ATALAYA MINING

MARCH 2023

SAFE TAILINGS MANAGEMENT at Atalaya

Overview

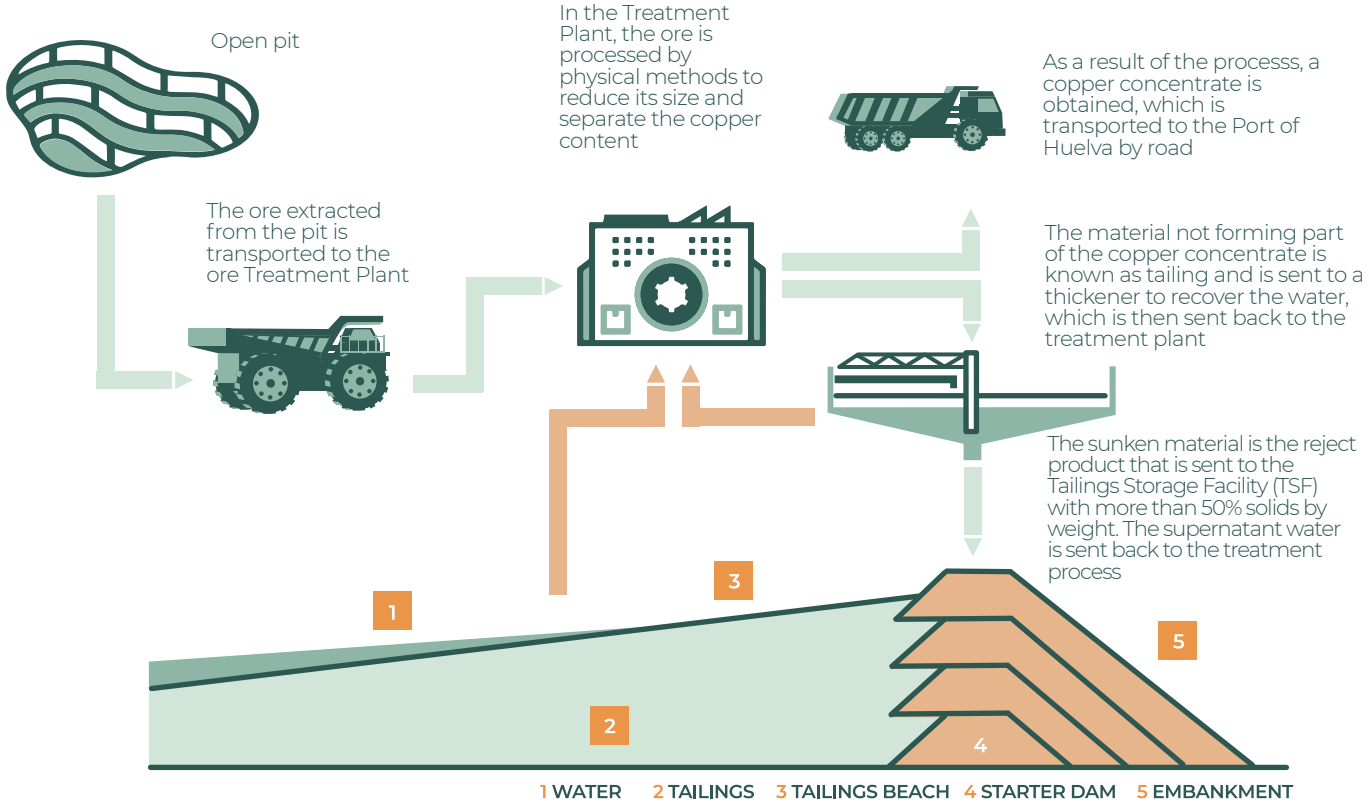
Atalaya Mining recognises the importance of disclosing safe and responsible management of the tailings and the status of its Tailings Storage Facilities (TSF) throughout the life cycle of these facilities (i.e., planning, design, construction, operation and refurbishment/decommissioning). These aspects are key to our stakeholders.

This document offers detailed information on how the Company manages this important aspect of its mining activities in Riotinto, Atalaya Mining´s flagship copper operation in Southern Spain.

