

# **ACHMMACH TIN PROJECT**

## **ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA)**

### **EXECUTIVE SUMMARY**



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### INTRODUCTION

Kasbah Resources Limited (Kasbah), an Australian mining company with headquarters in Perth, Australia is the owner of the Achmmach Tin Project. The overall objective of the project is to develop an underground mine for the extraction and processing of tin bearing ore.

Kasbah has the exploration and mining rights for two Exploitation Permits (PE N° 2912 and PE N° 193172) covering an area of 32 square kilometres, and referred to as the concession in this report. Kasbah also has the rights to a Research Permit (PR1939131). The total area covered by the facilities represents 54.6 hectares (ha), i.e. only 1.7% of the concession area.

The project location is illustrated in the project situation map on the next page and the layout is shown on the facilities layout drawing.

The concession is located in the rural districts of Ras Ijerri, Jahjouh and Ait Ouikhalfen, situated in the El Hajeb Province, part of the Meknes – Tafilalet region, and which is situated in the northeast part of the central plateau of the Atlas Mountains. The nearest city is Meknès (40 km to the northeast) and the nearest town is Agourai (25 km to the east).

The tin deposit was discovered by the Moroccan National Office for Mineral Exploration (BRPM) in 1985 and from 1991 onwards BRPM undertook extensive exploration and evaluation work. In 2006, Kasbah entered into a joint venture arrangement with the National Office for Hydrocarbons and Mining (ONHYM) to further explore the deposit. Kasbah has been carrying out development drilling since 2007 and the current estimation is that the deposit comprises 15.3 million tonnes of tin bearing ore at 0.85% tin grade representing 130,000 tonnes of contained metal.

The general environmental context of the area is that of a sparsely populated mountainous area with valleys and plateau features. The area is characterized by forest areas of pine and oak and open land which is used for growing cereal crops and seasonal grazing of animals. There are approximately 300 people living in the concession area; there are 4 households located in the immediate vicinity of the future mining facilities and there will be a need to resettle these people.

This Environmental and Social Impact Assessment (ESIA) has been prepared by Artelia Eau & Environnement (formerly Sogreah), which is a French engineering company specialized in the execution of ESIA. This ESIA has been prepared with the assistance of Artelia Maroc (formerly Sogreah Maroc) and Moroccan environmental specialists.

