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UZBEKISTAN: KARAKALPAKSTAN AND HOREZM SOLID WASTE MANAGEMENT – FEASIBILITY STUDY

ENVIRONMENTAL AND SOCIAL AUDIT AND ASSESSMENT.
NON-TECHNICAL SUMMARY (NTS).

REPUBLIC OF KARAKALPAKSTAN

Contract ID No. C43176/11619/71786

The logo for CECT, consisting of the letters 'CECT' in a bold, red, sans-serif font. The background of the entire page is a faint, grey wireframe illustration of a large industrial building's steel structure, showing a complex network of beams and columns.

UZBEKISTAN: KARAKALPAKSTAN AND HOREZM SOLID WASTE MANAGEMENT – FEASIBILITY STUDY

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ENVIRONMENTAL AND SOCIAL AUDIT AND ASSESSMENT
REPORT. NON-TECHNICAL SUMMARY (NTS).

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LIST OF ABBREVIATIONS

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
GIP	Good International Practice
GosKomEkologiya	State Committee of the Republic of Uzbekistan on Ecology and Environmental Protection
ha	hectare
Ltd	Limited liability company
MSW	Municipal solid waste
NTS	Non-technical Summary
OHL	Overhead transmission line
PIP	Priority Investment Programme
RK	Republic of Karakalpakstan
RoU	Republic of Uzbekistan
SEP	Stakeholder Engagement Plan
SUE	State Unitary Enterprise
TS	Transfer station
WSP	Waste sorting plant

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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 Republic of Karakalpakstan (the RK) (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 66.3 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 RK, 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, inženiring 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 the 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 standards².

The Project is aimed at implementing the Strategy's objectives in the RK, and includes the following activities:

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 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 construction of a **new MSW landfill in Nukus** and **reconstruction of three existing MSW landfills** in the Turtkul, Kungrad and Karauzyak districts with an extension of their sites; each landfill site to include, apart from the residual waste disposal area, a Waste sorting plant (WSP), a composting site for biodegradable waste and a number of auxiliary facilities; the Nukus City Landfill is also planned to include a small medical waste incinerator with the design capacity of 700 t/year;
- **The construction of eight transfer stations (TSs)** in the Amydarya, Khodjeyli, Beruni, Ellikkala, Kanlykul, Muynak, Chimbay and Takhtakupyr districts (which are planned to be located at the sites of the existing district landfills);
- **The construction/reconstruction of entrance roads** at the above-mentioned MSW landfills;
- **The reconstruction of the access road** to the Kungrad District Landfill (including two bridges over the channels).

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

Figure 1 illustrates the locations of the Project facilities in the RK and proposed MSW transportation flows to the MSW landfill sites. Maps showing the locations of the Project landfills and photographs of their sites are presented in **Annex 1**.

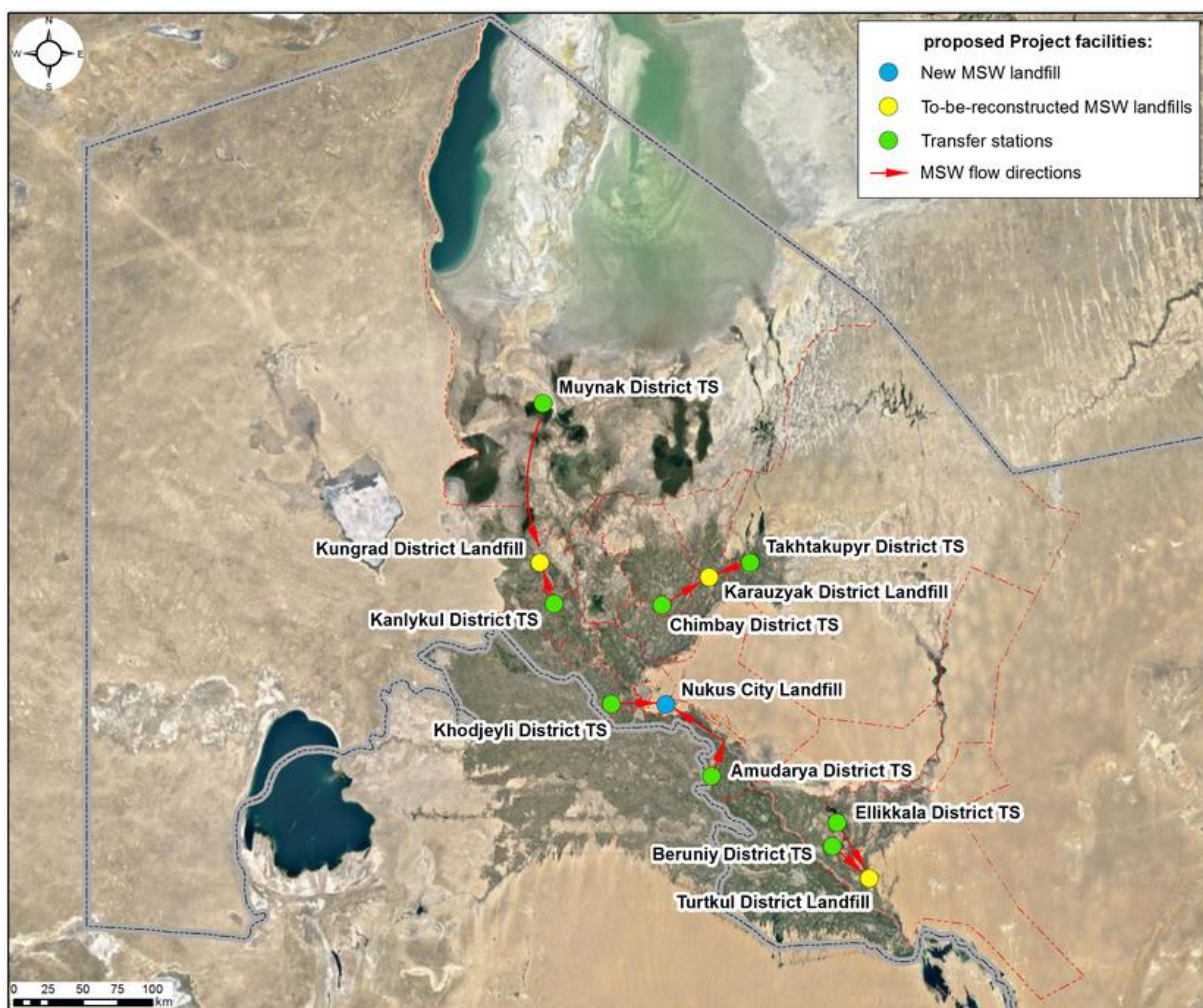


Figure 1. The Locations of Planned Project Facilities in the RK and Surmised MSW Transportation Flows

