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THE STATE COMMITTEE OF THE REPUBLIC OF UZBEKISTAN ON ECOLOGY AND ENVIRONMENTAL PROTECTION
EUROPEAN BANK FOR RECONSTRUCTION AND DEVELOPMENT

UZBEKISTAN: KARAKALPAKSTAN AND HOREZM SOLID WASTE MANAGEMENT - FEASIBILITY STUDY

ENVIRONMENTAL AND SOCIAL AUDIT AND ASSESSMENT.
NONTECHNICAL SUMMARY (NTS).

HOREZM REGION

Contract ID No. C43176/11619/71786

CECT

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в ассоциации с:

Ecoline International

pwc

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***** *signed as below*

Report Quality Control Certification

As per the CECT Consulting, inženiring in svetovanje d.o.o. procedures, this report and its content has been proofread and controlled for quality against the Terms of Reference, and its subsequent possible modifications.

Signature:

Name: Sergei Stepanischev, Project Director

Company: CECT Consulting, inženiring in svetovanje d.o.o.

Date: 17 January 2022

EBRD signoff:

LIST OF ABBREVIATIONS

CAS	Civic amenity site
E&S	Environmental and Social
EBRD	European Bank for Reconstruction and Development
ESAP	Environmental and Social Action Plan
ESP	EBRD Environmental and Social Policy
FS	Feasibility Study
GosKomEkologiya	State Committee of the Republic of Uzbekistan on Ecology and Environmental Protection
ha	hectar
HO	Horezm Oblast
MSW	Municipal solid waste
NTS	Non-technical Summary
PIP	Priority Investment Programme
RoU	Republic of Uzbekistan
SEP	Stakeholder Engagement Plan
SUE	State Unitary Enterprise
TS	Transfer station
WCS	Waste collection station
WSP	Waste sorting plant

CONTENTS

LIST OF TABLES AND FIGURES

1. INTRODUCTION

The Republic of Uzbekistan (RoU) has approached the European Bank for Reconstruction and Development (EBRD) with a request to participate in financing the modernization of the municipal solid waste (MSW) management infrastructure in the Horezm Region (HR) (the Project). The Project's overall objective is to improve availability, efficiency and safety of solid waste management services and practices, thus benefiting the natural and human environments. The volume of the proposed investments is 47.9 million USD in the form of sovereign loans. The Project will be implemented by the State Committee of the RoU for Ecology and Environmental Protection (GosKomEkologiya). Toza Hudud SUE in the HR, responsible for MSW collection, transportation and disposal in almost the whole region, will provide local technical support to GosKomEkologiya and will be the owner of the Project facilities.

The feasibility study (FS) and Priority Investment Programme (PIP) for the Project is being developed by CECT Consulting, inzeniring in svetovanje d.o.o. (Slovenia). Ecoline International Ltd. (Bulgaria) ("the Consultant") **analyses environmental and social (E&S) issues within the FS development**. The FS solutions will be refined at the technical design stage of the Project.

The Project was categorised as 'B' in agreement with EBRD and in accordance with the EBRD's Environmental and Social Policy (ESP) (2014). In this regard, the E&S Audit of the current Company's operations, as well as the E&S Assessment of the Project were conducted to identify its E&S impacts and risks, develop corrective and mitigation actions, and enhance the positive effects.

The results of the E&S Audit and E&S Assessment are summarized in this **Non-Technical Summary (NTS)**. In addition to this NTS, the following documents have been developed for the Project and disclosed to the public:

- Environmental and Social Action Plan (ESAP),
- Stakeholder Engagement Plan (SEP), and
- Land Acquisition and Livelihood Restoration Framework.

The Project is implemented in accordance with the applicable requirements of EBRD and the legislation of the RoU in the field of environmental protection, occupational health and safety, labour relations, community health and safety, land acquisition / allocation, stakeholder engagement, and protection of cultural heritage.

2. THE NEED FOR THE PROJECT AND ITS DESCRIPTION

In 2019, the national **Strategy for MSW Management**[1] was adopted to solve such existing problems with MSW management as insufficient provision of collection and removal services in rural settlements, unsatisfactory state of the MWS management infrastructure, and non-compliance of the existing MSW landfills with the requirements of sanitary and environmental standards.[2] In accordance with the **Strategy**, the existing MSW landfills are subject to closure and remediation. New sanitary landfills and transfer stations will be built instead that will meet both national and international requirements.

[1] Decree of the President of the RoU "On Approval of the Strategy for the municipal solid waste management in the Republic of Uzbekistan for the period 2019-2028" of 17 April 2019 No. PP-4291. https://lex.uz/docs/4291733?query=%D0%BF%D0%BB%D0%B0%D1%81%D1%82%D0%B8%D0%BA.

[2] Ibid.

The Project is aimed at implementing the Strategy's objectives in the HR, and envisions the construction of:

- **two new landfills** on the allocated land plots (in the Koshkupyr District on the territory of the Amirkum Massif and in the Bagat District on the territory of the Kumbodok mahalla citizens assembly (MCA)); at the site of each landfill, besides a residual waste disposal area, there will be a **waste sorting plant (WSP), a composting site** for biodegradable waste, and a number of auxiliary facilities; at the Koshkupyr District Landfill it is also planned to locate a biological treatment facility for separately collected food waste and a small medical waste incinerator (with capacity of 700 tonnes per year);
- **six waste transfer stations (TSs)** in the Gurlen, Yangibazar, Khiva, Khanka, Yangiaryk, and Hazarasp districts, which are supposed to be located at the sites of the existing district landfills or on adjacent land plots;
- **two civic amenity sites (CASs)** in the southern part of the Tuprokkala District (until April 2020 – Hazarasp District), located on specially allocated land plots;
- **construction/reconstruction of roads to the proposed MSW landfills** including i) constriction of entrance roads to landfill sites, and ii) reconstruction of the existing public roads connecting the landfill sites with the key motor roads (access roads) including upgrade of bridges over the irrigation/drainage channels.

The Project also includes the purchase of the necessary equipment and special vehicles for these facilities.

Figure 1 illustrates the locations of the Project facilities and the proposed scheme for MSW transportation between them. Maps showing the locations of the Project landfills and photographs of their sites are presented in **Annex 1**.

