Impact Overview	Mitigation measures
Climate and Air Quality	<p>Increase in ambient air emissions as a result of exhaust emissions from construction traffic and non-road mobile machinery.</p> <p>No significant air emissions are anticipated from Drain operation and irrigation, with the exception of GHG from pump usage.</p> <p>Overall impacts are likely to be positive, including</p> <ul style="list-style-type: none"> • reduction in biogas & odour following removal of wastes • more efficient pump usage 	Construction environmental management plans for all drainage works.
Odour	<p>No significant odour emissions are anticipated.</p> <p>Overall impacts are likely to be positive, including reduction in biogas & odour following removal of wastes</p>	Not applicable
Noise and Vibration	<p>Potentially significant noise and vibration disturbance from construction vehicles and machinery during drainage and irrigation infrastructure works.</p> <p>Noise disturbance – generally temporary and spatially limited to close vicinity of site.</p> <p>No significant air emissions are anticipated from Drain operation and irrigation, with the exception pump operation.</p> <p>Overall impacts are likely to be positive, due to more efficient pump operation.</p>	<p>Construction environmental management plans for all drainage works.</p> <p>Site-specific baseline noise monitoring and identification of sensitive receptors.</p> <p>Ongoing monitoring program for noise during construction works.</p> <p>Implementation of consultation and grievance processes set out in the Stakeholder Engagement Plan.</p> <p>Consideration of noise when selecting pumping equipment and installation of noise controls where appropriate.</p>

Environmental & Social Aspect	Impact Overview	Mitigation measures
Ecosystems and Flora & Fauna	<p>The impact on biodiversity is expected to be minimal.</p> <p>However, a general animal welfare impact exists during drainage works with the potential for injury or death to mobile fauna as they access active construction sites.</p>	<p>Construction Environmental Management Plans should include requirements for:</p> <ul style="list-style-type: none"> • Construction activities to be completed outside the breeding bird season. • Construction activities to be completed in a manner which reduces risk of harm to animals using the sites. Measures such as securing excavations and machinery; preventing access to hazardous substances; and pollution prevention measures should be employed as standard during all construction activities <p>Targeted ecological (biodiversity) survey completed for any expansion beyond existing boundaries, within the scope of local EIA requirements or to EBRD standards.</p>
Cultural Resources	The areas around the Drain are already heavily degraded, so significant impacts are not anticipated	Not applicable
Visual and Landscape	<p>Visual effects during drainage works, due to lighting and construction activities</p> <p>No significant visual impacts are anticipated from Drain operation</p>	<p>Construction Environmental Management Plans</p> <p>Implementation of stakeholder engagement plans and grievance processes.</p>
Waste Management	<p>Drain rehabilitation will generate wastes from:</p> <ul style="list-style-type: none"> • Collection of wastes from in and around the Drain; • Disposal of dredged material and solid wastes 	<p>Development of appropriate methods for the re-use and disposal of dredged material and waste (and associated sludge) removed from the drains and overbanks, including:</p> <p>Seek to reduce the amount of dredged material disposed to landfill</p>
Geology and Land	<p>Disposal of dredged material and solid wastes could result in contamination of soils and groundwater</p> <p>Increased waste to landfill.</p>	<p>Development of appropriate methods for the re-use and disposal of dredged material and waste (and associated sludge) removed from the drains and overbanks, including:</p> <p>Seek to reduce the amount of dredged material disposed to landfill</p>

Environmental & Social Aspect	Impact Overview	Mitigation measures
Hydrology, Surface Water and Groundwater	<p>Bank instability caused by dredging works</p> <p>Pollution of water by inappropriate sludge management.</p>	<p>Development of an operational plan that very clearly sets out the frequency with which dredging should be carried out and the methodology that must be adopted by the appointed contractors.</p> <p>Removal of material from the Drain to avoid any undercutting of the banks beneath the water line</p> <p>No saturated material to be placed on the crest of the banks.</p> <p>Development of appropriate methods for the re-use and disposal of dredged material and waste (and associated sludge) removed from the drains and overbanks, including:</p> <p>Development and implementation of water monitoring program.</p>
Wastewater Management	The only impact areas are general water run off during construction (see above) and domestic wastewater discharges.	<p>General mitigation measures on construction sites include:</p> <ul style="list-style-type: none"> • Provision of portable toilets with proper service contracts. • Other measures as for surface water (see above)
Geohazards / Seismic	The Project is not located in a seismically active region.	Not applicable
Land acquisition	No expected.	Implementation of stakeholder engagement plans and livelihood restoration plan, if necessary
Social, Population and Human Health	<p>Increased traffic movements and risk of accidents as a result of increased vehicles.</p> <p>Potential visual, odour, noise and dust impacts – see above.</p>	<p>Implementation of stakeholder engagement plans.</p> <p>Development and implementation of documented operating procedures and management plan (including processes for management of pests, air emissions, dust, etc. and monitoring programmes).</p> <p>Standard worker health and safety measures and controls</p>

7 HOW WILL THE PROJECT ENSURE EFFECTIVE MANAGEMENT AND MONITORING OF IMPACTS?

Two Environmental and Social Action Plans (ESAPs), one for the drain rehabilitation component and one for the solid waste component, have been developed in order to align existing operations and the proposed investments with the applicable national E&S requirements as well as EBRD's environmental and social requirements (the Performance Requirements).

The ESAPs will require the implementing entities to develop and implement mitigation and monitoring measures for all EHSS impacts of the existing operations (mainly existing solid waste sites) and the proposed investment. Additionally, environmental impact assessment (EIA) will be required for many aspects of the Project under Egyptian environmental legislation. For larger sites such as landfills, a more detailed environmental and social impact assessment (ESIA) to more exacting EBRD standards will be conducted.

The proposed action areas will result in improved EHSS performance and risk management and benefit enhancement across all aspects of the drain rehabilitation and solid waste management activities, as well as contractors' operations.

8 STAKEHOLDER ENGAGEMENT PLANS (SEP)

Two Stakeholder Engagement Plans (SEP) have been developed for the Project (one each for drain rehabilitation and solid waste) with the objective of identifying key stakeholders and ensuring that, where relevant, they are informed in a timely manner of the potential impacts of Project. The SEPs also identifies formal grievance mechanisms to be used by stakeholders (internal and external) for dealing with complaints, concerns, queries and comments. It will be reviewed and updated on a regular basis. If activities change or new activities relating to stakeholder engagement commence, the SEPs will be brought up to date. It will also be reviewed periodically during project implementation and updated as necessary. The SEPs include the following:

- Public consultations and information disclosure requirements;
- Identification of stakeholders and other affected parties;
- Overview of previous engagement activities;
- Stakeholder engagement programme including methods of engagement and resources; and a
- Grievance mechanism.

Stakeholders could be individuals and organisations that may be directly or indirectly affected by the project either in a positive or negative way, and/or may be interested in the Project and who may wish to express their views.