Tailings definition

Tailings are generated once the ore is processed in the treatment plant. At Atalaya Riotinto, the ore extracted from the mine is processed by physical methods of crushing and grinding to reduce its size to a fine sand (micron size), and finally by flotation methods to separate the material containing the copper from the rest. This balance of materials (fine sand) is what we call “tailings”.

At Atalaya Riotinto, the tailings are pumped to a thickener, where the contained process water is recovered until it reaches more than 50% solids by weight. The recovered water is sent back to the treatment process, and the thickened tailings are pumped and safely deposited in the Tailing Storage Facility (TSF).



Tailings Storage Facility (TSF)

Tailings Storage Facilities (TSF) are engineered structures carefully designed, built and managed to safely store the material they contain. In Europe, and Spain in particular where Atalaya Riotinto is located, there is demanding and consolidated legislation that guarantees that TSFs are built under the strictest safety standards.

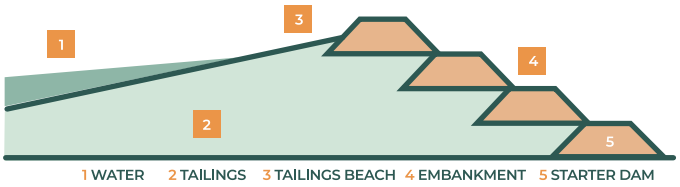
The generic construction methods for this type of facility are explained in the table below:

TSF Construction Methods

TSFs are designed and constructed to store both tailings and excess water. The design methos for TSFs are generally of 3 types.

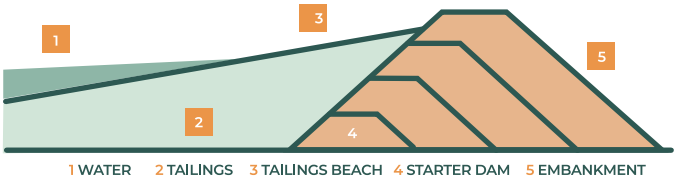
Upstream

This construction starts with an initial dam and the tailings are compacted in such a way that they form the basis for the next levels of the facility's regrowth. The main wall is moved upstream with each recharge. Construction of this type of facility must allow the tailings to dry and consolidate sufficiently to support a new level of re-growth. In general, such designs are suitable for facilities in areas of low rainfall and low seismic activity.



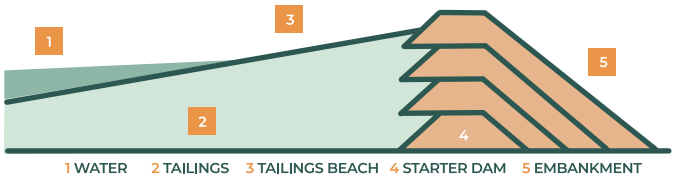
Downstream

Downstream designs start with an initial dam similar to the above method. Tailings are deposited in the facility and successive regrowth is supported downstream of the initial dam. This downstream design was developed for areas with seismic activity and high rainfall.



Centreline

The centreline method is a hybrid of upstream and downstream designs. In centreline construction, the dam is raised vertically from the initial dam. The wall remains fixed relative to the upstream and downstream directions as the dam is sequentially raised. Internal drainage can be incorporated to improve stability.



Source: https://globaltailingsreview.org/about-tailings/

Tailing storage facility (TSF) at Atalaya Riotinto

The management of the Atalaya Riotinto TSF covers the entire life cycle of the facility, from the design and construction to closure and decommissioning at the end of the mine's life. Post-closure surveillance by the company may last up to 30 years after closure, in accordance with Spanish regulations.

Riotinto's TSF covers an area of 501 Ha and consists of three sections (Gossan, Cobre and Aguzadera). The sections known as "Cobre" and "Aguzadera" are the ones currently in operation receiving tailings.

The Riotinto mine TSF began construction in the 1970s. It is one of the main TSFs in Europe due to its size and the technical specification of its structure. This uniqueness requires exhaustive control and monitoring.

Conscious of this, in 2015, when **Atalaya Riotinto** restarted the mining operation, it **invested more than 7 million** euros to implement a new system that transforms the concept of tailings storage at the site.

These improvements were introduced by Atalaya Riotinto already in 2015 to modernize the facility and reinforce its structural safety:

1. Construction of a large rock reinforcement in the existing TSF wall: 6.5 million tons of riprap. It provides solidity and control to the safety of the structure. As of this date, in order to reinforce safety, the dam's embankment raise will be built with rock material instead of the technical sand initially approved.