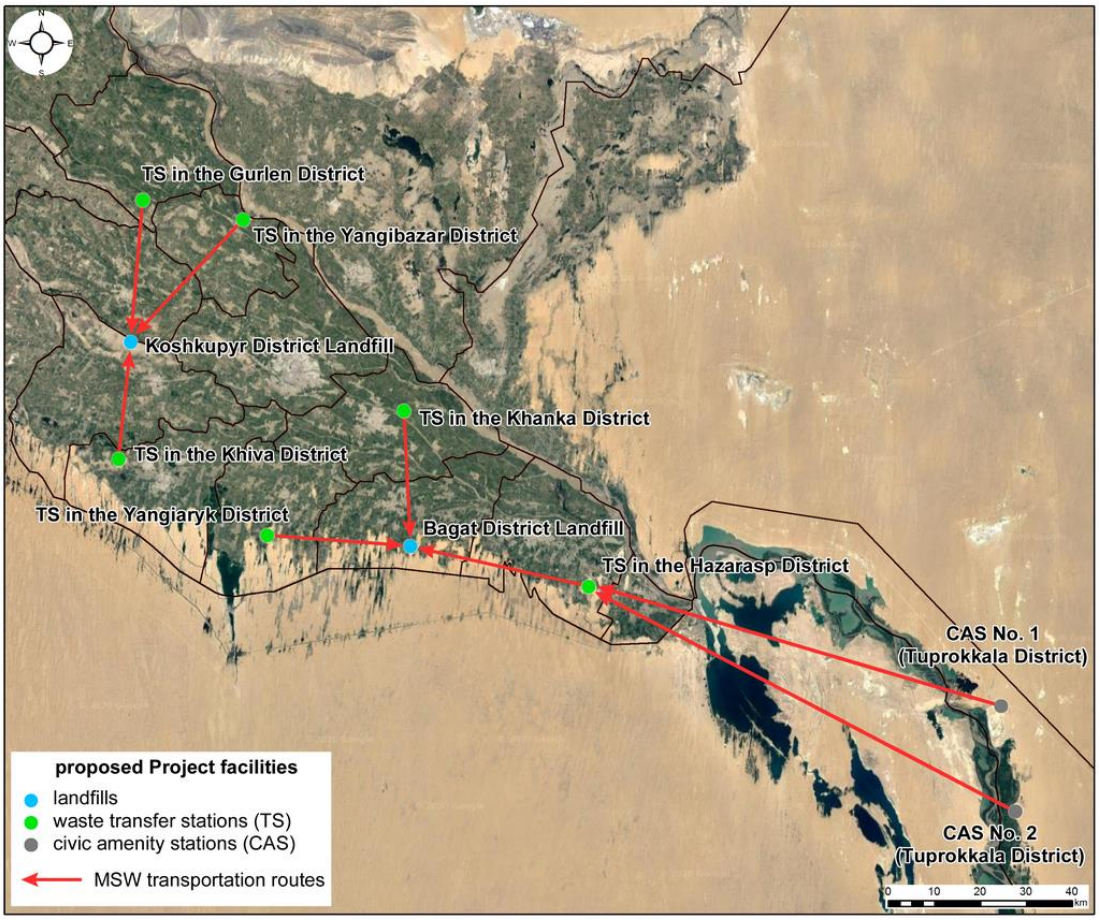
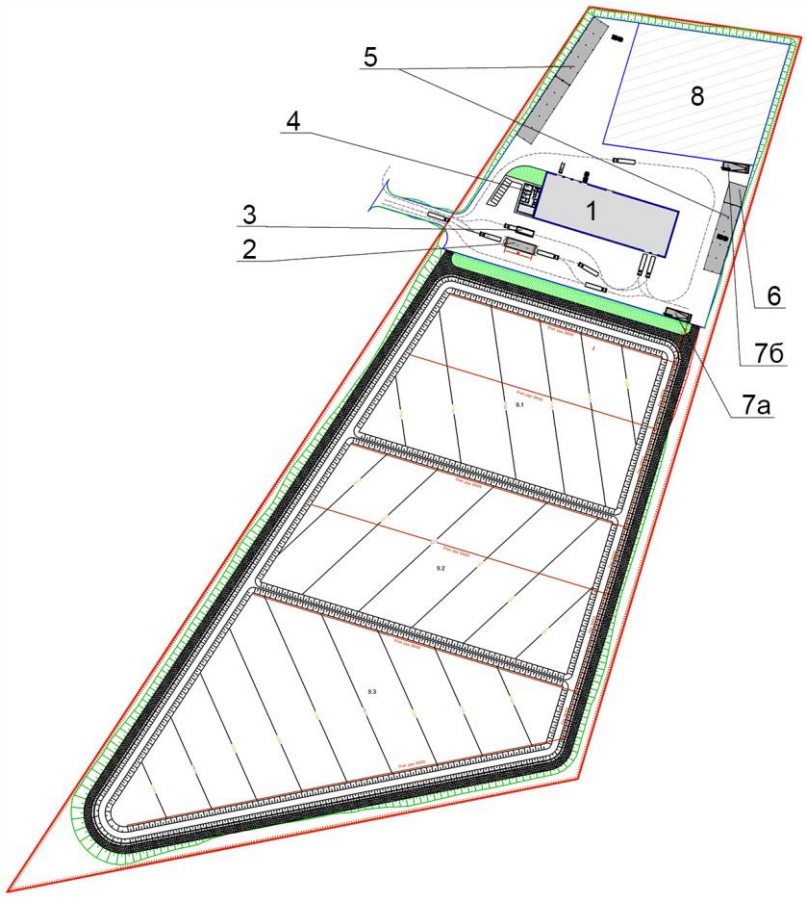


Figure 1. Location of the Project's facilities and the proposed transportation scheme of the collected MSW

The closure and remediation of the existing MSW landfills, construction / reconstruction of other roads connecting the Project facilities (not covered by the Project investments), site preparation works for TSs to be located at the existing landfills[3], and construction of new overhead transmission lines to the Project sites are considered as **the associated projects**. They are not part of the Project and will be financed from the state budget and coordinated by GosKomEkologiya. However, they are subject to the EBRD's E&S requirements.

It is assumed that mixed MSW accumulated at waste collection stations (WCSs) located in urban areas and that generated by the rural households will be transported to the TSs by waste trucks with a capacity of 7 m^3. At the TSs, the waste will be loaded into 60m^3 containers and delivered to the landfill sites. Waste collected from settlements located in the immediate vicinity of the landfills will be delivered to the landfill sites directly. CASs are planned to receive MSW (presumably, mixed waste) from the population of nearby settlements. Waste accumulated at CASs will be transported to the Bagat District Landfill or to the nearest TS in the Hazarasp District.

A distinctive feature of the proposed MSW landfills is its design as an integrated facility: a WSP, a composting site, and a residual waste disposal area will be located within one site (refer for an example in **Figure 2**). Residual waste will be disposed at a designated area consisting of several cells. The residual waste disposal area will be expanded in stages, and the service life of each cell is approximately five years.



Legend:
1 – waste sorting plant;
2 - wheel washing and disinfection station;
3 - weight bridge;
4 - administrative building;
5 – transport sheds;
6 - workshops;
7a – landfill leachate collection reservoir;
7b - surface runoff reservoir;
8 - composting area
NB: three cells to the bottom are parts of the residual waste disposal area

Figure 2. Master Plan of the Bagat District Landfill (final stages of operations)

[3] Site preparation works for these TSs will include: 1) dismantling of redundant buildings and structures, 2) removal of accumulated waste, and 3) earth works for levelling the sites.

Auxiliary facilities for the proposed MSW landfills will include an administrative building for personnel, a weight bridge, a wheel washing and disinfection station, a water well (for service water supply), sheds for special vehicles, workshops, and an electrical substation. The sites will be also equipped with systems to manage landfill leachate, to collect and treat surface runoff, and control fires. Quality of surface and groundwater in the vicinity of the landfill sites will be monitored.

The selection of sites for the proposed landfills in the HR was carried out in several stages and included analysis of siting alternatives. The presence of sensitive receptors (residential areas/houses, water bodies and water courses, and protected natural areas) within the proposed sites and their surroundings. As a result, the landfills were located so that their normative (maximally assumed) sanitary-protection zones (SPZs) would not contain any residential dwellings. The land allocation documents were reviewed and approved by the competent authorities including those responsible for environmental protection and sanitary and epidemiological welfare.

According to preliminary estimates, the Project's land needs include a) 26.8 ha for the Koshkupyr District Landfill and 15.5 ha for the Bagat District Landfill, b) from 0.5 to 1.0 ha for TSs, and c) about 0.25 ha for each of the CASs, d) less than 0.5 ha for the entrance roads to the landfills. Minor land allocation or easements might be required for the reconstruction of the access roads to the landfills.

