Ecoline International

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA)

GANJA WASTEWATER PROJECT, AZERBAIJAN

ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

May 2026

Ecoline International Ltd. 1 Racho Dimchev Str.. Sofia. 1000. Bulgaria www.ecoline-

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA)

GANJA WASTEWATER PROJECT, AZERBAIJAN

ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

Prepared by:

Ecoline International Ltd.
(Sofia, Bulgaria)

Director: Dr. Tatiana Strizhova
Tel: +359 876 630 522
E-mail: info@ecoline-int.org

Integra Consulting Ltd.
(Prague, Czech Republic)

Director: Martin Smutny
Tel: +420 774 541 484
Mobile: +420 724 110 779
E-mail:
office@integracons.com

ABAK-Az Crowe Ltd.
(Baku, Azerbaijan)

Director: Zamin Huseynov
Tel.: +994 12 492 7856
Mob.:+99450 326 7448
E-mail: abak@crowe.az

Prepared for:

European Bank for Reconstruction and Development

Azerbaijan State Water Resources Agency

DETAILS OF DOCUMENT PREPARATION AND ISSUE:

Version	Prepared by	Reviewed by	Authorised for issue	Issue Date	Description
1	ESIA Consultant's expert team (listed below)	Sean O'Beirne Tatiana Strizhova	Tatiana Strizhova	15 September 2025	Draft for review by the EBRD and the Client
2				25 November 2025	Draft addressing the EBRD's comments and issued for review by the Client and EBRD
3				11 December 2025	Draft addressing the EBRD's and Client's comments and prepared for disclosure
4				1 May 2026	Revised to incorporate issues raised during public consultation.

Expert	Role in the ESIA assignment
Sean O'Beirne (SE Solutions)	Project Manager / Team Leader
Tatiana Strizhova (Ecoline Int)	General Advisor /Quality Control
Martin Smutny (Integra Consulting)	Environmental Specialist (Int.)
Michal Musil (Integra Consulting)	Climate Change expert (Int)
Petr Jancik Integra Consulting)	Air dispersion modelling and odour control expert
Marina Khotuleva (Ecoline Int)	Social, Resettlement and Livelihood Restoration Expert
Iryna Usava (Ecoline Int)	Stakeholder Engagement Specialist
Andrey Artov (Ecoline Int).	Biodiversity expert
Julia Marukha (Ecoline Int)	Health and Safety Specialist
Irada Yagubova	Social and Stakeholder Engagement Expert
Fikrad Jafarov	National team leader, environmental and biodiversity specialist
Zamin Husseynov	National socio-economic and resettlement expert
Azad Rahimov	National Stakeholder Engagement Specialist
Nasseer Eminov	National Health and Safety Specialist
Anvar Safarzade	National Environmental and Waste Management Specialist
Ph. D., Iskenderov Tavakkul	National Zoologist, Fauna Expert
Ph. D.,Kerimov Tahir	National Zoologist, Fauna Expert
Ph. D., Aynur Bayramova	National Botanist, Flora Expert
Irshad Abbasov	National Environmental and Stakeholder Engagement Expert
Akif Veliyev	National Land Use Advisor
Sarhan Ibadov	National Legal Advisor
And various administrative and technical support experts – GIS, data sorting and management specialists, translators, editors, admin assistants, and others.	

DISCLAIMER

An Environmental and Social Impact Assessment (ESIA) is necessarily predictive in that it gets completed well before the project being assessed is actually implemented. The information on which the assessment is based comes from multiple sources including the feasibility report, the detailed design document, reports on studies that were conducted as part of the feasibility investigations, records of meetings, other publications, various databases, data that is collected by the team conducting the ESIA, anecdotal information and others. It is extremely difficult to verify the information that is used other than through testing the logic of that information as well as that can be done. In preparing this document, care has been taken to ensure that whatever information has been available has been accurately reproduced in the ESIA. Should information be found in this document that is incorrect then it is respectively requested that the incorrect information be brought to our attention so that the ESIA can be updated accordingly. We cannot be held accountable for information that we have accepted and reproduced in good faith regardless of the consequences of such information being incorrect. Anyone reproducing information contained in this ESIA does so entirely at their own risk.

LIST OF ABBREVIATIONS

AD	Anaerobic Digestion
ASWRA or "the Company"	Azerbaijan State Water Resources Agency
AZN	Azerbaijan manat
BAP	Biodiversity Action Plan
BAT	Best Available Techniques
BOD5	Biological oxygen demand for 5 days
CAPEX	Capital expenditure
CHA	Critical Habitat Assessment
CHP	Combined Heat and Power plant
COD	Chemical oxygen demand
dB(A)	Decibel
E&S	environmental and social
EBRD	European Bank for Reconstruction and Development
EHS	Environmental, Health and Safety
EIA	Environmental Impact Assessment
EIB	European Investment Bank
ELV	Emission Limit Value
EPA	(US) Environmental Protection Agency
EROS	Earth Resources Observation Systems
ESAP	Environmental and Social Action Plan
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
ESMS	E&S Management System
EU	European Union
EUR	Euro
GCAP	Green City Action Plan
GDP	Gross Development Product
GHG	Greenhouse gases
GIIP	Good International Industrial Practise
GIP	good international practice
GNJ	Ganja International Airport
HDD	Horizontal Directional Drilling
HDI	human development index
IDPs	internally displaced persons
IFC	International Finance Corporation
ILO	International labour organization
IUCN	International Union for Conservation of Nature
KfW	Kreditanstalt für Wiederaufbau (German State Bank)
LLC	Limited liability company
MENR	Ministry of Ecology and Natural Resources
MPN/100mL	Most Probable Number
Mt	Megatonnes
MWh/year	Megawatt-hours per year

NDC+	Nationally Determined Contribution
NPA	Nationally Protected Area
OHS	Occupational Health and Safety
OJSC	Open joint-stock company
OPEX	Operational expenditure
OUE-s	European Odor Unit
PBF	Priority Biodiversity Feature
PE	Population Equivalent
PIP	priority investment project
PPE	Personal Protective Equipment
PR	Performance requirement (of the EBRD)
PV	Solar power panels
RA	Republic of Azerbaijan
SCADA	Supervisory Control and Data Acquisition
SEA	Strategic Environmental Assessment
SEE	State Ecology Expertise
SEP	Stakeholder Engagement Plan
SME	Small and Medium enterprises
SPP	Spill Prevention Plan
SPZ	Sanitary protection zone
TSS	Treated Sanitary Sewage
UNDP	United Nations Development Programme
UNECE	United Nations Economic Commission for Europe
US	United States
UV	Ultraviolet
VAT	Value Added Tax
VEC	Valued Environmental Component
WWTP	Wastewater Treatment Plant

TABLE OF CONTENTS

1 INTRODUCTION

The European Bank for Reconstruction and Development ("the EBRD" or "the Bank") is considering providing finance to the Azerbaijan State Water Resources Agency (ASWRA or "the Company") for construction of the Ganja Wastewater Treatment Plant (WWTP) ("the Project"). The proposed Project is one component of the wider Ganja Water and Wastewater framework project and Priority Investment Programme being implemented under the Ganja Green City Action Plan (GCAP)[1].

ASWRA, a state-owned company, was established in 2023 to oversee the management and governance of all water resources in Azerbaijan, including providing ASWRA water supply and wastewater collection and sewage treatment services in Ganja City. ASWRA will implement the Project with support of its Ganja branch and the Project Implementation Unit.

The WWTP Project has been categorised as "A" in accordance with the EBRD's 2019 Environmental and Social Policy. This means that it is required to conduct a formalised and participatory Environmental and Social Impact Assessment (ESIA) of the proposed Project and associated infrastructure. The ESIA documents have been publicly disclosed for a minimum period of 120 days with stakeholder engagements during this period.

This document constitutes the Environmental and Social Management Plan (ESMP) for the Project for construction and operations, which has been updated to reflect issues raised by stakeholders during the disclosure period.

2 OVERVIEW

The purpose of the ESMP is to ensure that the mitigation identified during the impact assessment process is effectively implemented and reduces the impacts in the manner assumed, during project implementation. For an ESMP to be effective it needs to contain two key elements:

a) defining what must be achieved (actual performance in respect of key E&S indicators), and

b) defining what must be done to achieve the performance specified under point a).

The ESMP has been so developed but before presenting the two components it is useful to define what is meant by management within an ESMP. Probably the best recognized management philosophy is that of Plan, Do, Check and Act also known as the Demming cycle or PDCA. The PDCA approach is very simply one of:

- defining what needs to be achieved,
- defining what will be done to achieve what needs to be achieved,
- checking to see whether what was planned to be achieved is actually being achieved, and
- taking action where what is meant to be achieved is not being achieved.

[1] EBRD. 2025. GrCF3 W2 - Ganja Water and Wastewater. https://www.ebrd.com/work-with-us/projects/psd/55197.html

3 THE E&S MANAGEMENT FRAMEWORK

3.1 Overview

The overarching E&S management approach is illustrated schematically in **Figure 1** and described in more detail in the following sections.

3.2 Policy

ASWRA is to update the existing Corporate E&S policy to include ASWRA's commitment to aligning with international approaches and IFI requirements.

