Appendix C. Table 21. Closure Objectives and Criteria for Open Pits

CLOSURE OBJECTIVES AND CRITERIA – OPEN PITS				
Open Pit Closure Objectives	**Closure Criteria**	**Actions/Measurements**	**Reclamation Research Reference**	**Monitoring Reference**
AIR				
1. Fugitive dust levels meet Canadian Ambient Air Quality Objectives.	Mean TSP concentrations do not exceed 60 ug/m^3 annual objective, and the 24 hr maximum acceptable concentration does not exceed 120 ug/m^3 for the Canada Ambient Air Quality Objectives (CAAQO).	Routine AQM monitoring and sampling.	N/A	Appendix H, Tables 49 and 55. AIR 1.
LAND				
1. Pit wall slopes and pit lake outflow stream banks are stabilized.	No significant slumping or erosion occurring	Physical inspection by qualified engineer.	N/A	Appendix H, Tables 49 and 55. LAND 1.
2. Remove (or cut to surface) surface infrastructure (ie. buildings, pipelines, tanks, electrical).	Surface infrastructure is removed or cut to surface	Physical inspection.	N/A	N/A
3. Removal/remediation of hydrocarbon contamination.	Remediation complies with Canada Wide CCME Guidelines (Industrial) for Contaminated Site Remediation.	Environmental Site Assessment.	N/A	N/A
4. Indigenous vegetation used for rehabilitation work.	Record of species types used for revegetation work	Sampling and Inspection	Appendix F, Table 43. LAND 1.	N/A
5. Disturbed sites enhanced to encourage vegetation colonization.	Vegetation cover (%)	Routine monitoring and sampling	Appendix F, Table 43. LAND 2.	Appendix H, Tables 49 and 55. LAND 2.
6. Remaining operational, engineered structures meet appropriate design levels	Remaining operational engineered structures are signed off by a certified engineer, and constructed to 1:100 year storm event.	As-built design plan.	N/A	N/A
WATER				
1. No significant impacts to source lakes.	Source lakes and connecting outlet streams water levels remain within natural fluctuations.	Routine AEMP monitoring and sampling	Appendix F, Table 43. WATER 1.	Appendix H, Tables 49 and 55. WATER 1.
2. Surface drainage patterns at	Stream flow occurring from pit	Physical inspection.	Appendix F, Table 43.	Appendix H, Tables 49 and 55.

CLOSURE OBJECTIVES AND CRITERIA – OPEN PITS				
Open Pit Closure Objectives	**Closure Criteria**	**Actions/Measurements**	**Reclamation Research Reference**	**Monitoring Reference**
pit lakes are established to ensure runoff is channeled through the watershed.	lakes through outlet streams to downstream watershed.		WATER 2.	WATER 2.
3. Any lake stratification is stable.	Water license discharge criteria are met.	Routine monitoring and sampling.	Appendix F, Table 43. WATER 3.	Appendix H, Tables 49 and 55. WATER 3.
4. Water discharge from pit lake meets water license criteria.	Water license discharge criteria are met.	Routine monitoring and sampling.	Appendix F, Table 43. WATER 3.	Appendix H, Tables 49 and 55. WATER 3.
WILDLIFE				
1. Fish barriers are in place to prevent fish from entering pit lake.	No fish passing through fish barriers	Routine monitoring	Appendix F, Table 43. WILDLIFE 1.	N/A
2. Minimize access to protect wildlife safety.	Berm in place around open pit	Physical inspection and survey control	Appendix F, Table 43. WILDLIFE 2.	Appendix H, Tables 49 and 55. WILDLIFE 1.
3. Allow emergency access and egress from flooded pits.	Pit ramp left in place.	Physical inspection and survey control.	N/A	N/A
4. Wildlife are using the area.	Wildlife observed using the area adjacent to the pit lake.	Routine monitoring	Appendix F, Table 43. WILDLIFE 3.	Appendix H, Tables 49 and 55. WILDLIFE 1.
5. Sumps and collections ponds safe for wildlife use.	Sumps and collection ponds liners have been removed and have been filled in with waste rock.	Physical inspection and survey control.	N/A	N/A
HEALTH & SAFETY				
1. Minimize access to open pit to protect human safety.	Berm in place around open pit	Physical inspection and survey control.	N/A	Appendix H, Tables 49 and 55. HEALTH & SAFETY 1. Richard W to fill in
2. Allow emergency access and egress from flooded pits.	Pit ramp left in place.	Physical inspection and survey control.	N/A	Appendix H, Tables 49 and 55. HEALTH & SAFETY 1.
3. Sumps and collections ponds are safe for human use.	Sumps and collection ponds have been filled in with waste rock	Physical inspection and survey control.	N/A	Appendix H, Tables 49 and 55. HEALTH & SAFETY 1.
4. Appropriate safety control measures in place for reclamation activities associated with reclaiming open pits.	OH&S, HSEC Risk Registry, ISO 14001 compliance, PASS, JSO's, SOP's, JHA's completed where necessary. Mine Health and Safety Act and	Inspections, audits and reporting	N/A	Appendix H, Tables 49 and 55. HEALTH & SAFETY 1.

