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6.22 Impact Assessment Summary

Table 6.22.2 to Table 6.22.19 present summaries of potential environmental and social impacts and Project benefits, by discipline. The summary impact tables are provided to facilitate use of the ESMP and to provide context for the various initial management plans developed during the ESIA preparation and presented as appendices to this chapter. Where necessary, monitoring plans have been or will be developed to verify that impact mitigation and benefit enhancement activities are complying with design goals and regulatory requirements.

The summary of impacts have been assessed in accordance with the matrix in Table 6.22.1

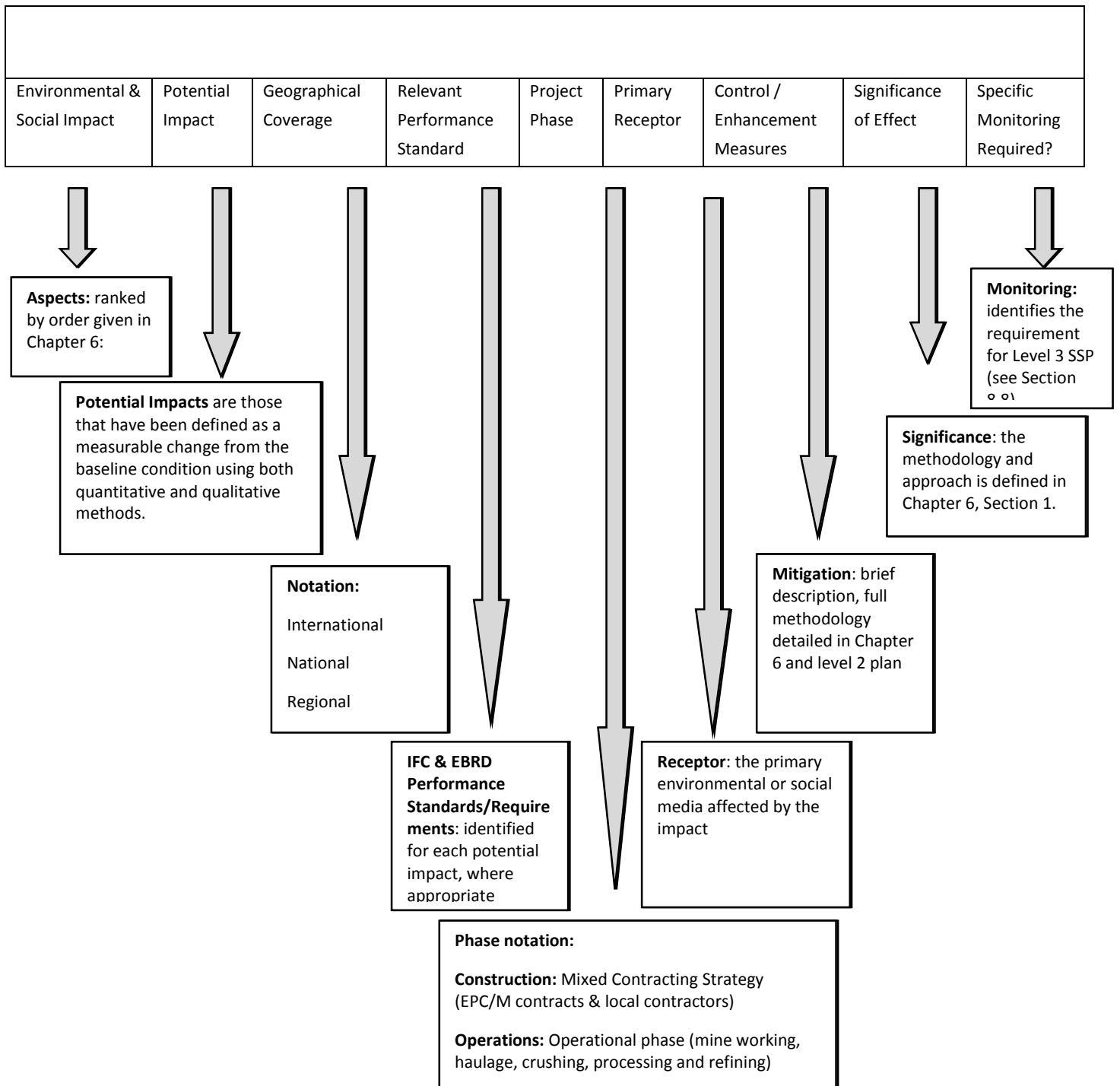


Table 6.22.1: Approach to the Summary Analysis of Impacts and Effects

Table 6.22.3: Landscape and Visual Impact – Summary of Potential Impacts and Effects

Receptor	Viewpoint	Direction of Effect (neutral infers both adverse and positive)	Relevant Performance Standard / Requirement	Project Phase			Control / Enhancement Measures	Significance of Effect															Specific Monitoring Requirements	Management Plan Reference		
								Construction	Operations	Closure and Rehabilitation	Very High	Major	Moderate	Minor / Negligible	Positive		Very High	Major	Moderate	Minor / Negligible	Positive				Very High	Major
				Construction - Year 2							Operations - Year 7					Closure phase - Year 15										
Landscape Receptors	Settled Lowland and Rocky Gorges	Adverse (neutral post closure)	PS1	X	X	X	*																		Yes	FMP, EMP, pMRCRP and BMP
	Lower Farmed and Settled Foothills	Adverse (neutral post closure)	PS1	X	X	X	*																		Yes	FMP, EMP, pMRCRP and BMP
	Forested Upper Gorge and Foothills	Adverse (neutral post closure)	PS1	X	X	X	*																		Yes	FMP, EMP, pMRCRP and BMP
	High Steppe and Plateau Grassland	Adverse (neutral post closure)	PS1	X	X	X	*																		Yes	FMP, EMP, pMRCRP and BMP
	Highland Hills and Grazing	Adverse (neutral post closure)	PS1	X	X	X	*																		Yes	FMP, EMP, pMRCRP and BMP
	High Rocky Peaks	Adverse	PS1	X	X	X	*																		Yes	FMP, EMP, pMRCRP and BMP
Representative Viewpoints – Visual Receptors	VP 1: Top of Jermuk Ski Lift	Adverse (neutral post closure)	PS1	X	X	X	*HLF design modified to reduce visual impact.																		Yes	FMP, EMP, pMRCRP and BMP
	VP 2: Hotel Olympia, Jermuk	Adverse (neutral post closure)	PS1	X	X	X	*HLF design modified to reduce visual impact.																		Yes	FMP, EMP, pMRCRP and BMP
	VP 3: Hotel Armenia, Jermuk	Adverse (neutral post closure)	PS1	X	X	X	*HLF design modified to reduce visual impact.																		Yes	FMP, EMP, pMRCRP and BMP
	VP 4: Deer Sculpture west of Jermuk	Adverse (neutral post closure)	PS1	X	X	X	*HLF design modified to reduce visual impact.																		Yes	FMP, EMP, pMRCRP and BMP
	VP 5: Western edge of Gndevaz Village	Adverse (neutral post closure)	PS1	X	X	X	*HLF design modified to reduce visual impact.																		Yes	FMP, EMP, pMRCRP and BMP
	VP 6: H-42 Road south of Gndevaz	Adverse / neutral post closure	PS1	X	X	X	*HLF design modified to reduce visual impact.																		Yes	FMP, EMP, pMRCRP and BMP
	VP 7: Road South-west of Heap Leach Facility																							Yes	FMP, EMP, pMRCRP and BMP	

