

APPENDIX 9/3
SOURCE-PATHWAY-RECEPTOR LINKAGE

Appendix C - Table A Source-Pathway-Receptor (S-P-R) Linkage

Phase	Hazard	Source (S)	Pathway (P)	Receptors (R) (SW = Surface Water; GW = Groundwater)	S-P-R Linkage
Current Operations	Plant and vehicle fuels and lubricants	Hydrocarbons & additives	Spillage and infiltration to groundwater	SW; Afon Ogwen (Upper)	No
				SW; Afon Ogwen (Lower)	No
				SW; Gwaen Gynfi Heathland	No
				SW; Galedffrwd Watercourse	No
				SW; Afon Caseg	No
				GW; Superficial Deposits	No
				GW; Bronllwyd Grit Formation	No
				GW; Padarn Tuff Formation	Yes
	Slate Reject tipping's	Flushing of fines / oxides during rainfall events	Surface runoff & infiltration to groundwater	GW; Llanberis Slate Formation	Yes
				SW; Afon Ogwen (Upper)	No
				SW; Afon Ogwen (Lower)	Yes
				SW; Gwaen Gynfi Heathland	No
				SW; Galedffrwd Watercourse	Yes
				SW; Afon Caseg	No
				GW; Superficial Deposits	No
				GW; Bronllwyd Grit Formation	Yes
	Discharge of polluted water	Quarry runoff / trade effluent / sewage effluent	Direct discharge to surface water	GW; Padarn Tuff Formation	Yes
				GW; Llanberis Slate Formation	Yes
				SW; Afon Ogwen (Upper)	No
				SW; Afon Ogwen (Lower)	Yes
				SW; Gwaen Gynfi Heathland	No
				SW; Galedffrwd Watercourse	No
				SW; Afon Caseg	No
				GW; Superficial Deposits	No
Dewatering	Shallow and deep groundwater	Cone of depression / interception of groundwater throughflow / Fracture networks / bedding planes/ geological faults	GW; Bronllwyd Grit Formation	No	
			GW; Padarn Tuff Formation	No	
			GW; Llanberis Slate Formation	No	
			SW; Afon Ogwen (Upper)	No	
			SW; Afon Ogwen (Lower)	Yes	
			SW; Gwaen Gynfi Heathland	Yes	
			SW; Galedffrwd Watercourse	No	
			SW; Afon Caseg	No	
Extension Area Overburden Stripping	Plant and vehicle fuels and lubricants	Hydrocarbons & additives	Spillage and infiltration to shallow groundwater	GW; Superficial Deposits	Yes
				GW; Bronllwyd Grit Formation	No
				GW; Padarn Tuff Formation	Yes
				GW; Llanberis Slate Formation	Yes
				SW; Afon Ogwen (Upper)	No
				SW; Afon Ogwen (Lower)	No
				SW; Gwaen Gynfi Heathland	Yes
				SW; Galedffrwd Watercourse	Yes
	Soil Movement	Flushing of soils during rainfall events.	Spillage of fluids at surface / infiltration to groundwater / flushing of drainage channels	SW; Afon Caseg	No
				GW; Superficial Deposits	No
				GW; Bronllwyd Grit Formation	No
				GW; Padarn Tuff Formation	No
				GW; Llanberis Slate Formation	No
				SW; Afon Ogwen (Upper)	No
				SW; Afon Ogwen (Lower)	No
				SW; Gwaen Gynfi Heathland	Yes
	Dewatering	Surface water and shallow groundwater	Interception of groundwater throughflow and drainage channels	SW; Galedffrwd Watercourse	Yes
				SW; Afon Caseg	No
				GW; Superficial Deposits	Yes
				GW; Bronllwyd Grit Formation	No
				GW; Padarn Tuff Formation	No
				GW; Llanberis Slate Formation	No
				SW; Afon Ogwen (Upper)	No
				SW; Afon Ogwen (Lower)	No

Phase	Hazard	Source (S)	Pathway (P)	Receptors (R) (SW = Surface Water; GW = Groundwater)	S-P-R Linkage
Quarry Void Extension	Dewatering	Deep groundwater	Cone of depression / interception of groundwater throughflow / Fracture networks / bedding planes/ geological faults	SW; Afon Ogwen (Upper)	No
				SW; Afon Ogwen (Lower)	No
				SW; Gwaen Gynfi Heathland	Yes
				SW; Galedffrwd Watercourse	Yes
				SW; Afon Caseg	No
				GW; Superficial Deposits	Yes
				GW; Bronllwyd Grit Formation	Yes
				GW; Padarn Tuff Formation	Yes
	GW; Llanberis Slate Formation	Yes			
	Slate reject tipping's	Flushing of fines / oxides during rainfall events	Surface runoff & infiltration to groundwater	SW; Afon Ogwen (Upper)	No
				SW; Afon Ogwen (Lower)	No
				SW; Gwaen Gynfi Heathland	No
				SW; Galedffrwd Watercourse	No
				SW; Afon Caseg	No
				GW; Superficial Deposits	No
				GW; Bronllwyd Grit Formation	No
				GW; Padarn Tuff Formation	No
	GW; Llanberis Slate Formation	Yes			
	Discharge of polluted water / increase in water discharge	Quarry runoff / trade effluent / sewage effluent	Direct discharge to surface water	SW; Afon Ogwen (Upper)	No
				SW; Afon Ogwen (Lower)	Yes
				SW; Gwaen Gynfi Heathland	No
SW; Galedffrwd Watercourse				No	
SW; Afon Caseg				No	
GW; Superficial Deposits				No	
GW; Bronllwyd Grit Formation				No	
GW; Padarn Tuff Formation	No				
GW; Llanberis Slate Formation	No				