Water risk

	Scope	Potential impacts	Management
Catchment	Risk associated with the potential alteration or modification of water catchments or resources in or around the areas where we operate. The risk may be posed by our current or historical activities or those of other water users, or cumulative and indirect impacts to shared water resources. BHP acknowledges and seeks to include the cultural and spiritual values associated with water resources, especially to Indigenous communities, in consideration of this risk type.	Potential impacts to the community from BHP's access to and use of water resources within the catchment include reduced water supply to communities, aesthetic impacts to recreational use for water or contamination of water sources, with potential reduction in availability for community water use. Ineffective catchment governance and regulation can make them more complex to manage. The potential impacts to the environment may include changes to natural groundwater levels, changes to stream flows, water quality issues in ground, surface or marine environments and reduced pressure in groundwater aquifers that in turn, may affect the biodiversity, habitats and species that rely on the water sources. Potential environmental impacts can contribute to adverse community impacts and affect the value of the water resource for future generations. Unsustainable use of the water resource may affect production and a lack of understanding of the water resource may impact the operated assets ability to assess the long-term water management limitations and opportunities. Impacts to the water resource may have longer-term financial implications and threaten our business model, including our ability to expand or develop new resources and inhibit the delivery of social value. The cumulative impacts resulting from multiple users of the water resource within a catchment may exacerbate the potential community, environmental and business impacts discussed above.	We seek to manage potential impacts to the water resource, including the environmental, community and business impacts, through: – ongoing and regular stakeholder engagement to ensure effective collaboration – compliance with water allocation permits – context-based water targets (CBWTs) to address shared water challenges in the catchment – participation in catchment-level reviews and regulator assessments to understand and improve technical knowledge, challenges and interactions at a catchment level – ongoing monitoring and measurement of water (quality, quantity), including maintaining a water balance – understanding baseline and reference characteristics of water resource and movements – predicting the impacts using technical models and testing of water management options should impacts occur – water recovery or source substitution – integration of the commitments in our Water Stewardship Position Statement and pillars of our Water Stewardship Strategy into business strategy, planning, decision processes and performance reporting – integration of water management practices into operated asset business planning – identification and where feasible, implementation of opportunities for reduced water use – where practical, ongoing monitoring of flora and fauna and other indicators of environmental health – human rights impact assessments – undertaking WRSAs involving stakeholder engagement For more information on how BHP engages with communities refer to the Local communities webpage - bhp.com/sustainability/communities/local-communities. BHP undertakes ongoing assessment of baseline conditions at a catchment level and the potential direct, indirect and cumulative impacts of our operated assets on the baseline condition. Climate change science must be factored into this assessment. For more information refer to the *Our Requirements for Environment and Climate Change* standard. Our Water Stewardship Strategy includes a collective action and a disclosure pillar, both of which focus on water governance and collaborating with host communities, government, industry peers and other stakeholders. While BHP does not have the ability to directly manage all catchment risks, we need to maintain a focus on management of our contribution to the risk and commit to participate in collective approaches to ongoing catchment governance. For example, we have worked with the CSIRO to assist with Ningaloo Reef public data collection, and we actively participate with the Fitzroy Basin Association and Queensland Reefs group, which both offer public education. We have undertaken WRSAs within the regions where we operate, which were completed by a third party and involved a review of public information and stakeholder engagement to determine the shared water challenges in the catchments where we operate.
Closure	Risk associated with water-related closure objectives and outcomes for assets that are closing or have closed, which may include water quality, water accumulation or flow issues within the BHP footprint and beyond.	Ineffectively managed water-related closure risks across the entire lifecycle of an asset may adversely affect the environment (for example, contaminants in surface and groundwater, changes to landforms), communities, public safety and our costs associated with managing water now and over the long term.	We seek to manage our potential water-related closure risk through closure planning and early and progressive closure management. Closure planning is an important control across BHP's assets. Closure strategies should consider issues such as pit void lake formations, acidic and metalliferous drainage, saline water accumulation, dewatering, extreme weather, water quality and potential impacts to both surface water and groundwater. For more information refer to the Closure webpage - bhp.com/about/operating-ethically/planning-the-closure-of-assets For more information on the financial provisions relating to closure liabilities, refer to the BHP Annual Report 2023, Operating and Financial Review 8 – How we manage risk.
