Initial Environmental Examination

Project number: 51041-002
September 2018
Draft

UZB: Horticulture Value Chain Infrastructure Project Samarkand Agro-Logistic Center

Part 2 of 3

Prepared by the Rural Reconstruction Agency (RRA), Republic of Uzbekistan for the Asian Development Bank (ADB).

- for waterproofing of building foundation do not use bitumen. It is recommended to use high density polyethylene or its analog;
- all vehicles and techniques must comply with technical requirements and have to pass regular inspection as indicated into the national standards[21];
- prohibit open burning of solid wastes generated particularly from labor camps and during land leveling activities;
- minimize site leveling works during period of the high winds when winds could nevertheless direct dust towards adjacent communities;
- if minimization is impossible and measurements of dust level shows increasing baseline level of dust on 3 mg/m^3 in the monitoring points indicated in Environmental Monitoring Plan (Chapter 8.2), it is necessary to install dust protection screen as indicated on Figure 23.

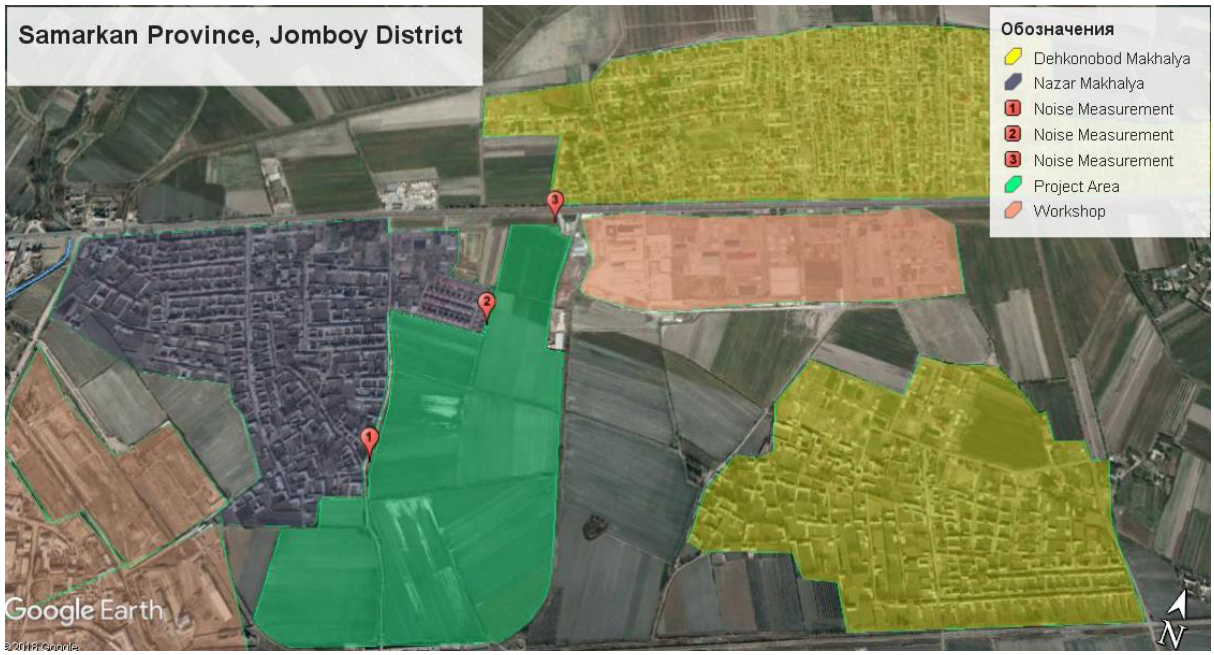

Figure 23: Recommended Dust Monitoring Points

Noise impact

Site preparation stage

170. Noise pollution and excess norms for vibration may occur mainly during operation of machinery and trucks movement. During the land leveling process the noise will be generated by excavator, bulldozers, compactor (if necessary) and trucks used for wastes and materials transportation.

171. The main receptor of noise on the project site is inhabitants of settlements Nazar and Dekhonobod and workers on the project site. The distance between border of the project site and settlements Nazar (P1 and P2) are around 30 meters (Picture 18). The distance between transport college and project site (P3) is around 180 meters. There are no other sensitive receptors, such as hospitals or kindergarten in a radius of up to 1 km from project site.

[21] "O'z DSt 1057:2004 Vehicles. Safety requirements for technical conditions" and "O'z DSt 1058:2004 Vehicles. Technical inspection. Method of control".

172. To assess an anticipated noise level during these type of works calculations was done based on existing information about operation of various equipment. Level of noise generated by various equipment was used based on existing standards.

Table 7: Noise Level Form Various Techniques (at the distance 50 feet[22])[23]

Noise source	Equivalent noise level, dB
Excavator	81
Dozer (Bulldozer)	82
Compactor (ground)	83

173. As a rule, noise caused by moving equipment is reduced with distance. Such reduction has logarithmic properties. In case of noise caused by construction activities, noise spread pattern from the noise point is used, that can be determined as: Noise $level_1$ - Noise $level_2$ = 20 log r_2/r_1. Calculation of noise propagation from these machineries at the different distances is presented in Table 8.

Table 8: Noise Levels at the Various Distances

Distance	Equivalent noise level (maximum), dB		
	Excavator (81)	Dozer (82)	Compactor (83)
20	78	79	80
30	74	75	76
50	68	69	70
180	54	55	56

174. Noise level from a single working equipment indicated in Table 7 will exceed permissible level 55 dB[24] for day time for residential area. Noise level will be decreased by fence (2 meters height) around entire the project site will be installed in the beginning of the construction activities, noise level will decrease on 7 dB[25]. In situation, when height of fence will be 4 meters, noise level will decrease on 14 dB for 30 and 180 meters on 16 dB for 20 meter distance (Table 8a). In addition to this, surface factor (area between construction site and college is non-asphalted/concrete, it is earth with some trees for college case) will reduce noise at least on 1.5-2 dB.

Table 8 (a): Noise Levels at the Various Distances

Distance	Decreasing of noise level, dB					
	Excavator (81)		Dozer (82)		Compactor (83)	
	2m fence	4 m fence	2m fence	4m fence	2m fence	4 m fence
20	71	62	72	63	73	64
30	65.5	58.5	66.5	59.5	67.5	60.5
50	59	52	60	53	61	54
180	45	438	46	39	47	40

[22] One feet is equivalent to 0.348 meters, 50 feet is meters 15m
[23] Part Two – Construction noise impact assessment, Table 7-4
[24] SanN&R 0267-09, Acceptable noise levels for habitable areas Uzbekistan 0267-09 and IFC, EHS Guidelines, 2011
[25] CRN 2.01.08 Noise protection, Table 29

175. Therefore, single working equipment during this type of works may cause exceeding noise level in the closest settlement – Nazar, if machinery works closer than 50 meters to the living houses. In this case, local population needs to be informed in advance about planning works with noise equipment. In case of receiving complains from population on noise, additional measures need to be undertaken: adding new mufflers or sound absorbing materials to the noise generating equipment.

Figure 23a: Recommended 4 meter Acoustic Screen (with length 400 meter and 100 meter) for Nazar Settlement and College

176. For educational entity – college (P3), located at the distance 180 m from construction site another national standard for noise level is applied – 40 dB in classrooms[26]. Even IFC standards provides another noise level – 45 dB for night time and 55 dB for day time[27], more strict national standard will apply for this project. Noise propagation showed that noise level generated by compactors (56 dB) will exceed standards (40 dB). 4 meter fence will decrease noise level up to 42 dB,[28] plus 2 dB due to ground absorption, which means that the anticipating noise level in classrooms with open window will not exceed 40 dB. Therefore, noise level from construction activities will not impact on college normal performance if 4 meter fence be constructed as indicated on Figure 23a.

177. If several machineries will work at one time during the land leveling, calculation of total noise level generating during this stage will be based on the Rules on Decibel Addition.[29]

[26] SanN&R 0267-09, Acceptable noise levels for habitable areas Uzbekistan 0267-09.
[27] IFC, Environmental, Health and Safety Guidelines, 2011, Table 1.7.1.
[28] Part Two – Construction noise impact assessment, Chapter 7.1.1.2.
[29] Part Two – Construction noise impact assessment, Chapter 7.1.3.4.

Table 9: Rules for Combining Noise Level

When two decibel values differ by:	Add the following to the higher decibel value:
0 or 1 dB	3 dB
2 or 3 dB	2 dB
4 to 9 dB	1 dB
10 dB or more	0 dB

Source: USDOT (1995).

178. The difference between two lowest noise equipment for all construction equipment operating together, the two lowest level equipment were added using rules indicated in Table 4, then thirds noise level was added to previous results using the same rules.

179. Two machineries with the lowest noise level were added: 82-81=1 dB. Therefore, 3 dB was added to 82, resulting in a combined noise level of 85 dB. Add this value to the next noise level using Table 4: 85-83 is a difference of 2 dB, therefore 2 dB is added to 83 dB, resulting in a total noise level for all equipment combined of 85 dB.

180. Noise level propagation for the combined noise level showed that at the distance on the 20, 30 and 180 m noise level will exceed standards on 55 dB without considering fence of construction site.

Table 10: Reducing Noise Level for Several Machinery

Distance	Equivalent noise level (maximum) without fence, dB	Decreasing of noise level due to fence, dB		Equivalent noise level with one fence dB	
		2 meter	4 meter	2 meter	4 meter
20	82	7	16	75	66
30	78	7	14	71	63.6
60	70	6+1.5	14+1.5	62.5	55
180	58	7+1.5	14+1.5	51	44

181. As shown in the table, for situation when several machinery working in same time, the noise level will exceed standards even with 4 meter fence up to distance 60 meter. Therefore, it is recommended do not use machinery at the same time at the distance, closer that 60 meter to the Nazar settlement.

182. It should be noted, that presented calculation shows the worst case scenario – the maximum anticipated noise. The noise level may reduce due to such factors, as topography, vegetation, atmospheric and equipment utilization factors, which is not possible to calculate on this stage.

183. Therefore, continuously monitoring of noise level needs to be implemented on the construction site on the regular base in the points, indicated on the Figure 18 based on the methodology indicated into the Environmental Monitoring Plan (Chapter 8, Table 22). In case of exceeding standards or receiving complains from population, additional mitigation measures, such as adding new mufflers or sound absorbing materials to the noise generating equipment, construction additional acoustic screen could be applied.

Main Construction activities

184. The maximum movement of trucks coming in and from the construction site is expecting during earth works. Approximately amount of earth which will be excavated for the construction of ALC's building and facilities' foundation was calculated. The calculation was done by multiplying of total square under all buildings on the territory of the ALC (82,719 m^2) on depth of foundation (2 m). Based on calculation, maximum amount of earth which will be excavated, transported and disposed on the landfill is 165,438 m^3. Some part of the excavated soil will be used for backfilling, but the main part will need to be disposed.

185. In average, one excavator could dig 600-800 m^3 of soil during the one shift (8 hours). One truck could carry around 15 m^3 of soil per one trip, which means that 80-107 trucks will be able to take out the earth excavated by two excavators during one shift. If more excavators will work on the construction site at the same time, it means that more trucks will operate on the construction site.

186. During constructions stage, various techniques and machinery will work in the same time. As per existing practice, the following machinery will be used during this stage: Excavators, bulldozer (dozer), air compressor, truck crane, assembly crane, compactor, vibrators for concrete compaction. Maximum noise levels for these equipment are presented in Table 11.

Table 11: Noise Level Form Various Techniques (at the distance 50 feet[30])[31]

Noise source	Equivalent noise level, dB
Excavator	81
Dozer (Bulldozer)	82
Compactor (ground)	83
Air Compressor	78
Truck (mobile) crane	83
Vibrator for concrete compaction	76
Backhoe	80
Truck	88
Hydraulic hammer	100
Pilling machinery	97
Hydraulic concrete saw	102

187. Using the same approach described in the para 171, it was calculated that maximum noise level from construction equipment will reach 102 dB. Three noisier equipment were selected – pilling machinery, hydraulic hammer and trucks. Hydraulic concrete saw will be used mostly inside of building, therefore its impact on houses was not considered. Noise propagation exercise showed the anticipated noise level during (Table 12) conduction of the main works.

188. For this types of construction works an impact on college as a receptor was not accessed because no construction works will be carried out on the lands located in front of college. That lands will stay as a reserve land for further development under the next phase of the project.

[30] One feet is equivalent to 0.348 meters, 50 feet is 15 meters
[31] Part Two – Construction noise impact assessment, Table 7-4

Table 12: Rules for Combining Noise Level

Distance	Equivalent noise level (maximum), dB	Decreasing of noise level due to 4 meter fence(s), on dB		Equivalent noise level with fence dB		Standards, dB (day time)
		2 meter	4 meter	2 meter	4 meter	
20	99	7	16	92	83	55
30	94.6	7	14	87.6	80.6	55
60	87	6+1.5	14+1.5	79.5	71.5	55
180	75	6+1.5	14+1.5	67.5	59.5	55
250	71.5	6+1.5	14+1.5	74	55	55

189. As shown in the table, noise level from the three nosiest equipment working at the same time will increase standards for day time. Therefore, hydraulic hammer and pilling machinery should not be used at the same time within distance closer than 250 meters to the settlement. Moreover, route of movement loaded trucks inside of ALC should not be placed closer than 70 meters to the settlement Nazar. Otherwise, the noise level from movement of loaded trucks will exceed standards in the settlement.

190. The closest to settlements pavilion which will be constructed on the first stage will be pavilion # 6. The closest houses are located at the distance more than 190 meters. Using single pilling machinery (the nosiest) at this distance may cause exceeding of noise level in front of houses up to 69 dB. Considering reduction of noise level due to 2 meter fence and vegetation between construction site fence and anticipating noise level will be around 60 dB. Pilling works will not be continuously, they will have short term character, therefore, noise from this machinery could be considered as insignificant.

191. Nevertheless, continuously monitoring of noise level needs to be implemented on the construction site on the regular base in the points, indicated on the Figure 18 based on the methodology indicated into the Environmental Monitoring Plan (Chapter 8, Table 22). In case of exceeding indicated parameters (Table 12) or receiving complains from population, additional mitigation measures, such as adding new mufflers or sound absorbing materials to the noise generating equipment, construction of additional acoustic screen close to noise source could be applied.

192. For the stages **of construction of internal roads and landscaping, access road and during installation of equipment** the same requirements need to be applied.

Vibration impact

193. Vibration impact during construction stage could be caused by the same machinery. The level of vibration and its propagation within a distance was calculated in accordance with methodology indicated in Transportation and Construction Vibration Guidance Manual (2013).

194. The Manual with reference to Transit Noise and Vibration Impact Assessment (Federal Transit Administration 2006), provides information on vibration level from different construction equipment (Table 13). The table does not provide data on mobile and assembles cranes since vibration level from this equipment is not significant.