Or, as an alternative, develop a Project-specific E&S Policy (including the commitment to complying with EBRD requirements and relevant provisions) as a stand-alone document.

3.3 EBRD requirements

The Project-specific EBRD requirements, as stemming from the ESIA, must be detailed in the ESMP. The ESAP details high level commitments by ASWRA as part of the loan agreement.

3.4 Project impacts

Project impacts derive from the ESIA conducted on the Ganja Wastewater Treatment Plant (WWTP). For each identified impact (singly or combined), objectives must be articulated as outcomes-based objectives.

3.5 Objectives

Objectives are started for each of the impact areas as an overall commitment to preventing or at least minimising the negative impacts and enhancing the benefits. Objectives must be stated as to what must be achieved by the project in respect of E&S elements as detailed in the box below.

The principle of outcomes-based objectives

ESIAs typically contain a raft of mitigation. While that mitigation is important, it is no guarantee that the required outcomes will be achieved, but it is the outcomes that are most important. For example, if mitigation for dust is to spray water on gravel roads, the outcome sought is to prevent dust, not to spray water. There are many ways of achieving the same outcome of preventing dust and the principle of adaptive management (despite being tautologous) implies being flexible in what gets done but being totally inflexible in pursuing what needs to be achieved. Engineers on a project should be given the flexibility to find optimum ways of achieving a stated outcome, not told what to do to achieve that outcome. If the project is measured on its actual E&S management performance, then mitigation must be adapted until it works not just endlessly repeated regardless of what is being achieved.

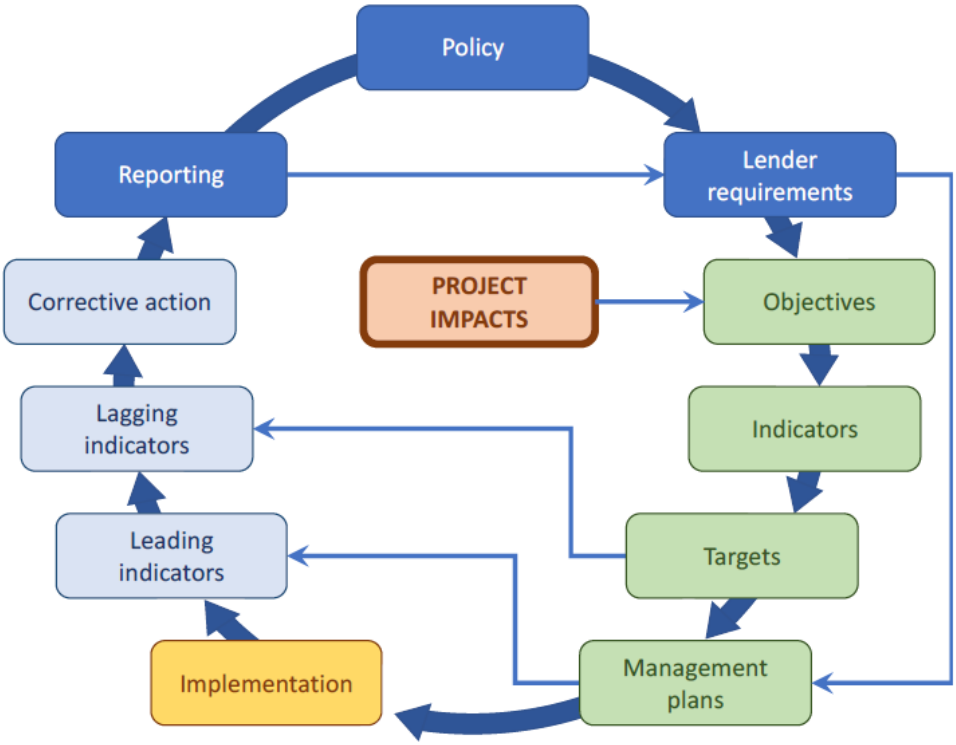

Figure 1. Schematic Presentation of the E&S Management Approach Advocated for the WWTP

3.6 Indicators

Whilst objectives detail overall intent, indicators must be defined that could be used to ascertain whether the objective is being met.

3.7 Targets

For each indicator, specific targets must be defined that serve to quantify, as well as possible, the intent of the objective. For example, objectives such as 'maximise' or 'minimise' can be expressed quantitatively to articulate exactly what those terms mean.

3.8 Management Plans

The purpose of the management plans is to express the mitigation that must be applied to be able to meet the targets. The management plans articulate what must be done to meet the performance targets and thereby achieving the objectives. Again, it must be recognised that these mitigation plans, can and should be adapted as the project unfolds with a view to consistently meeting the performance targets. The plans can be modified as necessary but the performance targets must remain steadfast. The mitigation defined in this ESIA is viewed as the minimum requirement for the management plans and is listed in **Figure 1**.

3.9 Implementation

Implementation of the management plans is always the most challenging part of the ESMP. For this reason, the management plans must detail what, who, where and when of the mitigation.

3.10 Monitoring of Leading Indicators

Environmental and social performance monitoring is always historical because it reflects what has happened. If a performance target is missed then the objective has not been met at least

for the period for which the monitoring took place. For that reason, performance data is viewed as 'lagging'. Lagging indicators reflect what has been achieved (or not) and as such are reactive – put differently, lagging indicators reflect the question 'did we do things right?' For effective E&S management, leading indicators must also be defined, as a proactive approach to ensuring that the targets are met. The question asked by leading indicators, is 'did we do the right things?' Simply put, leading indicators simply reflect whether mitigation was in fact implemented as detailed in the management plans.

3.11 Monitoring of Lagging Indicators

Lagging indicators derive directly from the indicators and targets set relative to the objectives. Lagging indicators are typically E&S quality variables such as dust concentrations, noise, water quality concentrations and so forth.

3.12 Corrective Action

If a performance target is not met, two questions can be answered in reviewing why, namely was the mitigation inadequate (lagging) or was the mitigation simply not implemented (leading)? As a function of either or both possibilities, corrective action must be defined and implemented.

3.13 Reporting

The final requirement is to formalise the E&S management into reports that can be submitted to the EBRD as required.

4 MITIGATION MEASURES DEFINED IN THE ESIA

The mitigation defined in the ESIA is presented in **Table 1**.

Table 1. Summary of the Mitigation Defined in this ESIA by Project Phases and Responsibilities for Implementation of the Mitigation

Impact / Risk Category	**Environmental baseline**		
Project Phase	**Construction**		
Aspects/ Hazard	**Impact/risk**	**Mitigation**	**Responsibility**
Missing baseline data.	There is no representative baseline of environmental quality monitoring meaning that it will not be possible to quantitatively assess the effect of the WWTP once commissioned	Immediately implement baseline environmental quality monitoring to ensure that there is a baseline before operations of the WWTP commence. Such monitoring to include: ▪ Ambient air quality Daily mean: Total particulate matter; Sulphur oxide; Nitrogen oxides; Carbon monoxide; Hydrogen sulphide; Mercaptans; Ammonia ▪ Water quality Actual concentrations of monitored pollutants in treated wastewater should be within the limits set for irrigation waters: pH; suspended solids; BOD5; nitrites (NO_2), nitrates (NO_3); phosphates (PO_4); oil products, Coli-index. Accounting for accidental discharge of industrial effluents into the city sewer system, heavy metals are to be included. ▪ Soil BOD5; nitrites (NO_2); nitrates (NO_3); phosphates (PO_4); oil products; Coli-index, heavy metals.	ASWRA Ganja supervision
Impact / Risk Category	**Geology and soil**		
Project Phase	**Construction**		
Aspects/ Hazard	**Impact/risk**	**Mitigation**	**Responsibility**
▪ Removal of trees and shrubs; clearing and grubbing; ▪ Removal and temporary stockpiling of topsoil; ▪ Removal and temporary stockpiling of topsoil; ▪ Vehicle and machinery	Soil pollution and its degradation, including increased susceptibility to scouring and erosion	***Develop and implement a Soil Rehabilitation Plan (SRP) that includes inter alia:*** ▪ Minimise disturbed land by using existing roads and avoiding side hill cuts; ▪ Design facilities for soil (topsoil and subsoil) stockpiling, waste, oil, chemicals and other construction materials storage; ▪ Store topsoil separately, uncompacted in such manner as to not lose its fertile characteristics; ▪ Prevent scouring and erosion of soil stock piles; ▪ Record depth of topsoil / fertile soil (depending on land use) – and use such records to plan depth of strip, soil protection risk mitigation and monitoring of soil replacement and rehabilitation;	Construction Contractor / ASWRA Ganja supervision

movement; refuelling and regular maintenance of vehicles and machinery; ▪ Trench excavations and temporary stockpiling of excavated material; corrosion protection for pipes and concrete structures; and ▪ Trench backfilling and topsoil reinstatement		▪ Only strip across the work areas of the servitude - no need to strip the area under the stockpile itself; ▪ Provide for drainage in and out of the project footprint and erosion protection at the toe of slopes; ▪ Strip fertile soil over the excavations and the trench that need to be reinstated, stockpile separately adjacent to trench, making provision for battering back of trench sides, provide drainage and erosion protection; ▪ Prevent mixing of subsoils or imported material with the in situ or stockpiled top and fertile soils especially preventing rocks and stones from being mixed into agricultural soils ▪ Prevent compaction where possible and apply mitigation to restore soil structure and function (such as ripping post construction and seeding); ▪ During excavation check (record as evidence) characteristics of the soil profile and ID areas with impervious layers (rock, compact clays etc) reinstating such layers to ensure that their function in the landscape is largely reinstated; ▪ Remove imported material / debris from the soil before landscaping and shaping; ▪ Ensure decompaction of lower soil layers before topsoil is replaced; ▪ Prevent unnecessary access to rehabilitated areas; ▪ Apply soil amelioration where laboratory testing indicates a reduction in soil quality; ▪ Cover soil stockpiles with vegetation and even with geomembrane if there are areas of erosion vulnerability; ▪ Weeds can help bind soils but these need to be cut short regularly to avoid seeding;	
		Develop and implement a Spill Prevention Plan (SPP) that includes inter alia: ▪ Define the roles and responsibility of construction personnel; ▪ Store oil products and chemicals separately, in special drums / tanks laid on secondary containments or trays, ▪ Roof secondary containment areas to prevent rainwater from entering the secondary containment. ▪ Conduct refilling of oil, fuel and other chemicals within impervious bunding;	