Table 6.22.4: Air Quality – Summary of Potential Impacts and Effects

Environmental / Social Impact	Potential Impact	Geographical Coverage	Relevant Performance Standard / Requirement	Project Phase			Primary Receptor	Control / Enhancement Measures	Significance of Effect															Specific Monitoring Requirements	Management Plan Reference															
				Construction	Operations	Closure and Rehabilitation			Very High	Major	Moderate	Minor / Negligible	Positive	Very High	Major	Moderate	Minor / Negligible	Positive	Very High	Major	Moderate	Minor / Negligible	Positive																	
																										Without Mitigation					With Mitigation (Short Term)					With Mitigation (Long Term)				
																										Very High	Major	Moderate	Minor / Negligible	Positive	Very High	Major	Moderate	Minor / Negligible	Positive	Very High	Major	Moderate	Minor / Negligible	Positive
Air Quality	Fugitive dust / Particulate (Blasting, Drilling, Conveying, Loading, Haulage and Crushing)	Local - site-wide	PS1, PS2, PS4	X	X		Nearby neighbours, Grazing lands/local flora, fauna, employees	Road watering, speed control, chemical dust control, proper vehicle maintenance, complaint monitoring, berms to shield sensitive areas, PPE, infrastructure design e.g. covered crusher and enclosed conveyor, cover truckloads of fill material, dust suppression/control equipment at loading and unloading, storage and transfer points.																			Yes	AQNVMP (Appendix 8.14) and OHSP (Appendix 8.7)												
	Combustion Engine and Point Source Emissions	Local - site-wide	PS1, PS2, PS4	X	X	X	Nearby neighbours, employees	Regular vehicle maintenance, speed control, emission control devices (e.g. catalytic converters, etc.), reduce vehicle idling times																			Yes	AQNVMP (Appendix 8.14) and OHSP (Appendix 8.7)												
	Nuisance odours from sewage treatment	Local - site-wide	PS1, PS2, PS3	X	X	X	Nearby neighbours, employees	Cover waste regularly (daily); gas relief system, Maintain sewage treatment system in good working order, PPE, waste reduction and recycling,																			Yes	SoWaMP (Appendix 8.13) and OHSP (Appendix 8.7)												
Abbreviations:		PPE: Personal Protective Equipment																																						

Table 6.22.5: Noise – Summary of Potential Impacts and Effects

Environmental / Social Impact	Potential Impact	Geographical Coverage	Relevant Performance Standard / Requirement	Project Phase			Primary Receptor	Control / Enhancement Measures	Significance of Effect															Specific Monitoring Requirements	Management Plan Reference
				Construction	Operations	Closure and Rehabilitation			Very High	Major	Moderate	Minor/negligible	Positive	Very High	Major	Moderate	Minor/negligible	Positive	Very High	Major	Moderate	Minor/negligible	Positive		
									Without Mitigation					With Mitigation (Short Term)					With Mitigation (Long Term)						
									Very High	Major	Moderate	Minor/negligible	Positive	Very High	Major	Moderate	Minor/negligible	Positive	Very High	Major	Moderate	Minor/negligible	Positive		
Noise	Noise from vehicle traffic, heavy equipment, mobile equipment, supply traffic, diesel generators, concrete plant, general construction activities	Local - Entire site	PS3, PR3	X	X	X	Nearby neighbours	Equipment / sound control/enclosures on high noise equipment; Noise barriers (berms, barriers), grievance mechanism, speed control, post signage denoting areas of high noise, regular vehicle maintenance															Yes	TP (Appendix 8.10), AQNVMP (Appendix 8.14) and SEP (Appendix 8.6)	
			PS2, PR2	X	X	X	Workers	PPE (hearing protection in high noise areas); signs where hearing protection required; training; occupational medical monitoring															Yes	OHSP (Appendix 8.7) and AQNVMP (Appendix 8.14)	
	Noise from topsoil/soil cover stripping and replacement. Drilling, blasting, product extraction and stockpiling, crushing and loading activities		PS3, PR3	X	X	X	Nearby neighbours	Blasting control speed controls, noise barriers, appropriate signage denoting areas of high noise, regular vehicle maintenance, grievance mechanism															Yes	AQNVMP (Appendix 8.14) and SEP (Appendix 8.6)	
			PS2, PR2	X	X	X	Workers	PPE (hearing protection in high noise areas); signs where hearing protection required; training; occupational medical monitoring,															Yes	OHSP (Appendix 8.7) and AQNVMP (Appendix 8.14)	