The closure and remediation of existing MSW landfills in the RK, construction and / or reconstruction of roads connecting proposed MSW management facilities, site preparation works for TSs to be located at the existing landfills³, and construction of overhead transmission lines (OHLs) connecting proposed facilities to the electricity grid are considered as **the associated projects**. They are not part of the Project and will be financed from the state budget, and their implementation will be controlled by GosKomEkologiya. However, they are subject to the EBRD's E&S requirements.

It is assumed that mixed MSW accumulated at waste collection stations located in urban areas and that generated by the rural households would be transported to the TSs by waste trucks with a capacity of 7 m³. At the TSs, the waste would be loaded into 60m³ containers and delivered to the landfill sites. Waste collected from settlements located in the immediate vicinity of the landfills would be delivered to the landfill sites directly. After weighing and registration, waste is taken to the WSP sorting lines where waste would be sorted both automatically and manually. Non-recyclable waste (residual waste) would be deposited in waste disposal cells. Hazardous infected medical waste destined for incineration, would be delivered to the Nukus City Landfill.

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 would be located within one site (refer for an example in **Figure 2**). Residual waste would be disposed at a designated area consisting of several cells. The residual waste disposal area would be expanded in stages, and the service life of each cell is approximately five years.

Auxiliary facilities for the proposed MSW landfills would 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 would 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. At the operating MSW landfills in the Karauzyak and Kungrad Districts, additional areas are envisioned for accommodating incoming MSW during the construction stage.

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 were considered during the alternative analysis. 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 competent authorities including those responsible for environmental protection and sanitary and epidemiological welfare.

According to the preliminary estimates, the Project's land needs include a) 15-16 ha for each of the MSW landfills located in the Karauzyak, Turtkul and Kungrad Districts, and around 24 ha for the MSW landfill in Nukus, b) from 0.5 to 1.0 ha for the TSs (depending on their capacity and the number of used waste containers). Minor land allocation and easements might be required for the (re)construction of the entrance roads and the access road to the Kungrad District Landfill.

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

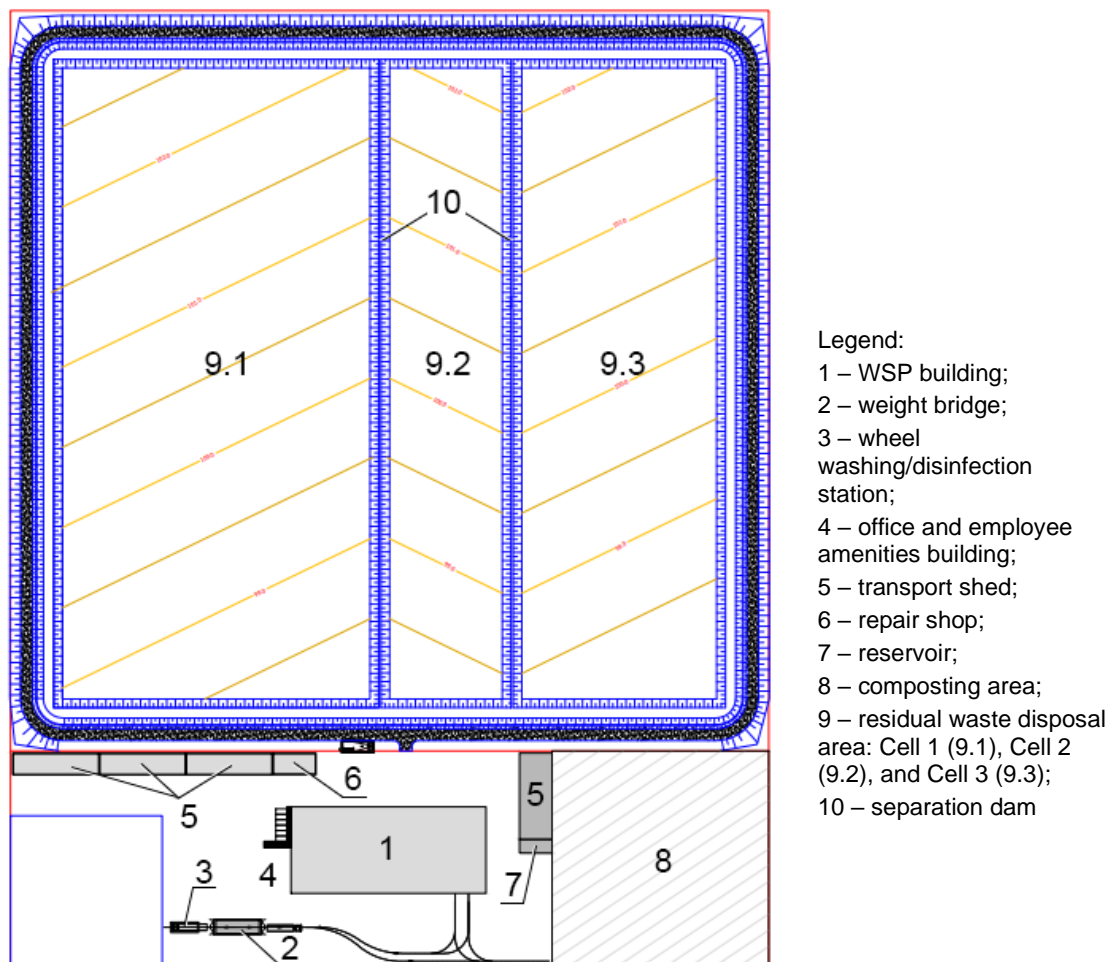


Figure 2. Master Plan of the Turtkul District Landfill (the End of the Operation Stage)

For the construction of the MSW landfills, land plots were allocated by the decisions of the khokims of the respective districts. They are sufficient for accommodating two cells 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, about 12 ha will be required to be allocated in the nearest future. This would help avoid economic and physical displacement impacts for the local population later on. All proposed TSs will be sited within the existing MSW 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 MSW landfills would be 15 years.