For the construction of the MSW landfills and CASs, land plots were allocated by the decisions of the khokims of the respective districts. The land plots allocated for the landfills are sufficient for accommodating two cells for residual waste disposal at each landfill that are proposed to be financed via the EBRD loan. In order to construct third cells and thus to provide for a 15-year estimated service life of both landfills, about 0.5 ha should be added to the proposed site for the Bagat District Landfill in the nearest future. This would help avoid economic and physical displacement impacts on the local population later on.

The land acquisition for the TSs has not been completed, but most (4 out of 6) TSs will be located at the sites of the existing landfills operated by the Company, and their construction would not require new land acquisition.

The tender process for design and build contracts is expected to commence in late 2022 – early 2023; construction works will indicatively start in the second half of 2023 subject to successful procurement and following completion of detailed design. The construction period will be 2–3 years.

The estimated service life of the proposed Koshkupyr District Landfill and Bagat District Landfill will be 16.4 and 15 years, respectively.

Once a waste disposal area has been filled to capacity, it should be closed and remediated as per the requirements of the Landfill Directive 1999/31/EC and applicable national regulations[4, 5]. In particular, prior to cease of use of the disposal cell, the uppermost layer of waste is compacted and covered by an impermeable mineral layer (bentonite mat), drainage layer and soil material (the top of which will be suitable for further planting) (**Figure 3**).

[4] RoU SanPiN No. 0157-04. Sanitary Requirements to the Organisation of Storage and Disinfection of Municipal Solid Waste at the Sanitary Landfills under Specific Conditions Existing in Uzbekistan of 12 July 2004. https://www.minzdrav.uz/documentation/detail.php?ID=47040.

[5] GosKomEkologiya Resolution of 17 October 2019 No. 12 "On the Approval of the Instruction on the MSW Landfill Design and Operation". https://lex.uz/ru/docs/4603651.

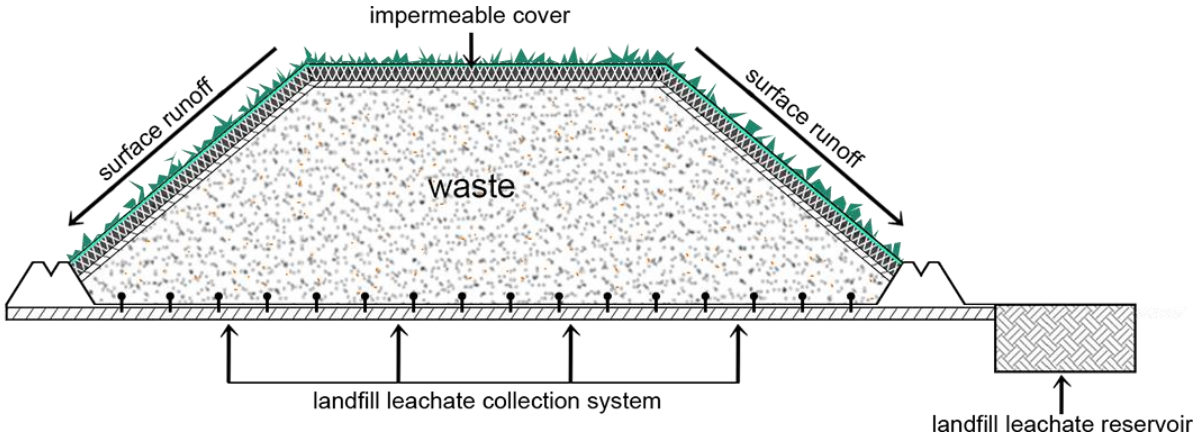


Figure 3. Modern MSW Landfill Cross-Section (Remediation Stage)

The estimated need for **labour resources at the construction stage** is as follows (no inflow of labour force from abroad or other regions of the country is expected): a) around 40 jobs, including 16 drivers of special vehicles and 28 construction workers, in 2023, when the construction of the MSW landfills commences, b) a total of around 110-140 jobs, including 10-25 management and office personnel, 30-35 special vehicle drivers and about 70-80 construction workers, when the construction of the MSW landfills continues being coupled with the construction of the TSs, CASs and entrance roads, as well as with the reconstruction of the access roads to the landfills. The number of construction staff will be defined precisely at the stage of technical design and selection of construction contractor(s).

During operations, the implementation of the Project will result in creation of around 220 new jobs for men and women with different levels of education, incl. 150-160 positions at the two newly built MSW landfills and about 30 positions at the TSs and CASs (excluding drivers). The remaining 30-40 positions will be opened for drivers of special vehicles and special equipment. To the maximum extent possible, it is planned to employ the staff from district branches of Toza Hudud SUE whose jobs will be slashed as a result of the closure of the existing Company's landfills.

3. SUMMARY RESULTS OF THE E&S AUDIT OF TOZA HUDUD SUE'S ACTIVITIES

Regional Toza Hudud SUE and its district / city branches are in charge of collecting, transporting, and disposing MSW in the HR. To date, the Company's balance sheet includes:

- 9 out of 10 operating MSW landfills in HR[6]: in the Bagat, Gurlen, Koshkupyr, Hazarasp, Khiva, Khanka, Shavat, Yangiaryk, and Yangibazar districts;
- 52 waste collection stations (WCSs) with containers for MSW collection;
- Garages and workshops at the Company's district branches, where special vehicles and special equipment (waste trucks, bulldozers, loaders, etc) are serviced and repaired.

The E&S Audit of Toza Hudud SUE in the HR was performed in December 2019 against the applicable requirements of the RoU and EU regulations[7] and the EBRD's ESP (2014).

[6] The largest solid waste landfill in HR, which is located in the Urgench District, is on the balance sheet of a private enterprise (URGENCH AVTO EKO TRANS LLC).

[7] Directives of the European Parliament and of the Council of Europe i) 2008/98/EC 19 November 2008 on waste and repealing certain Directives. https://eur-lex.europa.eu/eli/dir/2008/98/oj; ii) 1999/31/EC of 26 April 1999 on the landfill of waste. https://eur-lex.europa.eu/eli/dir/1999/31/oj; iii) 2014/52/EU of 16 April 2014 amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment. https://eur-lex.europa.eu/eli/dir/2014/52/oj; iv) 2012/19/EC of 04 July 2012 on waste electrical and electronic

Some elements of the Company's activities were found to be partially compliant with the requirements of the legislation of the RoU, for example, in terms of setting up a health and safety system for the Company's employees, monitoring the impact on health and safety of the population, regular monitoring of the state of environmental components at the existing MSW landfills and in their vicinity, and human resources management. The full compliance was identified in relation to employees' medical examinations, the Company's waste accounting, work of security personnel, and adherence to non-use of child and forced labour, and stakeholder engagement.

Partial compliance of the Company's activities with the EBRD's and European Union's requirements was identified in relation to environmental protection, social responsibility, occupational health and fire safety, emergency preparedness (including to fires), management and registration of workplace injuries, and preparedness to natural disasters (earthquakes and dust storms).

There are instances of unauthorized MSW sorting performed by the Company's staff at its facilities. No instructions are available for the hazardous waste and chemicals handling (including storage), the records of the workplace injuries are not maintained, the Company does not have a formalized procedure of handling complaints from employees and external stakeholders. The contractor management procedure has not been developed.