		▪ Equip the facilities designated for oil and chemicals storage and heavy trucks transporting the same materials with the relevant spill-kits and procedures for remediation of spills.	
Project Phase	**Operations**		
Aspects/ Hazard	**Impact/risk**	**Mitigation**	**Responsibility**
▪ Sewage sludge ▪ Spills of untreated sewage ▪ Spillages of hazardous materials especially oils, fuels and lubricants but also paints and solvents, and others, during the regular operation and maintenance.	▪ Direct soil contamination and pollution, at the project site ▪ Indirect soil contamination at the agriculture land where: ○ the sludge may be used as fertilizer, and ○ untreated water may be used for irrigation	***Develop/update and implement a Spill Prevention Plan (SPP)*** ▪ Define the roles and responsibility of construction personnel; ▪ Store oil products and chemicals separately, in special drums / tanks laid on secondary containments or trays, ▪ Roof secondary containment areas to prevent rainwater from entering the secondary containment. ▪ Conduct refilling of oil, fuel and other chemicals within impervious bunding; Equip the facilities designated for oil and chemicals storage and heavy trucks transporting the same materials with the relevant spill-kits and procedures for remediation of spills.	ASWRA and ASWRA in Ganja
		Develop and implement a Sludge Management Strategy that includes inter alia: ▪ Meeting conditions for use of treated sludge for agricultural purposes, compliant with EU Directive 86/278/EEC on environmental protection, and soil especially, when sewage sludge is used in agriculture, including prohibition of use of treated sludge for growing fruit and vegetable crops that are in direct contact with the soil and are normally eaten raw (e.g., lettuce, carrots), and so forth. ▪ Implementation of a monitoring programme for treated effluent and sludge on agricultural land and green belts fertilised by sludge for pH, dissolved salts, heavy metals, and organic compounds, as well as regular chemical analyses of sludge before it is applied for agriculture purposes.	
		Assess the feasibility of using sludge as a fertilizer including the required sludge safety monitoring, if provided to the community. If not feasible, implement controls for the safe storage of unused sludge.	
		Cease the sale and use of untreated effluents for irrigation (by no later than summer, 2026).	
		After WWTP operations commence, ASWRA to control the quality of treated water and the safe use of the same for irrigation.	

Impact / Risk Category	Surface and Ground Water		
Project Phase	**Construction**		
Aspects/ Hazard	**Impact/risk**	**Mitigation**	**Responsibility**
▪ Spillages of hazardous materials especially oils, fuels and lubricants but also paints and solvents, waste cement, anticorrosion substances, and others; ▪ Discharge of water used for pipeline pressure testing	▪ Contamination of surface water, which may have effects on the aquatic habitat and biota; ▪ Contamination of groundwater, which may have effects on the public health	***Develop and implement Construction Hazardous Materials and Spill Prevention and Countermeasures Management Plan that includes inter alia:*** ▪ Ensure that all hazardous materials are correctly stored, transferred, transported and used following good international practise; ▪ Refuelling must be done in a manner that minimises the risk of spills such as cut-off switches, use of drip trays, overfilling protection and so forth; ▪ No manual syphoning or decanting of fuel products. Fuel products may only be transferred using a pump to transfer fuel from one container to another; ▪ If there is a spill, it must be immediately stopped and countermeasures implemented to clean up the spill quickly and effectively; ▪ All water courses are to be crossed using Horizontal Directional Drilling (HDD) only. No excavations of water course will be allowed on the project; ▪ Water used for pressure testing must not contain any residual chemicals that would render the water contaminated. If water used for pressure testing is contaminated it must be disposed in a system that can be used to treat the water before it is discharged to surface water; ▪ Identify materials that may not be used on the project including substances banned by the Montreal protocol and subsequent conventions, persistent organic pollutants and so forth and include in the environmental specification provided to contractors; ▪ Determine quality and characteristics of ground and surface water that will be affected by trench excavation or river crossings to provide a baseline against which future changes can be assessed; ▪ Determine water quality and flow targets appropriate to the sensitivity of the receiving water so that the effects of construction can be monitored, and corrective action implemented timeously; ▪ Treat all pumped groundwater to remove sediment either through a settling pond, or filtration; ▪ Manage surface drainage during construction to prevent scouring of backfill and topsoil and/or sedimentation of runoff water; and	Construction Contractor / ASWRA Ganja supervision

		▪ Maintain downstream continual water quality monitoring of those parameters that could be affected by construction activities, and implement immediate corrective action, including cessation of work if required should changes in water quality be detected.	
Project Phase	**Operations**		
Aspects/ Hazard	**Impact/risk**	**Mitigation**	**Responsibility**
▪ Treating of Ganja Wastewater on WWTP ▪ Sewage sludge. ▪ Leakage or spills of untreated sewage. ▪ Spillages of hazardous materials especially oils, fuels and lubricants but also paints and solvents, and others, during regular operation and maintenance	▪ Impact on Surface water: ○ Although there are no data on water quality, it can be assumed that the Goshgarchay River, which currently receives the untreated Ganja effluent, is highly polluted. ○ The WWTP will treat Ganja wastewater. And the discharge of the untreated effluents to Goshgarchay River will be stopped providing the major positive impact on surface water. ○ Additional positive impact will be provided by closing open effluents' channel. ▪ Impact on Groundwater: ○ The drinking-water wells of local community and their proximity to the project site imply high-sensitivity to water pollution. ○ If the sludge is not properly managed on site, and/or in case of accident on sludge storage site,	To enhance the positive impact of wastewater treatment: ▪ Develop and implement effective on-site management that includes inter alia: • Timely recruitment and thorough training of personnel (including regular EHS trainings); • Availability and strict adherence to all job descriptions, technical and process instructions; • No use of open effluent channel (even after treatment); • etc. ▪ Implement Water Monitoring Program that includes inter alia: • Effluent quality - concentrations of monitored pollutants in treated wastewater should be within the limits set for irrigation waters: • pH; suspended solids; BOD5; nitrites (NO2), nitrates (NO3); phosphates (PO4); oil products, Coli-index. ▪ Develop and implement a Sludge Management Strategy that includes inter alia: • Conditions for use of treated sludge for agricultural purposes, compliant with the EU Directive 86/278/EEC on environment, and in particular soil protection, when sewage sludge is used in agriculture, including prohibition of treated sludge use for growing fruit and vegetable crops that are in direct contact with the soil and normally eaten raw (e.g., lettuce, carrots), and so forth. • Implement a monitoring programme for treated effluent and sludge on agricultural land and green belts fertilised by sludge, for pH, dissolved salts, heavy metals, and organic compounds, as well as regular chemical analyses of sludge before it is applied for agriculture purposes. ▪ Develop/update and implement a Spill Prevention Plan (SPP)	ASWRA Ganja

	there is a risk of contamination of the wells in Ziyadly.		
Impact / Risk Category	***Air quality***		
Project Phase	**Construction**		
Aspects/ Hazard	**Impact/risk**	**Mitigation**	**Responsibility**
▪ Dust; ▪ Tailpipe emissions from vehicles and machinery (carbon dioxide, carbon monoxide, nitrogen oxides and aromatic hydrocarbons); ▪ Welding fumes; and ▪ Solvent fumes	▪ Changes in air quality ▪ Indirect impacts: ○ adverse human health effects, and ○ potentially adverse impacts on habitat	***Develop and implement a Construction Atmospheric Emissions Control and Management Plan to minimize negative ambient air quality effects:*** ▪ Maintain construction equipment and vehicles, ▪ Disallow vehicles and machinery idling. ▪ While transporting friable materials keep the body of heavy vehicles covered, ▪ Limit vehicle speeds on unpaved roads ▪ Restrict excavation, earthworks and other dust-generating activities during strong winds, ▪ Apply regular watering to on-site and off-site dirt roads, especially during the excavation and other earthworks, ▪ Minimize the period between excavation and backfilling, ▪ Store friable materials and temporary stockpiles of top-soil under waterproof canvas, ▪ Establish vegetation growth on topsoil stockpiles to limit wind-blown dust; ▪ Prohibit on site fires and burning, ▪ Avoid operating machinery and equipment during situations with worsened local air quality (such as smog and atmospheric temperature inversions). ▪ Ensure the use of Personal Protective Equipment (PPE) and in particular dust masks, and respirators where there is high risk of worker exposure. • In addition, once the detailed design of the WWTP has been completed, additional odour risk modelling must be conducted on that design. The results of the modelling must be presented to stakeholders.	Construction Contractor / ASWRA Ganja supervision
Project Phase	**Operations**		
Aspects/ Hazard	**Impact/risk**	**Mitigation**	**Responsibility**