2. New, safer tailings deposition system: A more efficient tailings deposition system is installed. Discharge occurs at alternate points every 50 meters, forming thin layers. These dry and consolidate quickly, forming inclined layers that push the water away to the tailings dam wall.

3. Geotextile and latest control techniques: Geosynthetic waterproofing layers on the slopes of the new wall, as well as at the foot of these, covering the first 50 m of the dam interior. Leaks that could affect the stability of the walls are eliminated. Piezometers and inclinometers are installed to monitor the entire perimeter.

4. The capacity of the perimeter channel has been increased, a major civil work project to protect against historical rainwater floods.

The current construction methodology of the TSFs, based on a rock material dam, enables the achievement of safety factors above those established in legislation. The safety factor (i.e., the relation between the forces that can lead to dam failure and the resistant capacity of the dam) of the main section of the tailings dam has been increased over time through all the projects designed. Back in the year 2000, the corresponding technical instruction required a safety factor of 1.4, while in 1979 the project was already designed with a factor of 1.5. In subsequent projects this factor has been increased to current value of 1.88.

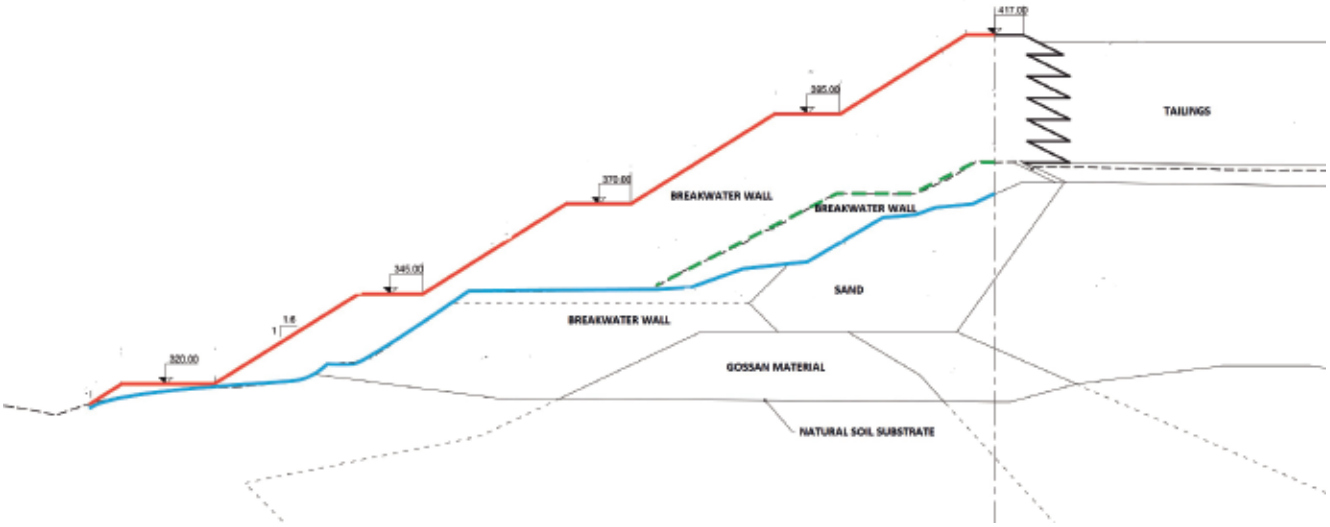
2020: Update for Riotinto's TSF project

Along with the update of the exploitation project and the modification of the restoration plan, Atalaya submitted a new proposal for the TSF to the competent administration. This upgrade will mainly consist of an extension of the actual TSF using a Centreline construction method.

The administrative file for the updated TSF has been shared with a wide range of stakeholders, so that they can give their opinion and issue the conditions to the permit they deem appropriate.

The objective of the upgrade project is to convert the two TSFs in operation (Cobre and Aguzadera) into a single one.

For the design of the upgraded TSF, a total of 44 million tonnes of waste rock material from the open pit will be used to reinforce the existing wall. This reinforcement is additional to those already undertaken by the company to increase the safety factors of the structure. The figure below shows the proposed reinforcement and Centreline method.