Table 6.22.6: Vibration – Summary of Potential Impacts and Effects

Environmental / Social Impact	Potential Impact	Geographical Coverage	Relevant Performance Standard / Requirement	Project Phase			Primary Receptor	Control / Enhancement Measures	Significance of Effect															Specific Monitoring Requirements	Management Plan Reference		
				Construction	Operations	Closure and Rehabilitation			Very High	Major	Moderate	Minor/negligible	Positive		Very High	Major	Moderate	Minor/negligible	Positive		Very High	Major	Moderate			Minor/negligible	Positive
									Without Mitigation					With Mitigation (Short Term)					With Mitigation (Long Term)								
Vibration	Vehicles, Heavy Equipment	Local - Site, Access Roads and Nearby Receptors	PS2, PS3, PR2, PR3	X	X	X	Employees, Residents, Buildings	Enforce speed limits for heavy equipment. Schedule high-vibration activities to daytime hours																		Yes	AQNVMP (Appendix 8.14) and SEP (Appendix 8.6)
	General Project Operations	Local - Site, Access Roads and Nearby Receptors	PS2, PS3, PR2, PR3	X	X		Employees, Residents, Buildings	Schedule high-vibration activities to daytime hours; Perform regular maintenance and inspection of equipment; Grievance mechanism - monitor vibration related complaints																		Yes	AQNVMP (Appendix 8.14) and SEP (Appendix 8.6)
Abbreviations:																											

Table 6.22.8: Groundwater – Summary of Potential Impacts and Effects

Environmental/ Social Impact	Potential Impact	Receptor Importance	Relevant Performance Standard / Requirement	Project Phase			Primary Receptor	Control / Enhancement Measures	Significance of Effect (positive have been highlighted in a blue scale)										Specific Monitoring Requirements	Management Plan Reference			
				Construction	Operations	Closure and Rehabilitation			Without Mitigation					With Mitigation									
									Very High	Major	Moderate	Minor/ negligible	Positive	Very High	Major	Moderate	Minor/ negligible	Positive					
Construction and Operation (where temporary, Pre- closure)	Perched water / Ephemeral springs in open pit areas, HLF and BRSF areas.	Local	PS1, PS3, PS4, PR1, PR3, PR4	X	X		Ground water	See Section 6.9 and relevant Management Plans (appendix 8.23 Surface Water Management Plan and 8.19 ARD Management Plan)													Yes	SWMP (Appendix 8.23) and ARDMP (Appendix 8.19)	
	Perennial Springs, open pit area, HLF and BRSF areas	Local	PS1, PS3, PS4, PR1, PR3, PR4	X	X		Ground water															Yes	SWMP (Appendix 8.23)
	Hydrothermal Springs Jermuk	Regional	PS1, PS3, PS4, PR1, PR3, PR4	X	X		Ground water															Yes	SWMP (Appendix 8.23)
	Groundwater used for supply purposes Kechut Springs, Springs North of Gorayk, Spandaryan- Kechut Tunnel.	Local	PS1, PS3, PS4, PR1, PR3, PR4	X	X		Ground water															Yes	SWMP (Appendix 8.23)
Ground water quality impacts in pit area and crushing plant - Construction and Operation (where permanent, Post- closure)	Groundwater Component of surface water baseflow – Darb River catchment.	Local	PS1, PS3, PS6, PR1, PR3, PR6		X	X	Groundwater – quality of base flow to river														Yes	SWMP (Appendix 8.23)	
	Groundwater component of surface water baseflow to Arpa River catchment.	Regional	PS1, PS3, PS6, PR1, PR3, PR6		X	X	Groundwater – quality of base flow to river														Yes	SWMP (Appendix 8.23)	
	Groundwater component of surface water baseflow to Vorotan River catchment.	Regional	PS1, PS3, PS6, PR1, PR3, PR6		X	X	Groundwater- quality of flow to river	See Section 6.10 and Water Management Plan													Yes	SWMP (Appendix 8.23)	
23Groundwater impacts from WDF - Construction	Impacts of groundwater due to blasting – likely to be temporary and restricted to operational phase only, attenuating rapidly following cessation of blasting.	Local	PS3, PR3		X		Groundwater – base flow to Vorotan River	See Section 6.9 and Technical Appendix 6.9.2.													Yes	SWMP (Appendix 8.23)	

Abbreviations: HLF: Heap Leach Facility, BRSF: Barren Rock Storage Facility, ARD: Acid Rich Drainage