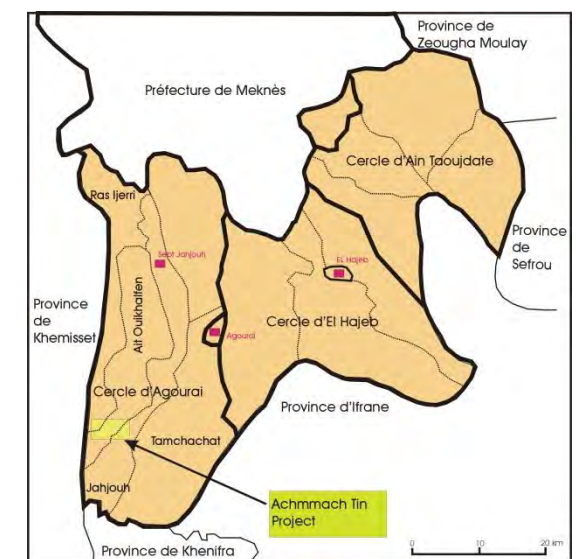
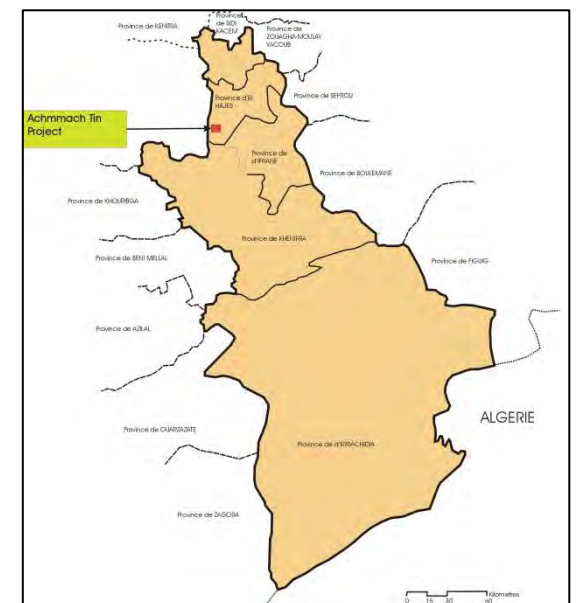
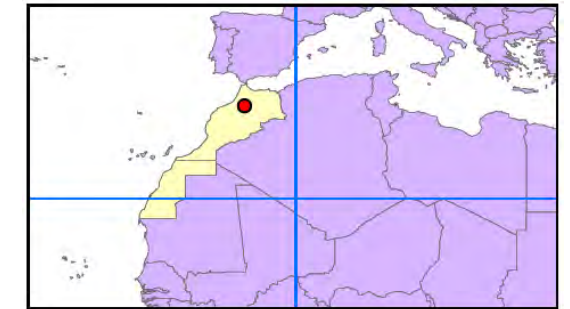
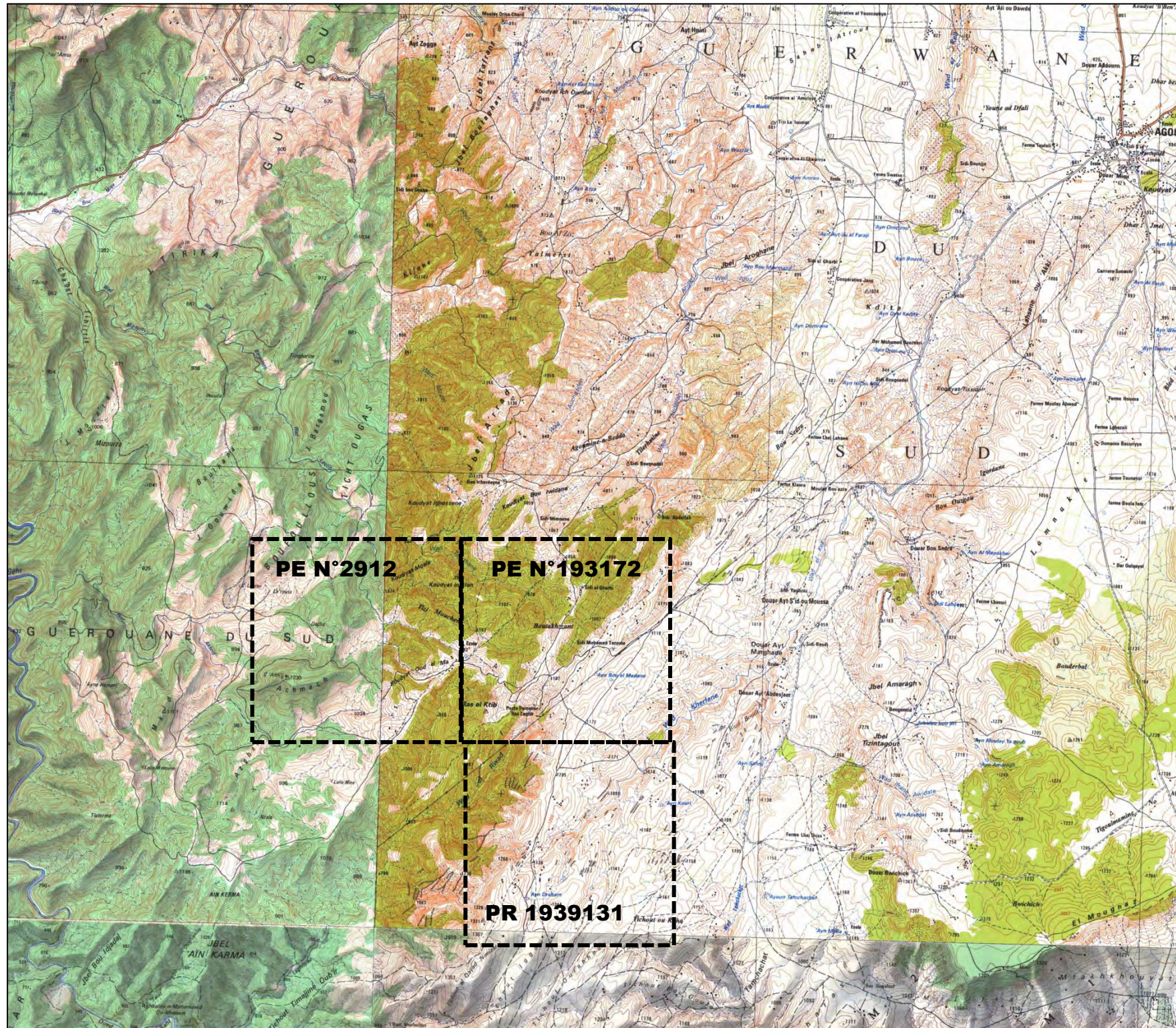
### ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT PROCESS

This ESIA has been prepared in compliance with Morocco's environmental regulations, and in particular law 12-03 relative to environmental impact assessment and Decree n° 2-04-564 regarding public involvement.

An ESIA scoping report was prepared in 2011 and presented to the National Committee for Environmental Impact Assessments (CNEIE) on the 15<sup>th</sup> June 2011 and the committee accepted the report and issued Terms of Reference for the Environmental Impact Assessment.

The ESIA was carried out during the period May 2011 to June 2013 and included carrying out a two season environmental baseline survey, the first in May 2011 and the second in October 2011. A draft Final ESIA prepared as part of the Preliminary Feasibility Study (PFS) was submitted to the CNEIE in September 2012. This revision of the ESIA has been prepared as part of the Definitive Feasibility Study (DFS) and includes the findings of the social baseline survey that was carried out in April 2013.





Echelle / Scale



0

5 km

PROJECT SITUATION MAP



## INTERNATIONAL FINANCE CORPORATION (IFC) PERFORMANCE STANDARDS ON ENVIRONMENTAL AND SOCIAL SUSTAINABILITY

This report has also been prepared to comply with the International Finance Corporation (IFC) Performance Standards on Environmental and Social sustainability (1<sup>st</sup> January 2012). The project is a Greenfield mining project and therefore is considered as a Category A project.

The rationale for the triggering of, and ensuring compliance with, the performance standards are summarized as follows:

*Performance Standard 1: Social and Environmental Assessment and Management System.* The project facilities cover an area of 54.6 ha and which is almost entirely modified habitat comprising mainly deforested land currently used for seasonal grazing of animals by local people living near the site and a small area (12 ha) of Aleppo Pine woodland (which is not the natural habitat, but has been artificially introduced). There are about 300 people living in the concession and 4 households will need to be relocated. An ESIA including an Environmental and Social Management and Monitoring Plan (ESMMP) has been prepared (this document).

*Performance Standard 2: Labour and Working Conditions:* The Project will require the recruitment of a local workforce for both construction and operation. Construction will require about approximately 350 people and operation about 290 local people. The ESMMP includes requirements for the preparation of a recruitment policy and plan which include the following themes (i) working conditions and management of worker relationships; (ii) protecting the work force; (iii) occupational health and safety; (iv) workers engaged by third parties, and (v) supply chain.