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

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>.

waste would be 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).

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 80 jobs, including 16 drivers of special vehicles and 56 construction workers, in 2023, when the construction of the MSW landfills commences, b) a total of around 160 jobs, including 40 drivers of special vehicles and about 110 construction workers, and about 50 people involved in road construction, in 2024, when the construction of MSW landfills continues and transfer stations would also be built, entrance roads would be constructed / reconstructed, and a public access road to the Kungrad District Landfill would be reconstructed. The number of construction staff will be precised at the stage of technical design and selection of construction contractor(s).

During operations, the implementation of the Project would result in creation of around 350 new jobs for men and women with different levels of education, including 310-320 positions at the four newly built MSW landfills and about 30 positions at the TSs. The remaining 30-40 positions would be opened for drivers of special vehicles and special equipment. To the maximum extent possible, it is planned to employ the staff from district divisions of Toza Hudud SUE whose jobs would be slashed as a result of the closure of the existing Company's landfills, and measures would be taken to provide employment opportunities for residents of nearby settlements.

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

Republican Toza Hudud SUE and its district/city branches are in charge of collecting, transporting, and disposing MSW in the RK⁶. To date, the Company's balance sheet includes:

- 14 out of 17 operating MSW landfills in the RK and one not yet operational (in the city of Nukus);
- 709 waste collection stations with containers for MSW collection; and
- Garages and workshops at the Company's district divisions, 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 RK was performed in December 2019 against the applicable requirements of the RoU and EU regulations⁷ and the EBRD's ESP (2014).

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 the registration of workplace injuries, rights to land for existing

⁶ In addition to the Toza Hudud SUE in the RK, a number of private companies provide services for collecting and disposal of MSW in the region.

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 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>.

facilities, work of security personnel, and adherence to non-use of child and forced labour. Non-compliances are associated with the lack of certification of workplaces, and inventory of waste generated at the enterprises of Toza Hudud SUE has not been carried out.

Partial compliance of the Company's activities with the EBRD's and European Union's requirements was identified in relation to fire safety, emergency preparedness (including to fires), and preparedness to natural disasters (earthquakes and dust storms), industrial accidents.

There are instances of unauthorized MSW sorting performed at some of the Company's facilities by third parties. There are no policies in the field of environmental protection, personnel management, labour protection and fire safety, there are no instructions for the handling of hazardous chemicals and hazardous waste (including their storage). The company does not have a formalized procedure for filing and resolving complaints from employees and from external stakeholders. Also, no contractor management procedure has been developed.

The detailed analysis of non-compliances was completed and recommended actions 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 between 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 and technical solutions proposed in the PIP. Afterwards, the **residual impacts 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 improvement of environmental and sanitary conditions of the territory and living conditions of the population due to the improved sanitary and epidemiological situation in the RK, 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 through the supply of raw materials in significant volumes for recycling enterprises (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 would 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 such as: deteriorated condition of road pavement (at operation stage) and bridges (at construction and operation stages) on the roads that are expected to be used for the transportation of Project cargo / MSW; reduced capacity of roads used during the operation of the Project, and road safety risks, especially in 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 operation stage. 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. Presumably, the impact on migrating wild animals – inhabitants of the Lower Amudarya State Biosphere Reserve (a protected nature area) - is possible due to the movement of the Project's specialized vehicles along a potential route connecting the Amudarya District TS and the Nukus City Landfill (at the operational stage).

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

Moderate to major	Moderate	Minor to moderate	Minor	Negligible to minor	Negligible
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Legend:

C – construction stage, O – operation stage, R – closure and remediation stage (MSW landfills)
 “adv.” – adverse impact, “pos.” – positive impact

Impact	Project Stage	Residual Impact Significance
Improvements in the environmental and sanitary conditions in the Project area	C, O	Pos.
Impact on regional economy		
Increased tax revenues	C, O	Pos.
Additional opportunities for small and medium business	O	Pos.
Contribution to climate change	O	Pos. (additional decrease in GHG emissions from MSW management system in RK with

Impact	Project Stage	Residual Impact Significance
		smaller Project's contribution to climate change to enhance positive impact)
Impact on E&S Receptors Resulting from the Project-Related Transportation of Construction Materials/Equipment (Construction and Remediation Stages) and MSW (at the Operation Stage)		
Impact on the natural habitats within the 'corridors of influence' extending along the roads	C	Neg.
	O	Neg.
Noise and vibration impacts	C	Neg.
	O	Neg.
Impact on cultural heritage	C	Neg.
	O	Neg.
Impact on public health in the affected communities	C	Neg.
	O	Neg. (for tenants of houses standing along the roads)
		Neg. (for other affected community members)
Public safety risks in the affected communities	C	Neg.
	O	Neg.
Impact on migratory wildlife species (Bactrian (Bukhara) deer)	C	Neg.
	O	Neg.
Vibration impact on irrigation structures	C	Neg.
	O	Neg.
Impact on Infrastructure		
Impact on Road Infrastructure		
Impact on bridge crossings	C	Neg. (roads not included in the PIP)
	O	Neg.
Impact on road pavement	C	Neg.
	O	Neg. (roads not included in the PIP)
Reduced traffic throughput capacity and change in existing traffic speed regime	C	Neg.
	O	Neg. (roads within the residential areas and their surroundings)
		Neg. (other roads)
Deteriorated traffic safety situation (i.e., higher risk of traffic accidents) on the affected roads	C	Neg.
	O	Neg. (roads within the residential areas and their surroundings)
		Neg. (other roads)
Impact on Regional Electricity Supply System	C	Neg.
	O	Neg.
Impact on Regional MSW Management System	C	Neg.
	O	Neg.
Impact on Employment		
Engagement of contractors	C	Pos.
Creation of jobs for local communities	C	Pos.
	O	Pos.
Reduction in the number of existing jobs	O	Neg.
Closure of two private MSW landfills	O	Neg.
Impact on Household Income		
Increased income as a result of employment	C, O, R	Pos.
Impact on income of farmers whose land lies within the SPZs of planned MSW landfills	O	Neg.
Impact on Household Spending		
Increase in MSW collection tariffs for individuals and legal entities in the region	C, O	Neg.