Table 13: Vibration Source Amplitudes for Construction Equipment

Equipment	Reference in PPV at 25 feet (in/sec)
Excavator (Clam shovel drop)	0.202
Large bulldozer	0.089
Small bulldozer	0.003
Loaded trucks	0.076

Source: Federal Transit Administration 1995 (except Hanson 2001 for vibratory rollers).

195. Using this data, vibration from this equipment can be estimated by the following formula:

$$PPV_{eqp} = PPV_{Ref}(\frac{25}{D})^n$$

Where:

PPV_{Ref} = reference PPV at 25 ft. (Table 6);

D = distance from equipment to the receiver in ft;

n = 1.1 (the value related to the attenuation rate through ground).

196. Values of vibration level calculated in accordance with this formula are presented in Table 14.

Table 14: Calculation of Vibration from Equipment

Distance	Vibration from equipment,							
	Large bulldozer		Small bulldozer		Loaded trucks		Excavator	
	in PPV (in/sec)	in dB	in PPV (in/sec)	dB	in PPV (in/sec)	dB	in PPV (in/sec)	dB
20	0.11	67	0.0038	37	0.097	66	0.26	74
30	0.07	63	0.0024	34	0.062	62	0.17	71
50	0.04	58	0.0014	29	0.035	57	0.09	65

Source: PPTA's consultants, 2018.

197. National standards for vibration level in residential houses are provided in Sanitarian Norms and Rules (SNR) № 0146-04 "Design of the living houses in climatic conditions of Uzbekistan". For living houses the standards is 67 dB for night time and 72 dB for day time with frequency in 37 and 61 Hz and for night time is 67 dB.

Table 15: National Standards for Vibration

Period	Permanent vibration, dB
Day time	72
Night time	67

198. International standards for vibration level used for this IEE are provided in "Transportation and Construction Vibration Guidance Manual" (2013). The Manual provides two types of limits for vibration level – for "frequent events" and "infrequent events". The Manual defines that "Frequent events" (continuous) is defined as more than 70 events per day and "Infrequent events" (single event) is defined as fewer than 70. As showed a calculation of maximum amount of trucks which will move to and from site will be more than 80 (para 183-184). Therefore, stricter (lower threshold) is applied for the current assessment for vibration impact. For example, a threshold for residential buildings with plastered walls/... is 0.2 in/s for continuous vibration and for single event condition is 0.5 in/s.

199. The Table 16 presents maximum continuous vibration level for preventing damages for different type of buildings. This data could be used as thresholds for both phases – construction and operation for structural integrity of buildings/houses.

Table 16: Maximum Continuous Vibration Levels for Preventing Damage (mm/s)

Description of building type	AASHTO (1990)			SAS (1992)		
	mm/s	in/s	dB*	mm/s	in/s	dB*
Historic sites or other critical locations	2.5	0.09	94	2.5	0.09	94
Residential buildings with plastered walls / Building with foundation walls and floors in concrete, wooden ceilings and walls in masonry	5.1-7.6	0.2-0.29	100-104	5.1	0.2	100
Residential buildings in good repair/ Building with foundation walls and floors in concrete, walls in concrete or masonry	10.2-12.7	0.4-0.49	106-108	7.6	0.29	100
Engineered structures without plaster / Buildings in steel or reinforced concrete	25.4-38.1	0.99-1.4	114-118	12.7	0.49	108

AASHTO = American Association of State Highway and Transportation Officials, SAS = Swiss Association of Standardization.
Source: California Department of Transportation (2013), US Transportation Research Board (2012).
* Converting into dB was done based on formula provided in para 57.

200. To convert vibration level presented in dB into vibration velocity presented in mm/s and vice versa the following formulas were used[32]:

$$V_{dB} = 20 * Lg10(V) + 86,$$
$$V = 10^{(V_{dB}-86)/20},$$

where

V_{dB} – vibration level in dB, and V – vibration velocity in mm/s

201. As showed results of calculation of vibration level (Table 17), vibration from construction activities on this stage will not impact on people living on surrounded area and structures since it is below standard in 72 dB for day time.

202. Anticipated vibration levels at the distances 30 meter is below standard. It will not also impact on residential building as well, since the highest vibration level will not exceed 0.2 in/s or 100 dB (Table 16).

Main Construction activities and construction of access road

203. Data on vibration from equipment generating vibration during these stages of construction activities are presented in Table 17. For completion of construction of access road (asphalting) vibration roller will be used as well.

[32] http://vibrocenter.ru/vibroacc.htm

Table 17: Vibration Level from Construction Equipment

Vibration source	Vibration level, in/s
Excavator	0.202
Dozer (Bulldozer) large	0.089
Compactor (ground) (vibration roller)	0.21
Loaded trucks	0.076
Vibrator for concrete compaction	0.21
Pilling machinery	0.734
Backhoe	0.089

Source: FTA, 2006.

204. Calculation of vibration level at the different distance are presented in table 18.

Table 18: Vibration Level at the Different Distance

Distance	Vibration from equipment from									
	Large bulldozer		Pilling machinery		Excavator		Vibration for concrete compaction		Compactor (vibration roller)	
	in/s	dB	in/s	dB	in/s	dB	in/s	dB	in/s	dB
20	0.11	67	0.83	85	0.097	66	0.26	74	0.27	75
30	0.07	63	0.53	82	0.062	62	0.17	71	0.17	71
50	0.04	58	0.30	77	0.035	57	0.09	65	0.01	46

Source: PPTA's consultants, 2018.

205. Therefore, vibration level, generating during construction works will not exceed standards for people (Table 15 – 72 dB) at the distance 30 and 50 m. It will also not exceed standard for buildings and structures Table 16 (0.2 in/s).

206. However, during public consultation one the participants raised concern regarding impact of vibration on houses integrity. Even calculation of vibration level showed that the vibration level will not exceed the level which may impact on people's health and houses integrity, it is recommended to conduct a visual observation of the houses faced to the construction site in Nazar RCA before commissioning construction works.

Mitigation measures:

207. The following measures need to be implemented to avoid noise and vibration impacts on settlements located close the the project site:

- Install noise barrier in front of Nazar settlement and College as indicated on Figure 23a;
- inform population about anticipated works;
- schedule land leveling so as to minimize the multiple use of the noisiest equipment on the site;
- hydraulic hammer and pilling machinery should not be used at the same time within distance closer than 250 meters to the settlement.
- route of movement loaded trucks inside of ALC should not be placed closer than 70 meters to the settlement Nazar.
- use of Personal Protective Equipment (PPE) by workers involving during construction stage in the sites where noise level will exceed 80 dB as per national regulation;

- schedule construction works between 8 am and 7 pm. In case of extension working hours, inform community (Nazar and Dehkonobod RCAs) in advance;
- conduct monthly noise measurements at the points indicated in Figure 23 and in case of exceeding - apply additional measures, such as adding new mufflers or sound absorbing materials to the noise generating equipment, construction of the additional acoustic screen could be applied.

208. Therefore, impacts on air quality, noise and vibration will be temporary and it could be mitigated by implementation of recommended measures.

Impact on water resources

209. Impacts on water resources will be similar during all stages of construction activities. The impacts could be caused by changes in water use and deterioration of water quality. Several small water streams (with average capacity 200 l/sec) flow on the territory of future ALC. The water streams are used for irrigation of agricultural lands and households plots of the Nazar RCA (Figure 24).

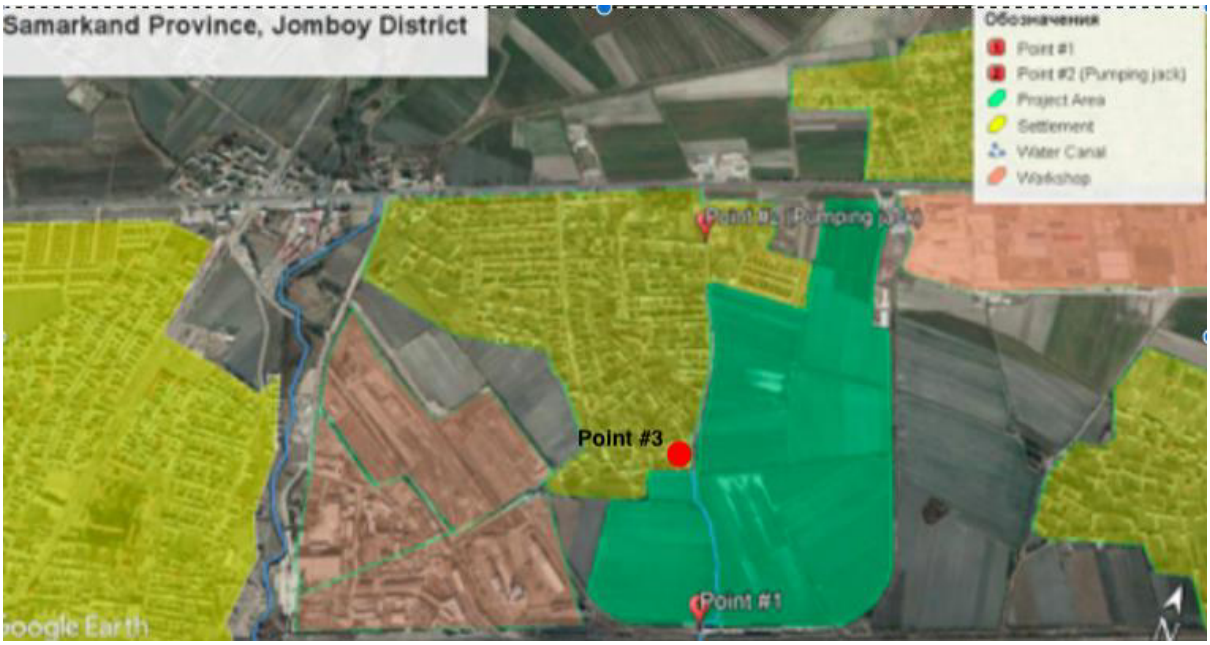

Figure 24: Water Streams (in blue water streams)

210. Population of the Nazar settlement uses a shallow ground water (from 10-12 meter depth) for drinking purposes. Therefore, pollution of ground water on construction site may lead to deterioration of water pumped by local population by hand pumps. Even the Government plans to connect all settlements in Jomboy district to a centralized water supply system by 2025, there is certain risk of pollution of ground water due to construction works.

211. Changes in water use due to water withdraw for construction purposes from the surface water may lead to water shortage and, as consequences, to conflicts with local population. Therefore, to avoid this, Contractor should receive a permission on temporary water use from SCEEP. Contractor may need to drill a ground water well for construction purposes, if requested amount of water will be not available from surface water sources.

212. Ground water which could be used for technical purposes (construction) is available on depth 10-12 meters, however for drinking purposes depth of wells needs to be not less than 100 meters, as it was recommended by the representative of Jomboy district "Vodocanal" (drinking water supply agency).

213. For the water streams flowing through the territory of the ALC, pipelines will be placed to make sure that water movement/circulation does not change due to the ALC construction. The diameters of pipeline will correspondent to the capacity of the replacing water streams.

214. The surface water may be polluted due to improper storage of the excavated soil, poor management of construction camps, and improper storage of construction materials, leakage of fuel and lubricates from construction machinery, washing of vehicles and techniques without proper treatment.

215. To avoid pollution of water courses by excavated soil through flushing it into the canals, excavated top soil needs to be storage away from water courses (at least 20 meters). Installation of temporary fence for construction period as per national legislation[33], will minimize water pollution as well.

216. To avoid water pollution from construction camps a proper waste management practice needs to be implemented. A detail assessment of waste management during construction stage and proposed mitigation measures are provided in the following paras.

217. Washing of machinery and trucks in the places not equipped for these purposes will lead to soil pollution and as consequences, to pollution of ground and surface water. Places for washing wheels and cars have to be equipped with internal waste water collection network and primary water treatment facilities.

218. Implementation of the following mitigation measures will avoid deterioration of water quality.

Mitigation measures:

- Contractor should not start construction works without obtaining permission from SCEEP on water use and discharge of waste waters;
- Make sure that temporary fence has been built before construction works has started;
- Excavated top soil needs to be storage away from water courses (at least 20 meters);
- Washing of machinery, equipment and trucks need to be done only in specially designated places equipped with waste water collection and primary treatment facilities (oil traps, sedimentation tanks and etc.);
- Store all toxic and hazardous materials required for construction and fuel at secure and managed sites located away from the water courses;
- Maintenance of all vehicles and equipment in operable condition ensuring no undue leakage of fuel and oil on the ground;
- Organize sanitation arrangements at worksites or any accommodation facilities provided for workers' ensuring that no raw sewage is released into the drain or water courses;
- Conduct monitoring of water quality in the points indicated on the Figure 24 (before site and after site), and in the water tap of RCA "Nazar" on the monthly base by ingredients indicated in the Environmental Monitoring Plan (Chapter 8, Table 22). If water quality deteriorates in comparison with baseline data (Table 5a) to undertake necessary measures to exclude pollution due to construction activities

[33] Norms and rules of civil construction # 3.01.01-3 "Organization of construction works"

219. Groundwater table level within the Project zone is 10-12 meters. This water is used for drinking purposes by local citizens. Therefore, prevention of ground water from pollution is very important.

220. Therefore, potential impact arises from maintenance of contractors' camps, transport, maintenance of vehicles and handling and storage of lubricants and fuel. The required provisions for construction camps are described in the subsections describing impacts on soil quality and waste management.

Impact on soil

221. The main anticipated impacts on soil during site leveling stage will be: disturbance or loss of top soil, its compaction and pollution. For site leveling purposes 30 cm depth soil has to be excavated and storage until the final construction stage. After completion construction of the main ALC's pavilions and facilities, this soil will be re-used for landscaping.

222. Since the most part of the ALC's land will be used under the buildings, parking area and other facilities (around 50 ha from 83 ha), certain part of excavated soil will remain. That part could be distributed among farmers or households for crop production.

223. During the main construction significant amount of soil will be excavated for foundation of building.

224. The movement of equipment and the temporary storage of materials on the ground during the construction may lead to compaction of the soil. This compaction will take place in the area affected by the construction works, in its vicinity.

225. Inert materials will be needed for construction of the ALC's internal and access roads. In that case, Contractor is allowed to use only authorized carriers. In case of necessity to open new carriers all relevant permissions from State Committee on Geology and Mineral resources need to be received prior staring using new carriers.

226. Oil spills generating during refueling and maintenance of machinery may pollute soil and ground water by lubricants, used oil and other chemicals.

227. To minimize this impact on soil quality the following measures shall be implemented:

Mitigation measures:

- The top soil of about 30 cm depth shall be removed and stored separately during excavation work, and after completion of the main construction the same soil shall be replaced on the top, in unpaved areas;
- The surpluses of top soil need to be distributed among farmers and householders as per decision of local government authorities and State Committee on Ecology and Environmental Protection (SCEEP);
- To minimize soil compaction, movement of all type techniques will be allowed only through agreed assess roads;
- Contractors will be required to use only authorized carriers with getting all necessary permissions per respective national legislation.