*Performance Standard 3: Resource Efficiency and Pollution Prevention:* The Project is located in proximity to surface and groundwater resources used by local people and the project will also require the use of these water resources. There is a risk that the water resources may be depleted and/or polluted by the project activities. To address this risk, the facilities have been designed to minimise water use, maximise recycling of water and the means of supply water to the project is designed in collaboration with and approved by the Water Basin Agency (*Agence du bassin hydraulique du Sebou – ABHS*). A contingency plan to provide water from an alternative source has been prepared. The ESMMP includes plans to manage water use and pollution prevention.

*Performance Standard 4: Community Health, Safety and Security:* The ESIA includes social baseline information on community health, and the impact assessment evaluates the impact of the project on community health, safety and security and establishes preventive and control measures. The ESMP includes plans for the implementation of the preventive and control measures.

*Performance Standard 5: Land Acquisition and Involuntary Resettlement:* The project does not involve land acquisition. The current land tenure of the areas where mining facilities will be located is collective (common) land for the cleared areas and forestry land for the wooded areas. Kasbah will pay rent to the Forestry commission for the use of the forestry land and will also pay rent on the use of collective land. There will also be a need to relocate 4 households located close to the future process facilities. The resettlement/compensation process will be as follows: Kasbah will initiate discussions with the people concerned. If an agreement is reached this would be ratified by the Ministry of the Interior (Moi). If an agreement cannot be reached the issue would be handled by the Moi, which would determine the level of compensation payable by Kasbah, with the assistance of the provincial administration in El Hajeb. The ESMMP includes a resettlement framework which outlines the general principles to be followed by Kasbah to ensure that resettlement will be carried out in line with the PS5.

*Performance Standard 6: Biodiversity Conservation and Sustainable Natural Resource Management:* The concession encompasses areas of natural habitat (Cork Oak woodland) and modified habitat (Aleppo Pine woodland and cleared areas). There are no areas of protected habitat or critical habitat in the project area of influence. The project has been designed to

minimise impact on woodland and project facilities footprint encompasses mainly the cleared land. The ESIA evaluates the impact on biodiversity.

*Performance Standard 7: Indigenous Peoples:* The ESIA has included interviews with local authorities and a social baseline survey. It has been established that there are no indigenous Peoples in the project area of influence. The people in the region are referred collectively to as the Guerrouane du Sud but this group of people is not to be confused with Indigenous People (see description of natural and human environment below for more details).

*Performance Standard 8: Cultural Heritage:* Interviews with local authorities and the social baseline survey have established that the only cultural heritage site in the vicinity of the project is the Sidi Addi peak. The site, although not an officially recognized cultural heritage site, has some importance for local people. Each year there is a gathering of local people at site on the 8th April. The site although located within the concession is at sufficient distance from project site to be unaffected. The ESMMP includes measures to ensure that Sidi Addi will be protected and access by local people will not be hindered.

## PROJECT COMPONENTS AND PROJECT PLANNING

The development of the Achmmach mine will comprise the following main components:

- Development of underground mining facilities;
- Site preparation activities including upgrading of sections of the mine access road;
- Construction of a 60 kilovolt High Voltage power line to the Project site;
- Construction of the ore processing facility, laboratory, administrative buildings, workshops and stores;
- Construction of a Tailings Management Facility;
- Construction of potable water, process water and storm water systems, and
- Mine operation which will produce an expected 12,000 tonnes of tin concentrate per year which will be transported by truck from the mine to for export.

The layout of the facilities is illustrated in the layout drawing provided on the next page.