Table 6.22.9: Surface Water – Summary of Potential Impacts and Effects

Environmental/ Social Impact	Potential Impact	Receptor importance	Relevant Performance Standard / Requirement	Project Phase			Primary Receptor	Control / Enhancement Measures	Significance of Effect (positive have been highlighted in a blue scale)											Specific Monitoring Requirements	Management Plan Reference									
				Construction	Operations	Closure and Rehabilitation			Very High	Major	Moderate	Minor/ negligible	Positive	Very High	Major	Moderate	Minor/ negligible	Positive												
																			Without Mitigation					With Mitigation						
																			Very High			Major	Moderate	Minor/ negligible	Positive	Very High	Major	Moderate	Minor/ negligible	Positive
Impacts from Oil, Chemical and Fuel Spillages, decrease in water quality as a result of accidental spillage and sediment	Kechut Reservoir Tributaries	Local	PS3, PS4, PS6, PR3, PR4, PR6	X	X		Agriculture, stock watering, ecosystem services	Design mitigation includes a minimum 110 % tank capacity of bunds, following protocols in the EPSRP, sediment/grease traps, effluent from facilities and wheel washes not being discharged to the stream, sewage effluent captured in sealed tanks and disposed of appropriately, training of employees and contractors in spill prevention measures														Yes	SWMP (Appendix 8.23), EPSRP (Appendix 8.9), CHSP (Appendix 8.15) and SEP (Appendix 8.6)							
	Arpa River Tributaries HLF Area	Local	PS3, PS4, PS6, PR3, PR4, PR6	X	X		Agriculture, stock watering, ecosystem services																Yes	SWMP (Appendix 8.23), EPSRP (Appendix 8.9), CHSP (Appendix 8.15) and SEP (Appendix 8.6)						
	Darb River	Regional	PS3, PS4, PS6, PR3, PR4, PR6	X	X		Agriculture, stock watering, ecosystem services																Yes	SWMP (Appendix 8.23), EPSRP (Appendix 8.9), CHSP (Appendix 8.15) and SEP (Appendix 8.6)						
	Darb River Tributaries	Local	PS3, PS4, PS6, PR3, PR4, PR6	X	X		Agriculture, stock watering, ecosystem services																Yes	SWMP (Appendix 8.23), EPSRP (Appendix 8.9), CHSP (Appendix 8.15) and SEP (Appendix 8.6)						
	Vorotan River	Regional	PS3, PS4, PS6, PR3, PR4, PR6	X	X		Agriculture, stock watering, ecosystem services, hydro- electric power generation																Yes	SWMP (Appendix 8.23), EPSRP (Appendix 8.9), CHSP (Appendix 8.15) and SEP (Appendix 8.6)						
	Vorotan River Tributaries	Local	PS3, PS4, PS6, PR3, PR4, PR6	X	X		Agriculture, stock watering, Ecosystem Services																Yes	SWMP (Appendix 8.23), EPSRP (Appendix 8.9), CHSP (Appendix 8.15) and SEP (Appendix 8.6)						
	Kechut Reservoir	National	PS1, PS3, PS4, PR4	X	X		National water supply, hydro- electric power generation, ecosystem services																Yes	SWMP (Appendix 8.23), EPSRP (Appendix 8.9), CHSP (Appendix 8.15) and SEP (Appendix 8.6)						
	Spandaryan Reservoir	National	PS1, PS3, PS4, PR4	X	X		National water supply, hydro- electric power generation, ecosystem services																No	SWMP (Appendix 8.23), EPSRP (Appendix 8.9), CHSP (Appendix 8.15) and SEP (Appendix 8.6)						
	Gndevaz Reservoir	Local	PS1, PS3, PS4, PR4	X	X		Agriculture stock watering																Yes	SWMP (Appendix 8.23), EPSRP (Appendix 8.9), CHSP (Appendix 8.15) and SEP (Appendix 8.6)						
	Wetland Ponds within Darb Tributaries including Benik's Pond	Local	PS1, PS3, PS4, PR4	X	X		Ecosystem services																Yes	SWMP (Appendix 8.23), EPSRP (Appendix 8.9), CHSP (Appendix 8.15) and SEP (Appendix 8.6)						

Table 6.22.9: Surface Water – Summary of Potential Impacts and Effects

Environmental/ Social Impact	Potential Impact	Receptor importance	Relevant Performance Standard / Requirement	Project Phase			Primary Receptor	Control / Enhancement Measures	Significance of Effect (positive have been highlighted in a blue scale)										Specific Monitoring Requirements	Management Plan Reference
				Construction	Operations	Closure and Rehabilitation			Without Mitigation					With Mitigation						
									Very High	Major	Moderate	Minor/ negligible	Positive	Very High	Major	Moderate	Minor/ negligible	Positive		
Impacts from Oil, Chemical and Fuel Spillages, decrease in water quality as a result of accidental spillage and sediment	Wetlands within Vorotan Catchment	Regional	PS1, PS3, PS4, PR4	X	X		Ecosystem services											Yes	SWMP (Appendix 8.23), EPSRP (Appendix 8.9), CHSP (Appendix 8.15) and SEP (Appendix 8.6)	
	Wetlands within Kechut Reservoir Tributaries	Local	PS1, PS3, PS4, PR4	X	X		Ecosystem services											Yes	SWMP (Appendix 8.23), EPSRP (Appendix 8.9), CHSP (Appendix 8.15) and SEP (Appendix 8.6)	
Impacts from construction of surface water diversions and sediment ponds resulting in reduction of surface water catchment area	Kechut Reservoir Tributaries	Local	PS3, PS4, PS6, PR3, PR4, PR6	X			Agriculture, stock watering, ecosystem services	Surface water ponds for construction designed to detain and release water to the surface water catchments, dewatering of pits in advance of mining not required therefore spring flows depending on groundwater not impacted and no loss of baseflow-to surface water receptors from groundwater expected										Yes	SWMP (Appendix 8.23), EPSRP (Appendix 8.9), CHSP (Appendix 8.15) and SEP (Appendix 8.6)	
	Arpa River downstream of Kechut Reservoir	Regional	PS3, PS4, PS6, PR3, PR4, PR6	X			Stock watering from Arpa river, fisheries habitat and wildlife water supply, fish farms												Yes	SWMP (Appendix 8.23), EPSRP (Appendix 8.9), CHSP (Appendix 8.15) and SEP (Appendix 8.6)
	Arpa River Tributaries Downstream of Ketchut Reservoir	Local	PS3, PS4, PS6, PR3, PR4, PR6	X			Stock watering from streams within the catchment, wildlife water supply												Yes	SWMP (Appendix 8.23), EPSRP (Appendix 8.9), CHSP (Appendix 8.15) and SEP (Appendix 8.6)
	Arpa River Tributaries HLF Area	Local	PS3, PS4, PS6, PR3, PR4, PR6	X			Stock watering from streams within the catchment, wildlife water supply												Yes	SWMP (Appendix 8.23), EPSRP (Appendix 8.9), CHSP (Appendix 8.15) and SEP (Appendix 8.6)
	Darb River	Regional	PS3, PS4, PS6, PR3, PR4, PR6	X			Agriculture, stock watering, ecosystem services												Yes	SWMP (Appendix 8.23), EPSRP (Appendix 8.9), CHSP (Appendix 8.15) and SEP (Appendix 8.6)
	Darb River Tributaries	Local	PS3, PS4, PS6, PR3, PR4, PR6	X			Agriculture, stock watering, ecosystem services												Yes	SWMP (Appendix 8.23), EPSRP (Appendix 8.9), CHSP (Appendix 8.15) and SEP (Appendix 8.6)
	Vorotan River	Regional	PS3, PS4, PS6, PR3, PR4, PR6	X			Agriculture, stock watering, ecosystem services, hydro- electric power generation												Yes	SWMP (Appendix 8.23), EPSRP (Appendix 8.9), CHSP (Appendix 8.15) and SEP (Appendix 8.6)