228. Pollution of soil during construction phase maybe caused by improper handling of fuel and oil during refueling and poor waste management which are accessed in the next chapters.

Management of hazardous substances

229. Oil, fuel and chemicals (including bitumen, concrete) are substances which are hazardous to human health and environment. During construction works they have to be stored properly in correctly labeled containers. Bitumen, fuel and oil need to be storage in tanks with lined bunds to contain spillage. Proper storage and handling of hazardous materials reduces wastage and reduces risks of spillages which could lead to pollution of ground water, soils and surface water. Construction site should have spill contingency plan.

Waste management

Hazardous wastes

230. During the construction phase hazardous wastes (used oil and batteries, fuel and bitumen residuals) will be generated from operation and maintenance of machinery. In case of improper handling and dispose of such materials it will lead to pollution of environment and such wastes are hazardous to human health.

Mitigation measures:

- Used oil shall be collected into containers placed at the concreted sites and disposed to national oil companies designated for accepting and treatment of used oils[34];
- Refueling vehicles and oil replacement have to be conducted in the special designated and properly equipped places. Such places have to be organized in the way avoiding releasing or leakage of oil on the ground or water courses. Emergency facilities have to be at the place for elimination of accident of oil spills;
- Used batteries have to be collected separately and transferred to the local branches "Cvetmet" for further disposal.

Non-hazardous wastes

Municipal wastes

231. Municipal solid wastes and waste waters will be generated at the construction and camp sites. Mainly it will be rubbish, plastic or glass bottles, waste food, organic wastes and etc. Improper wastes management may cause the spread of infectious diseases, emergence of insects and parasites in construction camp sites. In addition, it may lead to pollution of water courses and soil, conflicts with local population.

232. For disposal of municipal wastes, the Contractor will receive a permit on waste disposal from State Committee on Ecology and Environmental Protection (SCEEP) and will conclude agreements with relevant national agencies on their disposal for whole construction period. All wastes have to be disposed only in the areas indicated into the permits.

233. Sewage and "grey" water (water from bathroom and canteens) generated at site offices and work camp should be appropriated managed, so it does not produce odors or pollute water courses. There is no centralized sewage system in the construction site. Therefore, Contractor

[34] Resolution of Cabinet Ministries of RUz # 258 "On collection, storage and further disposal of used technical oil" dated from 4 September 2012.

is required to provide his own on-site waste water treatment facilities such as septic tanks. For disposal sewage from the septic tanks Contractor will have also to get a permit from SCEEP and conclude agreement with national agency “Toza Hudud”. Direct discharge of untreated sewage or oily water in surface water courses will be prohibited.

Construction wastes

234. Construction wastes generating during the leveling stage will be mainly residuals of plants. There is some probability that stones will be founded during this type of works. All these wastes could be disposed on the municipal landfills indicated by local agency “Toza hudud” which is under State Committee on Ecology and Environmental Protection (SCEEP).

235. During the main works, construction of internal and access roads construction wastes will consist of packing materials, welding rods, broken bricks and etc. Therefore, the following mitigation measures need to be applied for whole construction site period.

Mitigation measures:

- Segregate municipal on recyclable and non-recyclable;
- Obtain permit on disposal all types of wastes;
- Sell recyclable wastes to relevant local waste processing organizations (paper, glasses, plastic) and timely dispose of non-recyclable wastes to the landfill, determinate by local hokimiyats;
- Provide hydro isolated septic tank for collecting waste waters at the construction camp sites and bio toilets for workers at the construction sites and timely dispose waste waters to the local waste water treatment plants;
- Prohibit burning of all types of wastes;
- Prohibit discharge of sewage or oily water in surface water courses or soil;
- Create a safe (sheltered with concrete foundation) storage facility for water water.

Biological resources

236. Project site is located on the agricultural lands used for growing cotton and wheat. 704 mulberry trees, 100 poplars and 40 cherry trees grow within the territory of the construction site. In addition, 40 plane trees growing along the highway Samarkand-Tashkent. All these trees will be felled for construction of the ALC and for extension of existing road.

237. Before cutting trees compensation payment will be paid by PMO to the owner of trees. Poplar and cherry trees belong to farmers and compensations will be paid them. Compensations for the mulberry and plane trees will be paid to SCEEP.

238. During public consultation representative of SCEEP asked about possibility to leave felled trees to farmers whose fields they surround.

239. Prior commission of construction works, land owners will be notified about planning activities and they could remove residuals of cotton and wheat which are used as fuel by local population.

240. 83 ha of cotton and wheat fields will be acquired in accordance with national legislation and ADB SPS (2009) requirements. LARP prepared for this site indicates amount of compensation and owners need to be paid for acquiring of this land.

241. The project site is located on the agriculture lands without representatives of wild animals. Nevertheless, burning of the plants' residual during project cleaning stage will be prohibited.

242. There is no fish in the water courses next to the construction sites, due to small size of canal and low level of water.

243. To mitigate adverse impact on vegetation and wildlife and to comply with national requirements the following measures should be apply:

Mitigation measures:

- Clear mark the project site in order to avoid unnecessary felling of trees;
- Conduct joint revision of the project sites with representatives of inspectors from Jomboy district SCEEP to identify a number of felling trees to calculate compensations;
- Pay compensation for felling trees losses as indicated in CMR # 290 (2014);
- During land leveling don not use chemical and burning for removing vegetation;
- PMO should consider option to leave felled trees to farmers.

Impacts on land use

244. As it was noted in the previous paras, 83 ha of agricultural land will be acquired and transferred to into the industrial lands for construction of ALC. No more land will be acquired for extension of the road. All works will be conducted within RoW for the highway.

245. Withdrawing lands is agricultural land. However, considering expecting financial and social benefits from constructing ALC, these losses are negligible.

Socio-economic resources

246. Construction of ALC will have positive effect and may have some negative impacts on socio-economic resources during construction works.

247. Personnel with different qualifications will require for construction works, and local population will be hired for some of activities, which means creation of new jobs. Moreover, indirect services will be demanded to provide needs for housing, catering, petrol stations and etc.

248. These temporary impacts will contribute overall project positive impact – economical benefits from the ALC operation. Along with increasing incomes to the provincial budget, around 1150 people will get new jobs, from which around 30 percent will be females.

249. Some temporary difficulties for traffic due to construction of ALC and extension of highway Tashkent-Samarkand will occur during construction phase. Technical specifications for this activity will be endorsed by the national road agency. The technical specifications include a Traffic Management Plan for the construction period.

250. It is expected, that for construction of the ACL some specialists will come from abroad and this may cause conflict situations with local population in term of differences in cultures. It would be necessary to introduce workers from abroad with local culture and traditions in order to avoid conflicts.
251. During the public consultation participants raised question about possibility of use local population for the ALC construction and further operation.

252. The following measures need to be undertaken to minimize or compensate this impact:

Mitigation measures

- inform community in advance about planning works;
- for construction works which do not require specific skills, hire local population as much as possible;
- conduct explanatory work among workers about the local culture and traditions;

Health and safety issues

253. Besides impacts on air, water and soil quality, described in previous chapters, certain risks related to community health and safety, for workers in campsites may occur during construction phase.

For community

254. Inadequate lighting and fencing of construction sites inside of settlement areas can be dangerous for pedestrians and vehicles especially during the night time. Increasing of traffic due to trucks and vehicles movements to construction sites, temporary closing of roads during construction of access roads may cause inconvenience for local population as well.

255. Untimely and inefficient disposal of solid waste and improper sanitary conditions generated by the construction workers at construction sites and labor camps may cause pollution of the surrounding environment and affect on the health of local people. There also could be some social problems due to irresponsible behavior of the outside work force such as gambling, alcoholism and disrespect to local people and their culture.

256. Cultural interference workers with local communities may cause HIV and sexually communicable diseases (STD) spreading in case of law awareness about these diseases among workers and community.

257. The following measures need to be undertaken to minimize this impacts:

Mitigation measures

- Inform population the Nazar and Dehkonobod RCAs about planning works in advance;
- Together with traffic police authority and road agency Contractors shall develop a Traffic Management Plans with clear indication routes of vehicles' movements, placement of special signs, and speeding allowance, schedule transportation activities by avoiding peak traffic periods. The Traffic Management Plan has to be approved by Traffic Police and disclosed to local community prior commencement of construction works on respective sites;

- Provide proper lightening of construction site;
- Development of Site Specific Plans for campsites;
- Carry out regular awareness campaigns among work staff, including specific hazards associated with the spread of HIV/AIDS.
- After completion of the construction works reinstate construction and camp sites by bringing them to its primary condition;
- PSC will conduct a post-construction audit during a defect liability period to make sure that construction sites and camps are properly cleaned and restored before hand-over to Executive agency – Uzoziqovqatholding.

For workers

258. Separate Site Specific EMP (SEMP) for labor/construction camps will be developed by Contractors, endorsed by PSC and approved by the Environmental Specialist of PMO prior commencement of works. SSEMP for labor/construction camps will describe waste collection and disposal procedure, set up of camp facilities (such as a storage place for construction materials and techniques if any, laundry and toilets, access roads) in the way, which will allow to minimize impacts on environment and disturbance of local population. Labor camps have to provide safe and adequate living conditions for workers, such as dining rooms, toilets, shower rooms emergency medical kits. Other measures for fire-fighting and preventing electric shocks etc. need to be organized in accordance with national standards.

259. The Contractors will require to develop Occupation Safety and Health Plan, which covers among others the following topics: usage of Personal Protection Equipment's (PPE), working procedure in dangerous conditions (works at height, with noise equipment and etc.), training activities and others.

Cultural heritage

260. The ALC will be constructed on cultivated agriculture lands. As it was noted in chapter 4.6, the closest to construction site heritage is located at the distance more than 13 km from project site in Samarkand city.

261. Nevertheless, taking in consideration that Samarkand province rich in historical heritage, artifacts could be found during digging of foundation pits. In that case the following mitigation measures will be undertaken in accordance with the procedure indicated in the Law of RUz "On Protection and Use of Objectives of the Archeological Heritages" (2009).

Mitigation measures

- Excavation and other works need to be suspended immediately;
- Area with possible heritage shall be fenced with fencing tape;
- A designated focal point from a local administration (khokimiyat) and representative of Ministry of Culture of RUz need to be informed and invited for assessment of potential heritage and undertaken necessary actions;
- Civil works at the finding place could be recommenced after obtaining permission from the representative of Ministry of Culture of RUz and from focal point from Khokimiyats.

5.3. Operation stage

262. The conceptual design of the project considers the ALC will provide area for renting and opening of various types of productions and processing related to the horticulture sector. The ALC management will ensure that each new production, processing or activities launching on the territory of ALC fully comply with national environmental legislation. In particular, Environmental Appraisal (ZVOS) has to obtained for activities included in RCM of RUz # 491 (2001). Only processing and production which is not included in the ADB's Prohibited Investment Activates List (PIAL, ADB SPS (2009) could be implemented on the territory of ALC (Attachment 4).

Impact on the air

Noise level

263. In accordance with data provided by engineering team, after the ALC commissioning, about 1,000,000 cars annually will come in and out. Among them around 490,000 cars will be light and rest will be various carrying capacities.

264. As per data, provided by chief specialist of Samarkand highway agency, the average daily flow of the vehicles is 60,000 cars per days which means around 22 mln annually. The measurements of number of cars conducted by PPTA consultant showed similar results – 21.1 mln. cars annually. It means, that cars flow after implementation of ALC construction will increase on 4.5%.

265. Based on findings of research, conducted by national Institute of Hygiene under the Ministry of Health of RUz, increasing traffic on 2.5% leads to increasing equivalent noise level on 0.5 dB. Consequently, increasing traffic on 4.5 % will cause increasing noise level up to 1 dB in comparison with existing. Calculated difference between existing noise level and expecting is less than 3 dB. In accordance with IFC requirements, "Noise impacts should not exceed the levels presented in Table 1.7.1, or result in a maximum increase in background levels of 3 dB at the nearest receptor location off-site."[35]

266. However, houses of Nazar settlement located next to the fence of the ALC could be affected by increasing noise from vehicles coming and leaving ALC during the day and night time. An acoustic screen installed during construction stage (Figure 23a) will reduce a noise level from trucks movement during night time. Construction of fruit and vegetables processing which may cause noise will not be implemented in the area located close to Nazar settlements (Figure 3). During the night time retailing pavilions will not operate as well.

267. The ALC operation will not generate vibration which may adversely impact on people and integrity of the houses and buildings.

268. In accordance with data, provided by the engineering team, noise generated by the nosiest equipment in cold storage building - chiller will be around 50 dB at the 2 meters distance. Therefore, operation of the cold storage building will not lead to exceeding standards for noise for commercials and residential areas (Table 3).

[35] IFC, General EHS Guideline, Chapter 7 "Noise", 2007.

Mitigation measures

- Prohibit use honks by vehicles on access roads and on the territory of ALC especially during the night time;
- Limit speed of vehicles on access and internal roads by 30 km/h.

Air pollution

269. During ALC operation air pollution could be caused by processing lines (added value chain) which will be installed into the pavilion 6 (Figure 3). For each processing line a local environmental assessment needs to be conducted and Environmental Appraisal needs to be received from SCEEP.

270. Exhaust gases from engines of working machines can also pollute the air. Therefore, the trucks and cars will not be allowed remain at idle on more than 5 minutes.

271. Odor from solid wastes and sludge from waste water treatment plant may impact on people living in Nazar and Dehkonobod settlements. The ALC set up is designed in the way, when waste management area and waste water treatment plant are located away from the settlements, which decrease these impacts.

272. Nevertheless, in is important to make sure that solid wastes and sludge from WWTP will be disposed in time and in proper way.

273. Increasing of local temperature from working of cold storage's compressors may occur during operation phase. This could impact on people living next to the ALC. There are no official regulations establishing standards for distance between compressors and living area. However, based on consultations with local engineers the minimum distance between compressors and border of entity should not be less than 4 meters. As shown on Figure 3, location of cold storages ensures no impact on settlements.

Mitigation measures

- Prior commissioning of any processing line in added value chain pavilion ensure, that local Environmental Appraisals are received;
- Prohibit for all type vehicles to remain at idle on more than 5 minutes;
- Ensure that solid wastes and sludge WWTP are disposed timely in accordance with waste management plan;
- Strongly prohibit to burn any wastes on the territory of the ALC.

Impact on water resources

274. The main impacts on water resources during operation phase will be water use and pollution. During the ALC operation stage water will be used for domestic purposes, processing and irrigation of the territory. In the ALC the main consumers will be post harvest and processing pavilions where water will be required for washing of fruits and vegetables and producing of agricultural goods.

275. It is expecting, that daily water consumption of the ALC will be around 779 m^3 for processing and domestic use. Currently, there is no a centralized water supply system on the site

and in the surrounded settlements. Population use ground water for domestic consumption. This water is pumped by hand pumps from 10-12 depth. As it was stated in Chapter 4.2, quality of pumped water does not comply with national standards for drinking water.