The detailed analysis of non-compliances was completed and recommendations to address them were integrated in the Project's **ESAP.** The ESAP will be annexed to the loan agreement between the Company and EBRD and is subject to mandatory execution.

4. SUMMARY RESULTS OF THE PROJECT'S E&S ASSESSMENT

The **Project's E&S Assessment** identified and assessed the possible positive and negative changes to the natural, technogenic, and social environments that can be connected with the Project implementation. The baseline study of the environmental and socio-economic conditions was completed. The E&S impact assessment covered the risks/impacts associated with:

- The proposed Project facilities;
- The Project as a whole;
- Transportation of the construction materials during the construction stage of the Project; and
- MSW transportation from the CASs to the TSs and MSW landfills during the operation stage of the Project.

The E&S impacts and risks were considered in related to both the routine operations and emergency situations that may be caused by the natural disasters and/or technological accidents at the Project facilities.

The intensity, duration, scale, and probability of affecting sensitive receptors were assessed for each identified risk/impact. The overall **impact significance** was derived based on these parameters. For all impacts with the significance greater than minor (and for some impacts of minor significance) the mitigation measures were proposed, which complemented the technical and organizational solutions proposed in the PIP. Afterwards, the **residual impacts**

equipment. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32012L0019; v) 2010/75/EC of 24 November 2010 on Industrial Emissions (Integrated Pollution Prevention and Control) https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32010L0075.

significance was assessed (that is, the significance of impacts after the prevention or mitigation measures are implemented).

The mitigation actions developed as part of the Project's E&S Assessment are brought together in the **Project's ESAP** and structured by the stages of the Project lifecycle, namely, the design, construction, operation, and decommissioning / closure and remediation.

The initial significance of the risks/impacts varied from negligible to major, with the majority characterized as of minor, minor to moderate, and moderate significance. The significance of the residual impacts/risks varies from negligible to moderate for possible negative impacts, and from negligible to major for possible positive impacts.

According to the assessment of residual impacts from the Project as a whole (**Table 1)**:

- The residual positive impacts of moderate to major significance are expected for the environmental and sanitary conditions of the territory and living conditions of the population due to the improved sanitary and epidemiological situation in the HR, reduced soil and groundwater contamination risks, prevention of unauthorized disposal of MSW, etc.
- A minor to moderate residual significance is predicted for such positive impacts as:
    - Improved living standards of the local population due to possible employment at the new Project facilities;
    - Contribution to the development of small and medium businesses engaged in recycling (contribution to the economy of the region);
    - Smaller contribution of the Project to climate change due to the lower value and decrease in time of specific greenhouse gas (GHG) emissions per tonne of MSW managed (collected, transported and treated at the proposed landfills) in comparison to the baseline scenario assuming MSW disposal at the existing landfills of the Company; in addition, the contribution of GHG emissions from the region's operational landfills to the total GHG emissions from the country's waste management sector will also decrease during the Project implementation period.

Less significant will be the positive impacts associated with additional tax revenues and the involvement of contractors during the construction stage.

A residual minor to moderate significance is predicted for a number of negative impacts at the operation stage, such as: deteriorated condition of road pavement and bridges; reduced capacity of roads that can be used during the operations, and road safety risks, specifically within and around the crossed settlements. Since the MSW transportation routes have not yet been determined, a conservative assessment suggests a potential for safety risks to local community due to road accidents when transporting MSW through settlements during the operations. When roads within or nearby settlement will be used for MSW by container trucks increased noise levels within the residential areas along the roads are expected; the significant of this residual impact would be minor, from minor to moderate or moderate for specific road sections.

Table 1. The Residual Impact Significance for the Project as a Whole

Moderate to major	Moderate	Minor to moderate	Minor	Negligible to minor	Negligible

Legend:

C – construction stage, O – operation stage, R – remediation stage (MSW landfills)
"adv." – adverse impact, "pos." – positive impact

Impact	Project Lifecycle Stage	Residual Significance
Improvements in the environmental and sanitary conditions in the Project area	C, O, R	Pos.
Impact on regional economy		
Increased tax revenues	C, O, R	Pos.
Additional opportunities for small and medium business	O	Pos.
Contribution to climate change		Pos. (specific GHG emissions decrease over the service life of the Project facilities; total GHG emissions grow but at a much slower pace than under the baseline scenario)
Impact on road infrastructure		
Impact on bridge crossings	C	Adv.
	O	Adv.
Impact on road pavement	C	Adv.
	O	Adv.
Reduced traffic capacity and vehicle speed regimes on the roads used for the purposes of the Project	C	Adv.
	O	Adv. (roads within the residential areas and their surroundings)
		Adv. (other roads)
Reduced traffic safety (higher risk of traffic accident) on the roads	C	Adv.
	O	Adv. (roads within the residential areas and their surroundings)
		Adv. (other roads)
Impact on the power supply system		
Increased pressure on already overloaded district power supply systems	C	Adv.
Impact on employment		
Use of construction contractors	C	Pos.
Creation of jobs for local community members	C	Pos.
	O	Pos.
Reduced staff number in the Toza Hudud SUE	O	Adv.
Assistance in providing official employment to workers holding informal jobs in the Company	O	Pos.
Impact on Community Incomes		
Increase in income as a result of employment	C, O, R	Pos.
Impact on income of farmers whose land lies within the SPZ area of the proposed MSW landfills	O	Adv.

The main results of the E&S Assessment of impacts and risks associated with **individual proposed Project components** are as follows (details are given in **Annex 2**):

- The residual impacts of *conditionally* moderate negative significance are predicted for fauna at the Yangiaryk District TS from construction works (noise and artificial lighting) and from transportation of construction materials / MSW due to the location of IBA №UZ011 in 280m from this TS. *This assessment is to be confirmed via field studies.*

- Several negative residual impacts are likely to have minor to moderate significance:
    - Increased noise levels within the residential areas along the to-be-reconstructed section of the access road to the Bagat District Landfill during reconstruction works;
    - Occupational health and safety risks for the workers at the MSW landfill sites from noise, vibration, and air emissions during the construction and operations.
    - Landscape changes and visual impacts of the Bagat District landfill after 5-10 years of its operation;
    - Disturbance to animal habitats at the MSW landfills sites, especially in Bagat District, and the TSs in Yangiarik and Khazarasp districts, which were not previously affected by excavation and construction works (*the presence of protected species is subject to clarification during field zoological surveys of the sites*);
    - In case of high winds (over 10.8 m/s) - dust pollution of soil and water bodies / watercourses around the Bagat District Landfill, TS in Khanka, Yangibazar, Yangiaryk, and Khiva districts;
    - Deterioration of the road infrastructure (including bridges), in particular during the Project's operation stage;
- The visual impacts from the Bagat District Landfill after completion of remediation are expected to be positive of minor to moderate residual significance;
- Negative residual impacts associated with long-term allocation of land plots for the landfills, CASs and some TSs, and land use restrictions for ajacent areas during the operation stage of the Bagat District Landfill are estimated as minor;
- The identified impacts on ambient air quality, groundwater, flora, fauna, and protected natural areas (besides the above-mentioned Project sites), landscape and visual impacts (apart from the Bagat District Landfill), degradation of topsoil, and cultural heritage are estimated as negligible to minor.