▪ Atmospheric emissions from wastewater treatment process, namely from the aeration tanks, wastewater sedimentation tanks and wastewater treatment facilities and from deposits of generated sludge.	▪ Odour risk	***A properly designed and well-operated wastewater WWTP should not generate significant odour emissions***. This is generally achieved by using BAT in Project design and operations including: ▪ maintaining biological processes under aerobic conditions, preventing the formation of hydrogen sulfide and other malodorous compounds and ensuring stabilised sludge; ▪ covering and ventilating key treatment units; ▪ cleaning the extracted air using biofilters or scrubbers; and ▪ ensuring regular maintenance and ▪ establishing a 'green buffer' around the WWTP .	ASWRA Ganja with the support of ASWRA (headquarter)
Impact / Risk Category	***GHG Emissions***		
Project Phase	**Construction**		
Aspects/ Hazard	**Impact/risk**	**Mitigation**	**Responsibility**
▪ The use of construction machinery and heavy vehicles will result in direct CO2 emissions. The construction of the WWTP also requires substantial amounts of building materials, including concrete and steel, which have embodied GHG emissions in their production. Embedded emissions in construction materials are potentially significant no low-emission alternatives (e.g. green steel and concrete) are simply not available in the	GHG emissions are seen as negligible for construction.		Construction Contractor / ASWRA Headquarters supervision

Project context.			
Project Phase	Operations		
Aspects/ Hazard	**Impact/risk**	**Mitigation**	**Responsibility**
▪ Emissions associated with WWT process (Scope 1 emissions); ▪ Emissions associated with electricity consumed by the WWTP facility (Scope 2 emissions)	▪ Analysis indicates an annual net GHG savings (i.e. after accounting for the WWTP electricity consumption) of about 81,000 tonnes CO2e/year.	***The Project´s positive effect on GHG emissions could be further enhanced by:*** ▪ Installation of solar (photovoltaic) electricity generating; ▪ Sludge utilization. Further reductions of GHG emissions from the sludge are possible but not realised for the current project configuration.	ASWRA Headquarters
Impact / Risk Category	***Waste***		
Project Phase	**Construction**		
Aspects/ Hazard	**Impact/risk**	**Mitigation**	**Responsibility**
The main categories of construction waste are: ▪ Municipal solid waste; ▪ Spoil (excess excavated material); ▪ Vegetation waste; ▪ Packaging waste; ▪ Demolition waste (building rubble); ▪ Scrap metal; ▪ Waste concrete; ▪ Used welding rods; ▪ Hazardous waste in the form of spilled oils, lubricants and fuel and other hazardous materials	▪ Impacts are varied including risks of contamination of soil, surface and groundwater, air quality and odour, and by extension overall ambient environmental quality and public health. ▪ Waste may also present a fire risk. ▪ Impacts will occur on-site and in close vicinity but may also result from associated traffic and disposal of the wastes on municipal waste landfill	***Develop and implement a Waste Management Plan that includes inter alia:*** ▪ Predictions of construction wastes by categories with expected volumes and disposal methods ▪ Provisions for on-site or off-site waste storage locations, containers and conditions, ▪ Environmental, fire, health and safety rules for on-site waste storage facilities, ▪ Actions required for achieving the waste management hierarchy (prevention, minimization, reuse, recycling, energy recovery and disposal), ▪ Safe transportation of waste, ▪ Responses to accidents (leaks and or spills), ▪ Personnel requirements and responsibilities ▪ Maintaining waste inventory and disposal records. Before construction, identify the exact locations of waste storage facilities and designate areas for separate collection/storage of waste. The waste storage facilities should be fenced to prevent access by unauthorized persons.	Construction Contractor / ASWRA Ganja supervision

that may be required for coating and corrosion protection.		Workers engaged in waste management activities to be fully trained in the requirements of the Waste Management Plan.	
Project Phase	**Operations**		
Aspects/ Hazard	**Impact/risk**	**Mitigation**	**Responsibility**
Process waste includes: ▪ Sand removed from the wastewater intake; ▪ Bulk waste from the grids; ▪ Sludge The sludge constitutes the main waste stream of the Project.	▪ Impacts from waste include risks of soil, surface and groundwater contamination, air quality and odour, and by extension public health. ▪ Waste may also present a fire risk. ▪ The re-use of sludge poses similar risks. ▪ Potential impacts are exacerbated by the lack of clear strategy for the final disposal of the sludge	**Develop and implement Waste Management Programme (for operations) including inter alia:** ▪ Elaborate and implement waste management procedure for all relevant waste streams; ▪ Train personnel on safe handling of hazardous wastes, for WWTP operations; ▪ Equip the facility with the waste separate collection / storage containers and define locations; ▪ Update hazardous waste passports considering wastewater treatment operations and waste generation volumes ▪ Appoint specialized waste handling (removal, recycling and disposal) companies. Most waste streams, such as mixed household waste, garbage from cleaning of industrial facilities, bulk waste from the grids and sand removed from the wastewater intake can be removed from the site by communal services and disposed safely in the municipal landfill. Plastic waste and used LEDs must be removed by specialized companies for recycling and safe final disposal. The sludge volume will be reduced by dewatering and drying (wind rows) and then temporarily stored on-site. Subsequent disposal at the municipal landfill may also occur. For further minimization of potential risks and negative impacts (contamination, uptake of the landfill capacity) develop and implement a Sludge Management Strategy that includes inter alia: ▪ Maintaining a watching brief on the country-wide national sludge management plan for Azerbaijan that is being developed and implement practise defined in that plan. ▪ Prevent off-site migration of leachate sludge disposal areas through engineering and operational management controls. Engineering controls include lining systems, leachate collection and removal and if required,	ASWRA Ganja

		final cover/capping. Operational management controls include stormwater diversion to prevent contact with dried sludge, limiting liquid waste or high-moisture content material, application of operational covers such as daily soil covers or temporary geomembranes, and monitoring to ensure efficacy of leachate management. ▪ Conditions for use of treated sludge for agricultural purposes, compliant with EU Directive 86/278/EEC on environment, and in particular soil protection, should sewage sludge be used in agriculture, including prohibition of use of treated sludge for growing fruit and vegetable crops that are in direct contact with the soil and are normally eaten raw (e.g., lettuce, carrots), and so forth. ▪ A monitoring programme for treated effluent and sludge to monitor soil in agricultural areas and green belts fertilised by sludge, for pH, dissolved salts, heavy metals, and organic compounds, as well as regular chemical analyses of sludge before agricultural application. ▪ Should agricultural use not be feasible due to treated effluent quality not complying with the EU directive, ASWRA to identify sources of contaminants and enforce improved effluent quality from such sources to facilitate agricultural use. ▪ If forced to dispose sludge at landfill and only as a last resort, ensure that sludge is acceptable for landfill disposal and, if acceptable set a time-bound programme for phasing out landfill disposal in the shortest possible period of time, so as not to materially reduce the landfill lifespan. Reusing sludge in agriculture is feasible if a long-term, preferably national, management strategy addresses issues such as reducing heavy metals and contaminants in wastewater, enforcing standards, and raising awareness among farmers. Sludge can also be considered for land restoration or forestry. Any land application must include contaminant monitoring and ensure soil, surface, and groundwater quality are protected while meeting plant nutrient needs.	
Impact / Risk Category	***Noise and Vibration***		
Project Phase	**Construction**		
Aspects/ Hazard	**Impact/risk**	**Mitigation**	**Responsibility**
▪ Machinery Noise ▪ Mechanical vibration	▪ Nuisance ▪ Vibration damage to buildings	***Develop and implement a Construction Noise Management Plan that includes inter alia:***	Construction Contractor /