276. During consultations with representatives of Jomboy district drinking water supply organization, it was proposed that ALC could use ground water as well but from more deeper aquifer (100-120 m). Based on information provided by State Committee on Geology and Mineral Resources[36], the total operational capacity of ground water deposit for that part of Jomboy district was assessed as 4000 m^3/day. It means that this amount of ground water suitable for drinking purposes could be withdrawn from the aquifer without any risk.

277. The representatives of the drinking water company also confirmed that by 2022 around 70% of total population of Jomboy district, including Nazar and Dehkonobod settlements will be connected to centralized water supply system. Even considering situation, when both settlements located close to the construction site (Dehkonobod and Nazar) will not be connected to the centralized water supply system by 2022, existing ground water deposits will be efficient to cover both demands in water - the ALC in 779 m^3/day and settlements.

278. The drinking water demand for these two settlements will be around 907 m^3/day. The calculation was done with consideration of population grow by 2022 in both settlements (7556 inhabitants) by multiplying on national water consumption norms for rural area (120 l/day). Therefore, total water consumption by the ALC and two settlements will be around 1,706 m^3/day which is less than available 4000 m^3/day.

279. The ALC will use ground water for water supply without using of irrigation water from surface water courses. Therefore, operation of the ALC will not impact on other water users such as households and farmers.

280. In accordance with national legislation[37], the ALC administration will have to receive a permit for special water use from SCEEP before starting works.[38]

281. Release of untreated sewage from processing from the territory of the ALC into the surface water courses will lead to pollution of ground water. Design of waste water treatment plant which is part of the ALC facilities will ensure a compliance of treated water with national standards[39]. Requirement for waste water treatment plant indicated in para 130-132 of this IEE will allow to treat all types of waste waters generating from ALC operation: communal sewage and water from processing. A chemical laboratory will use modern equipment which will minimize generation of polluted water. A separate sewage network will be constructed for rain water from the territory of the ALC. The rain water will be collected into the sedimentation tank for cleaning, after this, cleaned water will be pumped into water reservoir and could be released into the same water course or re-used for irrigation.

[36] Assessment provided in Protocol of Scientific-Technical Board under Hydrogeological Expedition, 1998. The approved amount is still valid.

[37] Resolution of Cabinet of Ministries (RCM) of RUz #171 dated from June 14, 2013 “Regulation on the procedure for issuing a permit for special water use and water consumption”

[38] RCM # 214 dated from August 4, 2014 “Regulation on the procedure for issuing a permit for drilling of ground water wells”

[39] Sanitarian requirements for development and approval of maximum allowed discharges (MAD) of pollutants discharged into the water bodies with waste waters (SanR&N No 0088-99)

282. All rainwater will be collected in storm water collection network and redirected to treatment facilities. Each pavilion of the ALC will be connected to the internal sewage network. Waste treatment plan could be extended as per needs for for the next stages of the project – construction of meat and dairy pavilions.

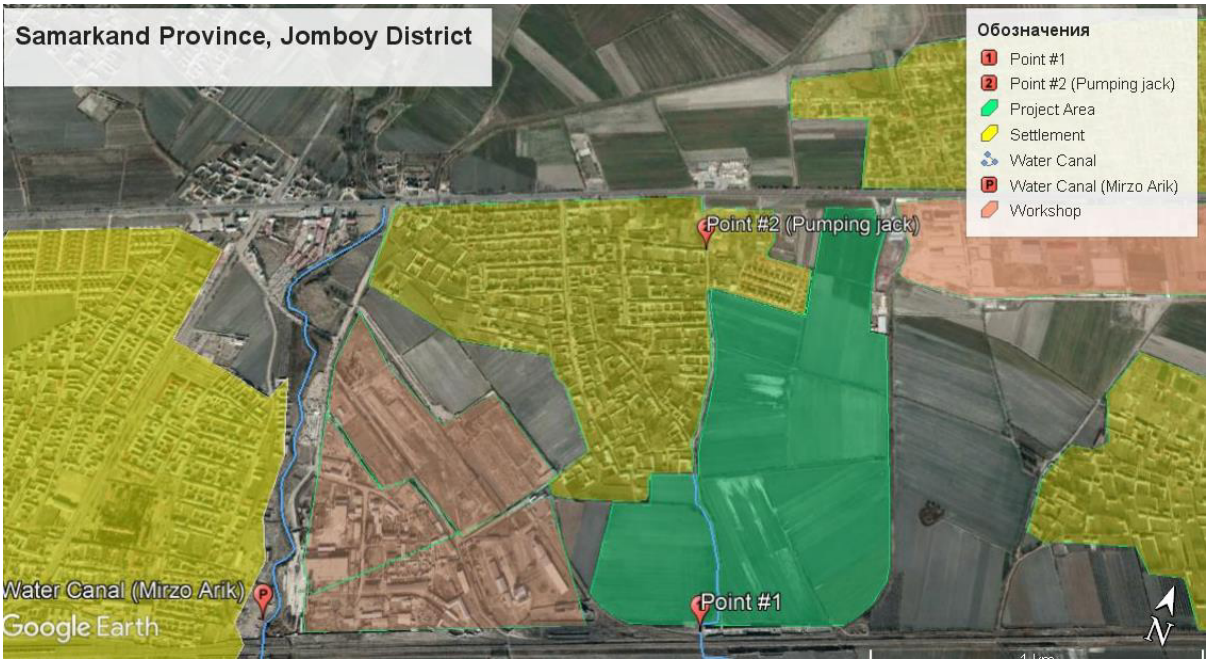

Figure 25: Watercourses and Monitoring Points for Construction Eite in Jomboy District

283. The following mitigation measures need to be undertaken for water resources protection:

Mitigation measures

- Receive all necessary permits for usage of drinking water and discharge of sewage water;
- Prohibit discharge of untreated water into the surface water or soils;
- Ensure properly functioning of the waster water plant;
- Conduct regular monitoring of treated water quality;
- Conduct monitoring of water quality in Mirzoarik;
- Conduct regular monitoring of treated water quality. If Nazar and Dehkonobod settlements will not be connected by the project commissioning to the centralized water supply system and water quality from hand pumps will worse than baseline data (Table 5a) the ALC management has to undertake measures on identification of possible source of pollution of ground water due to the ALC operation and fix the problem.

Waste Management

284. As described in chapter 3.2, it is expecting that around 3,200 ton of waste will be generated annually or 8.2 ton per day after full commissioning of ALC. Mainly the wastes will be represented by organic wastes, wastes from cleaning ALC's territory and some hazardous generating from maintenance of equipment. To manage these amount and types of wastes, Capacity Building and Training Consultant will design solid waste management area.

285. In accordance with Business Plan included in Feasibility Study for Samarkand ALC, 302,500 USD will be provided for organization waste management system and faculties in ALC.

286. Improper collection, storage and disposal of wastes will lead to risks of spread of infectious diseases. Therefore, Special Waste Management Plan (SWMP) will be developed by the ALC Training and Capacity Building Consultant and it will be agreed with national agency "Toza Hudud".

287. The SWMP should include but not limited by: a list of anticipated wastes which will be generated during ALC operation with indication sources, scheme of locations of bins, schedule of collection and disposal of wastes within the territory of ALC and schedule of disposal from the territory of ALC. The plan also should define amount of maximum amount of anticipated wastes and national agencies where wastes will be disposed.

Hazardous materials

288. During the ALC's operation phase hazardous materials will be used for repairing works of machinery and equipment. Improper storage and disposal of oil may lead to soil, ground and surface pollution.

Mitigation measures

- Dispose used oil in accordance with national regulation;
- Prohibit to release used oil or any chemicals on the ground or water courses.

Non-hazardous wastes

289. Organic residuals from post harvesting process, communal wastes, packing materials, plastic bottles and bags, organic wastes will be generated during ALC operation. It is recommended that organic wastes could be sold/transferred to the local farmers as fodder for livestock. Communal wastes need to be disposed on the municipal landfill determinate by local hokimiyats and all recyclable wastes (packing materials, plastic bottles and bags) to relevant local waste processing organizations (paper, glasses, plastic).

Health Safety

Traffic management

290. Increasing number of vehicles coming to and from the ALC may lead to increasing of accidents on the highway Samarkand-Tashkent. To minimize such risk, the project engineering group has developed a technical solution in consultation with the national road agency. Extension of the existing road with adding two new lines in direction to Tashkent and one additional line in direction to Samarkand will ensure safe movement of vehicles in from the ALC.

291. A road design, all necessary signs and notifications, speed limitation on access road will be designed under guideline of the national road agency in accordance with national regulations.

292. Special Traffic Management Plan for a movement of vehicles inside of ALC will be developed by the ALC's management and agreed with the national Traffic police. The Traffic Management Plan should include routes for visitors' vehicle movement, the ALC's internal cars,

indication roads for pedestrian. Moreover, special road sings for traffic management will also be placed inside of the ALC.

293. The ALC's plan with indication of routes to each pavilion and facilities will be placed at the entering point and on the territory of center for better orientation of visitors.

Operation of facilities

294. For operation of pavilions for small and medium business, and wholesales pavilions, an Occupational Health and Safety Plan will be developed also by ALC Operation and Management Consultant. The OHSP includes Fire Safety, Action plan for emergency situation. These documents will be developed in accordance with national requirements.

295. Separate Operation Health and Safety plans will be developed for maintenance of cold storage as well. This plan will be developed by Operation and Management Consultant.

Mitigation measures

- Develop an Occupational health and Safety Plan, which includes Fire Safety, Action plan for emergency situation for each ALC facility;
- Ensure proper implementation of plans during operation of the ALC;
- Conduct monitoring of road accidents on the access roads during to movement into and from ALCs;
- In case of accidents, revise and refine movement of vehicles on the access roads together with the Traffic police;
- Develop an internal traffic management plan and conduct monitoring of its proper implementation.

Socio-economic impact

296. Commissioning the ALC in Samarkand province will have significant socio-economic impact. For economic part the project will have direct, indirect and induced impacts.

297. **Direct impacts**. Taking into consideration an investment level in the order of US $ 180 million, it has been estimated that the construction of the ALCs will generate a direct gross added value of approximately US $ 60-80 million in the form of a wage bill and contributions to Social Security. It is estimated that the construction of each ALC will generate between 560 jobs and 600 direct jobs throughout the 30 months of the work (equivalent to 430,000 daily wages).

298. **Indirect impacts**. The consumption of national goods and services derived from the construction of ALCs indirectly supports approximately 150 jobs of thirty months duration (equivalent to 120,000 daily wages). These indirect jobs are related to the national companies in the construction materials and equipment sectors that will provide these goods and services to the awarded contractor. Additionally, an impact is generated on the total imports of the country, which has been estimated at US $ 20-30 million in the two and a half years of the works.

299. **Induced impacts.** The generation of income in the form of wages described above will have an effect on the increase of consumption (food, transport, clothing, etc.) derived from the increase in income. In terms of employment, the consumption of directly and indirectly generated

income would sustain about 170 jobs during the project execution period, equivalent to 123,300 wages at the end of the thirty-month duration of the works.

300. As consequences, increasing income of local population will improve their livelihood, it will reduce unemployment in the district, especially among young generation and females. A special capacity building program, included in a gender action plan will help to increase opportunity for local women to be hired in ALC.

301. Other impacts related to risk and inconveniences for population from surrounded settlements caused by the ALC operation are described above. Implementation of proposed mitigation measures will minimize such risks. A Grievance Redress Mechanism (GRM) developed under this project and the national system on citizen appeal will help to ensure that ALC operates in compliance with national standards.

Cumulative impact

302. During the public consultation the issue of air pollution by dust from the crashing plant located close to the construction site and Nazar settlement was raised by participants. This impact could be enhanced during construction period of the ALC. Noise protection screen installed for Nazar settlement (Figure 23a) will also reduce dust dispersion on the territory of settlement.

303. Along with this, special attention needs to be paid to implementation of mitigation measures for dust control and conduction continuously monitoring of dust level on the construction site. The monitoring needs to implemented by Contractor and PMO.

304. During the ALC operation dust could be generated during movement of vehicles on the road. The dust generation from the ALC operation will be insignificant, since all vehicles will move only on asphalted roads within the ALC with limited speed (no more than 5 km/h). Installation of noise protection screen, planting trees and watering of the ALC territory will minimize pollution of the Nazar settlements from dust.

6. INFORMATION DISCLOSURE, CONSULTATION, AND PARTICIPATION

305. One of the main goals of the IEE is to facilitate the participation of all stakeholders and local communities at all stages of the project cycle: from the pre-construction phase and construction activities to its operation. In this regards, a number of consultations were held in the project districts to capture the stakeholders' opinions about the project, and agree on the project activities.

306. Prior to the public consultations several meetings were conducted with internal and external stakeholders, such as representatives of the provincial and districts level committee on Ecology and Environment Protection, district Khokimiyats and makhallas, land cadaster committee, district water supply agency (Suvoqova) and district energy entities.

307. Public consultation (PC) was conducted on March 15, 2018 in administrative buildings of Jomboy district khokimiyat. Representatives of two settlements surrounded the project site – Nazar and Dekhonobod RCAs participated the meeting. PC participants were introduced with project's main features, results of environmental assessment and preliminary results of finding in term of resettlements and environmental issues. The PPTA's consultants introduced a Grievance Redress Mechanism and ADB requirements on public disclosure process. The information was

presented with using of a Power Point Presentation (Presentation and photos from the consultation are provided in Attachment 5).

308. The participants were explained that the project currently on the conceptual stage which will be followed by detail design stage. If any changes in the project design will take place, the environmental assessment will be revised per new circumstances and a new round of public consultation will be conducted with affected people.

309. During the PC people were requested to give their opinions and suggestions. In addition, participants were provided with contact information of PPTA's national environmental specialist for further suggestions and questions.

310. The stakeholders and consultation participants were informed that Contractor would install an informative banner with information on project objectives, activities, implementers, schedule of construction works, deadlines, contact information and logbooks for complaints and suggestions on each construction site.