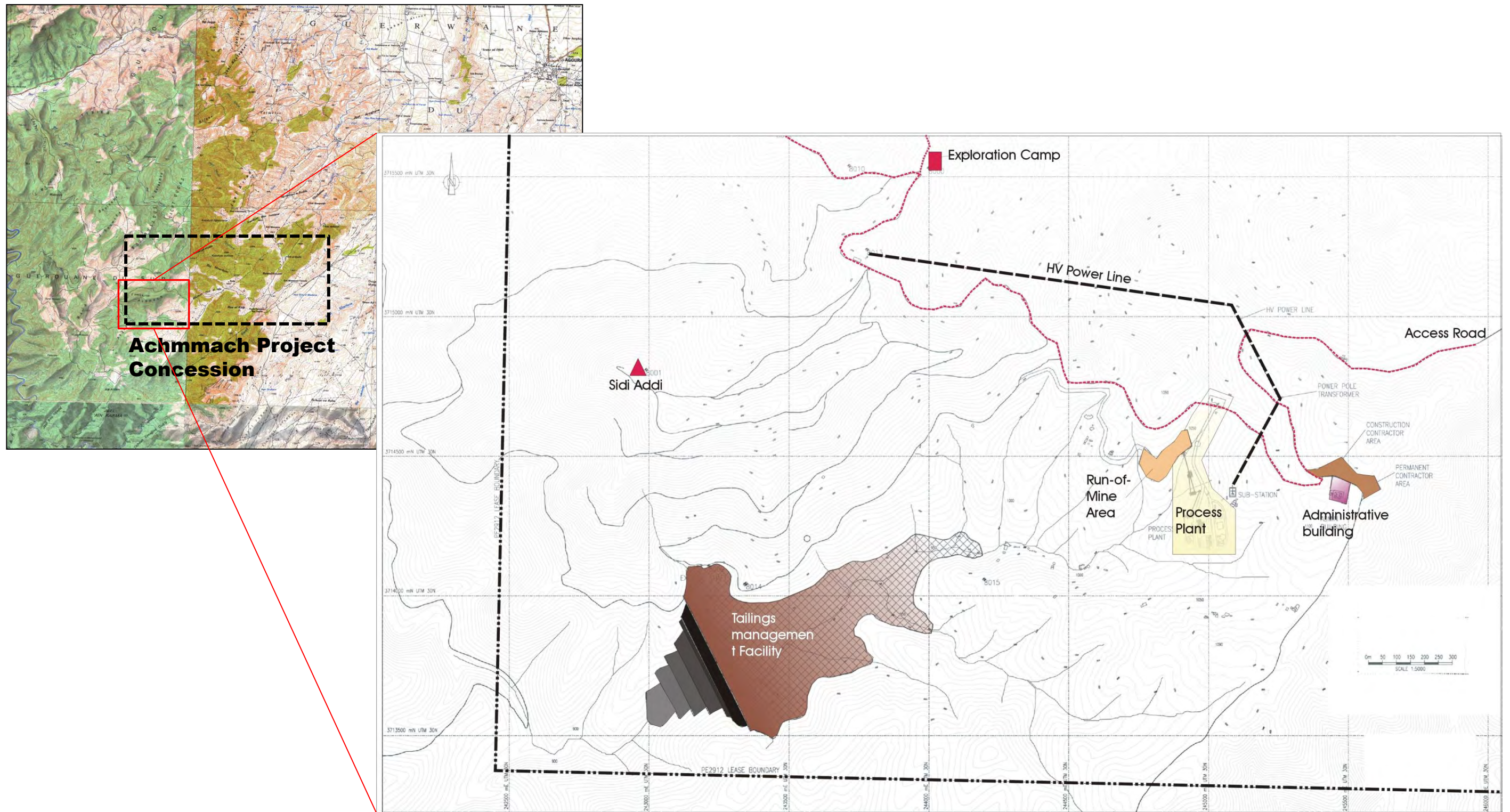
The overall planning for project implementation is as follows:

- Technical and economic feasibility studies will be carried out over a period of 15 months during the period Q3 2011 to H2 2013;
- Construction activities are expected to be carried out over a period of 12 months commencing during 2014;
- Mine operation is anticipated to commence during 2015.

In terms of work allocation and responsibilities, the overall project organisation during implementation can be summarised as follows:

- Kasbah, as project owner, will be responsible for the project implementation, general site management, mining of tin ore, operation of the processing plant and management of mine waste and discharges;
- Selected construction contractors will be required to carry out the site preparation works, road improvement works, construction of buildings and process facilities and any other civil engineering works.
- A contract mining engineer will be contracted to assist in mining operations in particular the initial rock excavation needed to reach tin deposits;
- A specialised contractor for the storage and use of underground explosives will be engaged.





LAYOUT OF FACILITIES



## DESCRIPTION OF THE NATURAL AND HUMAN ENVIRONMENT

### *PHYSICAL ENVIRONMENT*

The Project is located at an altitude of 1,085 metres above sea level, where the average annual rainfall is in the order of 1,000 mm, with between 80 and 100 days of rain per year. Average annual temperatures are in the range of 23°C, with a maximum temperature of 43°C and minimum temperature of -2°C.

The project is located in a mountainous area characterised by valleys and plateau features. A large elongated hill takes up most of the project area of which the highest point at an altitude of 1,230 metres is known as Sidi Addi. The general underlying geology of the area is schist, siltstone and sandstone, with limited evidence of underlying aquifers. There is limited groundwater and the water that is present collects in underlying dykes. There are many seasonal streams that originate in the concession area and drain towards the north, east and westerly directions. The Wad Beht is found 4 kilometres to the west and northwest of the concession.

The land-use in the project area comprises mainly forest and deforested areas. The deforested areas are used for seasonal grazing and some rain-fed agriculture.

The North of Morocco and the Atlas Mountains is a known area of seismic activity. The Project is located in an area where historically seismic activity has reached a maximum intensity of VI on the MSK 1964 scale. The facilities have been designed taking into account this constraint.