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

- A residual minor to moderate significance is predicted for some negative impacts, including:
 - air pollution due to emissions of pollutants within the sites of all MSW landfills at the construction and operation stages;
 - increased noise and vibration levels within the sites of all MSW landfills and TSs, as well as along the route of the access road to the Kungrad District Landfill, at the construction and operation stages;
 - dusting of the soil cover of the territories adjacent to the Karauzyak District Landfill (at all stages of the life cycle of this facility) and to the Amudarya and Khodjeyli District TSs (during the construction stage);
 - In case of high winds (over 10.8 m/s) - dust pollution of surrounding water bodies due to works at the Kungrad District Landfill at all stages of its life cycle;
 - A change in hydrogeological conditions in the vicinity of the entrance road to the Karauzyak District Landfill during the construction stage;
 - Changes in the nature of the landscape and visual impact from all MSW landfills (except for the Nukus City Landfill) after 5–10 years of operation;
 - Destruction of animal habitats at the sites of the Turtkul District and Nukus City landfills;
 - Occupational health and safety risks to workers during the construction and operation stages:
 - due to the increased level of noise and vibration within the sites of all MSW landfills and TSs, as well as along the access road to the Kungrad District Landfill, and
 - Due to air pollution related to air emissions within the MSW landfills' sites.
- Visual impact from the Turtkul District Landfill **after its remediation is completed** is predicted to be positive with a residual significance of minor to moderate.
- The MSW landfills are expected to attract birds, and the Project will contribute to increasing their numbers in the vicinity of the Turtkul and Karauzyak District landfills (significance of this residual positive impact is minor to moderate) and the Kungrad District Landfill (significance of this positive residual impact is moderate).
- The identified impacts on soil, groundwater, flora and fauna, landscapes and visual perception, topsoil of sites / routes, and cultural heritage (excluding those described above) have residual significance ranging from 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) as well as negative impacts (including 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.

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:

1. Closure and remediation of the Company's operational MSW landfills;
2. Preparation of sites for temporary deposition of waste during the construction of MSW landfills and remediation of the existing Turtkul, Kungrad and Karauzyak District Landfills;
3. Site preparation of the TSs, which will be located on the MSW landfills' territories;
4. Construction/reconstruction of the roads that are not included in the PIP, but which will be used for MSW transportation from the TSs to the MSW landfills; and
5. Construction/reconstruction of the electricity infrastructure.

Only the impacts of the associated projects 1-4 above were analysed during the E&S Assessment, since the alignments of the OHLs have not been defined yet.

The impacts from the closure and remediation of the Company's operational MSW landfills are similar to the impacts from the remediation of the Project landfills' waste disposal areas. The impacts from the construction/reconstruction of the roads that are not included in the PIP are 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 remediation of the operating MSW landfills, b) preparation of sites for temporary deposition of MSW at the existing Kungrad and Karauzyak District landfills and works on constructing new MSW landfills at these sites; and c) reconstruction of the roads that are not included in the PIP. It should be noted that the closure and remediation of the Company's MSW landfills will enhance **the main positive effects of the Project** – the improvement of the sanitary and epidemiological situation in the RK and reduction in the soil and groundwater

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>.

contamination risks – provided that the works are carried out in line with good international practice (GIP). The significance of this cumulative impact is moderate to major, transferring into major.

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

- Implementation of the MSW sorting schemes in urban multi-flat housing areas in the RK.
- Recycling infrastructure development projects; and
- Creation of free economic zones in the RK.

The completed assessment has shown that the cumulative impacts of the Project components and parallel projects on the vital E&S components 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 or major significance; positive impacts of moderate significance are likely to be associated with the local employment opportunities.

8. STAKEHOLDER ENGAGEMENT

The Company will implement the SEP approved by the 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 RK will introduce the **grievance mechanism** that will be compliance with both, the legislation of the RoU and the EBRD requirements. The 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:	Saparov Abdirakhman Danabaevich
Position:	Chairman of the Committee for the Protection of the Environment and Ecology of the Republic of Karakalpakstan
Address:	230100, Nukus city, Berdakhskoe shosse b / n
Email:	rktabiya@exat.uz or nukus@uznature.uz
Phone:	0 (361) 224-19-51, 0 (361) 224-08-77