CLOSURE OBJECTIVES AND CRITERIA – OPEN PITS				
Open Pit Closure Objectives	**Closure Criteria**	**Actions/Measurements**	**Reclamation Research Reference**	**Monitoring Reference**
	Regulations are met.			
5. Open pit mine component is left in a healthy state that supports continuation of human land use activities (traditional and non traditional pursuits).	Human land use of the pit lake mine component at post closure does not significantly compromise people's health through the use of air, land, water and wildlife.	Routine monitoring, physical inspection and survey control	Appendix F, Table 43. WATER 3.	Appendix H, Tables 49 and 55. AIR 1. Appendix H, Tables 49 and 55. LAND 1. Appendix H, Tables 49 and 55. WATER 3.
COMMUNITY				
1. Community land use expectations and Traditional Knowledge have been considered in the closure planning.	Community engagement when designing and constructing fish barriers for pit lakes.	Compliance with BHPB Billiton Sustainable Development Policy	Appendix F, Table 43. COMMUNITY 1.	Appendix H, Tables 49 and 55. COMMUNITY 1.
2. Archaeological sites are protected.	Negligible residual effects on archaeological sites.	Physical inspection and survey control	N/A	Appendix H, Tables 49 and 55. COMMUNITY 2.
3. Transition Plan in place.	Transition planning aligns with BHP Billiton Sustainable Development Policy and Closure Standard.	Corporate reporting	N/A	N/A
OPERATIONS				
1. Compliance with legal, regulatory, and corporate obligations.	Compliance with Annual reporting requirements for regulatory, Compliance with Mines Inspection and reporting (Mines Health and Safety Act), Meet any KPI's that have been established (BHP Billiton Closure Standards).	Compliance with BHPB Billiton Sustainable Development Policy	N/A	Appendix H, Tables 49. OPERATIONS 1.
2. Appropriate documentation is in place for open pits closure operations.	As-built plans for Panda Dam, Panda Spillway, Survey data for pit lake and outflow stream elevations.	Records management	N/A	N/A
3. Business procedures and policies in place for	Application of BHP Billiton Investment Policy and Standards	Use of systems and protocols	Appendix F, Table 43. OPERATIONS 1, 2 ,3 and 4.	N/A

CLOSURE OBJECTIVES AND CRITERIA – OPEN PITS				
Open Pit Closure Objectives	**Closure Criteria**	**Actions/Measurements**	**Reclamation Research Reference**	**Monitoring Reference**
reclamation project development.	are applied through reclamation planning to operations stages (Identification, Selection and Definition, Execution and Operation)			

Appendix C. Table 22. Closure Objectives and Criteria for Underground Mines

CLOSURE OBJECTIVES AND CRITERIA – UNDERGROUND MINES				
Underground Mines Closure Objectives	**Closure Criteria**	**Actions/Measurements**	**Reclamation Research Reference**	**Monitoring Reference**
AIR				
N/A	N/A	N/A	N/A	N/A
LAND				
1. Hazardous materials are removed from the underground mine and sent to appropriate facilities.	Fuel, oils, glycol, batteries, explosives, electrical transformers have been removed.	Physical inspection	N/A	N/A
2. Ground surface is stable.	No significant slumping or subsidence.	Physical inspection and survey control.	N/A	Appendix H, Tables 50 and 56. LAND 1.
WATER				
1. Groundwater contribution from underground does not significantly impact discharge water quality of pit lake.	Water license discharge criteria are met.	Routine monitoring and sampling.	Appendix F, Table 44. WATER 1.	Appendix H, Tables 49 and 55. WATER 3.
WILDLIFE				