311. Among 44 participants from 2 settlements surrounding the project site, 15 were females. The main issues raised during the public consultation in regards environmental issues are presented in the Table 19:

Table 19: Issues Raised During Public Consultation

Issues raised	Response	Addressed in IEE
Will our houses and land plots be impacted? (Citizen of Nazar RCA)	No any houses or land plots of households will be impacted due implementation of this project. Agriculture lands of 6 farmers will be affected and compensations will be paid in accordance with procedure explained during the presentation on resettlement aspects. If any changes in the project design occurs, the LARP will be updated. In case of new affected persons will be identified, the compensation will be paid in accordance with the presented procedure	Details provided in Chapter 5
If our houses will be impacted by construction activities and cracks will appear on the wall, how you will compensate it?	Assessment of vibration impact from performance of various type of equipment during construction stage was undertaken. The results showed that vibration level will not reach level which may impact on integrity of houses	Details is provided in Chapters 3 and 4. Requirements on conduction visual observation of houses are in included in EMP (Chapter 8, Table 21)
Will ALC have internal sewage collection system and waste water treatment disposal plant? What is a source for water supply?	Yes, internal sewage and water supply systems are part of the project design. Waste water treatment plant is designed to ensure quality of treated water in accordance with national standards.	Details are provided in Chapters 3 and 4
Is it possible to leave felled trees after compensation payment for farmers? Even trees are on the balance of Goskompriroda?	Mulberry and plane trees are not on farmers' balance and compensation for trees needs to be paid to Goskompriroda. After cutting trees, they become property of Contractor (who paid	Details are provided in Chapter 5 - EMP

Issues raised	Response	Addressed in IEE
	for trees). However, we will recommend Contractor to transfer the cut trees to farmers.	
Will the construction activities impact on the productivities of trees growing in our yards? For example, will increasing of dust level impact in productivity?	We are proposing number of measures for mitigation of dust impact. Along with mitigation measures, continuously monitoring of dust level will be undertaken by Contractor and PMO on regular base. In case of exceeding national standards, the Contractor must implement additional measures – such as installation of screen or more often watering roads and the construction site and etc.	Details are provided in Chapter 5, Chapter 8, Tables 21 (mitigation measures) and 22 (monitoring plan)
My field is located behind the planning project site and it is irrigated from the small water stream crossing territory of the project site. Moreover, almost all households in my village get water from the same canal. How you plan to resolve it?	For all water streams flowing through territory of the ALC, plastic pipelines will be constructed and laying in earth. No any water stream will be closed	Details are provided in Chapter 5 and Chapter 8, Table 21
Will local population have an opportunity to work on new ALC?	Yes, there will be a lot o opportunities for local people to get new job in the new ALC. Along with staff of ALC, many opportunities for local enterprisers will be created due to plans to provide area for different types of productions and processing inside ALC.	Details are provided in Chapter 5

312. Participants noted importance and their high expectations from this project as a source of new job opportunities for local populations and economic benefits for farmers and producers of whole Samarkand province.

313. This IEE incorporates comments and suggestions from all concerned stakeholders. The final IEE report will be made available on local language on Rural Reconstruction Agency (RRA) official website and in English on ADB's website.

314. As part of information disclosure, the final version of IEE will be translated into local language (Uzbek) and will be delivered to local communities and relevant authorities (hokimiyats). The final IEE report will be sent to State Committee on Ecology and Environment Protection (SCEEP) in Samarkand province for further use during the construction and operation phases.

315. For the interested parties the IEE (English and Russian versions) will be available at the offices of the PSC on construction site and local offices of RRA.

316. In order to maintain the transparency of the public disclosure process, the semiannual environmental monitoring reports (EMRs) will be published on the ADB and RRA websites as well. The hard copies of EMRs will be also sent to to SCEEP in Samarkand province.

317. Future consultations for project stakeholders shall follow as mentioned below.

(i) During detailed design stage, in case of any major changes in the design/alignment/location, the IEE will be updated accordingly. The PSC will hold at least one public consultation meeting at early stages to solicit perceived impacts, issues, concerns and recommendations from affected communities.

(ii) Prior to construction, the PSC will conduct an intensive information, education and communication campaign (ECC) to ensure the sufficient level of awareness/information among the affected communities regarding the upcoming construction, its anticipated impacts, the grievance redress mechanism, contact details and location of the PSC, and status of compliance with the Government's environmental safeguard requirements. Among others, the information banners containing information about the subproject, implementation schedule and contact details of the executing agency and Contractors will be installed at the strategic locations within the subprojects' main areas of intervention. The grievance redress procedure and details will be posted at the offices of the district branches of PSC and the Rural Reconstruction Agency (RRA) and district hokimiyats.

7. GRIEVANCE REDRESS MECHANISMS

7.1 Objectives

318. In accordance with ADB SPS (2009), Grievance Redress Mechanism (GRM) will be established after the project effectivity. The main goals of GRM are ensuring the receipt and timely redress of grievances and concerns submitted by the aggrieved project affected persons, and resolve complaints at the project level and prevent escalation to the national courts or ADB Accountability Mechanism. A grievance mechanism will be established to allow affected persons appealing any disagreeable decision, practice or activity arising from land or other assets compensation. APs will be fully informed of their rights and of the procedures for addressing complaints whether verbally or in writing during consultation, survey, and time of compensation. The grievance mechanism shall not impede access to the country's judicial or administrative remedies. Affected persons can approach a court of law at any time and independent of the project level grievance redress process.

319. Along with the ADB requirements on development and approval of grievance redress mechanism by implementation of investment projects, grievance redress procedure in Uzbekistan is also regulated by the national legislation of Republic of Uzbekistan, in particular by the law "On Citizens' Applications" and the "Law on the order of submission of appeals of physical and legal entities" ((#378, 03 December 2014). According to the "Law on the order of submission of appeals of physical and legal entities", the application or complaint shall be considered within fifteen days from the date of receipt in the state authority, which is obliged to resolve the issue on the merits, as well as require additional study and (or) check, a request for additional documents - up to one month. The submission procedure for grievances and citizens' applications has been discussed during the public consultations in the project districts.

7.2 Grievance Redress Mechanism

320. The GRM for the current project takes into account the national legislation, the specificity of the project sites and results of public consultations. According to the Resolution 97 (29 May 2006) the Khokimiyats of the respective rayons (cities) are obliged to notify owners of residential, production and other buildings, constructions and plantings on the made decision in writing for signature not later than six months prior to demolition, attaching to the notice copies of the relevant

decisions of the khokims of rayons (cities) and regions on the basis of the decision of the Cabinet of Ministers of the Republic of Uzbekistan on any land acquisition, demolition of residential, production and other buildings, constructions and plantings located on the land.

321. The APs will have the right to file complaints and queries on any aspect of land acquisition compensation and resettlement. PMO (involve the personnel from the RRA and the Ministry of Foreign Trade (MFT)) will be responsible for establishment of GRM after the project effectivity and act as the GRM secretary to make sure that the GRM is operational to effectively handle environmental and social concerns of project affected persons. PMO will be assisted by project management and supervision consultant (PSC) in GRM implementation. The proposing GRM was discussed with RRA specialists, representatives of khokimiyats and it was presented during the public consultations. All possible avenues are made available to the APs to resolve their grievances at the project level. Under the proposed project level grievance mechanism, affected households may appeal any decision, practice or activity connected with the assessment or valuation of land or other assets, acquisition and compensation. APs will be made aware of the procedures they can follow to seek redress, including, if necessary resort to the courts through the Government's grievance mechanism. The project grievance mechanism will be disseminated via the final LARP leaflet that will be distributed to affected households through the makhalla or village assembly of citizens or farmer's councils during the disclosure consultations.

322. In addition, the GRM was discussed with PPTA Resettlement team and updated into the format applicable for both aspects – environmental and social in term of environmental impact and mitigation measures. After discussion with all parties, the following multi-level GRM is proposed for the project and is described below in Table 20.

Table 20: Grievance Redress Mechanism and Levels

Level/Steps	Process
Level 1: **Contractor's office (construction period) or district khokimiyat**	The aggrieved person may apply to the Contractor's office in each project site. The social and environmental specialist will be in charge for receiving and registration complaints. PMO local representatives will collect information about received complaints on daily base. The alternative entry point for complaints will be also khokimiyats due to their obligations defined by national legislation. 1st deputy of khokim responsible for industry, capital construction communications and utilities is usually responsible for any issues/complaints regarding the construction and land allocation. (S)he will work closely with the PMO and inform them in case of complaints. After registration of received complaints, the Contractor's representatives and/or the khokimiyats will review nature/specificity of the complaint and will forward it to relevant party for resolving. Depending on nature of complaint it may go to Contractor, Land Cadaster, Makhalla or district branch of SCEEP. In parallel, PMO local representatives will inform PMO in Tashkent about received complaint and further actions undertaken for its solution. PMO representatives will be assisted by PSC in GRM implementation. All the responses shall be provided to complainants in a written manner. At this level complaint should be resolved during 15 days.
Level 2: **PMO's secretariat in Tashkent**	In case the grievance was not redressed on the first stage or applicant is not satisfied with the decision made/solution, s/he can submit the grievance directly to PMO in Tashkent. The PMO will review the compliant and will forward complaints to respective department to made decision on its redress. In case the grievance is not related directly to the project, the

Level/Steps	Process
	further instance will be recommended to the applicant where s/he should apply for the decision making. In case, if the compliant is required more time and resources for resolution, the PMO may establish complaint handling team with following members such as representatives from PMO local representative office, PSC, Contractor, district kokimiyat: cadastral department and mahalla or village assembly of Citizens or/and farmer's councils, or/and women association. All complaints will be resolved in 15 days, and in case additional details are required, a maximum of 30 days will be used to resolve and close the complaint with prior notification of complainant. All the responses shall be provided to complainants in a written manner.
Level 3: **Economic Court**	If the issue was not solved or the applicant is dissatisfied with the decision/resolution, the aggrieved person may submit grievance to Economic Court (Court of Law) where decision will be made in accordance with relevant national legislation. However, APs can approach the court of law at time during the grievance redressing process independent of GRM and the grievance mechanism should not impede access to the country's judicial or administrative remedies

7.3 GRC Records and Documentation

323. Most of grievances on environmental, land acquisition and resettlement issues are redressed at 1-2 levels. All grievances received from the population will be registered in a logbook which should be available at all levels: at the site office of Contractor, each PMO local representative office. Besides, there are also logbooks in the khokimiyats where the grievances from the population are usually registered. Even so, the information on received by Contractor grievances and applications from the aggregated persons, and undertook measures should be submitted to the representatives of local PMO offices for the accounting all grievances. Thereafter the information on all received grievances will be collected at the PMO.

324. The contact information of the Contractors, PSC, PMO local offices and PMO Tashkent secretariat will be disclosed to community members and APs during the public consultations in LARP finalization stage, as well as during the pre-construction public consultations.

325. The Contractor and PSC should include the information on grievances in monthly progress reports submitted to the PMO, who in their turn will include aggregated information to the semiannual environmental monitoring reports (EMR) to be submitted to ADB.

326. The aggrieved persons can also use the ADB Accountability Mechanism (AM) through the direct citizens' application to the Head Quarter in Manila, particularly to Complaints Receiving Officer, Accountability Mechanism Asian Development Bank Headquarters 6 ADB Avenue, Mandaluyong City 1550, Philippines Email: amcro@adb.org, Fax +63-2-636-2086.

327. AM is the last resort and ADB has its availability as a recourse in case other mechanisms for dealing with harmful project effects are not successful. GRM is required by SPS and the use of project level GRM should be encouraged first.

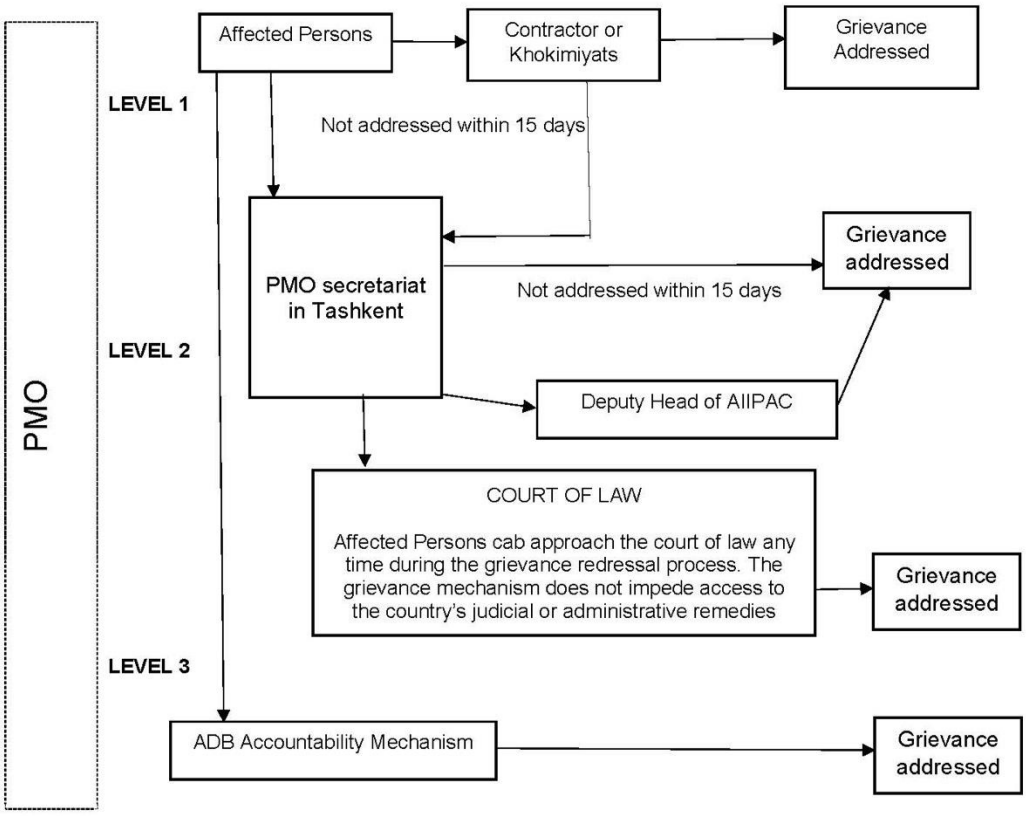

Figure 27: GRM Process

8. ENVIRONMENTAL MANAGEMENT PLAN

328. The Environmental Management Plan (EMP) compiles the comprehensive information gathering a summary of impacts previously identified, the actions required to mitigate those impacts in accordance with the laws of the Republic of Uzbekistan and the ADB safeguard policy; and the monitoring activities that are to be undertaken as part of the project in order to confirm that they have been effective in reaching their objectives.

329. The EMP also details the institutional arrangements and capacities that currently exist, or that will be put in place during project implementation, to ensure that the IEE (including the EMP) has (i) comprehensively considered both Uzbek and ADB requirements for environmental protection, (ii) identified all likely environmental impacts, (iii) proposed appropriate mitigation measures, and (iv) put in place the necessary systems to ensure that effective procedures for environmental monitoring and control of the project impacts, and mitigation measures are implemented throughout the life of the project.

8.1. Environmental Mitigation measures

330. Mitigation measures required to address the impacts identified by this IEE have been consolidated in the following EMP (Table 21). The table provides information on anticipated impacts during the pre-construction, construction and operation phases with proposing mitigation

measures, defining responsible party for their implementation. It is considered that PMO's Environmental Specialist (ES), International Environmental Specialist of PSC and Environmental Officers from Contractor will be responsible people for EMP implementation.

