ANNEX D

Environmental and Social Management Plan (ESMP)

The table below summarises the key mitigation measures per projects type and per project phase. Not shown in this table are the measures that are valid for all projects types as described in the ESMS. This are:

- Stakeholder engagement including grievance mechanism (all phases) – See ES Policy Section 3.5.2.2 and Appendix 1
- Minimum Labour Standards (construction) – See ES Policy Section 3.5.2.3
- Workers Health & Safety including incident reporting (construction) – See ES Policy Section 3.5.2.4 and Incident Reporting Form in Annex F
- Construction Contractor Code of Conduct – See Appendix 2

Project Type	Preparation (conception, planning)	Implementation / Construction	Operation

Power Transmission
➢ See Annex D3
	• Project design
	  ○ Associated facilities
	  ○ "Bird friendly design"
	• Project sitting
		• Community health & safety
		  ○ site access restriction
		• Construction best practices (soil, water, natural habitats, noise, emissions)
		• Accidental resettlement
			• Workers health & safety (maintenance)
			• Community Health & Safety: protection against electrocution

ANNEX D3

Environmental and Social Management Plan (ESMP) – Shugnan VI (Phase II) Cross –border Energy Project

Ph.	Topic	Measure	Means of Verification	Responsibility	Monitoring procedure
Preparation (conception, planning)	E&S Risk Management Project sitting	Pamir Energy (PE) plans to route the transmission line corridor and associated distribution lines in a way to prevent damage on valuable ecosystems and habitats; on valuable historic, religious, cultural, archaeological and paleontological resources and on community lands and livelihoods. In doing so, Pamir Energy will put particular focus on: - Avoiding vegetation and forest clearance - Using as much as possible existing right-of-way (e.g. along existing road corridors) - Aligning transmission corridors to avoid critical habitats (e.g. nesting grounds, heronries, rookeries, bat foraging corridors, and migration corridors) - Avoiding known areas of historical/cultural/archaeological interest - Avoiding habitations, since proposed transmission lines have capacity of 110kV - Avoiding private and privately used land for tower locations - Where feasible, minimize tower locations on arable land used for crops, hay, and orchards - Locating no towers in cemeteries - Locating towers at least 15 meters from Panj river - For towers placed in or closer to streams, the riverbed and higher risk zones; protective diversion walls and reinforced concreted foundations will be used to prevent damages from natural hazards (e.g. flooding and landslides) and to minimize erosion and sedimentation impacts from foundations. - Spacing to avoid electrocution of large birds (>2.5m spacing) - Where feasible, align corridor to avoid the need to cut back trees, including orchards	Design documents (feasibility study)	Pamir Energy	Project planning documents
	Project design	Pamir Energy ensures local communities are preferred for the supply of goods and services to the project and project personnel, where appropriate. If materials and competences are available locally, they should be sourced locally provided it does not disturb local economy (preference for local hiring).	Site observations Community meetings	Pamir Energy	Random site inspection
	Project design	Pamir Energy considers all associated facilities throughout the E&S risk management activities, such as: - Access roads needed for construction and maintenance - Distribution network, transformers, substations - Workers camps, material storage areas if any	Design documents (feasibility Studies)	Pamir Energy	Project planning documents