### *BIOLOGICAL ENVIRONMENT*

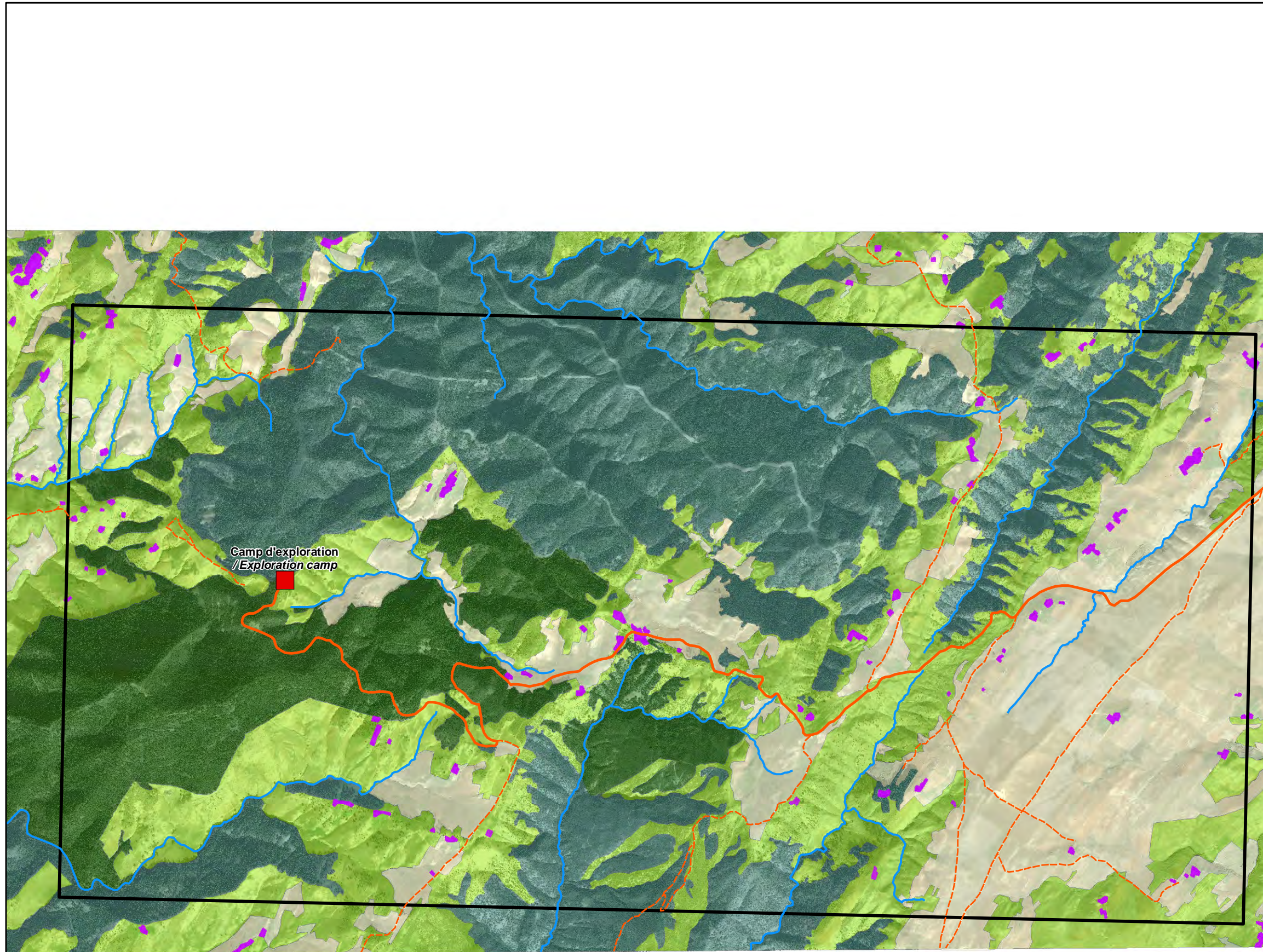
There are five types of habitat on the concession area; these are pine woodland, cork oak woodland, cleared areas, rocky outcrops and riverine habitats. The Aleppo pine woodland covers 75% of the concession area, this however is not the natural vegetation but has been artificially introduced to replace the natural cork woodland, that has been progressively cleared by local people.

The Project's flora inventory has identified 24 plant taxa in the concession area comprising some endemic and rare taxa. However the rare taxa are present in low numbers and sporadically distributed on the wooded and rocky outcrop habitats, which the project will not disturb.




The Project's fauna inventory carried out has identified the reptiles, amphibians, mammals and birds present in the concession area. In terms of rare or endangered animals, tracks of the Golden Jackal (classed as vulnerable by the IUCN) were observed and a number of important, rare and remarkable birds are thought to be present. These include Moussier's Redstart, Levaillant's Woodpecker, Montagu's Harrier, the Hen Harrier, the European Garden Warbler, the European Siskin, the Common Crossbill and the Ortolan Bunting. However the project is not expected to have a direct impact on these species as very small areas of woodland will be impacted and only a relatively small part of the concession area will be developed.

There are no protected areas in the vicinity of the concession. The nearest environmentally protected area is the Ifrane park, which is approximately 40 km southeast of the project area and far beyond the project's area of influence. The park is hydraulically upstream of the project area.



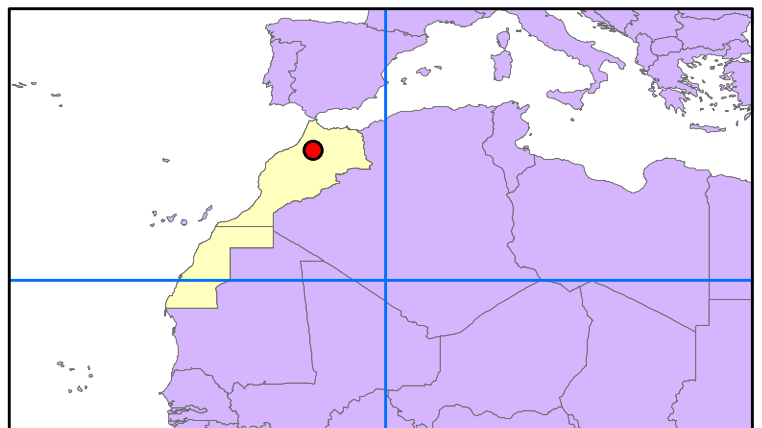



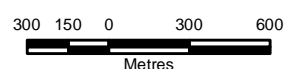
**Légende / Key**

-  Route d'accès  
*Mine access road*
-  Eaux de surface  
*Surface waters*
-  Pistes  
*Tracks*

**Occupation des sols  
Landuse**

-  Habitations  
*Dwellings*
-  Forêt de pins d'Alep  
*Aleppo pine woodland*
-  Forêt de chênes lièges  
*Cork oak woodland*
-  Terrains cultivés et jachère  
*Rain Fed cereal crops*
-  Parcours d'élevage et sol nu  
*Scrub / Pasture land*