5. GENDER RISKS ASSESSMENT

The **Project's gender risks assessment** was completed based on the recommendations of the *EBRD's Gender Toolkit* and the *EBRD's Mitigation Gender Traffic Light*[8]. As a result, minor to moderate and negligible positive impacts were identified (for example, improved sanitary-epidemiological and environmental situation, reduced risks of soil and water pollution, which worries women taking care of their families; and increased social sustainability of women employed in the Project). Some negative impacts were revealed as well, such as that the local women may feel dissatisfied to their low awareness of the risks and benefits of the Project; additional burden for women may arise in case of any health and safety incidents occur to their family members due to the Project, as women are responsible for nursing the sick).

The relevant mitigation and monitoring measures, including measures to create better working conditions for female personnel of the Company and to raise their professional capacity, were formulated in the ESAP of the Project.

[8] EBRD's Gender Toolkit (Matrices 1 and 2, 2010) https://www.ebrd.com/documents/gender/gender-toolkit-matrix-1.pdf and https://www.ebrd.com/downloads/sector/gender/Gender_toolkit_matrix2.pdf, EBRD's Mitigation Gender Traffic Light https://www.ebrd.com/cs/Satellite?c=Content&cid=1395241778509&pagename=EBRD%2FContent%2FDownloadDocument.

6. SUMMARY RESULTS OF THE E&S ASSESSMENT OF THE ASSOCIATED FACILITIES

The following **associated projects** were identified during the Project's E&S Assessment:

- Closure and remediation of the Company's operation MSW landfills;
- Site preparation of the TSs, which will be located on the MSW landfills territories;
- Construction/reconstruction of the roads that are not covered by the PIP and that will be used for MSW transportation from the TSs and CASs to the MSW landfills;
- Construction/reconstruction of the electricity infrastructure; and
- Construction of the TS in Urgench district.

Only the impacts of the first three groups of the associated projects were analysed during the E&S Assessment, since the alignments of the overhead power lines and the location of the TS in Urgench district have not been defined at the time of this assessment.

The impacts from the closure/remediation of the Company's operation MSW landfills are similar to the impacts from the remediation of the Project landfills' residual waste disposal areas. The impacts from the construction/reconstruction of the roads that are not included in the PIP will be similar to those related to the Project's road components.

7. SUMMARY RESULTS OF THE CUMULATIVE IMPACT ASSESSMENT

The **cumulative impacts** are expected from: a) construction of the Project TSs and MSW landfills remediation, and b) reconstruction of roads that are not included in the PIP. It should be noted that the closure and remediation of the Company's MSW landfills will contribute to the main positive effects of the Project – improved sanitary and epidemiological situation in the HR and reduction in the soil and groundwater contamination risks – provided that the works are carried out in line with good international practice (GIP).

In addition to the above-outlined associated projects, the **cumulative impact assessment** considered the following **parallel projects**:

- Implementation of the waste sorting schemes in the urban multifamily housing areas in the HR;
- Recycling infrastructure development projects;
- Closure and remediation of the Urgench District Landfill; and
- Construction of the construction waste landfill in the HR.

The assessment has shown that the cumulative impacts of the Project components and parallel projects on the environment can only slightly change the significance of the Project's residual impacts. The cumulative impact assessment did not identify any negative cumulative impacts of moderate to major significance; the positive impacts of moderate significance are likely to be associated with the local employment opportunities.

8. STAKEHOLDER ENGAGEMENT AND GRIEVANCE MANAGEMENT

The Company will implement the SEP approved by EBRD. The purposes of the SEP are to ensure the most effective interaction with all identified Project's stakeholders, to create and maintain respectful relations between the Company and the stakeholders, and to prevent possible conflict situations. The Stakeholder Engagement Programme developed as part of the SEP covers the design and construction stages of the Project facilities (2021 - 2025) and is subject to revision and updating at least one year after the start of construction and then before the Project facilities are commissioned.

As per the SEP, Toza Hudud SUE in the HR will introduce **a grievance mechanism** that will comply with both, the legislation of the RoU and the EBRD requirements. The Company's contacts below can be used for filing any grievances or inquires by phone, e-mail, mail, text messages (SMS), or messages in instant messengers. All grievances and inquires will be registered and considered as per a procedure stipulated in the SEP:

Should you have any questions about E&S aspects of the Project or grievances, contact:

Name: **Kilichov Atabek Adamovich**

Position: **Head of the Department of Ecology and Environmental Protection of Khorezm region**

Address: **Urgench city, Yoshlik street, 1.**

Email: **uznature@exat.uz** **OR** **horazm@uznature.uz**

Phone: **+998 622 24 14 89**

The SEP also contains recommendations on the use of alternative methods of engagement with various stakeholders of the Project under unfavourable circumstances (epidemics or pandemics).

As per the SEP, the Project-related information and documents will be uploaded to the website of the GosKomEkologiya at: http://www.uznature.uz/yz/invest/51#2 and http://www.uznature.uz/yz/legislation/ondata?legislationCategoryId=9.

9. E&S IMPACT AND RISK MANAGEMENT, MONITORING AND REPORTING

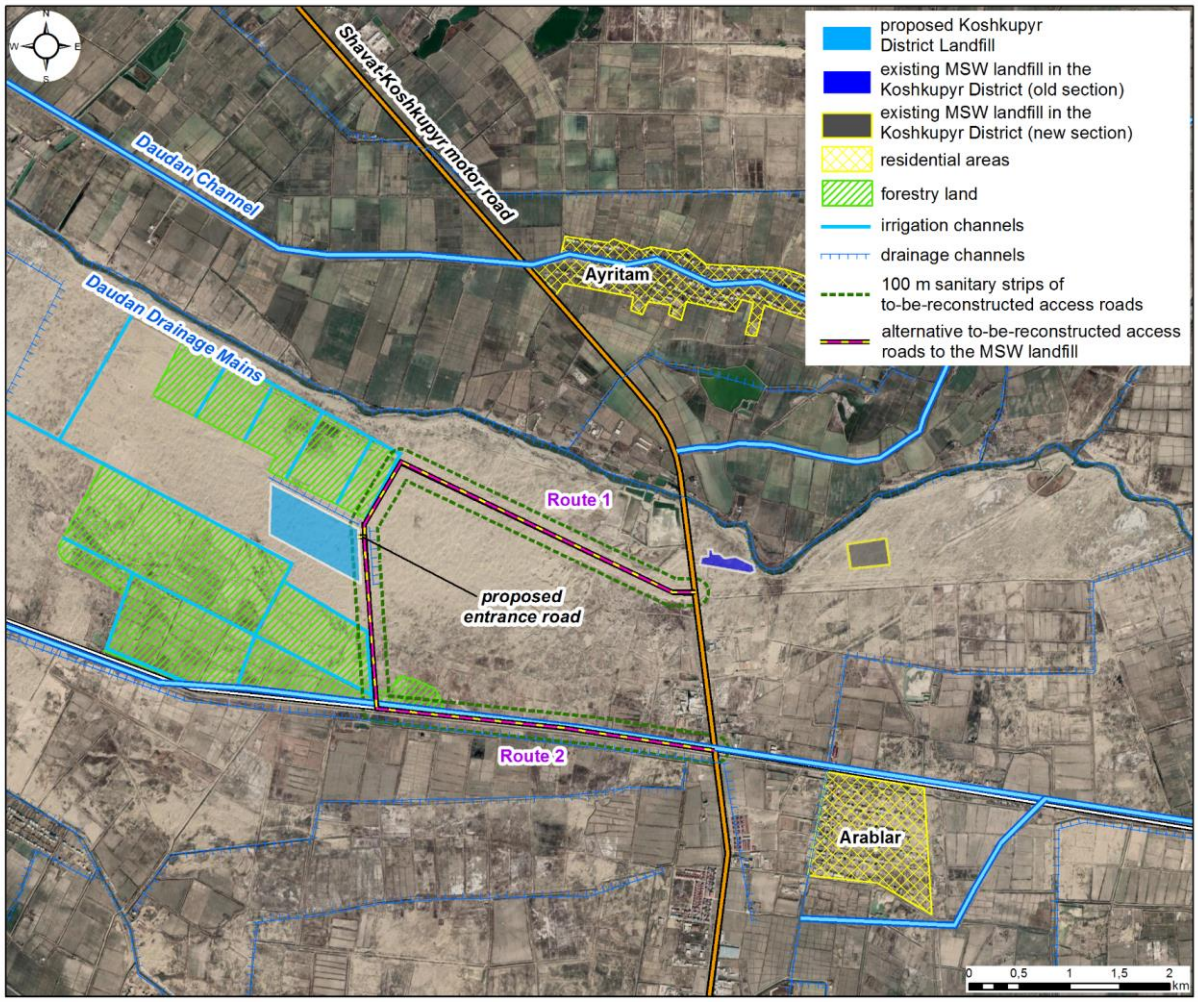
In accordance with the EBRD's ESP, the monitoring of the Project's E&S parameters should be conducted as per the Environmental and Social Monitoring Programme. The Programme should consider the identified risks and impacts of the Project implementation, their significance and scale and should be agreed with GosKomEcologiya and EBRD. The Programme shall meet the requirements of the EBRD and the legislation of the RoU[9]. The costs associated with the implementation of the E&S Monitoring Programme are envisioned in the PIP.

