

APPENDIX 5A: PROJECT COMPONENTS AND ACTIVITIES LIST

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Components and/or Activities					Description
Construction (Year -4 to Year -1)					
Operation (Year 1 to Year 22)					
Closure and Decommissioning (Year 23 to Year 26)					
Post-Closure (Year 27 to Year 32)					
Accommodations and staffing (permanent and temporary accommodations and mine staffing)	•	•	•		An existing exploration camp, accomodating 264 personnel, is located at the Casino mine site and will be relocated in Year -4 to the location of the new accommodations camp. The existing camp will be upgraded to a 948-person capacity accommodations camp by Year -2. Additional temporary camps for off-site construction will be provided by individual construction contractors as required such as for the construction of the Freegold Road Extension and Freegold Road Upgrade. The required workforce is expected to be 1,600 personnel during construction and 600 to 700 permanent mining personnel during operation. Details of the size and composition of the closure and reclamation workforce will be developed during the operation phase, prior to the planned commencement of closure and reclamation activities.
Aggregate sources (primarily borrow pits)	•	•			Borrow material will be required for the construction at the Casino mine site in addition to the cyclone sand and non-PAG waste rock proposed for the TMF. Ongoing testing and consideration is being made regarding the optimal borrow pits for the low permeability core to be used for the construction of the Casino Project components including the TMF Stage IA Starter Embankment.
Casino airstrip and airstrip access road	•	•	•	•	The Casino Airstrip will be located approximately 12 km southwest of the Casino mine site adjacent to Dip Creek. The new 1,600 m long, 30 m wide airstrip with an 80 m grade width and 60 m run out at each end will permit all-season operations and accommodate Bombardier Dash 8-100 or 200 series turbo-prop (37-39 seats) aircrafts. The airstrip will be left in place at closure, assuming transfer of authority/liability to an appropriate party is possible. Otherwise it will be decommissioned and the area revegetated. The airstrip access road will be a 14 km single lane gravel road with 2 bridges and 9 major culverts. Design of the airstrip access road will meet the BC Ministry of Forests and Range Forest and Road Engineering Guide Book.
Ancillary buildings	•	•	•		Ancillary buildings include the administration building,change house (mine dry) and assay laboratories, warehouse and laydown area, light vehicle maintenance building, truck shop, guard shed and scale house, and explosives facility.
Concentrate, precipitate and doré loading and transport		•			Copper concentrate filtered cake, copper sulphide precipitate and molybdenum concentrate will be moved by front-end loaders onto highway haul trucks. The loaded highway haul trucks will proceed to a wash station and will be cleaned before exiting the concentrate load out area. Highway haul trucks will travel to the Port of Skagway for shipment to market. It is anticipated that gold-silver doré will be loaded onto secure trucks at the gold recovery building and transported to the Casino airstrip where it will be shipped to refineries.
Concrete batch plant operation	•	•			A low-volume batch or portable concrete mixer will be transported to the Casino mine site in Year -3. Cement will be staged and stored on site in Year -4.
Contracted employment	•	•	•		An Engineering, Procurement, and Construction Management (EPCM) contractor will be used for the construction phase of the Casino Project. Various contractors will be used during operation and closure and decommissioning. CMC anticipates that an additional 100 to 200 contractor support personnel will be at the Casino mine site at any given time.
Cyclone sand plant		•			The TMF includes a cyclone plant to generate sand from the bulk non-PAG tailings to extend the downstream shell of the Main Embankment of the TMF starting in Year 1.Thickened tailings from the plant site will flow by gravity through a launder to the cyclone plant located at the TMF.
Dismantling of facilities			•		Details of the activities associated with dismantling of facilities during the closure and decommissioning phase will be developed during the operation phase, prior to the planned commencement of these activities. All concrete structures, foundations, and slabs will be removed or covered in place, levelled to surface, and re-vegetated. All support infrastructures (tanks, pipes, etc.) will be removed from the Casino mine site or disposed of on site in an approved manner; any buried infrastructure that must remain will be identified on site closure maps submitted to the Yukon government.
Diversion of Canadian Creek		•	•	•	The upper Canadian Creek catchment will be diverted around the northwest edge of the Open Pit in Year 10 when the Open Pit footprint intercepts Canadian Creek, to the lower Canadian Creek catchment. In Year 19, when operations in the Open Pit ceases, the diversion is breached and the Open Pit will be allowed to fill naturally by the upper Canadian Creek catchment.
Drilling and blasting	•	•			Drilling and blasting will occur at the Open Pit, Casino Airstrip and along the Freegold Road Extension and Upgrade and as required for other Project components during site preparation and construction.