Copper Section. Original project, 2015 improvements and 2020 proposed update.

- 2020 proposed update (TSF design by 2032). 44 million t rock fill reinforcement
- TSF original status in 2015
- Improvements undertaken by Atalaya Riotinto in 2015

The TSF update proposal presented by Atalaya Riotinto has been drafted by companies of recognised prestige and experience in this type of infrastructure and reviewed by independent international and national bodies (see section on TSF governance).

Dam safety factor of the tailings storage facility (2020-2022) compared to what is required by regulation (in brackets)[1]
1.88 / (1.4)

Security incidents (2020-2022)
0

Improvement in tailings deposition

The tailings produced in the process can be modified before final deposition in the TSF. Normally, this step is done to remove the excess water they contain in order to deposit them with a higher solids content by weight.

In 2021, Atalaya commissioned a tailings thickener, a step prior to deposition at the TSF, to recover a larger volume of process water and, in turn, increase solids content to more than 50% in weight. During 2022, the Company was able to thicken 100% of the tailings by modifying the existing thickener to deposit tailings with more than 50% solids by weight in the TSF. This was a success in terms of energy savings (there was less need to pump water from the TSF) and in terms of process water recovery, which resulted in lower evaporation losses.

The tailings, once thickened, are deposited in the TSF, forming thin layers. These dry and consolidate quickly, forming inclined layers that push the water far away from the tailings dam wall. The supernatant water is pumped to the ore treatment plant to be reused. Around 15 Hm3 of water was recovered and reused to the ore processed coming from supernatant water (see figure below)

Safe TSF Management

Atalaya Riotinto applies the best available techniques to ensure safe TSF management.

Atalaya's Major Accident Prevention Policy, signed by the top management aims to reach the highest level of protection and serves as the basis for the Safety Management System implemented by the Company[1].

The practices and procedures established by this system complement the Safety Project developed by Atalaya for its mining operation at Riotinto, which from the beginning has been designed considering the most stringent standards.

ATALAYA RIOTINTO'S MAJOR ACCIDENT PREVENTION POLICY

This policy can be downloaded from the Company's website.

TSF Governance

The Atalaya Riotinto's Technical Management is in charge of ensuring compliance with the regulations and basic mining safety standards applicable to TSF. The Technical Management reports directly to the Operations Management of Atalaya Riotinto Minera and is the Company's representative in safety matters before the competent administration.

For the extension works, there is a construction manager and a technical assistance team that report to the project management. Atalaya's governance procedures for its TSF management represent 5 layers of prevention:

5 layers of prevention TSF management procedure

1. **Geodetic and geotechnical sensor network monitoring**
2. **Surveillance R+D technology through "Minerva Project"**
3. **Internal staff inspections and governance**
4. **Inspections by accredited third parties**
5. **External reviews**