Compliance	Risk associated with changes in the regulatory settings, including the nature and extent of regulation related to water allocation, permits, tariffs and reporting obligations. Our operated assets function in mature regulatory environments for water and regulation compliance requires constant vigilance. The regions where we operate have reasonably mature regulatory systems for water extraction, use and discharge, although their approach and requirements vary by operated asset and jurisdiction. Typically, we are granted a licence to extract a prescribed quantity of water for a defined period and to discharge water at certain quantity limits and quality standards. These limits and standards are determined by relevant local regulatory authorities.	Alleged or actual non-compliance could result in adverse impacts ranging from lower-order infringements through to financial penalties, enforcement orders or proceedings, social activism or increased cost to BHP. Environmental impacts may result in regulatory breaches or legal liability.	Compliance, monitoring and reporting requirements are usually defined through permits and licences. In addition to local regulation, we apply a range of internal standards. Refer to Governance and oversight on the Water webpage - bhp.com/sustainability/environment/water and the Environment webpage - bhp.com/sustainability/environment for a detailed overview of these. There are a few instances where water use and discharge may not be regulated via licences or permits. Our internal standards require that, in these instances, BHP follows relevant local guidance e.g. Australian and New Zealand Environment and Conservation Council (ANZECC) Water Quality Guidelines or the International Convention for the Prevention of Pollution from Ships. Application of these guidelines typically requires consideration of the water quality in receiving waterbodies. Ongoing engagement with regulators help us to understand their priorities, how regulatory requirements apply to our operated assets and at a catchment level address existing non-compliances regarding surface water and groundwater.
Dewatering	Risk associated with management of dewatering activities and surplus mine groundwater and surface water (such as levels, volumes and pressures). Many of BHP's ore bodies are below the natural groundwater level and to access the ore we need to pump water to reduce the groundwater levels in order to access the ore bodies safely. Dewatering is an important activity that supports mine production, by enabling access to ore located below the water table or enabling access to ore by supporting pit stability.	Dewatering can potentially impact geotechnical stability and safety, water supply, excess water management, the environment, communities and production.	We seek to manage the risks associated with dewatering through: – mine planning – maintaining an operational and predictive water balance – defining dewatering and depressurisation targets – monitoring and reviewing performance metrics – environmental impact assessments – managing excess/surplus water (such as the re-injection of excess water to local aquifers, where possible) – ongoing hydrology assessments to inform planning
Extreme weather	Risk associated with extreme weather can cause drought, snow or flood events and may arise from acute (event-driven, including increased severity of extreme weather events) or chronic (longer-term changes) to climate cycles.	Extreme weather events may contribute to adverse production, environmental, community and reputational impacts. For example, ineffective management during drought conditions may constrain production due to limitations on water availability. Ineffective management of excess water also has the potential to affect geotechnical stability and safety, prevent site access, cause injuries or fatalities or physical damage to infrastructure due to flooding and affect the environment, communities and production. Infrastructure damage may result in adverse impacts to communities where we operate where BHP supplies services such as power, drinking water or waste water treatment services directly to those communities.	The protection of our workforce from the potential impacts of extreme weather forms part of the overall management of health and safety risks and is discussed within our health and safety disclosures. We seek to manage potential impacts including through: – use of forecasting tools and monitoring of extreme weather events to help inform appropriate infrastructure design and operation and assist in timely and appropriate management – establishing design criteria for surface water infrastructure, which consider the rainfall intensity and duration (including extreme weather events analysis) – building integrity within the infrastructure including, where required, additional measures designed to ensure integrity for those facilities located in areas of higher basin risk due to the presence of cyclone, tropical storm, drought and/or flood hazard events – emergency preparedness, communications systems and adequately trained staff. For example, operated assets test the effectiveness of emergency preparedness for extreme weather events by undertaking emergency drills that include external agencies, such as regional fire and police as well as internal BHP resources
Marine	Risk associated with the alteration in marine water quality (sea or coastal areas), water or seabed levels or biophysical changes to marine environments. Marine ecosystems are susceptible to impacts resulting from changes to the physical (e.g. temperature and pH) and chemical (metal, hydrocarbon concentrations) parameters of the water body. This risk can arise from discharges from desalination facilities or from port facilities located in proximity to communities and/or key marine areas.	Due to regional differences in marine ecosystems and potential cumulative impacts, the type and extent of potential impacts to the marine environment for each of our operated assets may be different and could result in increased costs for mitigation, offsets or financial compensatory actions or obligations. Potential adverse impacts include water quality impacts due to loss of hydrocarbon or chemical containment. Impacts to water quality have the potential to affect both the environment and communities. Brine discharges at desalination facilities may result in the alteration of marine ecosystems. Loss of containment or other major incidents may affect BHP's licence to operate and/or production.	Controls for chemical containment include: – pressure relief systems – engineering design specifications – operational procedures (e.g. job risk assessments, management of change, equipment performance standards, inspections and audits) – passive protection – bunding – continuous monitoring during operations Mitigating controls include: – communication and emergency drills – preparedness plans and emergency systems Controls for desalination and port facilities include: – ongoing maintenance of critical equipment – monitoring and technical studies – stakeholder engagement To help avoid or minimise potential or actual adverse impacts associated with smaller discharges in marine environments, treatment, sediment, erosion, dust minimisation and other collection and/or treatment systems are utilised.