Fish habitat compensation construction	•	•			Fish Habitat Compensation Construction will occur in lower Britannia Creek during the project construction phase. In lower Britannia Creek, a total flow diversion will be facilitated to direct flows from the existing creek into the historical Britannia channel, causing habitat loss in the lowest 1.4 km of Britannia Creek. The Casino Fish Habitat Compensation Plan proposes to re-direct flows into historical lower Britannia Creek, which avulsed into its current location sometime between 1965 and 1988, to follow the straight, road right-of-way, which offered little resistance and a direct, downhill path.
Freegold road extension (temporary winter crossing, first stage road, and all season resource road)	•	•	•		The Freegold Road Extension will be a 120 km, two-lane, gravel resource road designed for all weather use by haul trucks with highway legal loads. Starting in Year -4, an initial first stage road with limited access will be constructed along the Freegold Road Extension alignment to provide early access to the Casino mine site. This will be followed by the construction of the all-weather resource road along the same alignment during Years -3 and -2. During operations, access will be controlled and limited on the Freegold Road Extension from km 83 to the Casino mine site. CMC will engage in discussions with the Yukon Government to determine the closure and decommissioning objectives for the Freegold Road Extension. CMC is committed to undertaking activities to decommission the Freegold Road Extension if required.
Freegold road upgrade (inlcuding the Carmacks By-Pass and the all season road)	•	•	•	•	The Freegold Road Upgrade is an existing 83 km public road that will be upgraded to meet a 70 km/hr design speed with an 8.2 m wide gravel surface. The Freegold Road Upgrade will involve the construction of a bypass around the village of Carmacks, a new bridge over the Nordenskiöld River and upgrading the existing road. Construction for the upgrade will be completed before Year -1.
Fuel storage and distribution system for diesel and LNG	•	•	•		Both diesel and liquefied natural gas (LNG) will be used for the Casino Project. Diesel fuel storage will be in 6 x 50,000 L storage tanks near the truck shop, with enclosed lines, hoses and pumps. LNG storage will be in 10,000 m³ tanks with a total storage for a 10 day supply of 9,900,000 m³. Distribution components will include 2 portable fueling stations and 2 mobile re-fuelers with enclosed lines, hoses and pumps.
Gold Extraction Plant / Oxide Ore Processing	•	•			The oxide ore process will be comprised of a heap leaching with a carbon adsorption facility to recover gold and silver and a SART process to recover copper. The oxide ore processing facility will produce gold-silver doré bars. The copper sulphide precipitate will be bagged and loaded onto highway trucks for shipment to market. The gold extraction plant will be located to the southeast of the HLF.
Ground Preparation Activities (e.g. cut, fill, grub, etc.)	•				Ground Preparation Activities involve typical activities associated with clearin and preparing the land in advance of construction of principal Project components and support infrastructure. Activities include: • Clearing and grubbing of vegetation • Salvaging topsoil and subsoil for future use • Constructing sediment control structures • Developing site staging and laydown areas • Foundation preparation for infrastructure
Hazardous Materials Storage, Transport, and Disposal	•	•			Separate structures will be constructed for storage of hazardous materials and explosives in accordance with applicable regulations and specific permitting requirements. All hazardous materials and wastes will be removed for off-site disposal at an approved facility.
Heap Leach Facility	•	•			Construction and use of Heap Leach Facility will consist of: • Heap leach pad; • Composite liner system (comprised of a Linear Low Density Polyethylene (LLDPE) liner on a low permeability soil liner); • Leachate collection system (solution collection pipes and pumps); • Stormwater management system (events ponds and confining embankment); • Freshwater supply (for initial operations); and, • Cyanide destruction plant.

Components and/or Activities					Description
	Construction (Year -4 to Year -1)	Operation (Year 1 to Year 22)	Closure and Decommissioning (Year 23 to Year 26)	Post-Closure (Year 27 to Year 32)	
Heap Leach Pad	•	•			The heap leach pad will consist of five stages of development with liner expansions occurring every 3-4 years. Heap leach pad construction will commence in Year -4. Pad will be loaded with oxide ore in successive 8 metre thick lifts for 300 days a year. The leaching process will operate year round. Pad will operate until Year 18.
Laydown Areas	•	•	•		Receives and stores equipment, parts, construction materials and supplies. During construction a laydown area will be located in the general footprint of the Plant Site. Additional laydown space will be established at the Casino Airstrip and potentially along the access roads. Wherever possible, laydown areas will be positioned to cover areas already established during the bulk sampling program, or at future development areas such as the accommodation work camp and ore stockpiles. Laydown space will also be established along the Freegold Road Extension in places where ground conditions will support laydown areas and temporary camps.