Ph.	Topic	Measure	Means of Verification	Responsibility	Monitoring procedure
	Stakeholder Engagement	Pamir Energy engages and communicates with communities and plans sufficient time for participation. Moreover PE ensures regular consultations with the local authorities and communities regarding the management of construction. On-going consultation processes will also identify marginalized groups and include: - Outreach to all identified stakeholders - Realistic information on employment opportunities - Meetings with community leaders and citizens as appropriate - Implementation of Grievance Mechanism Further details on the stakeholder engagement process can be found in Appendix 1.	Project Documentation Minutes - Stakeholder Engagement & Consultations	Pamir Energy	Document review Grievance records
	Grievance Mechanism	Pamir Energy documents all grievances from workers, communities and other stakeholders formulated on a register along with the responses given. Anonymity, if required, shall be guaranteed. A template of the grievance form can be found in Annex G.	Grievance Mechanism	Pamir Energy	Review of grievance register
	Occupational Health & Safety	Pamir Energy (together with consultants) sensitizes its cooperation partners within this project on OHS. Among other things this includes to provide H&S training to contractors, sub-contractors and workers.	Trainings record. Incident documentation. Project reporting.	Consultant Pamir Energy	Check Training records Check incidents reports
	Land Acquisition and Resettlement	Pamir Energy engages with communities and authorities at the earliest stage to understand the land ownership and land use. Furthermore PE engages with the local community and potential affected households to understand their needs and identify the risk of damage to their livelihood basis through the project (e.g. take of pastureland, lack of access to water, orchard and fruit trees).	Minutes of Meetings Grievance Mechanism records	Pamir Energy	Project planning documents
	Land Acquisition and Resettlement	Pamir Energy intends to avoid any physical or economic displacement due to the project activities. Should any physical or economic displacement be inevitable (accidental situation), resettlement shall be addressed according to best practices mentioned in "*Land Acquisition and Livelihood Restoration Framework*" and KfW KCUS needs to be involved. - Based on final design/locations, Pamir Energy will identify all Project Affected Persons (PAPs) and impacts, identify land ownership, land use etc. - Consult with PAPs and communities - Consult with authorities on land ownership, land use - Acquire rights to land for towers and substation, provide like-for-like replacement for physical and/or economic displacement prior to displacement occurring (if inevitable).	Minutes of Meetings Grievance Mechanism records Management Plan for Land Acquisition and Compensation if needed	Pamir Energy	Review of grievance register

Ph.	Topic	Measure	Means of Verification	Responsibility	Monitoring procedure
	Biodiversity and Natural Habitats	Pamir Energy ensures a "Bird friendly design" of the transmission lines to minimise bird collision mortality. Pamir Energy continuously collaborates and has consulted with regional experts and environmental authorities to receive data on relevant areas for spring and autumn migration periods to determine if migrating birds cross the corridor, and if so whether they are likely to be at an altitude that could lead to collisions in the future. In the opinion of the experts and authorities, there is some, though not excessive risk of future mortality due to collisions. Pamir Energy will therefore install so-called "bird diverters" at intervals on transmission lines at valley crossings to discourage perching and loafing, and to discourage birds from approaching the line.	Site Observations Consultations with regional environmental experts & authorities	Pamir Energy Contractor	Random site inspection
Implementation / Construction	Grievance Mechanism	Pamir Energy documents all grievances from workers, communities and other stakeholders formulated on a register along with the responses given. Anonymity, if required, shall be guaranteed. A template of the grievance form in Annex G will be applied.	Grievance Mechanism & grievance record register on site and in the office.	Pamir Energy	Review of grievance register
	Labour Conditions	Pamir Energy and its contractors ensure minimum labour conditions will be applied (no child labour, no forced labour, non-discrimination) as required by ILO Conventions. Contribution from community in the form labour is allowed, provided that contribution is voluntary and does not negatively affect livelihoods.	Site visits/verification	Contractor	Inspection reports (also from labour authorities), Review of grievance register and training record