Table 6.22.9: Surface Water – Summary of Potential Impacts and Effects

Environmental/ Social Impact	Potential Impact	Receptor importance	Relevant Performance Standard / Requirement	Project Phase			Primary Receptor	Control / Enhancement Measures	Significance of Effect (positive have been highlighted in a blue scale)										Specific Monitoring Requirements	Management Plan Reference	
				Construction	Operations	Closure and Rehabilitation			Without Mitigation					With Mitigation							
									Very High	Major	Moderate	Minor/ negligible	Positive	Very High	Major	Moderate	Minor/ negligible	Positive			
	Voratan River Tributaries	Local	PS3, PS4, PS6, PR3, PR4, PR6	X			Agriculture, stock watering, Ecosystem Services												Yes	SWMP (Appendix 8.23), EPSRP (Appendix 8.9), CHSP (Appendix 8.15) and SEP (Appendix 8.6)	
Impacts from construction of surface water diversions and sediment ponds resulting in reduction of surface water catchment area	Kechut Reservoir	National	PS1, PS3, PS4, PR4	X			National water supply, hydro- electric power generation, ecosystem services												Yes	SWMP (Appendix 8.23), EPSRP (Appendix 8.9), CHSP (Appendix 8.15) and SEP (Appendix 8.6)	
	Spandaryan Reservoir	National	PS1, PS3, PS4, PR4	X			National water supply, hydro- electric power generation, ecosystem services												Yes	SWMP (Appendix 8.23), EPSRP (Appendix 8.9), CHSP (Appendix 8.15) and SEP (Appendix 8.6)	
	Gndevaz Reservoir	Local	PS1, PS3, PS4, PR4	X			Agriculture stock watering												Yes	SWMP (Appendix 8.23), EPSRP (Appendix 8.9), CHSP (Appendix 8.15) and SEP (Appendix 8.6)	
	Wetland Ponds within Darb Tributaries including Benik's Pond	Local	PS1, PS3, PS4, PR4PS1, PS3, PS4	X			Ecosystem services												Yes	SWMP (Appendix 8.23), EPSRP (Appendix 8.9), CHSP (Appendix 8.15) and SEP (Appendix 8.6)	
	Wetlands within Vorotan Catchment	Regional	PS1, PS3, PS4, PR4	X			Ecosystem services												Yes	SWMP (Appendix 8.23), EPSRP (Appendix 8.9), CHSP (Appendix 8.15) and SEP (Appendix 8.6)	
	Wetlands within Ketchut Reservoir Tributaries	Local	PS1, PS3, PS4, PR4	X			Ecosystem services												Yes	SWMP (Appendix 8.23), EPSRP (Appendix 8.9), CHSP (Appendix 8.15) and SEP (Appendix 8.6)	
Impacts as a result of accidental uncontrolled release of contact water from the BRSF, HLF detention pond and non contact water from the haul roads, pit and crusher area discharging into the receiving	Kechut Reservoir Tributaries	Local	PS1, PS3, PS4, PR1, PR3, PR4		X	X	Agriculture, stock watering, ecosystem services	Project designed for zero discharge of contact water during operations, contact water management system sized to manage extreme precipitation events, settlement of runoff prior to discharge through provision of sediment control ponds and											Yes	SWMP (Appendix 8.23), EPSRP (Appendix 8.9), CHSP (Appendix 8.15), SEP (Appendix 8.6) and pMRCRP (Appendix 8.18)	
	Arpa River downstream of Kechut Reservoir	Regional	PS1, PS3, PS4, PR1, PR3, PR4		X	X	Stock watering from Arpa river, fisheries habitat and wildlife water supply, fish farms													Yes	SWMP (Appendix 8.23), EPSRP (Appendix 8.9), CHSP (Appendix 8.15), SEP (Appendix 8.6) and pMRCRP (Appendix 8.18)
	Arpa River Tributaries Downstream of Ketchut Reservoir	Local	PS1, PS3, PS4, PR1, PR3, PR4		X	X	Stock watering from streams within the catchment, wildlife water supply													Yes	SWMP (Appendix 8.23), EPSRP (Appendix 8.9), CHSP (Appendix 8.15), SEP (Appendix 8.6) and pMRCRP (Appendix 8.18)

Table 6.22.9: Surface Water – Summary of Potential Impacts and Effects

Environmental/ Social Impact	Potential Impact	Receptor importance	Relevant Performance Standard / Requirement	Project Phase			Primary Receptor	Control / Enhancement Measures	Significance of Effect (positive have been highlighted in a blue scale)										Specific Monitoring Requirements	Management Plan Reference
				Construction	Operations	Closure and Rehabilitation			Without Mitigation					With Mitigation						
									Very High	Major	Moderate	Minor/negligible	Positive	Very High	Major	Moderate	Minor/negligible	Positive		
environment	Arpa River Tributaries HLF Area	Local	PS1, PS3, PS4, PR1, PR3, PR4		X	X	Stock watering from streams within the catchment, wildlife water supply	sediment control measures, backfill of the Tigranes / Artavzades pits and partial backfill of the Erato pit during closure with no permanent water in the open pits, passive water treatment for drainage from BRSF and HLF, ET cover on the BRSF and HLF, encapsulation of PAG barren rock within BRSF, ensure regular monitoring of water quality downstream	Very High	Major	Moderate	Minor/negligible	Positive	Very High	Major	Moderate	Minor/negligible	Positive	Yes	SWMP (Appendix 8.23), EPSRP (Appendix 8.9), CHSP (Appendix 8.15), SEP (Appendix 8.6) and pMRCRP (Appendix 8.18)
Impacts as a result of accidental uncontrolled release of contact water from the BRSF, HLF detention pond and non contact water from the haul roads, pit and crusher area discharging into the receiving environment	Darb River	Regional	PS1, PS3, PS4, PR1, PR3, PR4		X	X	Agriculture, stock watering, ecosystem services											Yes	SWMP (Appendix 8.23), EPSRP (Appendix 8.9), CHSP (Appendix 8.15), SEP (Appendix 8.6) and pMRCRP (Appendix 8.18)	
	Darb River Tributaries	Local	PS1, PS3, PS4, PR1, PR3, PR4		X	X	Agriculture, stock watering, ecosystem services											Yes	SWMP (Appendix 8.23), EPSRP (Appendix 8.9), CHSP (Appendix 8.15), SEP (Appendix 8.6) and pMRCRP (Appendix 8.18)	
	Vorotan River	Regional	PS1, PS3, PS4, PR1, PR3, PR4		X	X	Agriculture, stock watering, ecosystem services, hydro-electric power generation											Yes	SWMP (Appendix 8.23), EPSRP (Appendix 8.9), CHSP (Appendix 8.15), SEP (Appendix 8.6) and pMRCRP (Appendix 8.18)	
	Vorotan River Tributaries	Local	PS1, PS3, PS4, PR1, PR3, PR4		X	X	Agriculture, stock watering, Ecosystem Services											Yes	SWMP (Appendix 8.23), EPSRP (Appendix 8.9), CHSP (Appendix 8.15), SEP (Appendix 8.6) and pMRCRP (Appendix 8.18)	
	Kechut Reservoir	National	PS1, PS3, PS4, PR1, PR3, PR4		X	X	National water supply, hydro-electric power generation, ecosystem services											Yes	SWMP (Appendix 8.23), EPSRP (Appendix 8.9), CHSP (Appendix 8.15), SEP (Appendix 8.6) and pMRCRP (Appendix 8.18)	
	Spandaryan Reservoir	National	PS1, PS3, PS4, PR1, PR3, PR4		X	X	National water supply, hydro-electric power generation, ecosystem services											Yes	SWMP (Appendix 8.23), EPSRP (Appendix 8.9), CHSP (Appendix 8.15), SEP (Appendix 8.6) and pMRCRP (Appendix 8.18)	
	Gndevaz Reservoir	Local	PS1, PS3, PS4, PR1, PR3, PR4		X	X	Agriculture stock watering											Yes	SWMP (Appendix 8.23), EPSRP (Appendix 8.9), CHSP (Appendix 8.15), SEP (Appendix 8.6) and pMRCRP (Appendix 8.18)	
	Wetland Ponds within Darb Tributaries including Benik's Pond	Local	PS1, PS3, PS4, PR1, PR3, PR4		X	X	Ecosystem services											Yes	SWMP (Appendix 8.23), EPSRP (Appendix 8.9), CHSP (Appendix 8.15), SEP (Appendix 8.6) and	