		▪ Noise prevention must be applied where predicted or measured noise impacts from the construction area could exceed the applicable noise level guideline at the most sensitive receptor; ▪ Noise control must be applied at source; ▪ Noise reduction options include: • Limiting the hours of construction activities including the transport to the workdays only and during daytime i.e. from 7.00am to 6.00pm; and • Use speed limiting to control noise from vehicles; ▪ Implementing a complaints mechanism and responding to complaints. ▪ Ensure routine preventative maintenance of vehicles and machinery to reduce noise; ▪ Conduct routine inspections on vehicles and machinery so that excess noise can be corrected timeously. ▪ Install mobile noise protective screens during construction works if required; ▪ Avoid simultaneous use of high noise-generating equipment; ▪ Inform likely affected residents (Ziyadli village) about planned construction activities and duration, well in advance. ▪ No additional mitigation for vibration.	ASWRA Ganja supervision
Project Phase	Operations		
Aspects/ Hazard	**Impact/risk**	**Mitigation**	**Responsibility**
▪ WWTP technological process, including sand-filters, pre-thickeners, sludge dewatering, and blower units	▪ Noise exposure / noise disturbance for nearby households	**Develop and implement Noise Monitoring Plan (as a part of Environmental Monitoring Program)** Ensure pumps and other electrical equipment at the WWTP are mechanically sound. Should any such equipment start generating anomalous noise, the equipment must be immediately serviced and mended.	ASWRA Ganja
Impact / Risk Category	***Biodiversity***		
Project Phase	**Construction**		
Aspects/ Hazard	**Impact/risk**	**Mitigation**	**Responsibility**
▪ Physical destruction of habitats; ▪ Noise; ▪ Vibration;	• Destruction of habitats and associated potential loss of species • Disturbance of animals	***Develop a Biodiversity Management Plan (BMP) that includes the following mitigation and/or /management measures:*** ▪ Priority plant species:	Construction Contractor / ASWRA headquarters

▪ Air pollution; ▪ Light.	• Photosynthesis disturbance due to dust on plant leaves and needles; inhalation of exhaust gases by animals. • Attraction of insects, disorientation of migrating birds and butterflies, increased risk of predation of nocturnal animals.	▪ Protect Broad-leaved Cotton grass (Eriophorum latifolium Hoppe) located at the eastern boundary of the WWTP plot by fencing; ▪ Preserve the tree alley, rows, hedges and groves located on the eastern boundary of the WWTP with fencing. This will protect, among other tree species, the Oriental plane-tree (Platanus orientalis L.). Trees and hedges on arable lands and fields are good habitats for different animal species; ▪ Before construction conduct a detailed floristic survey of the construction area including the final design of the electricity supply infrastructure, with particular attention to endemic, relict, and threatened species; if such species are found, collect seeds and store them in suitable conditions, and then plant them in green areas at the Project site or adjoining areas. Translocation of species must be conducted wherever possible, e.g. Rhizomatous species can be replanted to other areas as an interim measure and later reintroduced to the original site. ▪ Priority animal species: ▪ Prior to Construction, create alternative habitat for fauna occurring in the derelict buildings. ▪ Such alternative habitat could be created by accumulating large rocks supplemented by demolition rubble (ensuring that the demolition rubble was kept as large pieces). The importance of the large pieces is in creating nooks and crannies and burrows and hiding place for the reptiles. The larger pieces also create basking space where the reptiles can be exposed to sunlight. The alternative habitats must adjoin/connect to fields with grass or fallow lands with weedy vegetation. ▪ Before starting demolition of the derelict buildings, a 'search and rescue' operation must be conducted to find and capture all (or at least most) of the reptiles in the derelict buildings, especially the European glass lizard, Pseudopus (Ophisaurus) apodus, Caucasus Emerald Lizard, Lacerta strigata, and Red-bellied racer, Dolichophis schmidti). ▪ This operation must include a snake specialist because of the potential presence of the highly venomous Levantine viper, Macrovipera lebetina. If Levantine viper specimens are found, they must be caught and relocated to suitable habitats outside the Project site and settlements (preferably, to the Mingecaur-Turyanchay Emerald site territory); ▪ Reptiles captured in the search and rescue could then be released into the alternative/replacement habitat as soon as possible after capture. The entire process would need to be supervised by a species expert to ensure the safe capture, temporary holding and then release.	and Ganja supervision

		▪ Survey the WWTP site in warm months (April-October) prior to construction to confirm no Greek (Mediterranean) tortoise (Testudo craeca) specimens or burrows. If found near the construction site, specimens must be captured and relocated to suitable habitats; ▪ Avoid using the existing drainage channel for the treated effluent pipeline corridor and rather run the pipeline corridor several meters away to avoid direct physical impacts on the channels. If there is no other option but for the pipeline corridor to follow the existing drainage channel, the trench must be excavated during Autumn (but no later than mid-November so as to avoid hibernating animals) so as not to disturb eggs and offspring of Dice snakes (*Natrix tesselata*), Grass snakes (*Natrix natrix*) and amphibians inhabiting the drainage channel; ▪ Survey the areas around the WWTP construction site from February to September to confirm absence of species and relocate as required should specimens be observed; ▪ Develop a Code of Conduct for workers that should as a minimum: ▪ Prohibit poaching in general but specifically Priority species (Black Francolin and Gray Partridge) along roads close to the WWTP site, ▪ Monitor compliance with the Worker Code of Conduct and implement compliance and enforcement action as needed. **Aquatic species**: ▪ Conduct an aquatic survey at the proposed treated effluent discharge point including invertebrates, identify potentially sensitive species and define and implement management actions for such sensitive species.	
Project Phase	**Operations**		
Aspects/ Hazard	**Impact/risk**	**Mitigation**	**Responsibility**
▪ Treated wastewater discharge ▪ Cleaning area for sludge storage	• Change in water quality in the river and in species composition and ratio • Destruction of habitats and potential loss of species ▪ Contamination of soil, surface and groundwater	***Develop a Biodiversity Management Plan (BMP)*:** Plant species: ▪ Protect two Eldar pines (Pinus eldarica) currently located in the sludge storage area ▪ If the trees cannot be protected they must be replaced elsewhere, ▪ Protect the Eldar pine (Pinus eldarica) located further south-west from the WWTP site (on arable land). Animal species:	ASWRA headquarter / ASWRA Ganja

		▪ Prior to construction, conduct a search and rescue operation across the footprint of the sludge storage area to identify, capture and relocate fauna (and flora previously not identified); ▪ Develop rules of conduct for encountering rare, endangered or dangerous animals and regularly train the WWTP staff on the application of the rules. Should priority animal species such as the tortoise access the site regularly, then a suitable barrier could be established later, using adaptative management principles. Note Sludge Management Strategy required under Waste, which includes prevention of off-site discharge of leachate from the sludge disposal area. **Aquatic species**: Monitor presence of aquatic species and changes during operations.	
Impact / Risk Category	***Landscape and Visual Amenity***		
Project Phase	**Construction**		
Aspects/ Hazard	**Impact/risk**	**Mitigation**	**Responsibility**
▪ Physical transformation of the landscape	▪ Visual impacts	There is no mitigation that would effectively reduce the visual impacts during construction.	No action required
Project Phase	**Operations**		
Aspects/ Hazard	**Impact/risk**	**Mitigation**	**Responsibility**
▪ Visual perceptions	▪ Visual impacts	▪ Temporary land use areas should be restored to their original condition construction completion. This includes the areas temporarily affected by the construction of the discharge channel and the WWTP; ▪ This may also involve rehabilitation of temporarily disturbed areas (e.g., construction material storage areas) immediately following construction completion including restoration of fertile soil and vegetation; ▪ Plant a green buffer belt 15m to 20m around the WWTP.	ASWRA Ganja
Impact / Risk Category	***Local Economy and Incomes***		
Project Phase	**Construction**		
Aspects/ Hazard	**Impact/risk**	**Mitigation**	**Responsibility**

▪ Contracting businesses including local small and medium enterprises to provide necessary goods and services	▪ Raise income and contribute to an increased welfare of people; ▪ Increased demand for some local goods and services provided by existing local businesses; ▪ The assumed further knock-on effects include increased incomes of local Project's suppliers and sub-contractors.	***Oblige the Construction Contractor to develop (during the design development) and implement (during the construction phase) a Procurement Plan*** in line with the national legislation and EBRD PR1/PR2; such Plan will aim at maximizing local procurement subject to service/product requirements.	Construction Contractor / ASWRA Ganja supervision
Project Phase	**Operations**		
Aspects/ Hazard	**Impact/risk**	**Mitigation**	**Responsibility**
▪ Provision of treated effluent for irrigation purposes; ▪ No access to untreated wastewater; ▪ Supply of raw and construction materials for pipeline maintenance works / small-scale procurement; ▪ Payment of taxes and social payments.	The quality of local agriculture production will be improved: only clean water will be used for irrigation.	***Develop the WWTP design documentation in accordance with the legislation of Azerbaijan, EBRD PRs, and GIIP and have it approved by the authorized bodies;*** ▪ Construct and operate the WWTP in accordance with the Project documentation, including the ESAP and ESMP; ▪ Conduct a survey of soil pollution in the Project area, jointly with competent authority; Ensure public access to the survey results and maintain an ongoing monitoring of pollution of agricultural soils in the WWTP area in accordance with the ESMP.	ASWRA Ganja
Impact / Risk Category	***Local Employment and Labour Market***		
Project Phase	**Construction**		
Aspects/ Hazard	**Impact/risk**	**Mitigation**	**Responsibility**
▪ Involvement of workforce into the construction of the	▪ Increasing employment; ▪ Strengthening of the labour	***The following measures are proposed to enhance positive Project impacts:***	Construction Contractor /