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		Date : Mai 2013

ACHMMACH TIN PROJECT	ETUDE D'IMPACT ENVIRONNEMENTAL ET SOCIAL <i>ENVIRONMENTAL AND SOCIAL          IMPACT ASSESSMENT</i>
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**Figure 4-6 Carte d'occupation des sols  
 dans la concession**  
*Figure 4-6 Land use in concession area*



## HUMAN ENVIRONMENT

A Social Baseline survey was conducted as part of the ESIA in April 2013. The aim was to establish the current social, economic and cultural context of the Project area. Fieldwork consisted of a household survey, focus group discussions with representatives of the communities adjacent to the Project and semi-structured interviews with social workers in the fields of health, local development and education and representatives of local authorities. The baseline household-survey questionnaire focused on the following indicators: living standards (including health, education, accommodation and access to energy and water), social organisation (including gender issues), land use, livelihoods and income, and cultural resources and practices.

The Project is located within the administrative region of Meknès-Tafilalet, in the Caidad of Jahjouh, Cercle of Agourai, El Hajeb Province. While the Concession area lies within two rural communes, Ras ljerri and Ait Ouikhalfen, the direct area of influence of the Project includes a third commune, close to the concession, Jahjouh. During the consultation process, local authorities have insisted on this definition of the direct sphere of influence of the Project (including the three communes), especially in relation to their interpretation of "local content" and job expectations at the local level. The total population of the three rural districts in which the project is located is estimated at 19,700 people. Ras ljerri and Jahjouh are the two principal urban centres which concentrate the majority of the population.

The project area is part of the area inhabited by a group of people collectively known as the *Guerrouane du Sud*. The *Guerrouane du Sud* are not an indigenous people as defined by the IFC Performance Standard 7 on Indigenous Peoples, that is to say a social group with distinct social and cultural characteristics (self-identification as a distinct cultural group and recognition of this identity by others, collective attachment to geographically distinct habitat or ancestral territories and distinct language or dialect, different from the official languages). While Berber is the language of the majority of the population (the *Guerrouane du Sud* are originally of Berber origin), there are also many Arabic-speakers and both languages may be spoken in a single family unit.

Within the concession area there are 50 households representing an estimated 300 people. Much of the rural population around the Project lives under or close to the poverty line. The Project area registers very low adult literacy rate. The dwellings in the concession and in the neighbouring areas have no access to municipal water supply or electricity. Water resources are often far from the dwellings and women must often walk a long way to fetch water daily. Solar panels were provided by a local NGO to most of the households in 2004: they are mainly used for lighting and television. The local population has limited access to health infrastructure and services. Local health centres perform diagnosis, treatment and prevention of common illness and injuries but no surgery. For severe health problems, people are transferred to the hospital in Agourai or Meknes. Many women still deliver at home, when possible with the assistance of a Kabla (birth attendant).

The land tenure system in Morocco is rather complex and characterized by a plurality of legal status: State-owned lands, collective lands and private lands (*melk*). Most of the lands in the project area are collective lands. There are administered by a Jmaâ (assembly) composed of Naibs (representatives of the land right-holders), under the direct supervision of the Ministry of Interior (through the Directorate of Rural Affairs - *Direction des affaires rurales*).

Agriculture is the primary activity and source of income. Main cultivated crops include wheat, barley, oats, broad beans and olives; livestock consists of poultry, goats, sheep, cattle, horses, mules and donkeys. Interviewed people, especially women, unanimously complained about the vulnerability of their farming conditions. Hard working conditions, social isolation, poor infrastructures, land tenure status, uncertainty of income and high dependency on climate conditions are some of the reasons why most of them envision a radically different future for their children and expressed the desire to move to a close urban area. It has been observed during field work and confirmed through the household survey that more and more families leave the area and move to the nearest cities (such as Agourai). Youth unemployment is a key challenge the three communes are facing.



In terms of other projects in the vicinity, there is the El Hammam fluorite mine operated by the *Société Anonyme d'Entreprises Minières* (SAMINE), which is located approximately 5 kilometres to the north-west of Sidi Addi. It has been operating for over 30 years. The Ouljet Es Soltane hydroelectric dam is being constructed about 30 kilometres north of the Achmmach concession. No interference between the two projects is expected to occur. Construction vehicles for the dam do not use the same roads as those proposed for future mine traffic.

There are no archeological or formal cultural sites in the project area or in the vicinity. However, there are a few spiritual sites in the concession area and its vicinity, among which the Sidi Addi peak, which has a spiritual significance for local people as it is considered as the mausoleum of the Saint Addi. During the Lemma, which takes place every year, and the Mousseem, people gather at the tomb of the Saint (*marabout*) and perform ceremony rituals. While the orthodox Muslims consider that the belief in saints is not Koranic, ritual sites such as the Sidi Addi are extremely popular. Many consulted individuals confirmed that they regularly visit this site during the year for prayers or tributes: people believe in Sidi Addi's therapeutic properties.

Household consultations have shown a positive perception of the project among the local population. The project is seen as an opportunity for local development: the inhabitants and local authorities expect the project to be a source of job creation (especially for young people) and poverty reduction (through social infrastructures such as schools, health centres and access roads). A great majority of consulted people would like to leave the area and thus sees the project as an opportunity to convert their hopes into reality, through the compensation they could get from the relocation plan (people have heard of similar experiences in the area). High expectations will be managed with an appreciation of the project positive impacts and early engagement with key stakeholders (community relations) to avoid misperceptions about the project.