Table 6.22.11: Demographics – Summary of Potential Impacts and Effects

Social Impact	Potential Impact	Geographical Coverage	Relevant Performance Standard / Requirement	Project Phase			Primary Receptor	Control / Enhancement Measures	Significance of Effect (positive have been highlighted in a blue scale)											Specific Monitoring Requirements	Management Plan Reference			
				Construction	Operations	Closure and Rehabilitation			Without Mitigation					With Mitigation										
									Very High	Major	Moderate	Minor/negligible	Positive	Not Acceptable	Major	Moderate	Minor/negligible	Positive						
Influx – disruption to communities	Disruption to local communities through influx during construction and operation, Influx created by the Project causes changes to the social fabric of local communities	Local	PS1, PS2, PR1, PR2	X	X		Residents	Maximise local employment, provide clear information on employment opportunities that are advertised widely, training to communities in local area of influence to increase skills, support SME development and agricultural assistance in affected communities, implement employee grievance mechanism, maintain and enhance CLC meetings, regular meetings with community administrators, central office to be located at ADR plant															Yes	SEP (Appendix 8.6)
Social maladies - crime and Vice	Influx of new people, particularly men with higher incomes, leads to increases in crime and vice	Local	PS1, PS2, PR1, PR2	X	X		Residents	provide induction on employee code of conduct and require compliance, develop clear policy to establish non-discrimination for employees with HIV/AIDS, provide information on preventing the transmission of STIs to employees, use of community system and reporting															Yes	ESMP, CHSP (Appendix 8.15) and SEP (Appendix 8.6)
Abbreviations:																								

Table 6.22.12: Economics – Summary of Potential Impacts and Effects																							
Socio-economic Impact	Potential Impact	Geographical Coverage	Relevant Performance Standard / Requirement	Project Phase			Primary Receptor	Control / Enhancement Measures	Significance of Effect (positive have been highlighted in a blue scale)										Specific Monitoring Requirements	Management Plan Reference			
				Construction	Operations	Closure and Rehabilitation			Without Mitigation					With Mitigation									
									Very High	Major	Moderate	Negligible / Minor	Positive	Not Acceptable	Major	Moderate	Negligible / Minor	Positive					
Macro-economics (royalties, taxes and profit sharing)	Job creation predominantly for local people. Some job creation for, non-local Armenian people, expatriates and contractors	National	PS1, PR1	X	X		Residents, Government	Managing macro-economic contributions, disclosure and transparency in financial transactions and accountability e.g. adhering to EITI principles and reporting, IFC reporting on taxes and government payments													Yes	ESMP	
Local inflation	Inflation of local goods e.g. food, groceries	Local	PS1, PR1	X	X		Residents	Monitor the cost of goods, improve local agricultural capacity, identify vulnerable groups sensitive to increases in the cost of goods, monitor impact of local salary levels, consider technical support for small producers to access better markets for their goods														Yes	ESMP
Local rents and land payments	Project footprint and security restrictions for safety	Local	PS1, PS5, PR1, PR	X	X		Residents	Training of community administrators on financial management, bring NGO partners to host communities to increase the development budgets in communities														Yes	ESMP
Abbreviations:																							