Ph.	Topic	Measure	Means of Verification	Responsibility	Monitoring procedure
	Labour Conditions	Pamir Energy and its contractors ensure the workforce has access to primary healthcare on site, providing prescriptions. - As a minimum, first aid kits need to be available on every construction site. - Emergency services (next hospital, health centre or doctor) needs to be identified and made available to workers in case of need. - Communications established with nearest medical facilities and personnel regarding works to be completed, arrange for support as appropriate Should worker camps be requested, Pamir Energy and its contractors provide workers with acceptable housing conditions ensuring the provision of adequate space, supply of water, adequate sewage and garbage disposal system, appropriate protection against heat, cold, damp, noise, fire, security and disease-carrying animals, adequate sanitary and washing facilities, ventilation, cooking and storage facilities and natural and artificial lighting, and in some cases basic medical services (comply with IFC/EBRD guidance "Workers' Accommodation: Processes and Standards").	Site visits & Observations Grievance Mechanism	Contractor	Random site inspection
	Occupational Health & Safety	Pamir Energy ensures H&S training to contractors and workers on the main risks on workers' health and safety related to work place (hazardous substance management, work at height, electric, traffic safety), the safe work practices, the emergency procedures and the requirement of incident reporting. Additionally PE ensures: - Medical clearance for workers to perform their tasks - Assessment of risks and identification of mitigation measures for all tasks, with PPE as last resort - Designing tasks for maximum safe operations - Only trained workers allowed to complete tasks	SOP's and site visits, Minutes of Meetings	Contractor Pamir Energy	Check Training records
	Occupational Health & Safety	Pamir Energy and its contractors record accidents and near misses and safety statistics continuously. Moreover PE and contractors implement incentive programme for incident recording. - Workers will be trained in fire prevention, and in the implementation of a Traffic Management Plan - Required to develop and implement and Emergency Preparedness and Response Plan or procedure.	Trainings record. Incident documentation. Project reporting.	Contractor Pamir Energy	Check Training records Check incidents reports

Ph.	Topic	Measure	Means of Verification	Responsibility	Monitoring procedure
	Occupational Health & Safety	Pamir Energy and its contractors monitor the security warnings and adapt a proactive attitude vis a vis security situation. Evacuating workers if necessary.	Trainings record. Incident documentation. Project reporting.	Contractor Pamir Energy	Check Training records Check incidents reports
	Occupational Health & Safety	Pamir Energy and its contractors ensure the use of Personal Protective Equipment (PPE) tailored to the hazard exposed to for workers. As a minimum foot plus head, hand, ear, eyes protection, depending on working position. Moreover Contractor ensures: - Worker transport (passenger vehicles only, no riding on heavy equipment, wear safety belts, etc.) - Work within boundaries, penalize supervisors and workers for violations - Install physical barriers at deep excavations to prevent accidents	Site Observations	Contractor	Random site inspection
	Emissions (dust, noise, gases)	Pamir Energy and its contractors reduce source of dust emissions at construction sites by: - Watering transportation roads during dry and windy conditions. Generally keeping roads in good condition. Covering truck loads with canvas to avoid dust blow. - Minimising drop heights for material transfer activities such as unloading of friable materials. Cover stockpiles when not used. - Using equipment and vehicles in appropriate technical conditions. Provide emissions control equipment where applicable (e.g. filters). Use low sulphur content fuels, in line with legal provisions in force as well as local availability. Ensure vehicles and equipment are switched off when not in use.	Site Observations	Contractor	Random site inspection, inspection of roads

Ph.	Topic	Measure	Means of Verification	Responsibility	Monitoring procedure
Implementation / Construction	Noise and vibration impacts	Pamir Energy and its contractors reduce noise and vibration impacts during construction. - Limiting the hours of operation for specific pieces of equipment or operations, especially mobile sources operating through community areas or close to residential houses (typically between 10 pm and 7 am). Avoiding vehicle movements at night. - Using of state-of-the-art technology and limiting the number of machines operated simultaneously. - Ensuring the use of modern and well-maintained equipment (e. g. use of silencers). - If blasting is to take place, the contractor will notify nearby residents and post signs at least six hours prior to the time of blasting. - If residents complain of noise, the contractor or Pamir Energy will monitor noise at the location of concern and implement mitigation measures if noise levels exceed the standards	No work conducted between 10pm and 7 am/ Grievance Mechanism Site observation	Contractor	Random site inspection, Review of filed grievances, review of timesheets of workers