CLOSURE OBJECTIVES AND CRITERIA – UNDERGROUND MINES				
Underground Mines Closure Objectives	**Closure Criteria**	**Actions/Measurements**	**Reclamation Research Reference**	**Monitoring Reference**
1. Eliminate access to underground workings.	Vent raises have been capped and portals have been sealed as per Mine Health and Safety Act.	Physical inspection and survey control.	N/A	N/A
HEALTH & SAFETY				
1. Ground surface is stable for human use.	No significant slumping or subsidence	Physical inspection and survey control.	N/A	N/A
2. Eliminate access to underground workings.	Vent raises have been capped and portals have been sealed.	Physical inspection and survey control.	N/A	N/A
3. Appropriate safety control measures in place for reclamation activities associated with reclaiming underground mines.	OH&S, HSEC Risk Registry, ISO 14001 compliance, PASS, JSO's, SOP's, JHA's completed where necessary. Compliance with Mine Health and Safety Act and Regulations.	Inspections, audits and reporting	N/A	Appendix H, Tables 50 and 56. HEALTH & SAFETY 1.
COMMUNITY				
As per Open Pits.				
OPERATIONS				
1. Compliance with legal, regulatory, and corporate obligations.	Compliance with Annual reporting requirements for regulatory, Compliance with Mines Inspection and reporting (Mines Health and Safety Act), Meet any KPI's that have been established (BHP Billiton Closure Standards).	Compliance with BHPB Billiton Sustainable Development Policy	N/A	Appendix H, Tables 50. OPERATIONS 1.
2. Appropriate documentation is maintained.	Surveyed plans for underground infrastructure (tunnels, portals, vent raises).	Records management	N/A	N/A
3. Identification of equipment and materials to be removed from the underground mine.	All mobile equipment and salvageable material has been removed from the underground mine.	Physical inspection	N/A	N/A

Appendix C. Table 23. Closure Objectives and Criteria for WRSAs

CLOSURE OBJECTIVES AND CRITERIA – WASTE ROCK STORAGE AREAS				
WRSAs Closure Objectives	**Closure Criteria**	**Actions/Measurements**	**Reclamation Research Reference**	**Monitoring Reference**
AIR				
1. Fugitive dust levels meet Canadian Ambient Air Quality Objectives.	Mean TSP concentrations do not exceed 60 ug/m^3 annual objective, and the 24 hr maximum acceptable concentration does not exceed 120 ug/m^3 for the Canada Ambient Air Quality Objectives (CAAQO).	Routine AQM monitoring and sampling.	N/A	Appendix H, Tables 51 and 57. AIR 1.
LAND				
1. Materials defined in the *WRORMP as potentially acid generating, are encapsulated.	Minimum 5 m granite cap.	Physical inspection and survey control	N/A	N/A
2. Remove (or cut to surface) surface infrastructure (ie. buildings, pipelines, tanks, electrical).	Surface infrastructure is removed or cut to surface.	Physical inspection.	N/A	N/A
3. Waste rock side slopes are stable.	Slope angles of WRSA is maximum of 35^0 angle of repose.	Physical inspection	N/A	Appendix H, Tables 51 and 57. LAND 1.
4. Dump height designed to appropriate elevation.	Dump height above highest intersecting topographic point as outlined in the WROSMP.	Physical inspection	N/A	N/A
5. WRSA is appropriate distance from adjacent natural lakes.	WRSA is no less than 100 m from high water mark of adjacent natural lakes.	Physical inspection	N/A	N/A
6. Permafrost is maintained or growing in the WRSA.	Permafrost temperatures at measurement points in the WRSA are at or below freezing point.	Routine monitoring	Appendix F, Table 45. LAND 1.	Appendix H, Tables 51 and 57. LAND 1.
7. Landfill encapsulated in the WRSA.	Minimum 5 m granite cap over Landfill.	Physical inspection and survey control	N/A	N/A
8. Landfarm decommissioned	Minimum 5 m granite cap over	Physical inspection and survey	N/A	N/A