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

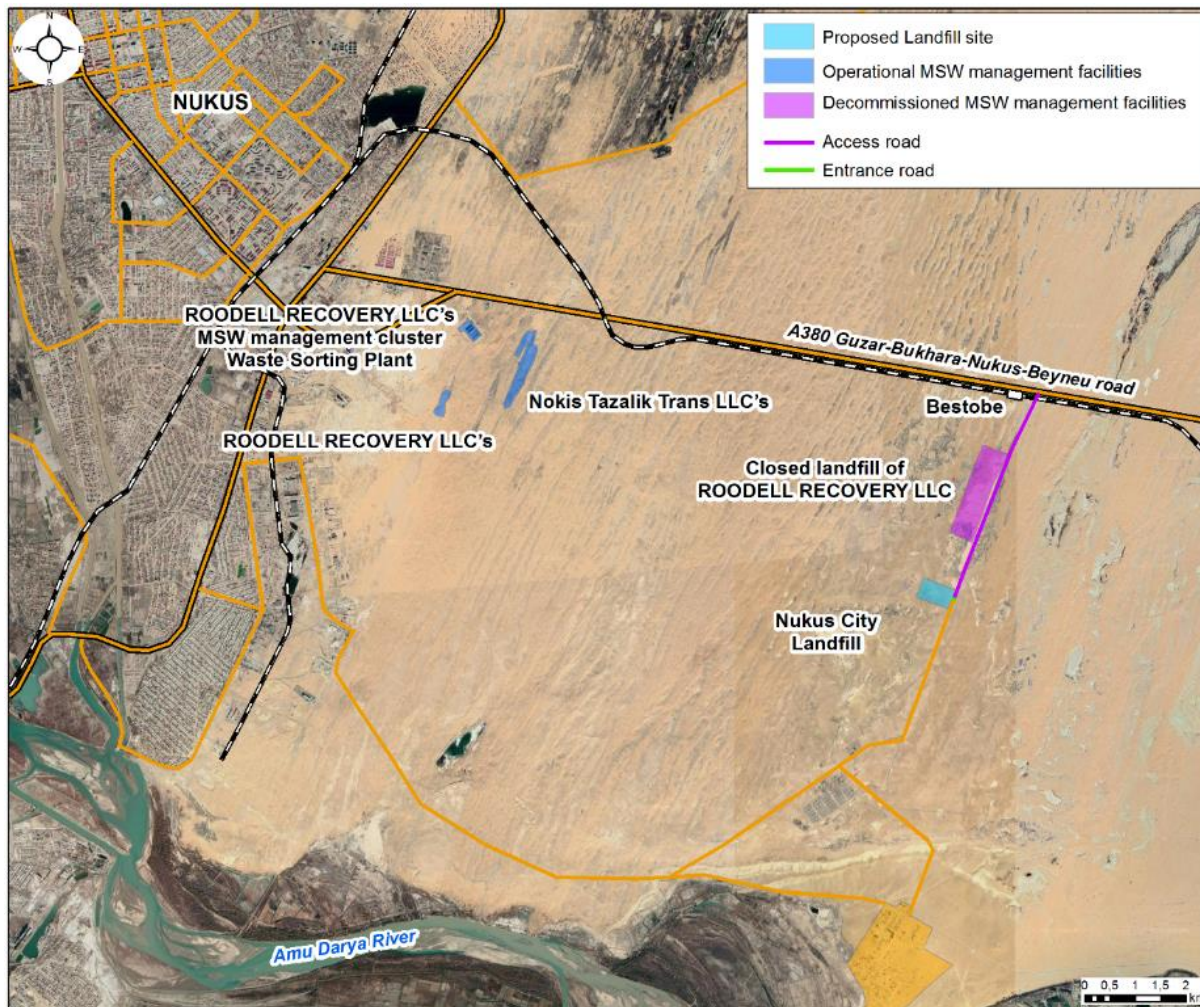
In accordance with the EBRD's ESP, the monitoring of the Project's E&S parameters should be conducted as per the Environmental and Social Monitoring Programme. The Programme should consider the identified risks and impacts of the Project implementation, their significance and scale and should be agreed with GosKomEkologiya and EBRD. The Programme shall meet the requirements of the EBRD and the legislation of the RoU⁹. 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 operational stage, the E&S Monitoring Programme will be implemented by Toza Hudud SUE in the RK, the republican and district structures of the Committee on Ecology and Environmental Protection of the RK. The Operations 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 Nukus City Landfill Site

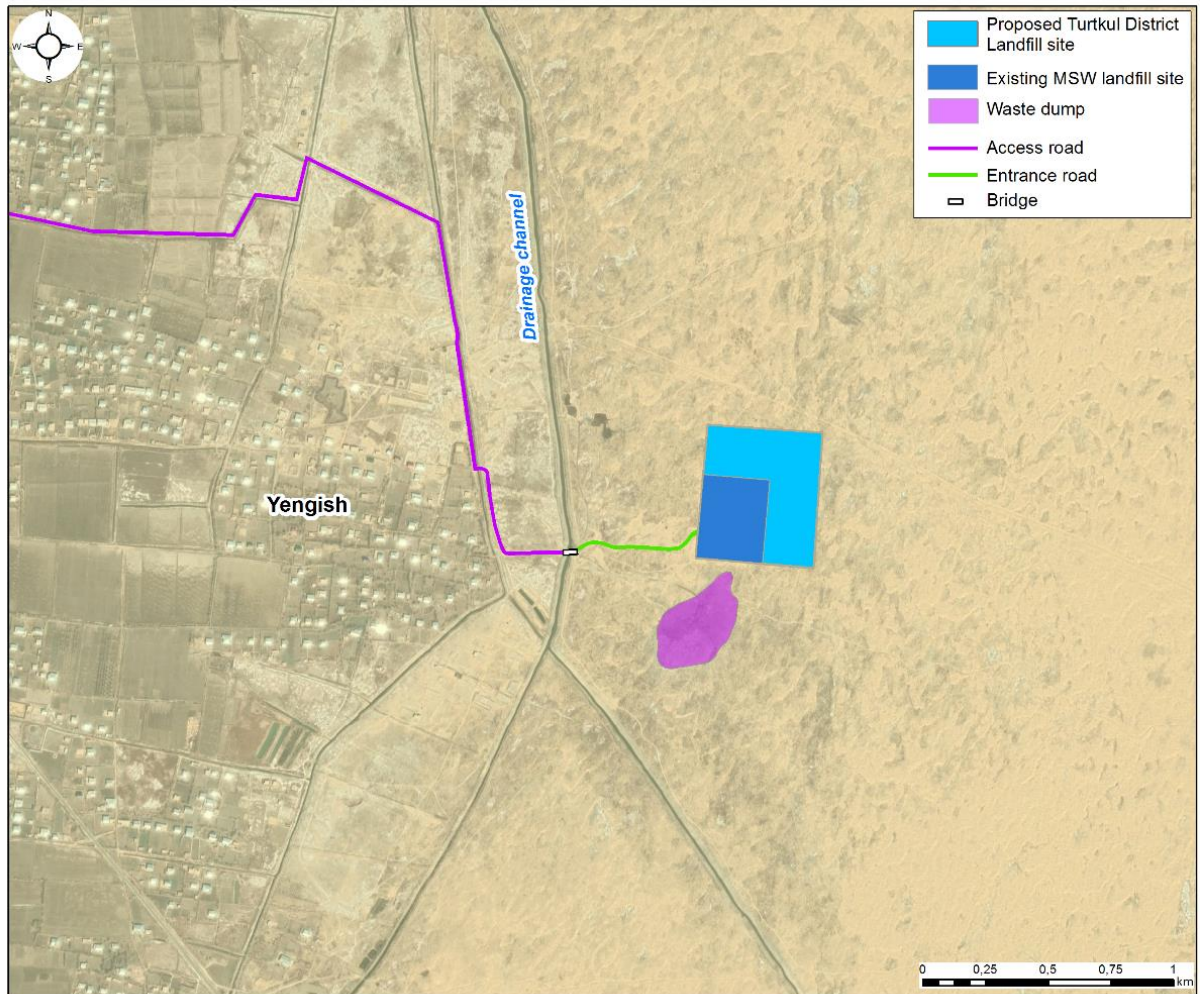


a)



b)