Ph.	Topic	Measure	Means of Verification	Responsibility	Monitoring procedure
	Soil and groundwater contamination	Pamir Energy and its contractors maintain high standards in housekeeping on site. - Identifying and storing appropriately (define dedicated storage areas with secondary containment) all hazardous substances like fuel or chemicals and provide solutions to remediate unforeseen leakage and spills Pamir Energy and its contractors enforce appropriate waste management practices: - Giving priority to reuse of waste material upon disposal. Use licenced waste contractor as feasible and relevant. - Collecting and segregating wastes and ensure safe storage and in line with legal requirements. - Fueling operations and other uses of fuels and hazardous materials will take place at least 20 meters from the river or any other permanent or ephemeral stream. Fuelling and vehicle maintenance will take place over drip trays or other impermeable surfaces. - Sanitary facilities (toilets) will be provided or otherwise available at or near all work locations. Workers will be strictly required to use the facilities at all times, with penalties for violations. If vendors provide portable toilets or sewage disposal, the contactor will verify the vendor has proper permits. Toilets will be at least 25 meters from the river. - All vehicles and mobile equipment will have spill cleanup kits, and drivers will be trained in the use of the kits. - Wash-water from washing trucks, equipment, or concrete will be contained and evaporated, taken for discharge to a sewer, or otherwise managed so it does not contaminate soil or vegetation. - Herbicides will not be used for vegetation control, nor insecticides or other pesticides for vermin control. - For towers placed in or closer to the riverbed; protective diversion walls and reinforced concreted foundations will be used to prevent damages from natural hazards (e.g. flooding and landslides) and to minimize erosion/sedimentation impacts from foundations and to prevent soil and groundwater contamination (see design details in Annexes to ESA_Shugnan VI).	Dedicated storage areas in place Waste Manifests	Contractor	Random site inspection, Review of waste inventories

Ph.	Topic	Measure	Means of Verification	Responsibility	Monitoring procedure
	Soil Management	Pamir Energy and its contractors implement best practices for <u>soil management:</u> - Ensuring appropriate storing of topsoil removed. After construction topsoil will be used as backfill for restoration of the area. - Limiting stockpile height to 2 m maximum to avoid soil compensation. - Reinstatement of construction working area to the best possible after construction activities are completed. - If construction takes place on inclined surfaces/slopes, ensure preventive erosion control measures are applied. - Mark the boundaries of construction zones and prohibit workers and equipment from straying beyond the boundaries. Within the boundaries, control precipitation run-on and run-off as necessary to prevent erosion from affecting areas outside the demarcated construction zone and access roads. - Ensuring that proper drainage is maintained throughout construction and on permanent works so that run-on and run-off cannot destabilize slopes, damage vegetation, or erode topsoil. - Carefully remove topsoil from locations where it is more than a few centimeters deep and store it in piles that are protected from erosion. If it will not be used for land restoration when construction is complete, it will be made available for local people to use in garden plots and other areas, with preference for people who received replacement land for land needed for the project. - If additional soil and spoil is needed beyond that generated by the project, it will be taken only from licensed quarries/vendors, and/or ensured that any self-exploitation activities be undertaken with full site restoration and reinstatement of vegetation when exploitation has ended. - Managing spoil from excavations in a way that prevents damage outside the demarcated boundaries of the construction zone. Prohibited to dump spoil down hillsides, or onto living vegetation in any area, and it will be required to place excess spoil in configurations that will be stable over the long term before demobilizing. - Required to keep vehicles on prepared roads and surfaces. - When construction is complete, remove piles and depressions from disturbed areas and will grade those areas to a stable contour, using as much spoil as possible. The stored topsoil will then be spread over the site before planting of native species of grass and/or shrubs, or broadcasting seeds of such species. - Monitor the success of the revegetation program and make repairs as needed to ensure the establishment of self-sustaining maximum ground cover. - Restore disturbed areas as soon as practicable once construction activity at tower locations is complete, even if construction is continuing at other locations, and not wait until construction is complete at all locations before beginning the restoration program.	Site verification, photographs	Contractor	Random site inspection