1. Geodetic and geotechnical sensor network monitoring

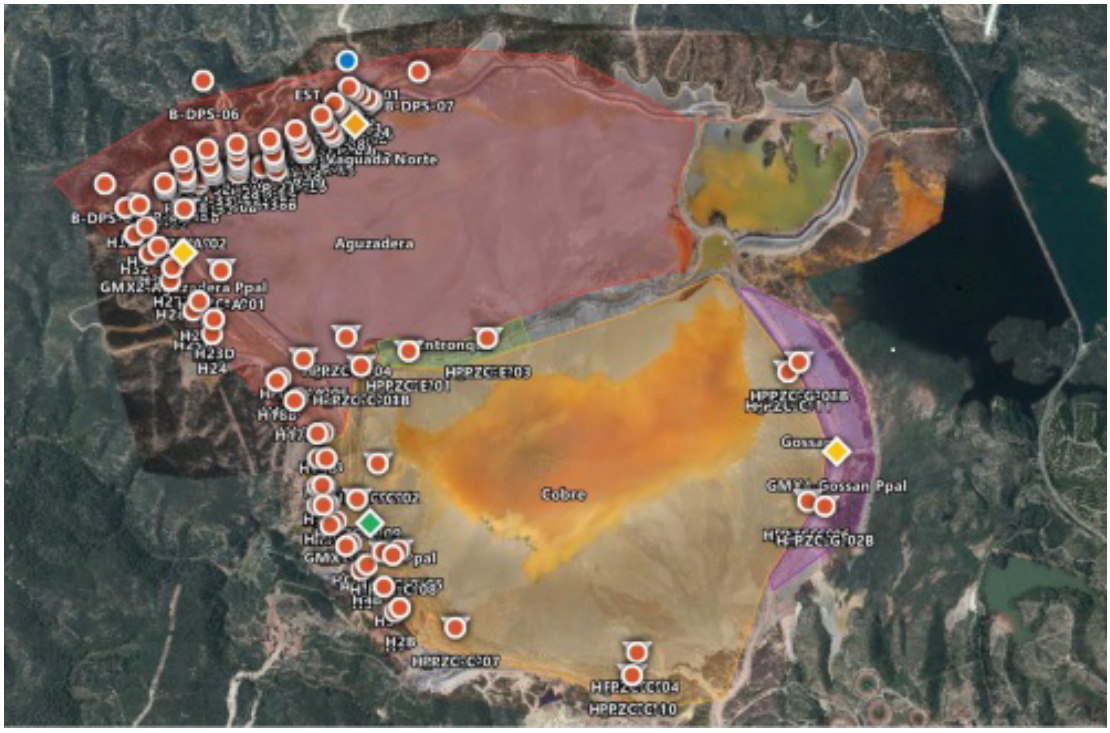
The control system of the TSFs was designed with a level of rigour that places it at the forefront worldwide. The project has a network of piezometers to monitor the water flow in the facilities and the pressures exerted by the tailings on the dam.

[1] Key guiding principles in this policy includes legal compliance; providing safe environments for employees and contractors, identifying major accidents and incorporating aspects necessary to prevent them and limit their negative consequences. Also, establishing procedures for the safe operation of the mining operation, including maintenance of facilities; planning; evaluating compliance with prevention objectives and setting up mechanisms for investigation and correction in case of non-compliance are other priorities in the implementation of the policy.

There is also a network of inclinometers and markers to monitor movements inside the structure and on the surface. Monitoring of filtration flows and water analysis is also carried out to identify any possible incorrect operation of the tailings dam.

The geotechnical department and technical services department is in charge of supervising this network, reporting to the Technical Management.

CONFIGURATION OF THE MONITORING NETWORK



Instrumentation installed by the end of 2022 included:

- 48 open piezometers
- 20 closed piezometers
- 22 inclinometers
- 29 topographical landmarks

This control network is expanded each year. The instrumentation at the end of the TSF construction will consist of:

- 54 open piezometers
- 38 closed piezometers
- 33 inclinometers
- 300 prisms

2. Surveillance technology “Minerva Project”

The Minerva project is a unique multidisciplinary monitoring and interpretation platform that integrate in real time, classical geodetic and geotechnical monitoring techniques with innovative satellite and passive seismic techniques.

Through this project, Atalaya Riotinto will control remotely all geodetic and geotechnical monitoring systems through a real-time control platform. The platform is currently GeoMos from Leica-geosystems, but the data of the different elements are already recorded and will be transferred in 2022 to the GeoMonitoring Hub platform (innovative platform in Europe), with a system of Alerts and Alarms established according to the thresholds set for the structures. This platform allows the integration of data from different sensors (geodetic and geotechnical). It will evolve in the future to integrate data from innovative systems in R+D+I.

Monitoring is guaranteed 365 days a year, 24 hours a day. This system allows immediate action, avoiding potential personal and material damage and minimizing environmental damage (please refer to the box below for further details)

MINERVA PROJECT- instrumentation installed in 2022

- Control of 20 closed piezometers in remote
- Installation of a meteorological station
- Leyca remote station and 3 orientation landmarks
- 45 prisms (2 prisms every 100m on all berms of Vaguada Norte (Aguzadera section). Continuous remote reading.
- In collaboration with CSIC, two cutting-edge technologies were incorporated into TSF surveillance:
  - o (SAR interferometry techniques) INSAR: started with the study of satellite images from 2014 to present 2.
  - o ANI: placement of 30 seismographs for data acquisition.