LNG Transport to site	•	•			LNG will be transported from Fort Nelson, BC to the Casino Project via double wall vacuum tanker trucks at an average frequency of 2 trucks per day in Years -2 to -1 and 11 trucks per day from Year 1 to 22.
Main and Supplemental Power Plant (Gas Turbine and Diesel)	•	•	•		<p>The Main power plant will be comprised of:</p> <ul style="list-style-type: none">• 2 x gas turbine driven generators and 1 x steam turbine driven generator for a total of 130 MW• 2 x 10 MW internal combustion engines for black start capability, emergency power and to supplement the electrical pwer from the gas and steam turbine generators <p>Supplementary power plant will be comprised of:</p> <ul style="list-style-type: none">• 3 x 6.7 MW dual fuel (diesel or LNG) driven generators• 1 x 300 kW diesel generator (black start and emergency use) <p>The Main Power Plant will be located at the processing plant site and is intended to supply the electrical energy required for the operations phase of the Casino Project.</p> <p>The Supplementary Power Plant will be located near the main accommodations complex and will provide power during the construction phase of the Casino Project.</p>
Maximum Disturbance Area	•	•	•		The Project footprint is estimated at 2,351 ha.
Mine Development	•	•	•		<p>Presence of the mine development in the socio-economic context as defined under a number of Valued Components:</p> <ul style="list-style-type: none">• Employment and Income;• Employability;• Economic Development;• Community Vitality;• Community Infrastructure and Servies; and;• Land Use and Tenure.
Mine Staffing	•	•	•	•	Direct mine employees. During the peak construction phase it is estimated that the Project will employ 1,000 personnel. During operations the Project is anticipated to employ approximately 600 people with an additional 100 to 200 contractor support personnel on site at any given time.
On-site equipment and vehicle use	•	•	•		On-site equipment consists of heavy equipment such as cranes, shovels, and loaders, etc. Traffic at the Casino Mine Site on haul roads and access roads ranges in size from haul trucks to pick-up vehicles.
Open Pit Mining	•	•			The Open Pit will occupy an area of approximately 300 ha and will be excavated by using a conventional bench configuration with access via ramps. The Open Pit will extend to a depth of 600 m.
Ore Conveyors	•	•			Conveyance of ore from Open Pit to mill site. Conveyors will be covered and equipped with wind hoods to reduce wind exposure and the potential for ore fines to be blown off the conveyors. Dust collectors will be installed at transfer points and other required areas to limit fugitive dust emissions.
Ore Crushing	•	•			Two primary crushers will be located next the Open Pit. One crusher will be used for the initial crushing of the sulphide ore for the mill and the other crusher will be used for the initial crushing of the oxide ore for the heap leach facility.
Ore Hauling	•	•			Loading and movement of ore onsite. Ore materials will be transported from the pit using haul trucks and are intended for either the crusher for processing or to a temporary ore stockpile to be milled over the later years of the Casino Project.
Ore Stockpiles	•	•			Approximately 144 million tonnes of low grade ore and 32 million tonnes of supergene oxide (SOX) ore will be stored in temporary stockpiles. The SOX ore will be stockpiled during the construction phase and in Year 1 of operations, and reports to the mill during Years 4 to 12. Low Grade ore will be stockpiled up to Year 17 and milled during the last four years of mine operations (Years 19 to 22). During the construction phase, oxide ore will be stored in a temporary stockpile near the crusher on the valley slope east of the Open Pit at the northern end of the TMF.
Processing Facilities for Sulphide Ore		•			Sulphide ore will be hauled to the crusher and reduced in size to minus 200 mm using a primary gyratory crusher. Primary crushed sulphide ore will be stockpiled and then reclaimed with feeders and a belt conveyor, which will provide the new feed to the SAG mill in the primary grinding circuit at the Plant Site. The primary crushed ore will be reduced in size in two stages: first, a primary SAG mill circuit and, second, a ball mill circuit. The copper and molybdenum sulphide minerals in the sulphide product from grinding will be concentrated and separated by froth flotation to produce a bulk copper/molybdenum concentrate. Copper concentrates will flow by gravity from the flotation circuit to a copper concentrate thickener where it will be filtered in three tower type copper concrate pressure filters into filter cakes. Molybdenum concentrate will flow by gravity from the flotation circuit to an agitated filter feed tank. Concentrate slurries from here will be filtered in one tower type molybdenum concentrate pressure filter to create filter cakes.
Reagent Storage and Distribution	•	•			Reagent storage and mixing facilities for the flotation circuits will be located within a structurally independent building adjacent to the flotation building. An 8,000 t pebble lime silo will be located apart from the flotation building.