A specific E&S Monitoring Programme should be developed and agreed upon for the construction, operation and remediation stages - before the start of each stage, taking into account the need to allocate appropriate human and material resources for its implementation. The responsibility for the development and implementation of the Construction E&S Monitoring Programme will be assigned to the General Contractor (through inclusion in its Terms of Reference) and the Project Implementation Unit of the Company. At the operation stage, the E&S Monitoring Programme will be implemented by Toza Hudud SUE in the HR and the regional and district units of the HR Department for Ecology and Environmental Protection. The E&S Monitoring Programme should be agreed with the EBRD before the Project facilities are commissioned.

Reporting on the Project's E&S performance indicators, including annual progress reports on the implementation of the ESAP and SEP and other Project plans, is submitted to the EBRD at all stages of the Project delivery.

[9] Resolution №737 of the Cabinet of Ministers of the RoU dated September, 5th 2019. On the enhancement of the environmental monitoring system in the RoU. https://lex.uz/docs/4502814.

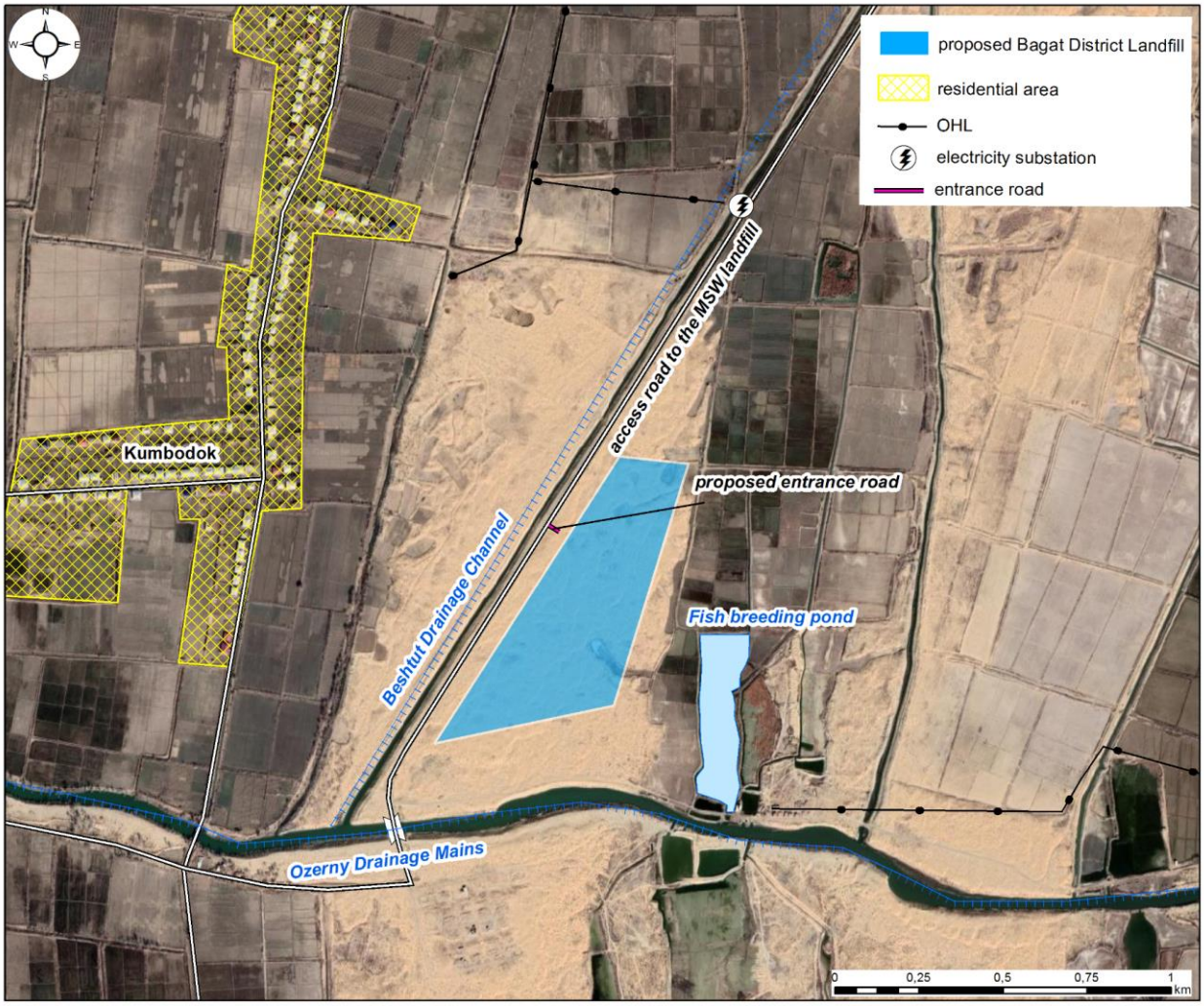
ANNEX 1. MAPS SHOWING THE LOCATIONS OF THE PROJECT LANDFILLS AND PHOTOGRAPHS OF THEIR SITES



Location Map of the Proposed Koshkupyr District Landfill

a) *b)*

Proposed Koshkupyr District Landfill (December 2019): General View of the Landfill Site (a), Access Road to the Landfill Site (b)



Location Map of the Proposed Bagat District Landfill

a) *b)*

Proposed Bagat District Landfill (December 2019): General View of the Landfill Site (a); Unauthorized Vegetable Garden within the Allocated Land Plot (b)[10]

[10] As per information from the district land management committee, this land parcel was not cultivated as of December 2021.