Table 21: ENVIRONMENTAL MANAGEMENT PLAN

Impact	Mitigation measure	Responsibility	Cost
Pre-construction stage			
Project design	• Project Supervision Consultant has to design waste water management plant with capacity no less than 779 m3/day. Selected water treatment technology has to ensure compliance of treated water with national standards and requirements indicated in para 129-131. If ALC's water consumption increases during the project detail design stage, the waste water treatment plant's capacity needs to be revised accordingly; • If Contractor decides to use own batching or bitumen plants, a national environmental environmental assessment needs to be conducted prior commissioning of construction works; • The design of batching or bitumen plants need to ensure that during plants operation dust level in the Dekhonobod and Nazar settlements will not exceed baseline parameters, especially during the windy weather; • Prior commissioning of construction works on waste water treatment plant, national environmental assessment needs to be conducted and necessary permissions need to be received as indicated in Chapter 2, Table 1. • Training and Capacity Building Consultant will develop waste management plan, which will include among others, the removal and disposal of solid waste, the cleaning of pavilions, dependencies and road cleaning, and finally the cleaning of the sewage and rainwater network of the ALC. This plan will also establish the cleaning	PMSC develops detail design PMO monitor compliance PMO ensure timely implementation of LARP and payment compensation	No cost Compensation costs are included in LARP and IEE

Impact	Mitigation measure	Responsibility	Cost
	and disinfection protocol of the common areas of the ALC. • New additional waste water treatment facilities need be constructed for the next stage of ALC construction;		
Absence of environmental experts in PMO	• Ensure that Environmental Experts with appropriate education is hired and he/she is involved in the work since the stage of bidding documents preparation.	PMO	ES is part of PMO with appropriate budget
Lack of proper environmental requirements	• All environmental requirements are needed to be included into bidding documents and a Contractor's contractor; • Bids evaluation has to be done with consideration of: capacity of bidders to meet EMPs requirements, proposing adequate budget efficient for implementation EMP, existence of good practice in environmental performance within other similar projects; • Include list of required national approval and licenses (indicated in Chapter 2, Table 1) in the bidding documents and identify responsible for receiving such permission.	PMO, PSC's Environmental Specialist	No cost required
Improper assessment of bidders' environmental capacity	• Include in working group of bidding committee environmental expert. • Ensure that awarded Contractors have proper environmental capacity, staffing and budget for EMP implementation.	PMO, PSC's Environmental Specialist	No cost is required
Non-compliance with national environmental legislation in term of conduction environmental impact assessment and required permission	• Prepare ZVOS as indicated in Chapter 2 and submit it to Samarkand Province Committee on Ecology and Environmental Protection (SCEEP) for revision and approval. • Include the requirements indicated in EA into the final EMP.	PMO Environmental Specialist	Will be financed from the PMO budget
Generation of different potential	• Update or new IEE to be prepared with full compliance of ADB SPS (2009)	PSC's Environmental	Included in the PSC contract

Impact	Mitigation measure	Responsibility	Cost
environmental impacts due to changes in design, layout	• If any changes into the ALC layout takes place during project detail design stage, make sure that waste management area, waste water treatment plant and cold storage places are located away from settlements (no close than 100 meters);	Specialist updates IEE PMO submit to ADB for revision and endorsement	
Non-compliance with national and international requirements during conduction bidding for purchase machinery and mechanisms	• Goods procured for project implementation will be done in compliance with ADB Prohibited Investment Activities List set forth at Appendix 5 of the Safeguard Policy Statement (2009); • Environmental specifications have to be included in bidding packages for purchase machinery within the project. Particularly, toxic level of machinery must meet "Euro 3" environmental requirements as defined by national regulations[40] and national standards on requirements for refrigerators[41].	PMO, PSC's Environmental Specialist	No cost is required
Improper SEMP and SSEMP development	• Within 30 days after contract award and prior to commencing any physical works, Site-specific Environmental Management plans (SSEMPs), and Topic Specific Management Plans: Waste Management Plan, Traffic management Plan, Construction Camps Management Plan and Occupational Health and Safety Plan (OHS Plan) have to be developed by the Contractor and they will be endorsed by PMC before submission to PMO for approval. Traffic management Plan has to be submitted local traffic authorities prior to mobilization.	Contractors develop SEMPs PSC reviews and endorses PMO approves	Included in the Contractors budget
Construction stage			
Air quality	• apply watering of construction sites, access and internal roads;	Contractors implement	Included in the Contractors budget

[40] Resolution of President of RUz "On measures for further development of production at the Samarkand automobile plant and renewal automobile park", dated from December 14, 2006.
[41] Attachment # 2 of Resolution of Cabinet Ministries of RUz # 17 dated from 9 January, 2018.

Impact	Mitigation measure	Responsibility	Cost
	• cover transported bulk materials and excavated soil; • locate temporary soil storage piles away from south-east part of the site in order to avoid dust pollution during windy weather; • as much as possible, as per engineering team design, use excavated soil (not top soil) for backfilling tranches for communication and infrastructure network, foundation pits, site leveling to create necessary natural slope for rainwater run-off collection during operation of ALC; • use topsoil for landscaping at the last stage of ALC construction. Distribute non-used topsoil among farmers/householders as per local authority decision; • for waterproofing of building foundation do not use bitumen. It is recommended to use high density polyethylene or its analog; • all vehicles and techniques must comply with technical requirements and have to pass regular inspection as indicated into the national standards[42]; • prohibit open burning of solid wastes generated particularly from labor camps and during land leveling activities; • minimize site leveling works during period of the high winds when winds could nevertheless direct dust towards adjacent communities; •	PSC and PMO monitor implementation	

[42] "O'z DSt 1057:2004 Vehicles. Safety requirements for technical conditions" and "O'z DSt 1058:2004 Vehicles. Technical inspection. Method of control".

Impact	Mitigation measure	Responsibility	Cost
Noise and vibration	• Install noise barrier in front of Nazar settlement and College as indicated on Figure 23a; • inform population about anticipated works; • schedule land leveling so as to minimize the multiple use of the noisiest equipment on the site; • hydraulic hammer and pilling machinery should not be used at the same time within distance closer than 250 meters to the settlement. • route of movement loaded trucks inside of ALC should not be placed closer than 70 meters to the settlement Nazar. • use of Personal Protective Equipment (PPE) by workers involving during construction stage in the sites where noise level will exceed 80 dB as per national regulation; • schedule construction works between 8 am and 7 pm. In case of extension working hours, inform community (Nazar and Dehkonobod RCAs) in advance; • conduct monthly noise measurements at the points indicated in Figure 23 and in case of exceeding - apply additional measures, such as adding new mufflers or sound absorbing materials to the noise generating equipment, construction of the additional acoustic screen could be applied • conduct visual observation of houses in “Nazar” settlement faced to construction site on integrity; • use of Personal Protective Equipment (PPE) by workers involving during construction stage in the sites where noise level will exceed 80 dB;	Contractors implement PSC and PMO monitor implementation	Included in the Contractors budget Costs for conduction monitoring are included in Env. Monitoring Table
Pollution of surface and ground water	• Contractor should not start construction works without obtaining permission from SCEEP on water use and discharge of waste waters;	Contractors receives permission	Included in the Contractors budget

Impact	Mitigation measure	Responsibility	Cost
	• Make sure that temporary fence has been built before construction works has started; • Excavated top soil needs to be storage away from water courses (at least 20 meters); • Washing of machinery, equipment and trucks need to be done only in specially designated places equipped with waste water collection and primary treatment facilities (oil traps, sedimentation tanks and etc.); • Store all toxic and hazardous materials required for construction and fuel at secure and managed sites located away from the water courses; • Maintenance of all vehicles and equipment in operable condition ensuring no undue leakage of fuel and oil on the ground; • Organize sanitation arrangements at worksites or any accommodation facilities provided for workers' ensuring that no raw sewage is released into the drain or water courses; • Conduct monitoring of water quality in the points indicated on the Figure 24 (before site and after site), and in the water tap of RCA "Nazar" on the monthly base by ingredients indicated in the Environmental Monitoring Plan (Chapter 8, Table 22). If water quality deteriorates in comparison with baseline data (Table 5a) undertake necessary measures to exclude pollution due to construction activities •	PMO and PSC monitor implementation	Costs for conduction monitoring are included in Env. Monitoring Table
Impact on soil	• The top soil of about 30 cm depth shall be removed and stored separately during excavation work, and after completion of the main construction the same soil shall be replaced on the top, in unpaved areas; • The surpluses of top soil need to be distributed among farmers and	Contractor implements PMO and PSC monitor implementation	Included in the Contractors budget

Impact	Mitigation measure	Responsibility	Cost
	householders as per decision of local government authorities and SCEEP; • To minimize soil compaction, movement of all type techniques will be allowed only through agreed assess roads; • Contractors will be required to use only authorized carriers with getting all necessary permissions per respective national legislation.		
Waste management Hazardous materials	• Strictly follow a Waste Management Plan developed by Contractor, endorsed by PSC and approved by PMO; • Used oil shall be collected into containers placed at the concreted sites and disposed to national oil companies designated for accepting and treatment of used oils[43]; • Refueling vehicles and oil replacement have to be conducted in the special designated and properly equipped places. Such places have to be organized in the way avoiding releasing or leakage of oil on the ground or water courses. Emergency facilities have to be at the place for elimination of accident of oil spills; • Used batteries have to be collected separately and transferred to the local branches "Cvetmet" for further disposal.	Contractor implements PMO and PSC monitor implementation	Included in Contractor budget
Waste management Non-hazardous materials	• Obtain permit on disposal of all types of wastes from local agency "Toza hudud"; • Segregate communal wastes on recyclable and non-recyclable; • Sell recyclable wastes to relevant local waste processing organizations (paper, glasses, plastic) and timely dispose of non-recyclable wastes to the landfill, determinate by local hokimiyats;	Contractor implements PMO and PSC monitor implementation	Included in Contractors budget

[43] Resolution of Cabinet Ministries of RUz # 258 "On collection, storage and further disposal of used technical oil" dated from 4 September 2012

Impact	Mitigation measure	Responsibility	Cost
	• Provide hydro isolated septic tank for collecting waste waters at the construction camp sites and bio toilets for workers at the construction sites and timely dispose of waste waters to the local waste water treatment plants; • Prohibit burning of all types of wastes; • Prohibit discharge of sewage or oily water in surface water courses or soil; • Create a safe (sheltered with concrete foundation) storage facility.		
Impact on biological resources	• Clear mark the project site in order to avoid unnecessary felling of trees; • Conduct joint revision of the project sites with representatives of inspectors from Jomboy district Goskompriroda to identify a number of felling trees to calculate compensations; • Pay compensation for felling trees losses as indicated in CMR # 290 (2014); • During land leveling don not use chemical and burning for removing vegetation; • Consider option to leave felled trees to farmers.	Contractor implements PMO and PSC monitor implementation Jomboy district Goskomprioroda participate in trees counting and monitoring compensation payment	Included in the Contractors budget Cost for felling 704 mulberry and 40 plane trees (to be paid to Goskompriroda) is around 30,000 USD is included in PMO budget
Socio-economic resources	• inform community in advance about planning works; • for construction works which do not require specific skills, hire local population as much as possible; • conduct explanatory work among workers about local culture and traditions	Contractor implements PMO and PSC monitor implementation	
Health and safety issues	• Inform population the Nazar and Dehkonobod RCAs about planning works in advance; • Together with traffic police authority and road agency Contractors should develop a Traffic Management Plans with clear indication routes of vehicles' movements, placement of special signs, and speeding allowance, schedule transportation	Contractor implements PMO and PSC monitor implementation	Included in the Contractors budget

Impact	Mitigation measure	Responsibility	Cost
	activities by avoiding peak traffic periods. The Traffic Management Plan has to be approved by Traffic Police and disclosed to local community prior commencement of construction works on respective sites; • Provide proper lightening of construction site; • Development of Site Specific Plans for campsites; • Carry out regular awareness campaigns among work staff, including specific hazards associated with the spread of HIV/AIDS. • After completion of the construction works reinstate construction and camp sites by bringing them to its primary condition; • PSC will conduct post-construction audit during defect liability period to make sure that construction sites and camps are properly cleaned and restored before hand-over to Executive agency – MFT		
Construction camps	• Separate Site Specific EMP (SSEMP) for labor/construction camps. SSEMP for labor/construction camps will describe waste collection and disposal procedure, set up of camp facilities (such as a storage place for construction materials and techniques if any, laundry and toilets, access roads) in the way, which will allow to minimize impacts on environment and disturbance of local population. • Provide safe and adequate living conditions for workers, such as dining rooms, toilets, shower rooms emergency medical kits. • Measures for fire-fighting and preventing electric shocks etc. need to be organized in accordance with national standards. • Develop Occupation Safety and Health Plan, which covers among others the following topics: usage of	Contractors develops plans PMO and PSC review and endorse plans and monitor their implementation	Included in the Contractors budget

Impact	Mitigation measure	Responsibility	Cost
	PPE, working procedure in dangerous conditions (works at height, with noise equipment and etc.), training activities and others. • Contractors shall instruct all the workers to act in a responsible manner.		
Archeological heritages: Chance of finding heritage during earthworks	• Excavation and other works need to be suspended immediately; • Area with possible heritage shall be fenced with fencing tape; • A designated focal point from a local administration (khokimiyat) and representative of Ministry of Culture of RUz need to be informed and invited for assessment of potential heritage and undertaken necessary actions; • Civil works at the finding place could be recommenced after obtaining permission from the representative of Ministry of Culture of RUz and from focal point from Khokimiyats.	Contractor implements PMO and PSC monitor implementation Representatives from Khokimiyat and Ministry of Culture assist in assessment and undertake necessary actions	No cost
Construction sites and areas used for construction camps without proper cleaning and reinstatement works	• After completion of the main construction Contractor shall provide full reinstatement of the construction and camp sites by bringing them to its primary condition; • Remove all rubbish, or temporary structures (such as buildings, shelters, and latrines) which are no longer required; and • The area that previously housed the construction camp is to be checked for spills of substances such as oil, paint, etc. and these shall be cleaned up; • All hardened surfaces within the construction camp area shall be ripped, all imported materials removed; • PSC will conduct post-construction audit during defect liability period to make sure that construction sites and camps are properly cleaned and restored to pre-project conditions before acceptance of works before hand-over to MFT and local khokimiyats.	Contractor implements PMO and PSC monitor implementation SCEEP accepts the works	Included in the Contractor's budget