Proposed Nukus City Landfill: General View of the Landfill Site (December 2019) (a) and View at the Access Road to the Landfill Site and Closed Dumpsite to the North of It (b) (March 2019)



Location Map of the Turtkul District Landfill Site

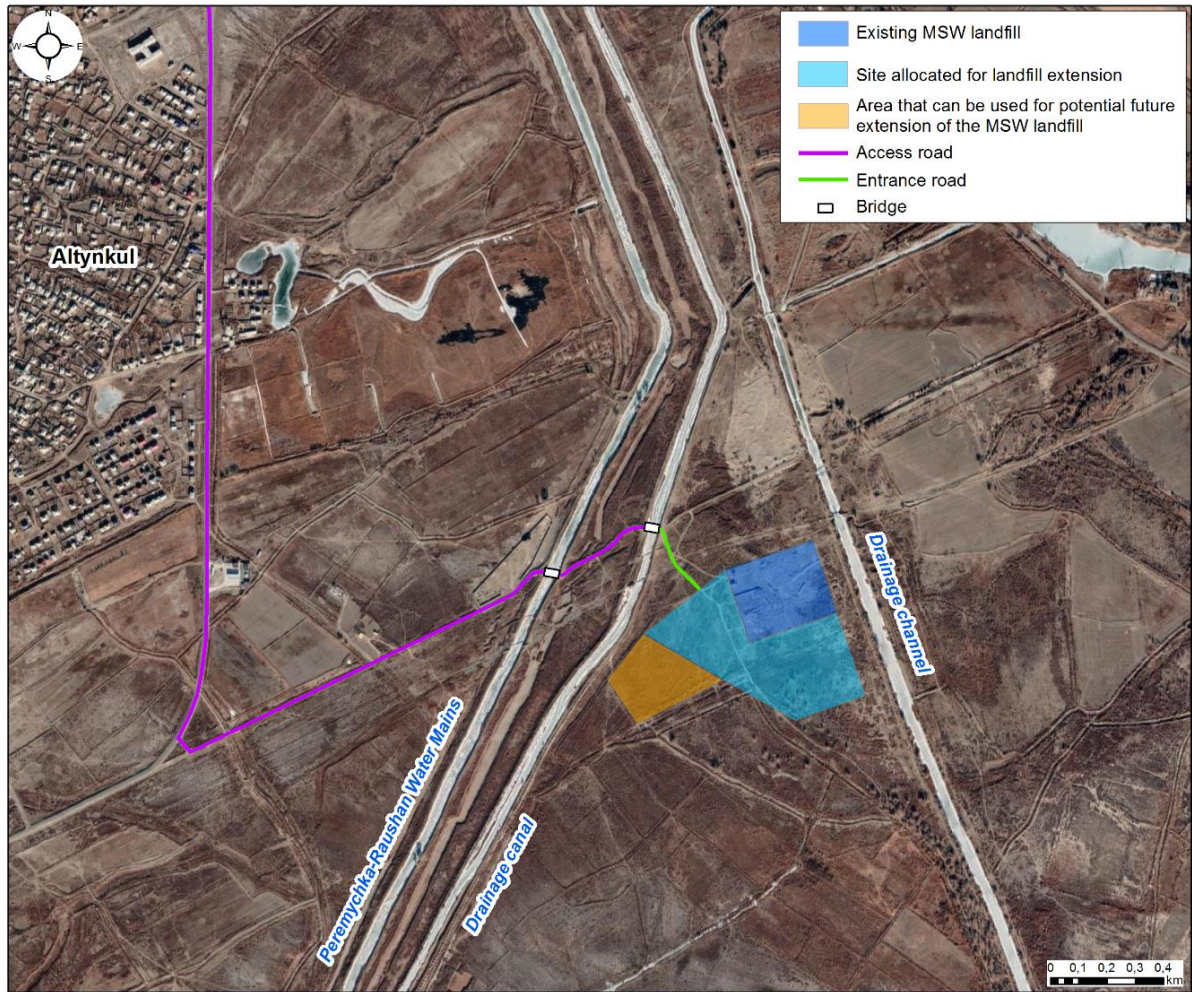


a)



b)

Proposed Turtkul District Landfill: Non-controlled Waste Dump Adjacent to the Landfill Site (a) and General View of the Proposed Landfill Extension Area (b)