Ph.	Topic	Measure	Means of Verification	Responsibility	Monitoring procedure
	Water Resources Protection	Pamir Energy and its contractors implement best practices for <u>water management:</u> - Prioritising the use of rainwater/storm-water over surface water/groundwater abstraction by using harvesting equipment and systems on site. - Reusing wastewater wherever feasible. - Restricting excavation activities during periods of intense rainfall. - Using temporary bunding to reduce the risk of sediment, oil or chemical spills to the receiving waters. - Carrying out excavation works in cut off ditches to prevent water from entering excavations. - Water harvesting conducted - No excavation during intense rainfall - Towers will be located at least 15 meters from Panj River and none will be placed in the drainageway of small tributaries. - For towers placed in or closer to the riverbed; protective diversion walls and reinforced concreted foundations will be used to prevent damages from natural hazards (e.g. flooding and landslides) and to minimize erosion/sedimentation impacts from foundations and to prevent water contamination (see design details in Annexes to ESA_Shugnan VI). - Vehicles and workers will use bridges when crossing the river and will not drive vehicles or equipment across the riverbed. - Riverbanks and all land disturbed by construction will be restored and revegetated as soon as feasible after the disturbance ends - Small ephemeral or permanent streams will be diverted around construction areas or placed in temporary conduits until construction is complete so they do not become silt-laden. - Sediment controls will be placed at the downhill/ downstream boundary of upland construction zones when there is a risk that sediment-laden run-off could leave the construction or camp site and either damage vegetation or reach the river. Such controls could include sedimentation ponds, silt fences, and/or other measures. - Run-on and run-off will be diverted around or otherwise prevented from coming into contact with concrete, including waste concrete, until the concrete is fully cured. Waste concrete will be promptly removed from the construction site and disposed or used where it cannot affect surface or ground water. - Local surface water may not be used to wash trucks and equipment, including especially equipment, batching, and ready-mix truck washing and cleaning except at distances at least 20m from rivers, and with barriers placed as needed to prevent wash-water from reaching rivers.	Site verification, photographs	Contractor	Random site inspection, Project planning documents

Ph.	Topic	Measure	Means of Verification	Responsibility	Monitoring procedure
	Community Health & Safety	Pamir Energy and its contractors restrict access to construction sites to non-authorized persons: - Preventing physical access to the site fencing and/or guarding - Using appropriate signage - Informing site users, community leaders, authorities (informal/official) during stakeholder meetings about access restrictions - Access controlled - All construction areas near communities and at the substation will be marked with barriers or safety tape and there will be only one or a few access points. Excavations will have physical barriers or intact safety tape placed on all sides of the excavation at any time there is no active work at the excavation site. Any lifting operations at the substation will have one or more flagmen on duty who can warn people away (lifting at towers will be manual). - When towers are in place, there will be signs on all four sides to warn of danger and prohibit climbing, with signs in the Tajik and Russian languages (and any other language known to spoken by nearby residents) and with graphic danger symbols that warn of the dangers of falls and of electrocution. - To prevent contact with energized conductors that could electrocute children or others. Pamir Energy will provide information on such risks and precautionary measures to local schools to help prevent such accidents. In addition, Pamir Energy will ensure that each tower has signs, in Tajik and Russian, that warn trespassers of the risk of electrocution, falls, and other dangers. The sign will have a 24-hour telephone number to which emergency calls can be made.	Site verification	Pamir Energy	Random site inspection
	Community Health & Safety	Pamir Energy and its contractors implement good practices for traffic safety: - Scheduling traffic activities to avoid peak hours on local roads if feasible. - Setting traffic speed limits, verify drivers' behaviour with respect to driving speed and safety. Ensure safe driving by project personnel, e.g. through training/induction/incentives (best driver awards). - Avoiding as much as possible driving at night. - Avoiding off-road vehicle traffic. Use existing roads. - Required to develop and implement a Traffic Management Plan that provides for driver training, vehicle safety, coordination with local traffic authorities, and traffic control at road construction	Observations Training attendance lists Grievance Mechanism	Contractor	Random site inspection

