Differences between water-retention dams and tailing dams

Component	Tailings dam	Water-retention dam
Stored material	Tailings solids and processed water with various contaminant levels, run-off water	Water
Regulatory regime	Ministry of Mines, Ministry of Environment	Ministry of Public Works, Regional Authorities, National Dam Associations
Operation life	Limited operation life - 5 to 40 years	Typically designated as 100 years but “as long as required by society”
Construction period	Raised over the mines operating time	Usually 1 to 3 years
Closure	Infinite closure period, aim for “walk away” design	Often not addressed, but facility may be decommissioned
Engineering	Medium to high level	High level
Continuity of engineering	Varies: Owner and engineer may change frequently during the construction period	Usually one engineering firm for design and construction
Quality assurance and quality control	Generally good for starter dam, variable levels during construction period. Can be at a low level for some companies	High level
Consequences of failure	Tailings debris flow resulting in physical damage and environmental contamination	Water-inundation damage
Dam section	Can vary during the design life, e.g. transition to centreline or downstream	Usually a consistent section

Source: Adapded from McLeod and Murray 2003