WWTP (direct and indirect)	market; ▪ Indirect employment opportunities in ancillary sectors, including supply chains, vehicle maintenance, transport services and others.	▪ Develop (prior to construction) and implement a Recruitment Policy compliant with national legislation, EBRD PR1/PR2 and ASWRA's Human Resource Policy; ▪ Oblige the Construction Contractor to develop a Recruitment Procedure, approve it at least a month before construction commences, and implement. The Recruitment Procedure will inter alia: • Specify the qualifications and skill levels for construction staff; • Prioritise employment of locals, subject to their qualification; • Include training for the potential local workforce; • Require that construction workers be provided with an employment reference/ confirmation letter and skills/training log, to enhance their subsequent employment prospects; • Provide timely information on available employment opportunities and required qualifications during the construction phase.	ASWRA Ganja supervision
Project Phase	**Operations**		
Aspects/ Hazard	**Impact/risk**	**Mitigation**	**Responsibility**
▪ Creation of long-term job places (21 permanent personnel, as per the FS).	▪ Increased employment and strengthened labour market.		ASWRA Ganja / ASWRA Headquarters supervision
Impact / Risk Category	***Infrastructure and Public Services***		
Project Phase	Construction		
Aspects/ Hazard	**Impact/risk**	**Mitigation**	**Responsibility**
▪ Increased heavy vehicle traffic on main roads and village roads. ▪ Temporary rise in electricity demand for construction equipment at the WWTP site. ▪ Potential interference with underground	▪ Road surface degradation, dust pollution, congestion, and temporary disruption to public and school bus services; ▪ Short-term electricity supply disruptions may occur due to transformer overload or accidental damage to power lines, which affects households and the operation of water supply	***Develop and implement a Traffic Management Plan that includes speed limits, alternative routes, scheduling to avoid peak community hours, and provision of information to residents regarding construction traffic movement at least two weeks before construction commences.*** ▪ Conduct utility surveys during the detailed design stage to identify and avoid the locations of electricity, gas, and water infrastructure at the WWTP site and effluent pipeline route and access roads. Ensure continuity of services during Project construction and operations. ▪ Monitor water quality at artesian wells to minimize disruptions to water supply system. Provide alternative water delivery option (e.g., water trucks) in case of contamination. ▪ Provide on-site waste collection and ensure disposal at approved landfill.	Construction Contractor / ASWRA Ganja supervision

infrastructure (gas infrastructure, water supply, and others utilities); ▪ Risk of disturbance or contamination of artesian wells and irrigation canal. ▪ Additional solid waste generation from construction workforce.	pumps; ▪ Temporary gas supply interruptions or leaks may occur if gas lines are accidentally damaged; ▪ Potential contamination or disruption of village water supply systems due to earthworks; ▪ Additional solid waste from up to 100 workers, creating short-term pressure on local waste collection and landfill capacity.	▪ Following construction, rehabilitate public roads used to pre-project or better condition.	
Project Phase	**Operations**		
Aspects/ Hazard	**Impact/risk**	**Mitigation**	**Responsibility**
▪ Traffic associated with the operation of WWTP. ▪ Higher electricity demand requiring a stable supply to avoid system overload or interruption. ▪ Risk of contamination of artesian water wells if treatment processes fail or overflows occur. ▪ Additional solid waste generation from permanent WWTP staff	▪ Dust pollution, congestion, particular on village roads. ▪ Higher power requirements could cause short-term disruptions from transformer overloads or accidental damage to power lines, impacting households and irrigation pump operations. ▪ System failures or overflows at the WWTP could result in untreated or partially treated wastewater entering local water sources, including artesian wells. This could contaminate the water in these areas, posing health risks to households and affecting agricultural irrigation that depends on	▪ Assess electricity infrastructure capacity during design stage to ensure sufficient supply and prevent overloading. ▪ Monitor water quality at artesian wells and irrigation channels. ▪ Develop and implement an Emergency Response Plan for operational failures (e.g., overflow, system breakdowns)	

	these wells.		
Impact / Risk Category	***Occupational Health and Safety of Employees***		
Project Phase	**Construction**		
Aspects/ Hazard	**Impact/risk**	**Mitigation**	**Responsibility**
▪ Vehicle and machinery movements. ▪ Deep excavations. ▪ Working at heights. ▪ Dust and vehicle fume exposure. ▪ Noise. ▪ Severe weather (hot or cold). ▪ Exposure to arc welding. ▪ Suspended loads and, ▪ Live circuits.	▪ Injuries and disease manifestations would include: ▪ Falls, Slips, and Trips - Working on scaffolding, ladders, or roofs and uneven surfaces, debris, or lack of traction, leading to falls on the same level. ▪ Struck-By Hazards - Workers can be struck by moving vehicles, heavy equipment, or falling objects from above. ▪ Caught-In/Between Incidents - Being caught, crushed, or compressed between moving machinery, objects, or collapsing structures. ▪ Electrical Hazards - Contact with exposed or faulty wiring, equipment, and improper electrical practices can lead to electrocution, burns, and fires. ▪ Hazardous Materials Exposure - Inhaling dust, solvent fumes, or vehicle, plant and machinery emissions can cause respiratory problems, long-term illnesses like lung disease, and cancer.	***Develop and implement a Construction Occupational Health and Safety (OHS) Management Plan that includes inter alia:*** ▪ An OHS risk assessment for all construction activities to identify potential hazards. Mitigation must be planned for each hazard based on the mitigation hierarchy where eliminating the hazard is the priority and the use of Personal Protective Equipment (PPE) should only be seen as a last resort. ▪ The Contractor must be obliged to comply with local OHS legislation and EU Directives on OHS and use of personal protection equipment (89/654/EEC, 89/656/EEC, 89/686/EEC and 2009/104/EC). ▪ Assessing the health and capability of workers to perform tasks – e.g. ensuring that workers scared of heights are not assigned to working at height. ▪ Preparation of emergency response plans (see below) specifically applicable to construction hazards and including the provision and maintenance of necessary emergency response and rescue equipment. ▪ Enough first aid trained employees to respond to emergencies. ▪ Implementation of specific personnel training on worksite health and safety management including a communication program with a clear message about management commitment to OHS. The communication program should also include regular meetings such as daily "toolbox" talks prior to initiation of work shifts. ▪ Integration of behavioural considerations into health and safety management, including on- the-job behavioural observation processes. ▪ Adequate illumination for safe working conditions. ▪ Signage in hazardous areas, installations, materials, safety measures, emergency exits, and other such areas should comply with international standards ▪ To the extent that alternatives cannot eliminate or sufficiently reduce a hazard or exposure, workers and visitors must be provided with necessary personal protective equipment (PPE), instruction and monitoring in the appropriate maintenance and use. Applicable PPE	

	Exposure to paints, adhesives, and other chemicals can lead to skin irritation, respiratory issues, and poisoning. ▪ Noise and Vibration - Prolonged exposure to noise can result in permanent hearing loss. while continuous use of power tools and vibrating equipment can damage nerves and blood vessels known as and-arm vibration syndrome (HAVS). ▪ Heavy Machinery and Equipment - Accidents involving cranes, forklifts, and other heavy equipment can cause serious injuries or fatalities ▪ Collapses - Unstable trenches, excavations, or building structures can collapse on workers causing severe injury or death. ▪ Other Risks - Injuries can occur from lifting heavy materials, either manually or with machinery. Repetitive motion or awkward postures can lead to musculoskeletal injuries (ergonomics). Extreme temperatures can cause heat-related illnesses or cold exposure. Psychosocial hazards include stress and other mental	includes, at a minimum, safety helmets and footwear, in addition to ear, eye, and hand protection. ▪ Control activities by having a permit to work system for performance of hazardous tasks. ▪ Regular inspection and maintenance of working area and equipment. ▪ Ensure adequate availability and maintenance of first aid kits, fire extinguishers, and PPE throughout the construction area. ▪ Good housekeeping always across the construction area. ▪ Access control to construction areas. ▪ Prescribing maximum speeds in and around the construction site, assign dedicated parking areas for employee vehicles, and implement reverse parking only. ▪ Prevent workers from entering excavations unless necessary and where it is necessary, ensure that excavation sides are shored appropriately to prevent collapse. ▪ Ensuring equipment is maintained to manufacturers' standards and noise baffles fitted. ▪ Reducing exposure times for people working near noisy machinery. ▪ Providing workers with appropriate hearing protection. ▪ Implement a drugs and alcohol policy. ▪ Provide preventive treatment to site workers and families, e.g., immunisation. health monitoring. ▪ Promote healthy lifestyles amongst the workers including topics such as limiting alcohol consumption, giving up smoking, healthy eating and safe sex. The list of mitigation measures is not necessarily exhaustive and must be implemented in respect of project specific circumstances and in the spirit of continual improvement.	