ANNEX 2. RESIDUAL IMPACT SIGNIFICANCE FOR INDIVIDUAL PROJECT COMPONENTS

Major	Moderate to major	Moderate	Minor to moderate	Minor	Negligible to minor	Negligible

Legend:

"+" – impact is likely to occur; "-" – impact is not likely,

C – construction stage, O – operation stage, R – closure and remediation stage (MSW landfills)

"pos." – positive impact

Note: Under normal operating conditions, the Project impacts are expected to be of adverse nature in most cases, except the MSW landfill remediation stage that is likely to have a positive visual impact.

R1 and R2 - Route 1 and Route 2: two alternative routes for the access road to the Koshkupyr District MSW Landfill, one option will be selected within the framework of the detailed technical design of the Project and then reconstructed.

Impact		MSW Landfills		Transfer Stations								Roads to be Reconstructed		
	Lifecycle Stage	Koshkupyr District Landfill	Bagat District Landfill	TS in the Khiva District	TS in the Khanka District	TS in the Yangibazar District	TS in the Gurlen District	TS in the Yangiaryk District	TS in the Hazarasp District	Civic Amenity Stations	MSW Landfill Entrance Roads	Access Road to the Koshkupyr District Landfill	Access Road to the Bagat District Landfill	Project Traffic Operations
Impacts from Project Facilities under Normal Operating Conditions														
Ambient air pollution by air emissions within the sites / routes	C	+	+	+	+	+	+	+	+	+	+	+ (R1 and R2)	+	+
	O	+	+	+	+	+	+	+	+	+	+	+ (R1 and R2)	+	+
	R	+	+	-	-	-	-	-	-	-	-	-	-	+
Ambient air pollution by air emissions within settlements that are in the vicinity of the sites / routes	C	-	+	-	-	-	+	+	-		+	-	+	+
	O	-	+	-	-	-	-	-	-	-	+	-	+	+
	R	-	+	-	-	-	-	-	-	-	-	-	-	+
Noise and vibration impact within the sites / routes	C	+	+	+	+	+	+	+	+	+	+	+ (R1 and R2)	+	+
	O	+	+	+	+	+	+	+	+	+	+	+ (R1 and R2)	+	+
	R	+	+	-	-	-	-	-	-	-	-	-	-	+
Noise within settlements that are in the vicinity of the sites / routes	C	-	+	-	-	+	+	-	-	-	+	-	+	+
	O		+	-	-	+	+	-	-	-	+	-	+	+ Option 1* (Option 2)*
	R	+	+	-	-	-	-	+	+	-	+	-	-	+
Degradation of natural or virtually undisturbed soil cover on the Project sites/routes	C	+	+	-	-	-	-	+	+	+	+	-	-	-
	O	-	-	-	-	-	-	-	-	-	-	-	-	-
	C	-	-	-	-	-	-	-	-	-	+	+ (R1 and R2)	+	-

Impact		MSW Landfills		Transfer Stations								Roads to be Reconstructed		
	Lifecycle Stage	Koshkupyr District Landfill	Bagat District Landfill	TS in the Khiva District	TS in the Khanka District	TS in the Yangibazar District	TS in the Gurlen District	TS in the Yangiaryk District	TS in the Hazarasp District	Civic Amenity Stations	MSW Landfill Entrance Roads	Access Road to the Koshkupyr District Landfill	Access Road to the Bagat District Landfill	Project Traffic Operations
Degradation of soil cover in the areas along the Project roads	O	-	-	-	-	-	-	-	-	-	-	-	-	-
	R	-	-	-	-	-	-	-	-	-	-	-	-	-
Soil contamination in the surrounding areas as a result of dust emissions from the Project sites/routes at high winds (over 10.8 m/s)	C	+	+	+	+	+	+	+	+	+	+	+ (R1) + (R2)	+	+
	O	+	+	+	+	+	+	+	+	+	+	+ (R1 and R2)	+	+
	R	+	+	-	-	-	-	-	-	-	-	-	-	+
Wind-blown debris escaping from the Project sites and **littering nearby areas** (impact on soil cover)	C	-	-	-	-	-	-	-	-	-	-	-	-	-
	O	+	+	+	+	+	+	+	+	+	-	-	-	-
Soil and vegetation contamination of the areas along the roads by surface runoff containing suspended solids and petroleum products	C	-	-	-	-	-	-	-	-	-	-	-	-	+
	O	-	-	-	-	-	-	-	-	-	-	-	-	+
	R	-	-	-	-	-	-	-	-	-	-	-	-	+
Groundwater pollution in and around the Project sites / routes	C	+	+	+	+	+	+	+	+	+	+	+ (R1 and R2)	+	+
	O	-	-	-	-	-	-	-	-	-	-	-	-	+ (indirect)
	R	-	-	-	-	-	-	-	-	-	-	-	-	+ (indirect)
Reduction in **groundwater resources** in and around the Project sites/routes	C	+	+	+	+	+	+	+	+	-	-	-	-	-
	O	+	+	+	+	+	+	+	+	-	-	-	-	-
	R	+	+	+	+	+	+	+	+	-	-	-	-	-
Surface water pollution in the surrounding areas of the Project sites/routes by construction dust emissions under high wind conditions	C	-	+	+	+	+	+	+	-	-	-	- (R1) + (R2)	+	+
	O	-	+	+	+	+	+	+	-	-	-	- (R1) + (R2)	+	+
	R	+	+	-	-	-	-	-	-	-	-	-	-	+
Surface water pollution in the drainage channels during the renovation of bridges along the access roads to the landfill sites	C	-	-	-	-	-	-	-	-	-	-	- (R1) + (R2)	+	+
	O	-	-	-	-	-	-	-	-	-	-	-	-	-
	R	-	-	-	-	-	-	-	-	-	-	-	-	-
Traffic-induced vibration affecting irrigation facilities (irrigation and drainage channels)	C	-	-	-	-	-	-	-	-	-	-	+ (R1) -	+	+
	O	-	-	-	-	-	-	-	-	-	-	+(R1) -	+	+
	R	-	-	-	-	-	-	-	-	-	-	-	-	+