Impact	Mitigation measure	Responsibility	Cost
Cumulative impact: dust pollution	• Conduct continuously monitoring of dust level on construction site. If standard for dust level is exceeded (0.5 mg/m^3) increase number of watering during the windy weather.	Contractor conducts monitoring and implement necessary actions PMO and PSC monitor implementation	Included in the Contractor's budget
Operation phase			
Impact from new processing and productions	• Environmental Appraisal (ZVOS) has to obtained for each production and processing included in RCM of RUz # 491 (2001) • Only processing and production which is not included in the ADB's Prohibited Investment Activities List (PIAL, ADB SPS (2009) could be implemented on the territory of ALC.	MFT	Included in MFT operational costs
Impact on air quality	• Prior commissioning of any processing line in added value chain pavilion ensure, that local Environmental Appraisals are received; • Prohibit for all type vehicles to remain at idle on more than 5 minutes; • Ensure that solid wastes and sludge from WWTP are disposed timely in accordance with waste management plan; • Strongly prohibit to burn any wastes on the territory of the ALC	MFT	Included in MFT operational costs
Noise and vibration	• Prohibit use honks by vehicles on access roads and on the territory of ALC especially during the night time; • Limit speed of vehicles on access and internal roads by 5 km/h.		
Impact on water resources	• Receive all necessary permits for usage of drinking water and discharge of sewage water; • Prohibit discharge of untreated water into the surface water or soils; • Ensure properly functioning of the waster water plant; • Conduct regular monitoring of treated water quality.	MFT SCEEP	Included in MFT operational costs Under the state program

Impact	Mitigation measure	Responsibility	Cost
	• Conduct monitoring of water quality in Mirzoarik. • If Nazar and Dehkonobod settlements will not be connected and water quality from hand pumps will worse than baseline data (Table 5a) to undertake measures on identification of possible source of pollution of ground water due to the ALC operation and fix the problem.		
Waste Management	• Waste management on the has to be implemented in accordance with Special Waste Management Plan (SWMP), developed by the Training and Capacity Building Consultant; • Conclude agreements with "Toza Hudud" agency for disposal of non-hazardous wastes and with oil treatment agency for disposal used oils. • In case of complaints from population on odor or any inconveniences related to improper waste management, revise and update (SWMP) in order to exclude further complaints.	Waste Management Authority under MFT	Included on MFT operational costs
Health safety	• Develop an Occupational health and Safety Plan, which includes Fire Safety, Action plan for emergency situation for each ALC facility; • Ensure proper implementation plans during operation of the ALC; • Conduct monitoring of road accidents related on the access roads during to movement into and from ALCs; • In case of accidents, revise and refine movement of vehicles on the access roads together with road police; • Develop internal traffic management plan and conduct monitoring of its proper implementation.	MFT,	Included on MFT operational costs

8.2. Environmental Monitoring

331. To ensure that mitigation actions are implemented in accordance with the requirements of the EMP, monitoring shall be undertaken as follows:

- Instrumental Monitoring for environmental quality such as air, noise, vibration, water – Monitoring of dust and noise shall be performed monthly by Contractor with usage their own equipment. Cost for this equipment is included in Contractor's budget. Schedules, parameters, locations are indicated are presented in Environmental Monitoring Table # 22. In parallel, PMO will conclude agreement with a local certified laboratory on conduction air quality (including dust control), noise and vibration level and water quality monitoring.
- Observational Monitoring – Throughout the project construction phase PMO's environmental specialist under guideline of PSC's IES shall continually monitor the Contractors actions. This will be achieved through weekly inspections of the Contractors environmental performance by PMO's environmental specialist throughout the construction period. PMO shall have the right to suspend works or payments if the Contractor is in violation of any of his obligations under the EMP and SSEMPs.

332. Developed within current IEE an Environmental Monitoring Plan provides details on required measurements, the locations of measurements points, frequency and responsibilities associated with each monitoring task (Table 22).

333. Besides instrumental environmental monitoring indicated into the Table 22, monitoring of EMP's implementation will be carried out. For efficient implementation of this activity it is proposed that several levels of supervision activities need to be undertaken: (i) daily inspection by Contractor's Environmental Officer (EO), (ii) monthly inspection by PMO's ES, and (iii) periodic audit (quarterly) by PSC's IES.

334. It is recommended, that dust and noise level will be measured by Contractor themselves on weekly base. For the measurements Contractor will use own devices which will be certified in local agency – Uzstandard.

335. PMO will hire certified laboratory to conduct noise, dust (for cross checking), SO2, NO2 measurement and water quality measurement as indicated in below table. This instrumental monitoring will be conducted on monthly base.

336. Results of environmental performance including monitoring activity have to be properly documented and reported. As indicated in EMP and Chapter 5, Contractor has to perform a log book with information about conducted training on EH&S for workers and another book for registration accidents during the civil works. Original records on results of required instrumental environmental monitoring (air and water quality) also need to be kept in the separate file for records.

337. It is recommended, that prior commencement of the civil works, PSC will develop for Contractors a format for site inspection to optimize a process of environmental supervision. The format could be in form of a checklist listed mitigation measures to be implemented at the construction sites, their performance status and some explanations as required.

Table 22: ENVIRONMENTAL MONITORING PLAN

Mitigation measures	Parameter to be monitored	Location	Frequency	Responsibility	Standards	Cost
Construction Stage						
Air quality	NO_x, SO_2, CO Dust	Points located close to settlements Nazar and Dehkonobod settlements (Figure 23)	Baseline – before construction works and after on monthly base, and as per receiving complaints from local population during construction works	PMO will hire certified laboratory to conduct analysis	Hygienic norms. List of Maximum Allowable Concentrations (MACs) of pollutants in ambient air of communities in the Republic of Uzbekistan including Annex 1. SanR&N RUz No.0179-04[44]	Cost for hiring laboratory to conduct measurements on monthly base are included in PMO budget - 50 measurements for 4 years – 3,500 USD
Air quality	Dust	Points located close to Nazar and Dehkonobod settlements (Figure 23)	Baseline – before construction works and after on weekly base and as per receiving complaints from local population	Contractor, with using own devices	The same	Cost is included in Contractor's budget –2500 USD
Noise level	Noise level	1. Point located close to Nazar settlement (Figure 23, P2) 2. Point located close to Dehkonobod	Baseline – before construction works and after on monthly base, and as per receiving complaints from local population during	PMO will hire certified laboratory to conduct analysis	Noise level during the day time should not exceed 55 dB and for night time – 45 dB 2. Noise level should not exceed 3 dB	Cost for hiring laboratory to conduct measurements on monthly base are included in PMO budget - 50 measurement

[44] National standards comply with international IFC standards

Mitigation measures	Parameter to be monitored	Location	Frequency	Responsibility	Standards	Cost
		settlements (Figure 23, P3)	construction works Baseline – before construction works and after on weekly base and as per receiving complaints from local population Before construction works starting and on monthly base during works of pilling machinery	Contractor, with using own devices Contractor	than baseline – 75 dB day time and 73 dB – night time 1. Noise level during the day time should not exceed 55 dB and for night time – 45 dB 2. Noise level should not exceed 3 dB than baseline – 75 dB day time and 73 dB – night time Absence of new damages/cracks	for 4 years – USD 1,400 Included in Contractor's contract. 1 devise for noise measurements is 200 USD Included in Contractor's contracts
Noise level Vibration imapct	Noise level Visual monitoring of house integrity	1. Point located close to Nazar settlement (Figure 23, P2) 2. Point located close to Dehkonobod settlements (Figure 23, P3) Houses in "Dehkonobod" settlement faced to to the construction site				
Water quality	1. Visual monitoring of surface water on existence oil film and turbidity 2. Oil products, dry residual, pH, ammonia, SO_4	Water bodies located next to construction sites (Figure 24) and water from hand pumps in Nazar settlements	1. Visual during each visit of construction site (at least weekly). 2-3. Baseline – before construction works and after on monthly base and per	1. Contractor 2-3. PMO will hire certified laboratory to conduct analysis.	1. Absence of oil films on the water bodies surface. 2 If baseline shows non exceeding standards	Included in Contractor's contracts. Cost for hiring laboratory to conduct measurements on monthly base are included in

Mitigation measures	Parameter to be monitored	Location	Frequency	Responsibility	Standards	Cost
	3. Water quality in hand pumps		complaints from people		indicated in "Sanitarian requirements for development and approval of maximum allowed discharges (MAD) of pollutants discharged into the water bodies with waste waters". SanR&N No 0088-99, this standards need to be used. If baseline exceeds standards (for example as in Table 5a) use baseline indicators for comparison. 3. If baseline shows non exceeding standards indicated in "Drinking water." O'z'DST	PMO budget - 50 measurements for 4 years is 6,200 USD

Mitigation measures	Parameter to be monitored	Location	Frequency	Responsibility	Standards	Cost
					950:2011 – Drinking water. Hygienic requirements and quality control this standards need to be used. If baseline exceeds standards (for example as in Table 5a) use baseline indicators for comparison.	
Operation Stage						
Air quality	Noise level	1. Point located close to Nazar settlement (Figure 23, P2) 2. Point located close to Dehkonobod settlements (Figure 23, P3)	1. Per complaints from people on noise disturbance due to work of pump station	MFT	1. Noise level during the day time should not exceed 55 dB and for night time – 45 dB 2. Noise level should not exceed 3 dB than baseline – 75 dB day time and 73 dB – night time	Cost is included into the annual budget of MFT

Mitigation measures	Parameter to be monitored	Location	Frequency	Responsibility	Standards	Cost
Water quality	In accordance with norms indicated "Sanitarian requirements for development and approval of maximum allowed discharges (MAD) of pollutants discharged into the water bodies with waste waters". SanR&N No 0088-99,	Discharge points from waste water treatment plants	Quarterly	District branch of Suvoqova	Sanitarian requirements for development and approval of maximum allowed discharges (MAD) of pollutants discharged into the water bodies with waste waters". SanR&N No 0088-99 and para 129-131	Cost is included into the annual budget of MFT
Traffic safety	Number of accident due on access and internal roads	Access and internal roads of ALC	Monthly	MFT	n/a	Cost is included into the annual budget of MFT

8.3 Reporting

338. Monthly Contractor's environmental reports shall consist of: filled formats from each construction site, brief information on conducted training, received complaints and their resolving, accidents during the civil works if any. Contractors will submit their report to PSC for endorsement before submission to PMO.

339. The PSC's monthly and quarterly project progress reports will include a section on Environment, Health and Safety (EHS). The reports will contain information about results of own inspections of EMP implementation. The reports also have to include information on undertaking on-the job and planned training, capacity building activities, proposed actions on improvement of EMP implementation by Contractors or fixing non-compliances observed during audits. A separate section will be dedicated to GRM. This section shall provide information on received complaints and undertaken actions. The reports will be submitted to PMO.

340. The PMO's Environmental Specialist (ES), assisted by PSC's Environmental Specialist (ES) will develop semi-annual Environmental Monitoring Reports based on information reviewed within Contractor's monthly and quarterly reports and own observations during site visits.

341. PSC will conduct a post-construction audit during the liability period to check compliance of completed construction and camp sites with EMP requirements. The audit has to be conducted before hand-over project's objects to MFT. Based on post-construction audits results, PMO's ES with PSC assistance will prepare final Environmental Monitoring Report to demonstrate that the sub-projects were properly completed.

8.4. Implementation arrangements

8.4.1 Institutional arrangements EMP implementation

342. The Agency for Implementation of Investment Projects in Agro-Industrial Complex (RRA) under the Cabinet of Ministries will be the executing agency. Both the RRA and the Ministry of Foreign (MFT) will be the project implementing agencies. A project management office (PMO) will be established under RRA with its current staff and relevant personnel assigned from MFT (if and when required). MFT will establish and finance its own implementation/management team/entity to coordinate the implementation and subsequently to be in charge of operation of the ALCs. A project management and supervision (PMS) consulting firm will be recruited to assist the project implementation and supervision.

343. The PMO at RRA will be responsible for implementation of EMP to comply with ADB's safeguards requirements and environmental national regulations. For this, PMO will hire a qualified full-time an Environmental Specialist who will be guided by an International Environmental Specialist (IES) of the Project Supervision Consultant (PSC) in overseeing the implementation of EMP. The cost for implementing EMP will be included in the construction contracts, and the cost for environmental supervision will be included in the consulting service of the PSC, the cost for environmental instrumental monitoring will be included in Contractors and PMO's budgets. PMO will be responsible for overall environmental compliance with SPS 2009 for both ADB and RRA funded activities. A grievance redress mechanism to handle both environmental and social safeguard issues was discussed with PMO, presented during Public Consultation and will be established after the project effectivity.

344. The project organizational chart is presented in PAM.

345. EMP will form part of the bidding documents. To ensure that mitigation actions are implemented in accordance with the requirements of the EMP, monitoring shall be undertaken as described in Chapter 8, Table 21.

346. Contractor will be responsible for implementation of mitigation measures. Within 30 days after contract award and prior to commencing any physical works, Site-specific Environmental Management plans (SSEMPs) and other plans, indicated in Table 21 will be developed by the Contractor under the guidance of the PSC, and be endorsed by PSC before submission to PMO for approval. SSEMP is the document that the Contractor shall prepare outlining how he intends to implement the EMP at a specific site or for a specific issue to ensure that all mitigations are implemented as specified in the EMP. SSEMPs will be needed for major environmental issues and most critical sites relating to sensitive receptors. During construction, the Contractor must retain the expertise of EO to implement and continually update the SSEMPs, and to report on the implementation of mitigation measures throughout the contract period.

347. The PSC is tasked with specific responsibility to assist PMO in ensuring safeguard compliance of civil works – with particular emphasis on the monitoring of implementation of EMP through the SSEMPs and related aspects of the project. PSC shall mobilize a IES to ensure that the Contractor complies with his environmental obligations. It is required that the IES provides a training program to the PMO's environmental specialist and Contractor's EO prior to the start of construction to develop their knowledge and understanding of the environmental, social, health and safety aspects of the project. PSC's IES shall:

- Assist the team leader in managing and implementing the project and ensuring compliance with the project implementation plan, the loan agreement, and the project agreement(s), particularly with ADB's Safeguard Policy Statement (SPS 2009) requirements and project environment-related legal covenants;
- Review the initial environmental examinations (IEEs) conducted during the feasibility study stage to understand the EMPs, and assist the PMO in updating the IEEs in case of technical design changes or unanticipated impacts;
- Supervise the turnkey contractors during the detailed design and construction/installation of works and facilities to ensure EMPs and measures are properly implemented;
- Assist PMO in ensuring safeguard compliance of civil works – with a particular emphasis on the monitoring of implementation of the EMPs through the site-specific environmental monitoring plans and related aspects of the project;
- Provide on-the-job trainings to the PMO's and contractor's environmental staff prior to the start of construction to develop their knowledge and understanding of the environmental, social, health and safety aspects of the project, and build capacity of staff in The Rural Reconstruction Agency (RRA) and MFT to undertake their tasks in EMP monitoring;
- In coordination with other PSC specialists and PMO staff, and with regards to EMPs, contribute to the preparation of bid documents for the turnkey contracts for establishing the ALCs in selected project sites, and assist RRA and MFT in bid evaluation when required;
- Assist PMO in preparation of bi-annual environmental monitoring reports for further submission to ADB; and
- Contribute inputs to the PSC's quarterly progress reports for project management and supervision and the brief monthly summary reports, highlighting potential and actual

issues/problems related to EMP and recommending corrective measures/actions for PMO's actions.