Main issues of local concern are: employment opportunities for local people in an area where the great majority of the population is illiterate and unskilled and where the unemployment rate is very high, working conditions (workers' rights), pollution and water scarcity, compensation rights for relocation, health impacts especially because of dust and water pollution, accidents risks because of an increased road traffic. It is expected that most unskilled positions should be able to be taken up within the local study area (the three communes of Jahjouh, Ras Ijerri and Ait Ouikhalfen).

## ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

### *IMPACT ON LAND-USE*

During the construction phase, the construction of the mine facilities will change the land-use of an area covering 54.6 ha; (1.7% of the concession area). The facilities will be constructed on areas of land currently used mainly for the seasonal grazing of animals (42.2 ha), a small area (12.35 ha) of Aleppo woodland (modified habitat) and a very small area (0.03 ha) of Cork Oak woodland (natural habit). During the operation phase there will be no further impact on land-use. The impacts on the natural and socioeconomic environment resulting from the change in land use are discussed under the headings for impacts on flora and socioeconomics below.

### *IMPACT ON WATER RESOURCES*

There are four risks with respect to impacts on water resources; (i) reduced water availability for the local population due to groundwater extraction, (ii) risk of contamination of water resources from the discharge of sanitary, domestic and process wastewater, (iii) risk of contamination of groundwater from the tailing management facility's lixiviate (seepage water), and (iv) increased turbidity in the seasonal streams,

The means of supplying water to the mine will be established in collaboration with, and approved by, the water basin agency (ABHS). The annual mine water consumption is not expected to exceed 500,000 cubic metres per year, which translates as approximately 57 cubic metres per hour. A water balance prepared for the project by Golder UK Limited and Kasbah

indicates that although the water balance is cyclical in nature, the project will be in surplus on an annual basis. However, there will be a seasonal deficit during the summer months when it will be necessary to obtain make-up water from external sources.

The area is characterized by the absence of continuous underlying aquifers and the groundwater that is present is that which collects in dykes and faults in the underlying geology. The project water supply will potentially comprise any or all of (i) run-off harvested during the winter season, (ii) ground water abstracted using bore holes from an area situated 4 to 5 kilometres to the south east of the facilities and located within the PR1939131 permit area, and (iii) river water pumped from the Wad Beht situated 4 km to the west of the facilities.

There is a risk that the pumping of groundwater could result in reduced water availability for the local people who are using water from wells and springs close proximity to the likely locations of the project water supply boreholes. This risk is considered to be low because Kasbah will endeavour to abstract water from isolated water bearing structures that are not hydraulically connected to structures used by local people. The project bore holes will be drilled to a depth of 100 metres or more, whereas local people use wells that have been constructed to a depth no greater than 15 metres. Kasbah will make available to the local people water extracted from the mine's water extraction bore holes. Water storage tanks will be installed and water troughs for animals. A contingency plan will be established to supply water to local people affected by the project, in the event that existing groundwater resources are depleted due to the project.

Sanitary and domestic wastewater will be treated by a wastewater treatment plant, and during the construction phase the sterilised treated wastewater disposed of underground via conventional leach drains. However, this will be a short-term solution, and once the mine is in operation the treated wastewater will be recycled to the ore processing unit, and consequently no wastewater will be discharged into the natural environment.

The ore extraction process is a physical process using grinding, milling and flotation techniques. The use of some small amounts of chemicals in the flotation process will be required. Water is required for the extraction process. However, the process maximizes recycling and no process water will be discharged into the natural environment.

The ore contains traces of sulphides, which when discharged to the tailings management facility could be a source of acid seepage. To militate against acid seepage, the ore treatment process has been designed to remove most of the sulphides, which will be isolated and disposed of to secure zones in exhausted areas of the underground workings in combination with cemented paste backfill. In addition, the tailings will be dosed with an excess of limestone neutralizing agent to ensure acid generation cannot occur. As a matter of standard practice the tailings management facility will be designed with a system to collect and recycle the small quantity of resultant lixiviate (seepage water) to the ore processing unit. Seepage from beneath the TMF is expected to follow natural bedrock downstream of the TMF where it will be captured in a seepage pond.

Stockpiles of ore, mine waste dumps and the tailings management facility will be equipped with toe drains and sediment traps to prevent rainwater runoff from transporting sediment and fine rock material into the watercourses situated near the facilities. As a rule drainage from stockpiles will be directed to the TMF.

### ***IMPACT ON NATURAL HABITAT***

The layout of the project facilities has been designed to avoid areas of natural habitat (cork oak woodland) or minimize impacts on other areas of woodland (Aleppo Pines) which have been planted where cork oak has been cleared. However, a 0.03 ha area of cork oak woodland and approximately 12 ha of Aleppo pines will need to be cleared. All clearing of trees will be carried out in collaboration with and with prior approval from the Forestry commission (*Haut Commissariat aux Eaux et Forêts*).



### ***IMPACT ON FLORA***

The Project facilities will be constructed on land which is currently used for seasonal grazing of animals, and which is scrub land for much of the year. This land is the type of habitat which is the least environmentally sensitive in the concession area. It should also be noted that cork oak woodland is the natural habitat of the area, but much of this has been cleared by local people. The construction of the facilities will therefore create a direct impact on the vegetation on this area but it is of low environmental sensitivity.

### ***IMPACT ON FAUNA***

The change in land-use as a result of the construction of facilities and loss of pasture/scrub land will represent a loss of habitat for some fauna. The fauna that will be affected by this change are the mammals that are present in this type of habitat, and which predominantly comprise small rodents. This impact is expected to be negligible, as these animals can move to areas nearby. The loss of habitat is not expected to have a detectable impact on birds or reptiles. The impact will take place during the construction phase and no further impact is expected during the operation of the mine.