CLOSURE OBJECTIVES AND CRITERIA – WASTE ROCK STORAGE AREAS				
WRSAs Closure Objectives	**Closure Criteria**	**Actions/Measurements**	**Reclamation Research Reference**	**Monitoring Reference**
and encapsulated in WRSA	Landfarm.	control		
9. Contaminated Snow Containment Facility is decommissioned.	Water pumped out to LLCF. Liner moved to the Landfarm facility encapsulated in the WRSA.	Physical inspection and survey control	N/A	N/A
10. Coarse Rejects are stabilized.	Min 2 m granite cap on Coarse Rejects.	Physical inspection and survey control	N/A	N/A
11. Waste kimberlite areas are stabilized to prevent seepage and erosion.	Min 2 m granite cap on waste kimberlite, or disposed of in open pit.	Physical inspection and survey control	N/A	N/A
12. Topsoil storage sites are stabilized.	Vegetation cover (% cover) and/or rock cover in place on remaining topsoil storage areas.	Physical inspection and survey control Routine monitoring and sampling	Appendix F, Table 45. LAND 3.	Appendix H, Tables 51 and 57. LAND 2.
13. Lake sediments/glacial till storage sites are stabilized.	Vegetation cover (% cover) and/or rock cover in place on remaining lake sediments/glacial till storage areas.	Physical inspection and survey control Routine monitoring and sampling	Appendix F, Table 45. LAND 3.	Appendix H, Tables 51 and 57. LAND 2.
14. Indigenous vegetation used for rehabilitation work on topsoil and lake sediment/glacial till storage site.	Record of species types in place for revegetation work.	Sampling and Inspection	Appendix F, Table 45. LAND 2.	N/A
15. Quarry sites within WRSAs are stabilized to prevent permafrost degradation.	No significant thermokarst erosion or subsidence within WRSA.	Physical inspection	N/A	Appendix H, Tables 51 and 57. LAND 3.
16. Removal/remediation of hydrocarbon contamination.	Remediation complies with Canada Wide CCME Guidelines (Industrial) for Contaminated Site Remediation.	Selective assessment of impacted materials.	N/A	N/A
WATER				
1. Seepage discharge at the receiving environment meets water license criteria.	Water License discharge criteria are met.	Routine monitoring and sampling	Appendix F, Table 45. WATER 1.	Appendix H, Tables 51 and 57. WATER 1.
WILDLIFE				

CLOSURE OBJECTIVES AND CRITERIA – WASTE ROCK STORAGE AREAS				
WRSAs Closure Objectives	**Closure Criteria**	**Actions/Measurements**	**Reclamation Research Reference**	**Monitoring Reference**
1. Access and egress available for wildlife on WRSAs.	Access ramps available for use by wildlife.	Routine monitoring	Appendix F, Table 45. WILDLIFE 1.	Appendix H, Tables 51 and 57. WILDLIFE 1.
HEALTH & SAFETY				
1. Appropriate safety control measures in place for reclamation activities associated with reclaiming WRSAs.	OH&S, HSEC Risk Registry, ISO 14001 compliance, PASS, JSO's, SOP's, JHA's completed where necessary. Mine Health and Safety Act and Regulations are met.	Inspections, audits and reporting	N/A	Appendix H, Tables 51 and 57. HEALTH & SAFETY 1.
5. WRSA mine component is left in a healthy state that supports continuation of human land use activities (traditional and non traditional pursuits).	Human land use of the pit lake mine component at post closure does not significantly compromise people's health through the use of air, land, water and wildlife.	Routine monitoring, physical inspection and survey control	Appendix F, Table 45. WATER 1. WILDLIFE 1.	Appendix H, Tables 51 and 57. AIR 1. Appendix H, Tables 51 and 57. LAND 1 and 3. Appendix H, Tables 51 and 57. WATER 1.
COMMUNITY				
1. Community land use expectations and Traditional Knowledge have been considered in the closure planning.	Community engagement when designing and constructing wildlife access ramps on WRSA.	Compliance with BHPB Billiton Sustainable Development Policy	Appendix F, Table 45. WILDLIFE 1.	Appendix H, Tables 51 and 57. COMMUNITY 1.
2. Archaeological sites are protected.	Negligible residual effects on Archaeological sites.	Physical inspection and survey control	N/A	Appendix H, Tables 51 and 57. COMMUNITY 2.
3. Transition Plan in place.	Transition planning aligns with BHP Billiton Sustainable Development Policy and Closure Standard.	Corporate reporting	N/A	N/A
OPERATIONS				
1. Compliance with legal, regulatory, and corporate obligations.	Compliance with Annual reporting requirements for regulatory, Compliance with Mines Inspection and reporting (Mines Health and Safety Act), Meet any KPI's that have been	Compliance with BHPB Billiton Sustainable Development Policy	N/A	Appendix H, Tables 51. OPERATIONS 1.

CLOSURE OBJECTIVES AND CRITERIA – WASTE ROCK STORAGE AREAS				
WRSAs Closure Objectives	**Closure Criteria**	**Actions/Measurements**	**Reclamation Research Reference**	**Monitoring Reference**
	established (BHP Billiton Closure Standards).			
2. Appropriate documentation is maintained for closure operations of WRSAs.	Surveyed location of landfill and landfarm sites.	Records management	N/A	N/A
3. Business procedures and policies in place for reclamation project development.	Application of BHP Billiton Investment Policy and Standards are applied through reclamation planning and execution (Identification, Selection and Definition, Execution and Operation).	Use of systems and protocols.	Appendix F, Table 45. OPERATIONS 1.	N/A

* WROSMP – Waste Rock and Ore Storage Management Plan.