348. PMO is responsible for overall EMP implementation and will be assisted by the PSC with EMP requirements. The PMO's responsibilities include the following, but not limited to:

- Implement the EMP developed within the IEE;
- Ensure the bidding documents of PSC and Contractors include all tasks as described in the approved EMP;
- Supervise the PSC and Contractors in EMP implementation for overall compliance with SPS 2009 requirements and project environment-related legal covenants;
- Ensure all necessary government permits and license, including Environmental Appraisal, for all civil works will be obtained;
- Approve SSEMPs which will be prepared by the Contractors and endorsed by the PSC;
- With assistance of the PSC, prepare, submit to the EA and ADB, and disclose semi-annual environmental monitoring reports on ADB website and in UZB;
- Report in a timely manner to ADB of any non-compliance or breaches with ADB safeguard requirements and take corrective actions promptly;
- In assistance with PSC's IES update the IEE in case of technical design changes or unanticipated impacts;
- Establish a Grievance Redress Mechanism (GRM) after the project effectivity and act as the GRM secretary to make sure that the GRM is operational to effectively handle environmental and social concerns of project affected persons;
- Build up and sustain institutional capacity in environmental management and railway safety, including conducting public awareness programs.

349. State Committee on Ecology and Environmental Protection (SCEEP) through it is branches in Samarkand province will be also involved in the process of project implementation and the ALC operation. In accordance with the Law on Nature Protection and the Resolution of Cabinet Ministries of RUz #491 dated from December 2001, a national Environmental Impact Assessment (EIA) will be prepared during the project detail stage. Current IEE could be used as a base for national assessment with some revision in term of formatting. The SCEEP will issues an Environmental Appraisal which will include number of requirements. These requirements will be mandatory for implementation and their implementation will be monitored by inspectors from Jomboy district SCEEP.

350. Moreover, for all new fruits and vegetables processing which will be constructed on the territory of the ALC, environmental examination needs to be undertaken and Environmental Appraisal needs to be received from SCEEP for each processing.

351. Representatives of the SCEEP will also participate into a hand-over process as member of State Acceptance Commission. The SCEEP will receive the project's semi-annual environmental monitoring reports from the PMO.

8.4.2 Capacity building activity

352. It is proposed that Project's capacity building on environmental aspects will cover three main directions:

i) ***PMO's capacity*** on EMP implementation during construction stage - to enhance PMO's capacity on the EMP implementation PSC's IES will provide short training for PMO's Environmental Specialist and further assistance in monitoring SEMP implementation and guidelines for Contractor's Environmental Officer as required.

ii) ***SEMP implementation*** – training will be conducted by PSC's IES for PMO and Contractors;

iii) ***Awareness program for ALC's*** staff and renters in the project area – in part of environment, the program will cover waste management activates in ALC. The program will be developed by Capacity Building Consultant who will be hired for development of the ALC management system. One part of program will include organization of waste management facilities and development awareness progress on its effective implementation.

353. The tentative plan of required training is presented in Table 23.

Table 23: Tentative Program of Training for PMO and Contractors Staff

	Name of training	Time	Recipients	Organizer
1	Overall EMP implementation, Environmental Monitoring Reports preparation	Prior commencement of the civil works	PMO Safeguards Specialist	PSC
2	SEMP implementation	Prior commencement of the civil works	Contractors workers	Contractor's Environmental Officer with support of PSC
4	On occupational health and safety and environmental management	Regularly during construction and operation period	Contractors workers	Contractor's Environmental Officer with support of PSC's IES specialist

8.4.3 Cost estimation for EMP implementation

354. Costs required for implementing the EMP will cover the following activities:

(i) Conduction instrumental environmental monitoring of noise, vibration level and air and water quality by Contractors;
(ii) Compensation payment for cutting trees; and
(iii) Awareness program.

355. Although some of the measures included in EMP are an integral part of the civil works (watering, storage of top soil and etc.), some measures (establishing sound-absorbing panels) are required additional funds. Cost estimation for EMP by the main items are presented in Table 24:

Table 24: Cost Estimates for EMP Implementation

Item	Quantity	Unit cost, USD	Total Cost, USD	Remarks
Instrumental Monitoring				
Dust measurement devices	1	2,500	2,500	Cost will be included in Contractor budget

Noise measurement devices for Contractor	1	200	200	Cost will be included in Contractor budget
Noise measurements for independent assessment (in case of complaints from population)	60	20	1,200	AIPAC will hire Sanitarian Epidemiological Station to conduct analysis
Dust measurements for independent assessment (in case of complaints from population)	60	50	3,000	AIPAC will hire certified laboratory (Uzhydromet, Goskompriroda) to conduct analysis
Water quality	60	90	5,400	AIPAC will hire certified laboratory (Uzhydromet, Goskompriroda) to conduct analysis
Subtotal			**12,300**	
Environmental Mitigation Measures/Permissions				
Payment for cutting trees • plane trees • mulberry	 2.8[45]x22[46] 2^2x22	 40 704	 2464 31,000	Cost is included in Contractor's budget
Installation of acoustic barrier with height 2 meters (2 meter fence plus 2 meter acoustic screen)	500 m	40	20,000	To be installed by Contractor
Subtotal			**53,464**	
Environmental awareness program				
Training on EMP implementation	2	1000	2000	As indicated in table 23. Budget is included in PSC contracts
Subtotal			**2000**	
Total			67,764	
Contingency			6,776.4	10 % of subtotal
TOTAL			**74,540.4**	
Staffing				
Environmental Specialist International	 8	 16000	 128,000	Cost is included in PSC budget
PMO National Environmental Specialist,	54	1000	54,000	Cost is included in PMO budget
Total for staffing			**182,000**	

[45] Coefficient which depend on type of trees (CMR # 290, dated from October 20, 2014)
[46] 22 USD is minimal wage in RUz, which is used as a base for calculation of fees

Construction of Waste management faculties	1	302,500	**302,500**	The cost is included the project general budget. No needs for additional cost in EMP
Construction of Waste water treatment plant	1 unit	1,589,000	1,589,000	The cost is included the project general budget. No needs for additional cost in EMP
Operation of wastes management facilities (both sewage and solid)	annual	207,920	**147,722**	The cost will be included in MFT operation budget

Source: PPTA's Consultant, 2018.

356. Expenses related to Construction of solid waste management facilities and construction of waste water treatment plant are included in the civil works cost.

357. Expenses related to staffing of PMO, PSC and Contractors with environmental specialists are included into their budgets. Waste management training is included in the PSC's capacity building program. Therefore, these expenses are excluded from total budget for EMP.

9. CONCLUSIONS

358. Based on results of the conducted Initial Environmental Examination the following conclusion could be done.

359. During the project implementation and operation phases the impact on environment will have site-specific character. The main impacts anticipating during construction will be dust pollution, generation of wastes and movements of vehicles.

360. These impacts could be mitigated by implementation appropriated measures indicated in Table 21. Along with implementation of measures continuously environmental monitoring needs to be implemented through Contractor and PMO side.

361. GRM needs to be established immediately after loan signing and its proper implementation needs to be monitored from PMO and PSC sides.

362. During operation phase the main environmental impacts are related to increasing traffic on the highway. Special attention needs to be paid to waste management during operation phase.

363. It is essential to develop effective waste management procedure and implement it properly. Such procedure will be developed by Consultant on Capacity Building.

364. In general, the project implementation will have a significant positive impact on socio-economic resources through creating new job opportunities, improvement of market for farmers and general income in Samarkand province economy.

10. ATTACHMENTS
Attachment 1. Air Measurements Results

O'ZBEKISTON RESPUBLIKASI
FAVQULODDA VAZIYATLAR
VAZIRLIGI HUZURIDAGI
GIDROMETEOROLOGIYA XIZMATI MARKAZI
(O'ZGIDROMET)

ATMOSFERA, YUZA SUVLAR
VA TUPROO IFLOSLANISHNI
MONITORINGINI
OLUB BORISH HIZMATI (IMH)
100052, Toshkent shahar, 52
Bodomzor yo'li 1-top ko'chasi, 72
Telefonlar: 237-15-47, 235-86-14
Faks: 233 61 17
Telegraf manzili: Toshkent ГИМЕТ

REPUBLIC OF UZBEKISTAN
MINISTRY OF EMERGENCY SITUATIONS
THE CENTER OF
HYDROMETEOROLOGICAL SERVICE
(UZHYDROMET)

ATMOSPHERE, SURFACE WATER AND
SOIL POLLUTION MONITORING
SERVICE (PMS)
72, 1st Bodomzor yuli str.,
Tashkent 100052,
Republic of Uzbekistan
Telephones: 237-15-47, 235-86-14
Fax: 233 61 17
Telegrame: Tashkent GIMET

2018 29.01 № 06-08/01-26

Директору
ООО «Nazar Business and Technology»
Халмирзаевой М.И.

Центр гидрометеорологической службы при Министерстве по чрезвычайным ситуациям Республики Узбекистан (Узгидромет) в ответ на Ваше письмо № 9/18 - от 18.01.2018 г. направляет Вам ежегодные данные по качеству атмосферного воздуха гг.Самарканд и Андижан за 2016-2017 годы.

Приложение: 2л.

Начальник СМЗ М.А.Плоцен

Качество атмосферного воздуха в г. Самарканд за 2016-2017 гг.
среднесуточная концентрация (в мг/м^3)

Наименование примеси		I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
SO_2	2017	0.009	0,011	0,010	0,012	0,010	0,010	0,010	0,009	0,007	0,009	0,011	0,009
	2016	0,008	0,008	0,010	0,008	0,010	0,009	0,010	0,008	0,007	0,005	0,009	0,010
NO_2	2017	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	2016	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01

Предельно - допустимая концентрация (ПДК с.с.):
Пыль - 0,15
Диоксид серы (SO_2) - 0,05
Диоксид азота (NO_2) - 0,04

Attachment 2. Noise measurements Results and photos

Noise Measurements

Р Е С П У Б Л И К А У З Б Е К И С Т А Н

НАЦИОНАЛЬНАЯ СИСТЕМА АККРЕДИТАЦИИ

УП «ГИГИЕНА ТРУДА»

при НИИ САНИТАРИИ, ГИГИЕНЫ И ПРОФЗАБОЛЕВАНИЙ

МИНИСТЕРСТВА ЗДРАВООХРАНЕНИИ РУз

«УТВЕРЖДАЮ»

Директор «УИ «ГИГИЕНА ТРУДА»

« 17 » 03. 2018 г.

З.Н. ТУРАКУЛОВ

ОТЧЕТ

по хоздоговорной работе с ООО «Nazar Business and Technology» на тему «ИССЛЕДОВАНИЯ ШУМА НА ОБЪЕКТАХ г.г. САМАРКАНДА И АНДИЖАНА»

Т А Ш К Е Н Т - 2018 г.

1

расположением жилых застроек вблизи от производственных предприятий (Андижанская область). **(Рис. 1-4).**

Таблица 1

Результаты измерений уровней звука на объектах исследований

№ точек	ОБЪЕКТЫ ИССЛЕДОВАНИЙ:		№ измер.	Эквив. уровни звука, дБА	ПДУ для жилой застройки	Превышения
	Самаркандская область					
I..	«Мазар-махалля»	д	1.	41	55	-
		д	2.	40		-
II.	«Дехканабад-махалля»	д	3.	41	55	-
		д	4.	42		-
III.	«Дехканабад-махалля»	д	5.	52	55	-
		д	6.	52		-
		н	**9.**	**52**	**45**	**7**
		н	**10.**	**52**	**45**	**7**
IV.	Магистраль . «Самарканд-Ташкент»	д	7.	75	55	20
		д	8.	75	55	20
		н	**12.**	**74**	**45**	**29**
V.	Магистраль . «Самарканд-Ташкент»	д	11.	76	55	21
Андижанская область						
I.	Фермерское х-во	д	1.	43	55	-
		д	2.	43		
II.	Магистраль . «Андижан-Фергана»	д	3.	75	55	20
		д	4.	75	55	20
		н	**6.**	**73**	**45**	**28**
		н	**7.**	**73**	**45**	**28**
III.	Магистраль . «Андижан-Фергана»	д	5.	75	55	20
		н	**8.**	**73**	**45**	**29**
		н	**9.**	**73**	**45**	**29**

Скорость -80км/час.

№	Грузовые Машины	Легковые машины	автобусы	трактора	Общее кол-во
	72	768	36	8	**884**
%	*8,1*	*87*	*4*	*0,1*	*100*

Рис 1. Загруженность магистрали «Самарканд –Ташкент»
в « часы пик» (дневное время)

Скорость -80км/час.

№	Грузовые Машины	Легковые машины	автобусы	трактора	Общее кол-во
	300	420	6	2	**728**
%	*41*	*57,4*	*0,8*	*0,3*	*100*

Рис 2. Загруженность магистрали «Самарканд –Ташкент»
в « часы пик» (ночное время)

№	Грузовые Машины	Легковые машины	автобусы	трактора	Общее кол-во
	58	246	6	2	**312**
%	*19*	*79*	*1,4*	*0,6*	*100*

Рис 3. Загруженность магистрали «Андижан –Фергана»
в « часы пик» (дневное время)

Скорость -80км/час.

№	Грузовые Машины	Легковые машины	автобусы	трактора	Общее кол-во
	58	246	6	2	**312**
%	*19*	*79*	*1,4*	*0,6*	*100*

Рис 4. Загруженность магистрали «Андижан –Фергана»
в « часы пик» (ночное время)

IV. ЗАКЛЮЧЕНИЕ

Выполнены исследования по изучению шумового режима на объектах исследований в Самаркандской и Андижанской областях согласно ГОСТ 20444-85. Шум. Транспортные потоки. Методы измерения шумовой характеристики. на соответствие их нормативным требованиям по СанПиН РУз №02067-09 «Санитарные нормы и правила по обеспечению допустимого шума в помещениях жилых, общественных зданий и на территории жилой застройки».

На объектах Самаркандской области превышения зарегистрированы на территории жилой застройки размещенных вблизи от магистрали «Самарканд – Ташкент», где превышения для дневного времени составили до 20дБА и 29дБА для ночного времени. В точке измерений («Дехканабад-махалля») превышения в ночное время составили 7дБА, что обусловлено работой производственных предприятий: гипсового завода и цеха по обработке гранита.

В Андижанской области превышения ПДУ на территории жилой застройки, расположенной также вблизи транспортной магитстрали «Андижан-Фергана» составили от 20 до 29дБА.

V. Использованная нормативно-методическая литература, материалы.

1. ГОСТ 20444-85. Шум. Транспортные потоки. Методы измерения шумовой характеристики.
2. СанПиН Руз №02067-09 «Санитарные нормы и правила по обеспечению допустимого шума в помещениях жилых, общественных зданий и на территории жилой застройки

V I. Ответственный исполнитель

Зав. лабораторией физических факторов,
канд.мед.наук, ст.н.сотр. МАГАЙ М.

Photos from the Project Area