Tailings	Risk associated with the design, operation, maintenance, governance and reliability of tailings storage facilities.	Potential adverse impacts arising from the ineffective management of tailings storage facilities (TSFs) can range from seepage and interrupted production to catastrophic failure incidents with the potential for multiple injuries and fatalities, widespread environmental damage and extensive community disruption and potential damage to community infrastructure, businesses and livelihoods, with flow-on financial and reputational impacts.	In FY2019, we introduced mandatory minimum performance requirements for TSFs that govern how we manage TSF failure risks across BHP and outline applicable processes, including business planning, risk assessments, and management of change. Our internal standards and guidance for TSFs has been updated to align with the Global Industry Standard on Tailings Management. For more information on tailings refer to our Tailings storage facilities webpage - bhp.com/sustainability/tailings-storage-facilities.
Water access, sanitation and hygiene (WASH) and water-related human rights	Risk associated with providing access to safe and reliable drinking water (potable water) and appropriate sanitation and hygiene facilities, including availability of appropriate water infrastructure to supply WASH facilities. The remote nature of many of our operated assets means BHP can sometimes contribute to improved access to water and sanitation as we are often the sole supplier of water to our workforce for drinking and sanitation, and the manager of effluent. This role sometimes extends to neighbouring communities.	Ineffective WASH practices and infrastructure may result in the inability to provide the required quantity and quality of drinking water or sanitation. This may result in illness and potential fatalities, and could also disrupt our operated assets, impact communities and the environment, have adverse financial and reputational impacts and inhibit the delivery of our social value proposition. Our operated assets also have the potential to affect the cultural and spiritual values associated with water resources, including potential human rights breaches.	Understanding the baseline quality of the water we receive, the performance of our treatment plants and monitoring the water produced are our WASH priorities. Our Water Stewardship Position Statement commits us to uphold the basic human right to water access and sanitation within our operations and to contribute to realising this right within communities. We do this by seeking to ensure members of our workforce have access to clean drinking water, gender-appropriate sanitation facilities and hygiene at our workplaces and within our communities where we are the supplier of these services. We have global drinking water standards that our operated assets are required to meet. Other controls include appropriate infrastructure that is constructed, designed and operated to meet external water quality standards by suitably qualified persons and is regularly maintained, inspected, monitored, with exception reports and responses, emergency response and business continuity planning. Regular maintenance of water infrastructure, such as treatment plants, pipelines and tanks, is critical to ensure water is adequate for our operated assets, both in quantity and quality. Human rights impact assessments (HRIAs) are a control applied in certain circumstances to assess direct impacts to the workforce and local communities, as well as potential impacts to other human rights, such as Indigenous, spiritual and cultural rights. All operated assets are required to undertake and review HRIAs regularly.
Water quality	Risk associated with changes in the chemical attribute of water, which may occur from runoff or seepage (including from exposed ground, pit slopes, waste rock), infiltration from water, tailings and process facilities, infrastructure, and increases in salinity due to long-term storage of water.	Changes to the quality of water that runs through or under an operated asset can affect the surrounding groundwater resources and streams. This can affect other water users and the environment. Changes in water quality can also constrain production or result in water accumulation over time (due to discharge restrictions), which makes management during extreme rainfall events more challenging. This risk can persist for years after mining activity has ceased.	Management of water quality risks requires an understanding of what contributes to changes in water quality, how this may affect sensitive receptors within the environment and/or communities, and the appropriate management measures required. Controls include: – avoiding contact with substances that may affect water quality – appropriate design, construction and monitoring of facilities to prevent and detect contamination – preventing or minimising adverse impacts through treatment and monitoring of water quality outcomes, so that the effectiveness of controls is understood and can be reviewed as appropriate
Water security	Risk associated with current and future balance between water supply, including the capacity and reliability of water supply infrastructure, and demand for all relevant users and related to the ecosystem function. A continuous and sustainable water supply is critical to our operated assets including provision of sufficient and well-maintained water infrastructure.	An inability to secure water access can constrain production, and have regulatory, legal and financial implications. It may also adversely impact the environment or community, which was discussed as part of the Catchment risk area of this table. Insufficient or poorly maintained water infrastructure can result in the inability of water infrastructure to supply the required quantity or quality of water necessary for our operated assets. This can result in reduced production and other adverse impacts, including to the long-term viability of our operated assets. The level of risk is dependent on location and climate impact, water availability and supply. For example, availability has been a risk at New South Wales Energy Coal in the Hunter region of eastern Australia due to extended periods of below-average rainfall.	An adequate understanding of technical aspects of the water resource, hydrological conditions and/or long-term changes in water availability and management is critical to ensure ongoing supply. In addition, understanding demand through water balances, predictive modelling and monitoring is central to effective water security. Many of the controls in place for the management of catchment risk are applied for management of water security risks. Refer to controls listed above for the Catchment risk area of this table. We seek to use lower-quality water where feasible and recover and recycle water to reduce withdrawal of new water from the environment. Water infrastructure needs to be: – designed and constructed to meet internal and external standards – regularly inspected and maintained – operated within set parameters – regularly monitored with processes to respond to monitoring Regular maintenance of water infrastructure, such as treatment plants, pipelines and tanks, is critical to ensure water is adequate for our operated assets, both in quantity and quality.