Table 6.22.13: Labour and Working Conditions – Summary of Potential Impacts and Effects																					
Socio-economic Impact	Potential Impact	Geographical Coverage	Relevant Performance Standard / Requirement	Project Phase			Primary Receptor	Control / Enhancement Measures	Significance of Effect (positive have been highlighted in a blue scale)										Specific Monitoring Requirements	Management Plan Reference	
				Construction	Operations	Closure and Rehabilitation			Without Mitigation					With Mitigation							
									Very High	Major	Moderate	Minor / Negligible	Positive	Not Acceptable	Major	Moderate	Minor / Negligible	Positive			
Direct employment	Job creation predominantly for local people. Some job creation for, non-local Armenian people, expatriates and contractors	Regional	PS1, PS2, PR1, PR2	X	X		Residents	Maximise local employment, provide skills training to local people and scholarships to local students in host communities, implement HR Policy and ensure supply chains do not use child or forced labour, use of grievance mechanism		Major Closure (-ve)	Moderate Operations (+ve)	Minor / Negligible Construction (+ve)	Positive		Not Acceptable	Major Operations (+ve)	Moderate Operations (-ve)	Minor / Negligible Construction (+ve)	Positive	Yes	ESMP, Human Resources Policy (Appendix 8.4) and SEP (Appendix 8.6)
Indirect employment and procurement	Job creation from multiplier effect and through establishing supply chains to procure goods and services	National	PS1, PS2, PR1, PR2	X	X		Residents	SME development, prioritise Armenian contractors, develop 'how to do business with Lydian' guide that is widely disseminated, and implement technical assistance programmes			Moderate Operations (+ve)	Minor / Negligible Construction (+ve), Closure (+ve)	Positive			Major Operations (+ve)		Minor / Negligible Construction (+ve), Closure (+ve)	Positive	Yes	ESMP
Working Conditions	Accommodation standards to ensure employees have access to appropriate lodging, and services and a safe and healthy living environment	Regional	PS1, PS2, PR1, PR2	X	X	X	Residents	Accommodation standards defined and maintained, no more than 4 people per room, no hot bunking, separate quarters for male and female employees, camp is dry and closed, catering provided for camp and hotel residents												Yes	ESMP
Abbreviations:																					

Table 6.22.14: Land Use, Agriculture and Natural Resources – Summary of Potential Impacts and Effects

Environmental Social Impact	Potential Impact	Geographical Coverage	Relevant Performance Standard / Requirement	Project Phase			Primary Receptor	Control / Enhancement Measures	Significance of Effect															Specific Monitoring Requirements	Management Plan Reference
				Construction	Operations	Closure and Rehabilitation			Very High	Major	Moderate	Negative / Minor	Positive	Very High	Major	Moderate	Minor / Negligible	Positive	Very High	Major	Moderate	Minor / Negligible	Positive		
									Without Mitigation					With Mitigation (Short Term)					With Mitigation (Long Term)						
									Very High	Major	Moderate	Negative / Minor	Positive	Very High	Major	Moderate	Minor / Negligible	Positive	Very High	Major	Moderate	Minor / Negligible	Positive		
Soil disturbance and physical barriers around agricultural land	Construction and operation of the Project	Local	PS1, PS3, PS4, PS5, PS6	X	X	X	Residents, Herders	Minimise project footprint, maintain access to land adjacent to the project where safe to do so, rehabilitation trials to determine how best to enhance soil quality and return land to grazing post closure																Yes	FMP (Appendix 8.8) and LALRP (Appendix 8.24)
Restriction of access	Land conversion for Project development	Local	PS1, PS3, PS4, PS5, PS6	X	X	X	Residents, Herders	Minimisation of restricted access where safe to do so, monitor land users to assess impacts caused by restricted access to pasture and grazing lands and identify mitigation measures																Yes	FMP (Appendix 8.8) and pMRCRP (Appendix 8.18)

Abbreviations:

Table 6.22.15: Livelihoods – Summary of Potential Impacts and Effects																						
Socio-economic Impact	Potential Impact	Geographical Coverage	Relevant Performance Standard / Requirement	Project Phase			Primary Receptor	Control / Enhancement Measures	Significance of Effect (positive have been highlighted in a blue scale)										Specific Monitoring Requirements	Management Plan Reference		
				Construction	Operations	Closure and Rehabilitation			Without Mitigation					With Mitigation								
									Very High	Major	Moderate	Minor / Negligible	Positive	Not Acceptable	Major	Moderate	Minor / Negligible	Positive				
Economic displacement of land users and land owners	Land required for project infrastructure located on private and state owned lands in the communities of Gndevaz and Saravan	Project Footprint	PS5, PR5	X	X		Residents	No physical displacement necessary, compensation for private land and crops paid prior to being taken and compensated at replacement value orphan land is compensated, all sale purchase agreements registered, normal sale-purchase transactions with private landowners, use of grievance mechanism, vulnerable people identified and provided assistance during and after land acquisition process, impacts are monitored.													Yes	LALRP (Appendix 8.24) and Guide to Land access and Compensation
Economic displacement of herders	Project footprint and security restrictions for safety	Regional	PS1, PS2, PS5, PR1, PR2, PR5	X	X		Residents	Carry out a herder census, support herders with new land agreements (including illegal herders), replace lost assets at equal/improved level, monitor herders livelihoods, expand Lydian agricultural programmes to herders, provide similar support to for technical assistance to seasonal herders													Yes	SEP (Appendix 8.6), LALRP (Appendix 8.24) and CDP (Appendix 8.16)
Abbreviations:																						

Table 6.22.16: Cultural Heritage- Summary of Potential Impacts and Effects

Environmental / Social Impact	Potential Impact	Geographical Coverage	Relevant Performance Standard / Requirement	Project Phase			Primary Receptor	Control / Enhancement Measures	Significance of Effect															Specific Monitoring Requirements	Management Plan Reference		
				Construction	Operations	Closure and Rehabilitation			Very High	Major	Moderate	Minor/negligible	Positive		Very High	Major	Moderate	Minor/negligible	Positive		Very High	Major	Moderate			Minor/negligible	Positive
									Without Mitigation					With Mitigation (Short Term)					With Mitigation (Long Term)								
Direct physical impacts to cultural heritage	Excavation, grading and other ground disturbing activities; passage of heavy vehicles on top of archaeological sites, especially in wet weather	Local – site-wide	PS1, PS4, PS8	X	X		Known cultural heritage,	Additional surface reconnaissance surveys to evaluate sites of unknown importance than can't be avoided by project re-design, implement chance finds procedure, training of employees and staff, excavation of cultural heritage sites by national authorities, marking of known sites or high potential areas with high visibility establish appropriate buffer zones and no go areas around known archaeological sites and high potential areas															Yes	CHMP, including Chance Finds Procedure (Appendix 8.17)			
Indirect physical impacts to cultural heritage	Blasting, vibration; transit of heavy vehicles in close proximity to archaeological sites	Local – site-wide	PS1, PS4, PS8	X	X		Known cultural heritage,	Known cultural heritage, marking of known sites or high potential areas with high visibility establish appropriate buffer zones and no go areas around known archaeological sites and high potential areas															Yes	CHMP, including Chance Finds Procedure (Appendix 8.17)			