Site Reclamation / Re-Vegetation		•	•	•	<p>The primary closure and decomissioning goals for the Casino Project will be:</p> <ul style="list-style-type: none">• To protect public health and safety;• To prevent or minimize adverse environmental impacts;• To reclaim the site to a land use stat consistent with surrounding conditions; and,• To ensure long-term physical and geochemical stability of all mine facilities. <p>Additional key objectives include:</p> <ul style="list-style-type: none">• Undertake progressive reclamation where practicable;• Address stakeholder, relevant government departments, potentially affected First Nations and local communities priorities and concerns;• Prevent the spread of invasive plant species;• Re-establish wildlife habitat to a level comparable to baseline conditions;• Where practicable, return altered water courses to their original alignment and cross-section; and,• Demonstrate that future risks and liabilities associated with the site have been eliminated or controlled to an acceptable level.
Site Security and Fencing	•	•	•		A staffed security gate and scale house will be located at the Casino mine site entrance (in addition, another staffed security gate will be located at the entrance of the Freegold Road Extension at km 83) and will house a guard around the clock. The Explosives Facility will have a single gated lockable entry point.
Surface Water Management (Contact Water)	•	•	•		Sedimentation and erosion control structures and best management practices will be implemented to mitigate sediment transport. Contact water will be collected and directed to the TMF.
Surface Water Management (Non-Contact Water)	•	•	•		Runoff from areas upslope of the Open Pit will be allowed to flow into the Open Pit. Pit dewatering and pumping systems will collect water in the put and will be pumped to the plant site for use in the milling process. In Year 10, when the Open Pit intersects Canadian Creek, an engineered diversion channel will be constructed to divert the creek around the Open Pit.

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Operation (Year 1 to Year 22)					
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Tailings Management Facility	•	•	•		TMF will be located southeast of the Open Pit within the Casino Creek headwaters valley. The TMF will retain 947 Mt of tailings and 658 Mt of PAG waste rock and overburden; at the end of the operation phase the TMF will cover approximately 1120 ha. The general features of the TMF for the Casino Project are: <ul style="list-style-type: none">• Two earth-rockfill-cyclone sand, zoned embankments;• Cyclone plant, cyclone sand and cyclone overflow;• Tailings distribution system;• Two separate reclaim water systems;• Waste storage area;• Supernatant pond; and,• Water management system.
Topsoil Stockpiles	•	•	•		Topsoil recovered during the construction phase will be stockpiled at select locations close to the material source for use in reclamation activities.
Traffic (Equipment and Materials to Site)	•	•	•		The transport of supplies and materials to site will be via the Freegold Road. Projected road traffic during the construction phase will range from an average of 4 vehicles per day in Year -4 to an average of 28 vehicles per day in Year -2. During operations there will be an estimated 56 inbound vehicles and 68 outbound vehicles per day.
Waste management: garbage and sewage waste facilities	•	•			Domestic camp wastes (food, plastics, paper), and inert bulk wastes (i.e. rubber belts, drywall, etc.) will be sorted by material and bagged and will be trucked to an approved disposal area, landfilling on site, or incinerated on site. Sewage will be managed and treated onsite in accordance with the standards of the <i>Waters Act</i> and <i>Public Health and Safety Act</i> . A packaged sewage treatment plant system will be used to treat all sanitary wastewater. Treated effluent will be disposed of in a rock drain, designed to the standards of the Yukon Government.
Wasterock and Overburden Disposal	•	•	•		All PAG waste rock and overburden will be disposed sub-aqueously in the TMF. Suitable non-PAG waste rock and overburden will be used as a construction material for the TMF embankments with any excess waste rock being disposed of in the Waste storage area within the TMF. Non-PAG overburden will be placed in temporary stockpiles located around the Casino mine site for use in reclamation activities.
Water Supply	•	•	•		Water supply for the mill and cyclone pland will require the reclamation of supernatant pond water from the TMF facility. During construction, the reclaim barges and associated pumping systems, ponds and tanks will be established. The system is sized to meed the feed water requirements of the mill and cyclone sand plant. Make-up water, to supplement natural run-off and water recycling to meed Project demand as well as a potable water source for drinking water, will be collected in a riverbank caisson and radial well system adjacent to the Yukon River and pumped from a pumping station through an above ground, insulated, 36" diameter by 17.4 km long pipeline with four booster stations to the 22,000 m ³ capacity freshwater pond near the plant site. The Yukon River make-up water supply pipeline will be completed prior to the commencement of Operations at the start of Year 1. Prior to the completion and comissioning of the Yukon River Water Pipeline at the start of Year 1, water requirement of the Casino mine site will be met using fresh water retained within the Temporary Frshwater Supply Pond which will retain water for operating the HLF and related activities, supporting various construction activities, and emergency water supply (i.e. firefighting systems). Potable water during construction will be sourced from groundwater wells near the camp.

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