Impact		MSW Landfills		Transfer Stations								Roads to be Reconstructed		
	Lifecycle Stage	Koshkupyr District Landfill	Bagat District Landfill	TS in the Khiva District	TS in the Khanka District	TS in the Yangibazar District	TS in the Gurlen District	TS in the Yangiaryk District	TS in the Hazarasp District	Civic Amenity Stations	MSW Landfill Entrance Roads	Access Road to the Koshkupyr District Landfill	Access Road to the Bagat District Landfill	Project Traffic Operations
Wind-blown debris littering water bodies in the vicinity of the Project sites (**impact on water bodies**)	C	-	-	-	-	-	-	-	-	-	-	-	-	-
	O	+	+	+	+	+	+	+	+	-	-	-	-	-
	R	-	-	-	-	-	-	-	-	-	-	-	-	-
Additional load on the existing solid waste management infrastructure	C	+	+	+	+	+	+	+	+	+	+	+ (R1 and R2)	+	-
	O	+	+	+	+	+	+	+	+	+	+	+ (R1 and R2)	+	-
	R	+	+	-	-	-	-	-	-	-	-	-	-	-
Land withdrawal and land use change	C	+	+	-	-	-	-	+	+	+	+	-	-	-
	O	+	+	+	+	+	+	+	+	-	-	-	-	-
Degradation of natural or virtually undisturbed vegetation within the Project sites / routes	C	+	+	-	-	-	-	+	+	+	+	-	-	-
	O	-	-	-	-	-	-	-	-	-	-	-	-	-
	R	-	-	-	-	-	-	-	-	-	-	-	-	-
Degradation of natural or virtually undisturbed vegetation within the areas along the Project roads	C	-	-	-	-	-	-	-	-	-	+	-		
	O	-	-	-	-	-	-	-	-	-	-	-	-	-
	R	-	-	-	-	-	-	-	-	-	-	-	-	-
Impact of dust emissions on natural or virtually undisturbed vegetation in the surrounding areas of the Project sites/routes under high wind conditions (winds over 10.8 m/s)	C	+	+	+	-	+	-	+	+	+	+	+ (R1) - (R2)	+	+
	O	+	+	+	-	+	-	+	+	+	+	+ (R1) - (R2)	+	+
	R	+	+	-	-	-	-	-	-	-	+	+	-	+
Destruction of wildlife habitats at the Project sites	C	+	+	-	-	+	-	+	+	+	+	-	-	-
	O	-	-	-	-	-	-	-	-	-	-	-	-	-
	R	-	-	-	-	-	-	-	-	-	-	-	-	-
Destruction of wildlife habitats within the areas along the Project roads	C	-	-	-	-	-	-	-	-	-	+	+ (R1 and R2) + (R2)	+	
	O	-	-	-	-	-	-	-	-	-	-	-	-	
	R	-	-	-	-	-	-	-	-	-	-	-	-	
Impact on wildlife as a result of emissions, vibration, artificial lighting and noise generated by onsite operations and traffic at the construction and operation stages	C	+	+	+	-	+	-	+	+	+	+	+(R1) +(R2)	+	+
	O	+	+	+		+		+	+	+	+	+(R1 and R2)	+	+
	R	+	+	-	-	-	-	-	-	-	-	-	-	+
Dust emissions contaminating riparian strips and water protection zones near the Project	C	-	+	+	+	+	+	+	-	-	-	-	+	+
	O	-	+	+	+	+	+	+	-	-	-	-	+	+

Impact		MSW Landfills		Transfer Stations								Roads to be Reconstructed		
	Lifecycle Stage	Koshkupyr District Landfill	Bagat District Landfill	TS in the Khiva District	TS in the Khanka District	TS in the Yangibazar District	TS in the Gurlen District	TS in the Yangiaryk District	TS in the Hazarasp District	Civic Amenity Stations	MSW Landfill Entrance Roads	Access Road to the Koshkupyr District Landfill	Access Road to the Bagat District Landfill	Project Traffic Operations
sites/routes under high wind conditions (winds over 10.8 m/s)	R	-	+	+	+	+	+	+	-	-	-		-	+
Impact on wildlife species inhabiting the important bird area IBA No.UZ011 (noise and artificial lighting from the TS site operations and construction / operation traffic)	C	-	-	-	-	-	--	+**	-	-	-	-	-	+**
								+**						+**
	O	-	-	-	-	-	-	+**	-	-	-	-	-	+**
								+**						+**
	R	-	-	-	-	-	-	-	-	-	-	-	-	-
Visual impact	C	-	+	+	+	+	+	+	+	-	+	-	+	-
	O	+	+	+	+	+	+	+	+	-	-	-	-	-
	R	+ pos.	+ pos.	-	-	-	-	-	-	-	-	-	-	-
Impact on **cultural heritage**	C	+	+	-	-	-	-	+	+	+	+	-	-	+
	O	-	-	-	-	-	-	-	-	-	-	-	-	+
	R	-	-	-	-	-	-	-	-	-	-	-	-	+
Risks to **employee health and safety**	C	+	+	+	+	+	+	+	+	+	+	+	+	+
	O	+	+	+	+	+	+	+	+	+	-	-	-	+
	R	+	+	-	-	-	-	-	-	-	-	-	-	+
Health impacts for people residing in the vicinity of the Project sites/routes (related to pollutant emissions including dust, bioaerosols and foul-smelling substances, noise, and artificial lighting)	C	-	+	-	-	+	+	-	-	-	+	-	+	+
	O	-	+	-	-	+	+	-	-	-	+	-	+	+
	R	-	+	-	-	-	-	-	-	-	-	-	-	+
Risks to community safety associated with the Project traffic at the construction/remediation stages and MSW traffic during the operations	C	-	-	-	-	-	-	-	-	-	-	-	-	+
	O	-	-	-	-	-	-	-	-	-	-	-	-	+
	R	-	-	-	-	-	-	-	-	-	-	-	-	+
Accidental Impacts from Project Facilities														
Spontaneous combustion of waste at the landfill sites	O	+	+	-	-	-	-	-	-	-	-	-	-	-
	R	+	+	-	-	-	-	-	-	-	-	-	-	-
Accidental release of landfill leachate into the groundwater aquifers due to bottom lining failure at the MSW landfill site	O	+	+	-	-	-	-	-	-	-	-	-	-	-
	R	+	+	-	-	-	-	-	-	-	-	-	-	-
Fuel and lubricant spillage and leakage	C	+	+	+	+	+	+	+	+	-	+	+	+	-
Accidental pollution of topsoil in the surrounding areas due to the release of contaminated surface	C	+	+	+	+	+	+	+	+	+	+	+	+	-
	O	+	+	+	+	+	+	+	+	+	+	+	+	-

Impact		MSW Landfills		Transfer Stations								Roads to be Reconstructed		
	Lifecycle Stage	Koshkupyr District Landfill	Bagat District Landfill	TS in the Khiva District	TS in the Khanka District	TS in the Yangibazar District	TS in the Gurlen District	TS in the Yangiaryk District	TS in the Hazarasp District	Civic Amenity Stations	MSW Landfill Entrance Roads	Access Road to the Koshkupyr District Landfill	Access Road to the Bagat District Landfill	Project Traffic Operations
runoff as a result of a failure in the surface runoff collection and treatment system	R	+	+	-	-	-	-	-	-	-	-	-	-	-
Accidental pollution of groundwater aquifers due to the release of domestic and/or industrial wastewater as a result of the collapse of wastewater reservoirs and their lining systems	O	+	+	+	+	+	+	+	+	+	-	-	-	-
Accidental pollution of watercourses in the surrounding areas due to the release of contaminated surface runoff	C	-	+	+	+	+	+	+	-	-	+	+	+	-
	O	-	+	+	+	+	+	+	-	-	+	+	+	-
	R	-	+	-	-	-	-	-	-	-	-	-	-	--
Accidental escape of wind-blown debris and littering the ajacent areas	O	+	+	+	+	+	+	+	+	+	-	-	-	-
Accidental release of untreated flue gas from the medical waste incinerator (in case of power outage)	O	+	+	-	-	-	-	-	-	-	-	-	-	-
Workplace injuries among staff working in the landfill cells as a result of a waste pile collapse caused by inappropriate waste disposal practices	O	+	+	-	-	-	-	-	-	-	-	-	-	-
	R	+	+	-	-	-	-	-	-	-	-	-	-	-
Uncontrolled release of landfill gas at the proposed landfills and other landfill sites	O	+	+	-	-	-	-	-	-	-	-	-	-	-
	R	+	+	-	-	-	-	-	-	-	-	-	-	-

Note:

* The residual impact significance is rated as a) minor for the scenario where suitable bypass routes are provided and 60 m^3 containers are used (Option 1) and b) minor, minor to moderate or moderate for various road sections in the scenario where no bypass routes are provided and smaller-capacity containers are used (Option 2).
* Moderate significance if field surveys confirm that protected wildlife species are present within the area of influence of the proposed facility.