	health challenges.		
Project Phase	**Operations**		
Aspects/ Hazard	**Impact/risk**	**Mitigation**	**Responsibility**
▪ Vehicle and machinery movements. ▪ Working at heights. ▪ Severe weather (hot or cold). ▪ Dangerous animals. ▪ Live circuits. ▪ Confined spaces. ▪ Asphyxiation risk. ▪ Dangerous (potentially odourless) gases, and ▪ Fire and explosion.	▪ Injuries of different severity, including severe injury, permanent disability, fatality and adverse human health effects.	***Develop and implement an Operations Occupational Health and Safety (OHS) Management Plan that includes inter alia:*** ▪ An OHS risk assessment for all activities to identify potential hazards. Mitigation must be planned for each hazard based on the mitigation hierarchy where eliminating the hazard is the priority and the use of Personal Protective Equipment (PPE) should only be seen as a last resort. ▪ Compliance with local OHS legislation and EU Directives on OHS and use of personal protection equipment (89/654/EEC, 89/656/EEC, 89/686/EEC and 2009/104/EC). ▪ The health and capability of workers to perform tasks – e.g. ensuring that workers scared of heights are not assigned to working at height – must be determined and applied in a fit for purpose manner. ▪ Promotion and monitoring of safe driving amongst employees. ▪ Preparation of emergency response plans specifically applicable to operational hazards and including the provision and maintenance of necessary emergency response and rescue equipment. ▪ Enough first aid trained employees to respond to emergencies. ▪ Implementation of specific personnel training on worksite health and safety management including a communication program with a clear message about management commitment to OHS. The communication program should also include regular meetings such as daily "toolbox" talks prior to initiation of work shifts. ▪ Integration of behavioural considerations into health and safety management, including on- the-job behavioural observation processes. ▪ Adequate illumination for safe working conditions. ▪ Signage in hazardous areas, installations, materials, safety measures, emergency exits, and other such areas in accordance with international standards ▪ To the extent that alternatives cannot eliminate or sufficiently reduce a hazard or exposure, workers and visitors must be provided with the	ASWRA Ganja / ASWRA Headquarters supervision

		necessary personal protective equipment (PPE), instruction and monitoring in the appropriate maintenance and use. Applicable PPE include, at a minimum, safety helmets and footwear, in addition to ear, eye, and hand protection. ▪ Control activities by having a permit to work system for performance of hazardous tasks. ▪ Regular inspection and maintenance of working area and equipment. ▪ Ensure adequate availability and maintenance of first aid kits, fire extinguishers, and PPE throughout the construction area. ▪ Good housekeeping always across the WWTP. ▪ Access control. ▪ Ensuring equipment is maintained to manufacturers' standards and that noise baffles are fitted. ▪ Reducing exposure times for people working near noisy machinery. ▪ Providing workers with appropriate hearing protection. ▪ Implement a drugs and alcohol policy. ▪ Provide preventive treatment to site workers and families, e.g., immunisation. health monitoring. ▪ Promote healthy lifestyles amongst the workers including topics such as limiting alcohol consumption, giving up smoking, healthy eating and safe sex.	
Impact / Risk Category	***Community Health and Safety***		
Project Phase	Construction		
Aspects/ Hazard	**Impact/risk**	**Mitigation**	**Responsibility**
▪ Tailpipe emissions (carbon dioxide, carbon monoxide, nitrogen oxides and aromatic hydrocarbons) from machinery and vehicles; ▪ Welding fumes; ▪ Solvent fumes; ▪ Noise and vibration from the movement and operation of	▪ Risk of traffic accidents due to movement of construction vehicles; ▪ Risk of accidents due to open pits or trenches (especially for children), ▪ Possible nuisance related to noise pollution and vibration, light pollution, air / dust emissions ▪ Possible influx of job seekers/construction	▪ Continue implementing the SEP, including • Road safety lessons in local schools; • Prior to construction inform the local community about the construction schedule, the company and responsible persons, contact information and safety measures; set up notice boards with suitable information on the construction process. ▪ Prohibit night-time construction activities and vehicle traffic; ▪ Fence the construction sites [the best solution would be to install the permanent (operations) fence for the WWTP prior to construction]; ▪ Develop and implement a Construction Traffic Management Plan (see details in Section 6.12). The Plan should detail the selection and use of roads in a manner that minimises community safety risks. The Plan should be agreed with the municipal and/or national safety services and local authorities;	Construction contractor / ASWRA Ganja supervision

construction machinery and vehicles within the WWTP sites and pipeline construction corridor including construction sites for Project roads; ▪ Noise, vibration and artificial lightning from Project's construction vehicles travelling along the access roads to the construction corridor and WWTP sites; ▪ Increased road traffic accident hazard at the access roads and local roads due to intensive traffic of heavy vehicles; and ▪ Potential influx of construction workers.	workers.	▪ Implement an Emergency Response Plan for the construction phase; and ▪ Oblige the Construction Contractor to: • Maximize local employment in the workforce subject to qualification requirements; • Implement a worker Code of Conduct that sets clear expectations for worker interaction and behaviour with the local residents; • Conduct health awareness training for workers including sexually transmitted diseases and HIV/AIDS at induction and then periodically throughout the project; and • Monitor workers health including sub-contractors.	
Project Phase	**Operations**		
Aspects/ Hazard	**Impact/risk**	**Mitigation**	**Responsibility**
Regular WWTP operation / wastewater treatment	▪ A multifaceted long-term positive impact on the well-being of the population is expected, including: ▪ Improved sanitation will enhance the quality of life of the local population; ▪ Health risks to the population will be reduced	**To enhance the positive impact the following is recommended:** ▪ Strictly implement EHS requirements during operations, provide suitable training / instructions to WWTP personnel to ensure the reliability and sustainability of WWTP operations; ▪ Continue implementing the SEP (updated for operations) focusing on building communication with the community (including grievances), and strengthening trust and cooperation.	ASWRA Ganga / ASWRA Headquarters supervision

	including the number of cases of infectious diseases among children and adults; ▪ Discomfort associated with the odour will not be an issue any more.		
Impact / Risk Category	***Local Land Use and Livelihoods***		
Project Phase	**Construction**		
Aspects/ Hazard	**Impact/risk**	**Mitigation**	**Responsibility**
▪ Allocation of land for the construction of the effluent discharge pipeline (and potentially access roads). ▪ The existing diversity of land use needs to be reorganized to bring it in compliance with national legislation and EBRD PRs. Informal use of ASWRA assets and grazing livestock at the WWTP site is obviously not acceptable and must be ceased.	▪ As the construction of the WWTP will be carried out within the existing Client-owned land plots, additional land will be required only for the Effluent Channel (i.e., a corridor of the effluent line itself and a 20 m buffer / safety corridor) and possibly access roads. ▪ The Project-related land acquisition is not expected to trigger physical displacement. ▪ Economic displacement impacts are expected due to land acquisition and restricted access to ASWRA's land.	▪ Consult local farmers and authorities about the availability of alternative community pastures and ensure access to such pastures for affected farmers; ▪ Route the effluent pipeline to avoid or minimise the impact on private land; ▪ Prepare a Resettlement Framework to outline the potential impacts of land acquisition and land use restrictions due to the Project. ▪ If the resettlement impacts are confirmed as unavoidable, prepare and implement a Resettlement Plan (including relevant livelihood restoration).	
Project Phase	**Operations**		
Aspects/ Hazard	**Impact/risk**	**Mitigation**	**Responsibility**

▪ Established of the WWTP SPZ: ▪ Enforcement of the related land use restrictions (no food crops).	▪ Take all possible action to reduce the size of the SPZ for the Ganja WWTP, ideally so that it matches the boundaries of the land plots owned by ASWRA ▪ Currently, the possibility of establishing the SPZ within the client-owned land plots is not verifiable and will need to be confirmed at the detailed design stage. ▪ Particular attention is to be paid to the area between two ASWRA land plots (assets). This area may be affected by WWTP operations from both sides and thus can be exposed to increased emissions, including odour impacts. This area is currently used by local farmers for crop cultivation. The land is irrigated with underground water from boreholes (one of which is located within this area) and is farmed using hired labour. As per the 2024 FS, ASWRA considered acquiring this land, however ASWRA did not plan to do this at the time of this writing. ▪ There is also a risk that if residential houses fall within the SPZ, they will need to be relocated.	▪ Include in the detailed design measures to reduce air emissions from the WWTP facilities, to reduce the SPZ; ▪ Site the facilities to ensure that primary sources of emissions are as far as possible from residential areas and arable lands, at a distance at least equal to the normative SPZ (500m). ▪ Develop an SPZ Design Document and have it approved, in consultation with environmental and sanitary-epidemiological authorities. ▪ Include risks of economic and physical displacement in implementing the SPZ's regime into the Resettlement Framework. ▪ If the resettlement impacts are confirmed during detailed design as unavoidable, prepare and implement a Resettlement Plan (including relevant livelihood restoration). ▪ During the preparation of the RP conduct and document consultation with all displacement - affected persons, including vulnerable households (if any).	
Impact / Risk Category	***Gender Inequality and Vulnerable Groups***		