Ph.	Topic	Measure	Means of Verification	Responsibility	Monitoring procedure
Implementation/Construction	Biodiversity and Natural Habitats	Pamir Energy and its contractors implement <u>good practices for natural habitats protection</u>: - Scheduling activities to avoid breeding and nesting seasons for any identified critically endangered or endangered wildlife species. - Using existing roads for access as much as feasible - Limiting vegetation clearing to areas within the site boundary where it is absolutely necessary to reduce habitat disturbance. o Avoid clearing mature trees. o Ensure revegetation of cleared areas where possible after construction using native species. o Revegetate with recovered plants and other appropriate local flora - Avoid using pesticides to perform vegetation clearance. - Mark and stay within boundaries of construction zones and paths - Train/warn workers to remain within boundaries, penalize supervisors and workers for violations - Strip and store topsoil and subsoil/spoil in separate piles within construction boundaries, protect from erosion - Install drainage control as needed to control erosion that would affect off-site areas - Restore disturbed areas and clear site of all debris and waste when works are complete - If cutting and/or construction within 100 meters of mature trees with cavities used by owls or bats cannot be avoided, cutting and/or construction within 100 meters must be delayed until after bats have emerged from hibernation, young owlets and bats have permanently left the nests, and roosts are not being actively used. - If mature trees with hollows that support or have supported hibernating or nesting bats must be cut, "bat boxes", will be placed and approved by a qualified expert. Pamir Energy will replace bat boxes as needed for the first five years of operation. At least two bat boxes will be placed for each such bat-supporting tree that is cut.	Site observations	Contractor	Random site inspection
	Cultural Heritage	Pamir Energy and its contractors ensure all chance finds of cultural heritage (e.g. graves, old ceramic, old building fragments) are reported immediately to the relevant authority. If possible, avoid excavation in the ultimate neighbourhood of a chance find, fence the chance find and await instructions from the competent authority. Contractors (and their supervisors) need to be aware on which authority is to be contacted in case of find. Contact numbers / addresses must be readily available.	Contractual documentation Chance finds records	Contractor/ Implementing Partner	Random site inspection

Ph.	Topic	Measure	Means of Verification	Responsibility	Monitoring procedure
Operation	Occupational Health & Safety	Pamir Energy minimises risks of electrocution for workers: only qualified personal equipped with adequate protection equipment can perform the maintenance works	Contractual documentation Site observation	Pamir Energy	Check Training records Check incidents reports
	Community Health and Safety	Pamir Energy avoids as much as possible use of hazardous substances such as wooden poles preservatives or PCB containing transformers	Contractual documentation Site observation	Pamir Energy	Random site inspection
	Community Health and Safety	Pamir Energy minimises risks of electrocution for community: - Access to climb electricity pylons needs to be restricted - Use of signs, barriers (e.g. locks on doors, use of gates, use of steel posts surrounding transmission towers, particularly in urban areas) - Education / public outreach to prevent public contact with potentially dangerous equipment - When towers are in place, there will be signs on all four sides to warn of danger and prohibit climbing, with signs in the Tajik and Russian languages (and any other language known to spoken by nearby residents) and with graphic danger symbols that warn of the dangers of falls and of electrocution. - To prevent contact with energized conductors that could electrocute children or others. Pamir Energy will provide information on such risks and precautionary measures to local schools to help prevent such accidents. In addition, Pamir Energy will ensure that each tower has signs, in Tajik and Russian, that warn trespassers of the risk of electrocution, falls, and other dangers. The sign will have a 24-hour telephone number to which emergency calls can be made.	Contractual documentation Site observation	Contractor	Check Training records Check incidents reports
	Biodiversity and Natural Habitats	Pamir Energy ensures that if pesticides are to be used for agriculture program or for right of way clearing, only those that are low in human toxicity, that are known to be effective against the target species, and that have minimal effects on non-target species and the environment shall be used. Pamir Energy will ensure that no hunting or killing of any wild animals or birds will occur in the project area. PE ensures that operational staff and workers do not cut and use forest wood for cooking and other purposes. Moreover all staff instructed not to disturb any wild animal and their habitat.	Pesticide Specification sheet Site verification	Contractor	Random site inspection