3. Internal inspections

TSFs are inspected by internal qualified personnel. Safety inspections and monitoring of the TSF works are carried out on a daily and weekly basis. The daily inspections are conducted together with the contractor company executing the works, and the weekly inspections are undertaken by Atalaya Riotinto's technical services department.

A quarterly report on the control and surveillance of the TSF is issued by Atalaya Riotinto's Technical Management. In 2021, a total of 29 people from Atalaya Riotinto received specific training in "Management and Governance of sludge ponds", a 40-hour course.

4. Inspections by accredited third parties

Atalaya Riotinto TSFs are inspected regularly by external independent qualified personnel. Every month the external entity (APPLUS) carries out an exhaustive monitoring of the control and geotechnical surveillance of the Riotinto TSF. This surveillance is reflected in a quarterly report issued by this independent entity and sent to the Administration.

The scope of these inspections increased in 2022 to cover the following additional aspects:

- Internal Emergency Plan
- Atalaya's Major Accident Prevention Policy
- Atalaya's Safety Management System
- Characterisation of tailings
- Communications of data to the Competent Authority for the preparation of the external emergency plan.

5. Other external reviews

The TSF project and its updates are reviewed by external bodies of recognized prestige. Thus, the TSF update presented in 2020 was reviewed by:

- Geological and Mining Institute of Spain (IGME, for its Spanish acronym).
- Higher Technical School of Mining Engineers (Escuela Técnica Superior de Ingenieros de Minas)
- Independent company (Knight Piesold consulting)

All the documentation related to the TSF update was made available to the general public and all interested parties, so that they could issue their opinions or concerns, guaranteeing the public participation process.

Focus on continuous improvement: Towards Smart Mining

Smart mining in all its value chain represents the mining concept of the future. Through the use of cutting-edge technologies in an integrated manner, it achieves efficient management of the production process, saves energy and protects lives and the environment.

Researchers from the Spanish National Research Council (CSIC) will apply two pioneering national and international monitoring systems to the mining activities at Riotinto.

The research team will simultaneously apply satellite radar interferometry and environmental seismic noise to obtain results in near real time. The ultimate goal is to monitor deformations that may occur in the mine environment.

Focused on developing this concept, in 2023 we will begin the implementation of Project Stone, complementing Project Minerva.

Besides, the Company regularly collaborates within its industry association AMINER and with public administrations to improve safety regulations. In 2022, Atalaya participated in different seminars sharing some of the most advanced practices it has adopted in safety, such as the application to mining infrastructures of control techniques such as micro-seismicity, satellite control and artificial intelligence.

Global Industry Standard on Tailings Management (GISTM)

Atalaya Riotinto is committed to a responsible management of TSFs that guarantees zero harm to the population and the environment, prioritizing the safety of our facility throughout all stages of its life cycle. To do so, we incorporate the best available techniques and we are at the forefront when it comes to the use of new technologies applied to the surveillance of these facilities.

We are working to align ourselves with the Global Industry Standard on Tailings Management (GISTM) and have set a deadline of 3 years for this. We will adapt our internal governance systems to be aligned with the standard.

The new TSFs associated with the new mining projects promoted by Atalaya Mining plc will incorporate alignment with the standard from the design phase, as is the case with Atalaya Touro, which already incorporates compliance with the global standard from the design phase of the TSF associated with this project.

EMERGENCY PREPAREDNESS AND RESPONSE

Emergency Plans in Atalaya Riotinto

Managing potential emergencies is an integral part of our safety system. Atalaya prepares with emergency response plans that define roles, procedures, communications and instructions on how to act in the event of an emergency. The Company regularly performs emergency drills, exceeding what is required by law (in 2022, 2 emergency drills were conducted, including a fire scenario and one serious accident due to collapse of a structure).

Atalaya Riotinto's activities have the following emergency plans:

- **Internal Emergency Plan:** Atalaya Riotinto has an internal emergency plan whose scope of application is the mining waste management facilities (i.e. tailings storage facilities) which aims to establish measures, procedures and guidelines to prevent or reduce adverse effects on the environment and human health in the exploitation and management of mineral resources.
- **Self-Protection Plan:** This plan incorporates all additional mining infrastructures (i.e. treatment plant). The plan aims to establish actions, provide adequate responses to them and serve the authorities to integrate the approach followed by the Company, in their own higher level self-protection plan (see below).