Location Map of the Kungrad District Landfill Site

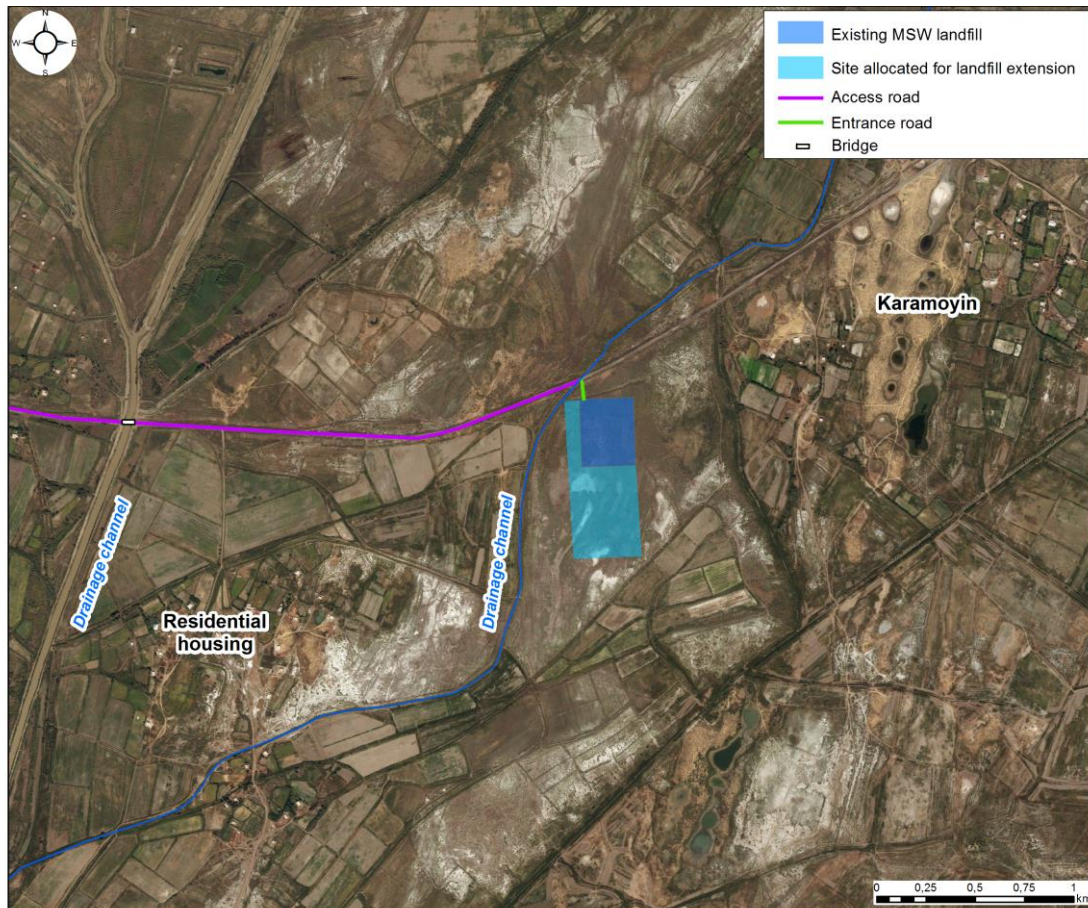


a)



b)

Proposed Kungrad District Landfill: General View of Existing Landfill Extension Area (a) and Dilapidated Bridge over the Nearby Channel (b)



Location Map of the Karauzyak District Landfill



a)



b)



c)

Proposed Karauzyak District Landfill: General View of the Existing Landfill with the Access Road (a) and Proposed Landfill Extension Area (b, c)

ANNEX 2. RESIDUAL IMPACT SIGNIFICANCE FOR INDIVIDUAL PROJECT COMPONENTS

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

“+” – impact is likely to occur; “-“– impact is not likely,

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

“pos.” – positive impact

Note: Under normal operating conditions, the Project impacts are expected to be negative in most cases, except the positive visual impact from the MSW landfill remediation

Impact	Project Cycle	MSW Landfills				Transfer Stations								Roads to be Reconstructed			
		Nukus City Landfill Including Entrance Road (New Construction)	Turtkul District Landfill (Reconstruction and Extension)	Kungrad District Landfill (Reconstruction and Extension)	Karauzyak District Landfill (Reconstruction and Extension)	Amydarya District TS	Khodievli District TS	Beruniy District TS	Elikkali District TS	Kanlykul District TS	Muynak District TS	Chimbay District TS	Takhtakupyr District TS	Access Road to the Kungrad District Landfill	Entrance Road to the Turtkul District Landfill	Entrance Road to the Kungrad District Landfill	Entrance Road to the Karauzyak District Landfill
Impacts from Project Facilities under Normal Operating Conditions																	
Air pollution by emissions within the Project sites/routes	C	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
	O	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
	R	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-
Air pollution by emissions within the nearby residential areas adjacent to the Project sites/routes	C	-	+	-	+	+	+	-	-	-	-	+	+	-	+	-	-
	O	-	+	-	+	-	-	-	-	-	-	-	-	+	-	-	-
	R	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-
Noise and vibration within the Project sites/routes	C	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
	O	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
	R	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-
Noise and vibration within the nearby residential areas adjacent to the Project sites/routes	C	-	+	-	+	+	+	+	-	-	+	+	-	-	+	-	-
	O	-	+	-	+	+	+	-	-	+	+	-	-	+	-	-	-
	R	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-
	C	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-

Impact	Project Cycle	MSW Landfills				Transfer Stations								Roads to be Reconstructed			
		Nukus City Landfill Including Entrance Road (New Construction)	Turtkul District Landfill (Reconstruction and Extension)	Kungrad District Landfill (Reconstruction and Extension)	Karauzyak District Landfill (Reconstruction and Extension)	Amydarya District TS	Khodjeyli District TS	Beruniy District TS	Elikkali District TS	Kanlykul Dist5rict TS	Muynak District TS	Chimbay District TS	Takhtakupyr District TS	Access Road to the Kungrad District Landfill	Entrance Road to the Turtkul District Landfill	Entrance Road to the Kungrad District Landfill	Entrance Road to the Karauzyak District Landfill
Degradation and contamination of natural or virtually undisturbed soil cover at the Project sites/routes	O	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Topsoil contamination at the technogenically modified sites	C	-	-	-	-	+	+	+	+	+	+	+	+	+	+	+	+
	O	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Soil contamination in the surrounding areas as a result of dust emissions from the Project sites/routes during high winds (over 10.8 m/s)	C	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
	O	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
	R	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-
Degradation of soil cover	C	-	-	-	-	-	-	-	-	-	-	-	-	+	+	+	+
	O	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wind-blown debris escaping from the Project sites and littering nearby areas at wind speeds over 10.8 m/s	C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	O	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
	R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Groundwater pollution within the Project sites/routes	C	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
	O	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Decline in groundwater resources in the areas where the Project sites are located	C	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
	O	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
	R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Change in the hydrogeological conditions in the vicinities of the landfill access/entrance roads	C	-	-	-	-	-	-	-	-	-	-	-	-	+	-	+	+
	O	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+
	O	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+