Abbreviations:

Table 6.22.17: Community Health and Safety – Summary of Potential Impacts and Effects

Environmental / Social Impact	Potential Impact	Geographical Coverage	Relevant Performance Standard / Requirement	Project Phase			Primary Receptor	Control / Enhancement Measures	Significance of Effect (if positive it is has been highlighted)										Specific Monitoring Requirements	Management Plan Reference	
				Construction	Operations	Closure and Rehabilitation			Without Mitigation					With Mitigation							
									Very High	Major	Moderate	Minor/negligible	Positive	Very High	Major	Moderate	Minor/negligible	Positive			
Communicable disease linked to the living environment	Influx from the Project, particularly of men, increasing the spread of communicable diseases	Local	PS1, PS2, PS4	X	X		Residents, employees	Management of influx generated by Project, monitor housing inflation, support development of a community health information system, review WHO Pandemic influenza alerts, screening of employees for communicable diseases, community health awareness programmes												Yes	HIV and Communicable Diseases Policy (Appendix 8.4) and CHSP (Appendix 8.15)
Vector related diseases	Transportation of products and personnel increasing the spread of vector related diseases	Local	PS1, PS2, PS4	X	X		Residents, employees	On-going monitoring of health records and health profiles in the region												Yes	CHSP (Appendix 8.15)
Soil, water and waste related diseases	Earthworks activities for the Project affecting soil, water and waste related diseases, increased pressure on facilities	Local	PS1, PS2, PS3, PS4	X	X		Residents, employees	Monitor water quality, on-going environmental management, communication of findings to stakeholders, effective waste management on site (including associated facilities) and in the community												Yes	ESMP and SWMP (Appendix 8.23)
High risk sexual practices, STIs including HIV/AIDS	Influx from workforce brings more men into the area with higher disposable incomes who change their sexual practices	Regional	PS1, PS2, PS4	X	X	X	Residents, employees	Increasing employee awareness of STIs and preventative measures, implementation of employee code of conduct, monitor commercial sex work activity, particularly in Jermuk, develop support programme, employee code of conduct												Yes	HIV and Communicable Diseases Policy (Appendix 8.4) and CHSP (Appendix 8.15)

Table 6.22.17: Community Health and Safety – Summary of Potential Impacts and Effects																				
Environmental / Social Impact	Potential Impact	Geographical Coverage	Relevant Performance Standard / Requirement	Project Phase			Primary Receptor	Control / Enhancement Measures	Significance of Effect (if positive it is has been highlighted)										Specific Monitoring Requirements	Management Plan Reference
				Construction	Operations	Closure and Rehabilitation			Without Mitigation					With Mitigation						
									Very High	Major	Moderate	Minor/negligible	Positive	Very High	Major	Moderate	Minor/negligible	Positive		
Food and nutrition	Loss of pasture land, food hygiene/health associated with mine camp food and higher incomes, inflation of food prices	Local	PS1, PS2, PS4	X			Residents, employees	Monitor food inflation, nutritional surveillance and awareness programmes and support local agricultural programmes									Yes	CHSP (Appendix 8.15)		
Non-communicable Diseases linked to lifestyle changes	Mine camp catering and increased incomes changing diet	Local	PS1, PS2, PS4	X	X	X	Residents, employees	Support IEC campaigns on nutrition and well-being, medical surveillance programme of employees and well-ness programme in workforce, develop partnerships with NGOs who can deliver health programmes									Yes	CHSP (Appendix 8.15)		
Environmental health determinants - including hazardous chemical substances	Risks associated with cyanide, hydrocarbon, other chemicals	Regional	PS1, PS2, PS3, PS4	X	X	X	Residents, employees	Implement HCS management programmes, compliance with ICMC, employee health and safety training, PPE, monitor exposure to HCS, emergency response and preparedness plan, medical surveillance and site facilities, complete detailed risk assessment of all HCS, effective communication with communities on use, handling and risks of cyanide									Yes	ESMP		
Social determinants of health	Job creation and economic benefits improve livelihoods and well being	Local	PS1, PS2, PS4	X	X		Residents, employees	Support local economic development and communication at a local level									Yes	CDP (Appendix 8.16) and CHSP (Appendix 8.15)		

Table 6.22.19: Ecosystem Services – Summary of Potential Impacts and Effects

Environmental / Social Impact	Potential Impact	Geographical Coverage	Relevant Performance Standard / Requirement	Project Phase			Primary Receptor	Control / Enhancement Measures	Significance of Effect (if positive it is has been highlighted)										Specific Monitoring Requirements	Management Plan Reference	
				Construction	Operations	Closure and Rehabilitation			Very High	Major	Moderate	Minor/negligible	Positive		Very High	Major	Moderate	Minor/negligible			Positive
									Without Mitigation					With Mitigation							
Ecoservices – milk, milk products and meat from livestock	Quality of Product	Local	PS3, PS4		X		Herders	Operation according to Management Plans												YES	
Ecoservices - Hay production	Yield/Quality	Local	PS3, PS4		X	X	Farmers	Operation according to Management Plans												YES	LALRP (Appendix 8.24)
Ecoservices – Commercial Apricot production	Yield/Quality	Local	PS3, PS4		X		Farmers													YES	LALRP (Appendix 8.24)
Freshwater with suitable quality for drinking water or irrigation	Agricultural Surface Water	Local	PS1, PS2, PS3, PS4	X	X	X	Ground and Surface Water	Operation according to Management Plans and SOP's.												YES	EPSRP (Appendix 8.9), SWMP (Appendix 8.23) and ARDMP (Appendix 8.19)
Priority Ecosystem – Erosion control	Soil and Surface Water	Local	PS3, PS4, PS5, PS6		X		Surface Water	Erosion Control												YES	SWMP (Appendix 8.23)
Cultural identity from herding way of life	Landscape character/way of life	Local	PS2, PS5, PS8		X	X	Residents	Project Design												YES	CHMP (Appendix 8.17)
Abbreviations:																					