The last update of the self-protection plan for Atalaya Riotinto was issued in December 2020 by the competent authorities (i.e. Centre for the prevention of emergencies in the province of Huelva, Fire Service and Riotinto Town Council). It undergoes an annual external audit and that comprise also the internal audits of the integrated management system. The self-protection plan is to be reviewed at least every 3 years or if there are important changes in the facilities or in the organisational structure of Atalaya Riotinto.

Simultaneously, the **External Emergency Plan** seeks to assist in the coordination with administrations, agencies and intervention services. The main objective is to establish means of information and prevention, organization and procedures to ensure the adequate coordination of emergency means and resources to reduce or mitigate the effects of potential accidents.

The External Emergency Plan is to be prepared by the competent administration on the basis of the previous documents elaborated by Atalaya. Atalaya is in permanent contact with the competent administration so that it has all the necessary information to develop the external emergency plan.

MINERVA

#smartgeocontrol

Minerva Project, our transition to digital monitoring

Atalaya has implemented Minerva Project, a disruptive multidisciplinary platform that integrates in real-time the geotechnical and geodetic classic monitoring techniques with innovative methods that the Spanish National Research Council (CSIC) is currently assessing, such as satellite, passive seismic and artificial intelligence techniques.

The Minerva Project integrates multiple elements into a single platform, the GeoMonitoring Hub. This platform consolidates and correlates data from different sources (i.e. instrumentation, Remote Monitoring Service, Radar-InSAR etc.).

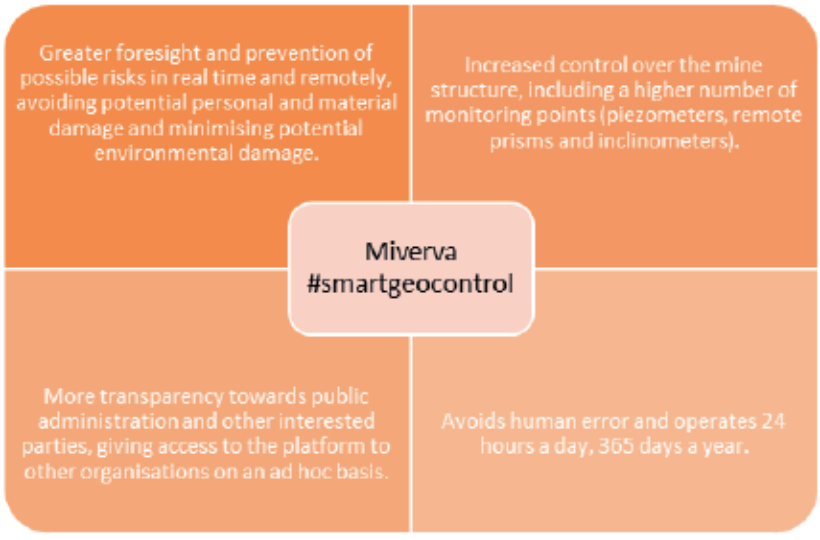
The techniques used in the Minerva Project are state-of-the-art today. The hub platform, the radar, and the data collection equipment are cutting-edge technology. It also incorporates systems implemented for the first time in Europe. In this sense, the hub platform stands out, which was only used by large mining companies and is the first time it has been implemented in Europe. In addition, the latest generation IBIS-FM-EVO GeoRadar is the first to be implemented in Europe.

The innovative techniques InSAR (satellite sensing or imaging) and ANI (noise interferometry) are part of the research carried out with the CSIC through the Stone project. This is a three-year project awarded by the Ministry of Science and Innovation to improve the Minerva system.

The Minerva Project will last for the life of the mine and is a project in continuous evolution in which the instrumentation, both geodetic and geotechnical, will be reviewed and implemented according to the project's needs.

This project will benefit not only the mining sector but also any element that needs to be monitored (e.g., civil works to control slopes, buildings, etc.). Furthermore, it could be incorporated into the rest of Atalaya's operations (i.e., Touro and Masa Valverde).

STONE Project is financed by MCIN/AEI/10.13039/501100011033 and the European Union-NextGeneration EU/PRTR



"Emulating her mythological archetype, Minerva will watch in real-time from space, ground and underground and anticipate potential contingencies".