Project Phase	Construction		
Aspects/ Hazard	**Impact/risk**	**Mitigation**	**Responsibility**
▪ Engagement of a predominantly male construction workforce. ▪ Increased traffic and related road safety risks affecting children and the elderly. ▪ Temporary disruptions to public transportation services affect women and vulnerable groups who depend on them for access to education, healthcare, and markets.	▪ Construction work is typically male-dominated, which may limit direct employment opportunities for women. However, women may indirectly benefit from the increased demand for local services and small-scale trade. ▪ Increased heavy vehicle traffic on local and village roads poses higher safety risks for pedestrians, especially schoolchildren and the elderly. ▪ •Restricted mobility for vulnerable groups (e.g., children, elderly, people with disabilities and women) due to traffic congestion and public transportation disruptions.	***The following mitigation measures are recommended for implementation during construction:*** ▪ Conduct community awareness and engagement sessions to inform residents about construction schedules, traffic plans, and available support. ▪ Coordinate with local authorities to ensure continued access to public transport, particularly school buses and services relied on by women and the elderly. ▪ Prioritize local hiring where possible, including opportunities for women in non-heavy labour roles.	
Project Phase	**Operations**		
Aspects/ Hazard	**Impact/risk**	**Mitigation**	**Responsibility**
▪ Creation of permanent employment opportunities during operation at the WWTP, traditionally dominated by men. ▪ Improved wastewater management and	▪ Risk of gender inequality in employment. ▪ Improved wastewater management will positively affect the environment and agriculture by reducing soil contamination, increase the availability of water for safe irrigation, and enhancing crop quality and	▪ Adopt gender-sensitive recruitment practices, with targets for women employment. ▪ Provide vocational and on-the-job training for women to enable their employment in laboratory operations, monitoring, administrative functions, and maintenance. ▪ Enforce equal pay for equal work across all project-related employment. ▪ Implement and monitor an Operational Worker Code of Conduct to prevent gender-based violence, harassment, and discrimination. Support this code with awareness-raising and training initiatives.	

sanitation. ▪ Increased availability of treated water for irrigation.	marketability. This, in turn, strengthens the local economy, supports livelihoods, and may expand employment in agriculture and related sectors such as food processing and trade. ▪ Operation of the WWTP is also expected to improve public health by reducing pollution. These benefits will particularly benefit vulnerable groups, including women (as primary caregivers), children, pensioners, and low-income households. Improved sanitation is expected to reduce healthcare costs and the time women spend managing family health issues. ▪ The availability of treated wastewater for irrigation is a beneficial outcome of WWTP construction, although it may also pose certain challenges. The question of equitable distribution of treated waters was raised during scoping consultations. Households already facing financial difficulties (particularly female-headed households, IDPs, and pensioners) may be disproportionately affected if tariffs increase.	▪ Collaborate with local authorities to implement affordability mechanisms for treated wastewater tariffs, including subsidies, and ensure equitable distribution to guarantee vulnerable households have equal access to treated water from the WWTP.	

Impact / Risk Category	***Cultural heritage***		
Project Phase	**Construction**		
Aspects/ Hazard	**Impact/risk**	**Mitigation**	**Responsibility**
▪ Earthworks	▪ No cultural heritage has been identified in the Project area. So, no negative impact is expected. ▪ During excavations potential loss or damage may occur to chance finds and/or undiscovered underground heritage assets.	▪ Reduce the size of the construction corridor as much as possible; ▪ Limit vehicle movements and machinery activities to the cleared area within the construction corridor, and minimise the scale of earth works; ▪ Prior to construction works, develop a Chance Finds Procedure for the Project and train the Construction Contractor and its relevant workers in applying this Procedure.	
Project Phase	**Operations**		
Aspects/ Hazard	**Impact/risk**	**Mitigation**	**Responsibility**
	▪ No impacts are expected if the maintenance activities take place within the 10 m buffer strips both sides of the effluent discharge line, within the WWTP sites or the earlier disturbed construction areas.		

5 CHECKING AND CORRECTIVE ACTIONS

5.1 E&S Monitoring Requirements

No reliable representative baseline data on air quality, water and soil pollution exists for the WWTP. Such data will be needed to assess the performance of the Project. It is recommended to establish environmental monitoring during construction (1-year program, in 2026-2027) to establish a baseline for the WWTP. The minimal monitoring requirements are summarized in the **Table 2**.

Table 2. Summary of E&S monitoring Requirements

#	Parameter	Location	Frequency
1	Ambient air quality Daily average pollutant concentrations: • Total particulate matter; • Sulphur oxide; • Nitrogen oxides; • Carbon oxide; • Hydrogen sulphide; • Mercaptans; • Ammonia	• Ziyadly/boundary of WWTP site • Istikhana/bank of the open channel	Quarterly
2	Water quality Actual concentrations of monitored pollutants in treated wastewater should be within the limits set for irrigation waters: pH; suspended solids; BOD5; nitrites (NO_2), nitrates (NO_3); phosphates (PO_4); oil products, Coli-index. Accounting for accidental discharge of industrial effluents into the city sewer system, heavy metals are to be included.	• Collector (point 1) • Istikhana/ open channel • 200 m below discharge point	Quarterly
3	Topsoil BOD5; nitrites (NO_2); nitrates (NO_3); phosphates (PO_4); oil products; Coli-index, heavy metals.	Agricultural lands between two WWTP sites and nearby	3-5 samples

5.2 Data Quality

Project monitoring programmes must apply approved methods for quantitative and qualitative data collection. Monitoring should be conducted by or under the supervision of trained E&S specialists and analysis should be conducted by entities permitted or certified for these purposes. All data are to be tabulated and stored electronically for a minimum period of five years. Involvement of the state laboratories (Sanitary Epidemiological Service and/or Environmental Committee is encouraged).

5.3 Inspections

Regular and systematic visual inspection provides an important source of information on E&S management performance. Most notably inspection serves to assess activities and the degree

to which these reflect the project's E&S management requirements. At the same time, some potential impacts are difficult to monitor quantitatively, such as soil erosion and waste management. For this reason, inspections are a key component of checking and corrective action and indeed of the ESMP. Inspections will be scheduled in such a way that all activities across the project are inspected consistently and regularly but should happen at least every fortnight across the working front, and possibly more frequently where specific non-compliances are identified.

6 AUDITS

Audits are systemised and formalised methods of assessing the degree to which the requirements of the ESMP have been implemented. Audits are thus used to ensure that procedures, monitoring, reporting and other management functions are operating as they are intended to as components of the overall management philosophy. Audits must be scheduled regularly to ensure that the components of the ESMP that allow it to work as a system, are being regularly checked for effectiveness. Audits must be conducted at least once every three months.

6.1 Implementation

As part of the overall checking and corrective action regime it is important to maintain an index of the implementation of required management actions. In order to do so it is necessary to track the various activities that must be implemented as well as their implementation status. The implementation status can be derived from audits and inspections and the submission of progress reports that detail the specific implementation status of given actions.

6.2 Corrective Action

6.2.1 Identifying corrective actions

The management component of the ESMP derives from evaluating all the information that becomes available on a weekly/monthly/quarterly and annual basis. It is important to note that ESMP is based on two types of indicators, namely leading and lagging indicators. Leading indicators are proactive and serve to highlight whether the project has adequate mechanisms in place to address key social and environmental risks as identified in the ESIA. Lagging indicators provide information on historical incidents and allow the project to appraise the efficacy of the corrective actions implemented and the performance of the management system (typically assessing performance against targets). The project can use this information to develop an understanding of why a target was missed. Information availability is thus critical to the success of the ESMP and a key implementation discipline is to ensure that reporting is timely, effective, and accurate.

Where a non-conformance is identified it is necessary to evaluate the reason for the non-conformance and to define the necessary corrective action. It is important to recognise that corrective action can take many different forms but it is fundamentally about changing a component of the overall management approach. For example, it may be that implementation has been ineffectual, or the defined management actions have been fully implemented but they are simply not working. Whatever the cause, the cause must be identified and action taken to rectify the cause. Whatever corrective action is defined, it must be recorded and formalised and implementation of the corrective action tracked. In this manner a record of corrective action can be established that serves as a reference for future corrective action. Where corrective action is seen to result in the desired effect, the ESMP must be updated accordingly to reflect that corrective action and ensure that is adopted as practise into the future.

6.2.2 Incident register

The project will maintain an incident register that serves to provide a central record of all incidents on the project. An incident is defined as any event that results in the requirements of this ESMP being contravened, whether that be flouting the mitigation prescribed or performance not meeting defined targets. The incident register will be divided into Environmental and Social Incidents and Occupational Health and Safety Incidents and the full circumstances of the incident are to be described and recorded. There will be a one-to-one correlation between performance and the incident register so that if there is a non-conformance evident in the performance monitoring, then the incident that resulted in that non- conformance will be available in the incident register.

6.2.3 Close out procedures

Every incident in the incident register is to be resolved or 'closed out' over time. Such a closing out is to be described in the incident register, together with what was done to notify the complainant (in the event that there was a complaint), whether the authorities were notified (in the event that the seriousness of the incident warranted such reporting) and what has been implemented on the project to ensure that there is not a repeat of the incident. The close-out is to be signed off by the project manager, reflecting accountability for the resolution of the incident.

6.2.4 Documenting corrective actions

All corrective actions are to be documented as part of the record keeping of the project and this ESMP is to be updated with such corrective actions to always ensure that the ESMP correctly reflects the management practices being used by the project.