Impact	Project Cycle	MSW Landfills				Transfer Stations								Roads to be Reconstructed			
		Nukus City Landfill Including Entrance Road (New Construction)	Turtkul District Landfill (Reconstruction and Extension)	Kungrad District Landfill (Reconstruction and Extension)	Karauzyak District Landfill (Reconstruction and Extension)	Amydarya District TS	Khodjeyli District TS	Beruniy District TS	Elikkali District TS	Kanlykul Dist5rict TS	Muynak District TS	Chimbay District TS	Takhtakupyr District TS	Access Road to the Kungrad District Landfill	Entrance Road to the Turtkul District Landfill	Entrance Road to the Kungrad District Landfill	Entrance Road to the Karauzyak District Landfill
Surface water pollution in the surrounding areas by dust emissions from the Project sites/routes under high wind conditions	R	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-
Disturbance caused to the riparian strips of watercourses and water pollution in these watercourses as a result of reconstruction works	C	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-
	O	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Windblown debris escaping from the Project sites and littering adjacent watercourses at high winds (over 10.8 m/s)	C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	O	-	-	+	+	+	+	+	+	-	+	+	-	-	-	-	-
	R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Land acquisition, land use change/restriction	C	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-
	O	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-
Destruction of natural or virtually undisturbed vegetation cover within the Project sites	C	+	+	+	+	+	+	+	+	+	+	+	-	-	-	-	-
	O	+	+	+	+	+	+	+	+	+	+	+	-	-	-	-	-
	R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Destruction of vegetation cover within the allocated road strips of the landfill access and entrance roads	C	-	-	-	-	-	-	-	-	-	-	-	+	+	+	+	+
	O	-	-	-	-	-	-	-	-	-	-	-	+	+	+	+	+
	R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pollution of natural or virtually undisturbed vegetation cover by dust emissions in the vicinities of the Project sites/routes during high winds (over 10.8 m/s)	C	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
	O	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	R	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-
Destruction of wildlife habitats within the Project sites	C	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-
	O	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Destruction of wildlife habitats within the allocated road strips of the access roads to MSW landfills	C	-	-	-	-	-	-	-	-	-	-	-	+	+	+	+	+
	O	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Impact	Project Cycle	MSW Landfills				Transfer Stations								Roads to be Reconstructed			
		Nukus City Landfill Including Entrance Road (New Construction)	Turtkul District Landfill (Reconstruction and Extension)	Kungrad District Landfill (Reconstruction and Extension)	Karakauyak District Landfill (Reconstruction and Extension)	Amydarya District TS	Khodjeyli District TS	Beruniy District TS	Elikkali District TS	Kanlykul Dist5trict TS	Muynak District TS	Chimbay District TS	Takhtakupy District TS	Access Road to the Kungrad District Landfill	Entrance Road to the Turtkul District Landfill	Entrance Road to the Kungrad District Landfill	Entrance Road to the Karauzyak District Landfill
Impact on wildlife (emissions, vibration, light and noise from the Project operations and MSW transportation in the vicinities of the Project sites/routes)	R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C	+	+	+	+	-	+	-	-	-	+	-	-	+	+	+	+
	O	+	+	+	+	-	+	-	-	-	+	-	-	+	+	+	+
MSW landfills attracting large numbers of birds	R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	O	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-
Impact on PNAs	R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	O	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Visual impact	R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C	-	+	-	-	+	+	+	-	-	+	+	-	-	+	+	-
	O	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-
	O	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-
- after the completion of remediation works within the waste disposal areas	R	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-
Impact on cultural heritage	C	+	+	+	+	+	+	+	+	+	+	+	-	-	-	-	-
	O	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Risks to employee health and safety	C	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
	O	+	+	+	+	+	+	+	+	+	+	+	-	-	-	-	-
	R	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-
	C	-	+	-	+	+	+	+	-	+	+	-	-	+	-	-	-

Impact	Project Cycle	MSW Landfills				Transfer Stations							Roads to be Reconstructed				
		Nukus City Landfill Including Entrance Road (New Construction)	Turtkul District Landfill (Reconstruction and Extension)	Kungrad District Landfill (Reconstruction and Extension)	Karakauyak District Landfill (Reconstruction and Extension)	Amydarya District TS	Khodjeyli District TS	Beruniy District TS	Elikkali District TS	Kanlykul District TS	Muynak District TS	Chimbay District TS	Takhtakupy District TS	Access Road to the Kungrad District Landfill	Entrance Road to the Turtkul District Landfill	Entrance Road to the Kungrad District Landfill	Entrance Road to the Karauzyak District Landfill
Community health impacts in the vicinities of the Project sites/routes (related to pollutant emissions including dust, bioaerosols and foul-smelling substances, noise, and artificial lighting)	O	-	+	-	+	+	+	+	-	-	+	+	-	+	-	-	-
	R	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-
Accidental Impacts from Project Facilities																	
Accidental pollution of groundwater as a result of leachate/effluent migration into the groundwater aquifers	O	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Accidental release of untreated flue gas from the medical waste incinerator	O	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Accidental pollution of soil cover and groundwater by untreated wastewater downstream of the Project sites	C	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
	O	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Littering nearby farmland and residential areas with wind-blown debris	O	-	+	-	+	-	+	-	-	-	-	+	-	-	-	-	-
Accidental pollution of soil, watercourses and water bodies in the surrounding areas as a result of dust emissions	C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	O	+	+	+	+	+	+	+	+	+	+	+	+	-	-	-	-
Fire risks for employees	O	+	+	+	+	+	+	+	+	+	+	+	+	-	-	-	-
Health risks to employees due to exposure to infected waste (at the MSW landfills and TSs) and associated risks to family members of landfill staff	O	+	+	+	+	+	+	+	+	+	+	+	+	-	-	-	-
Air pollution by waste combustion emissions reaching residential areas under high wind conditions	O	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-
Leachate seeping through landfill liner into the groundwater aquifers and spreading with groundwater flow to cause the pollution of drinking water sources	O	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-