### ***IMPACT ON AIR QUALITY***

The concession is in a mountainous area far from any major sources of air pollution. The baseline survey has measured the air quality and confirmed that there are no signs of air pollution.

During the construction, dust will probably be generated by traffic moving along the access road, this will be minimised by controlling traffic speed and if necessary periodic spraying of sensitive areas along the road using water and a suitable proprietary dust suppressant. As part of the social baseline survey dust concentration measurements were taken at dwellings situated along the access road and it was found that dust concentrations are significantly lower than Morocco's threshold limit values for particulate matter for both ambient conditions and when vehicles are travelling along the access road close to the dwellings. This suggests that dust created by increased traffic along the roads should not create significant impacts.

The earth works at the project site will create localised dust emissions, but this is not expected to affect the local people. It should be noted that the earth works will take place in a valley and that the region is characterised by low wind speeds, in general winds are less than 3 metres per second, which corresponds to Force 1 (light airs) on the Beaufort scale. Households in close proximity to the site will be moved away from the site and the nearest dwellings are situated at least 2 kilometres from the site, on the other side of a small ridge.

There will be exhaust emissions as a result of fuel consumption, but this is expected to cause only localised changes in air quality.

During the operation phase, there will be continued dust emissions associated with traffic and this will be managed as for the construction phase. Exhaust emissions from diesel combustion is not expected to cause a detectable change in air quality outside the concession perimeter.

### ***IMPACT ON BACKGROUND NOISE LEVELS***

The baseline background noise levels were measured as part of the baseline survey and levels of 42 decibels recorded which is typical of open countryside. During the construction work, the noise will be generated by the earthmoving equipment at the site and movement of road vehicles along the access road. The road noise will be minimised by enforcing a speed limit near farms and hamlets. During the mine operation, noise will be generated by different machinery and vehicles at the mine site, though this is not expected to be detectable at a distance of more than 2 or 3 kilometres from the site. Noise from road traffic will be managed as during the construction phase. The mine operation will include the use of explosives, however the mine is an underground mine, and all explosions will be underground and are not expected to be perceived at the surface.

## **WASTE MANAGEMENT**

The waste generated during the construction phase is expected to comprise vegetation from land clearing, inert building waste, non-hazardous waste and small amounts of hazardous waste such as used oils, batteries, oily rags and empty drums. The waste generated during the operation phase is expected to comprise non-hazardous waste (food and packaging waste, general office waste) and small amounts of hazardous waste such as for the construction phase. All waste will be managed by a licensed local waste disposal contractor.

## **COMMUNITY HEALTH AND SAFETY**

The risks with respect to community health and safety comprise (i) risk of road accident, (ii) degraded groundwater quality, (iii) reduced water availability, and (iv) exposure to infectious diseases. These risks will be managed through the implementation of a number of environmental and social management plans: (i) a health and safety plan including road safety aspects, (ii) a water use and wastewater discharge plan, and (iii) a groundwater monitoring plan. A contingency plan which comprises supplying the mine with water from the Wad Beht (rather than using groundwater) has been prepared to ensure that if there are water availability problems, the mine and local people can be supplied with water from an alternative source. The exposure to communicable diseases is managed as part of the workforce health and safety (see below).

## **WORKFORCE HEALTH AND SAFETY**

The risks with respect to workforce health and safety comprise (i) the risk of road accident, (ii) work place accident, (iii) exposure to poor sanitary conditions, and (iv) exposure to infectious diseases. These risks will be managed through the implementation of a mining health and safety plan addressing the following aspects: (i) general workplace health and safety, (ii) hazardous substances, (iii) electrical safety and isolation, (iv) physical hazards, (v) fitness to work, (vi) remote site health, (vii) noise and vibration, and (viii) specific hazards of working underground.

Communicable diseases will be managed by providing surveillance and active screening and treatment of workers, and preventing illness among workers in local communities by undertaking health awareness and education initiatives.

## **POSITIVE SOCIOECONOMIC IMPACTS**

The project should contribute to a general improvement of quality of life and health in the area. The positive social impacts include:

- ❖ Creation of direct employment. During the construction phase there will be job opportunities for around 230 skilled Moroccan workers and 114 unskilled Moroccan workers, i.e. a total of 344 people. During the operation phase there will be job opportunities for 215 skilled Moroccan workers and 75 unskilled Moroccan workers, i.e. a total of 290 people. It is highlighted that this figure has been estimated for the feasibility study and may change as the project matures.
- ❖ Payment of rent for the use of the collective lands, which will not vary in value with the quality of the growing seasons as do pasture and crop yields and this rent should contribute to offsetting poor yields.
- ❖ There is a current tendency for young people to leave the district to seek work elsewhere. The creation of job opportunities related to the mine could reduce this tendency, thus creating a positive impact on the social structure and family units in the districts in the vicinity of the mine.
- ❖ Local companies and people will have opportunities to provide different types of services. It is estimated at this stage that contracts with local companies and peoples will represent between 25 and 35 million dirhams per year



- ❖ During the construction activities Kasbah will improve certain sections of the access road. This action will benefit the local people using the road.
- ❖ In the context of the project, Kasbah will establish new bore holes to supply water to the mine, and this will be complemented with water abstracted from the Wad Beht. Local people could benefit from improved water access through the installation of elevated water storage tanks from where the local people can draw water; and from installation of water troughs which will provide water for animals.
- ❖ Also a positive aspect will be the payment of rent for land occupation, which will not vary in value with the quality of the growing seasons as do pasture and crop yields, i.e. rent will mitigate the risk of poor yields.

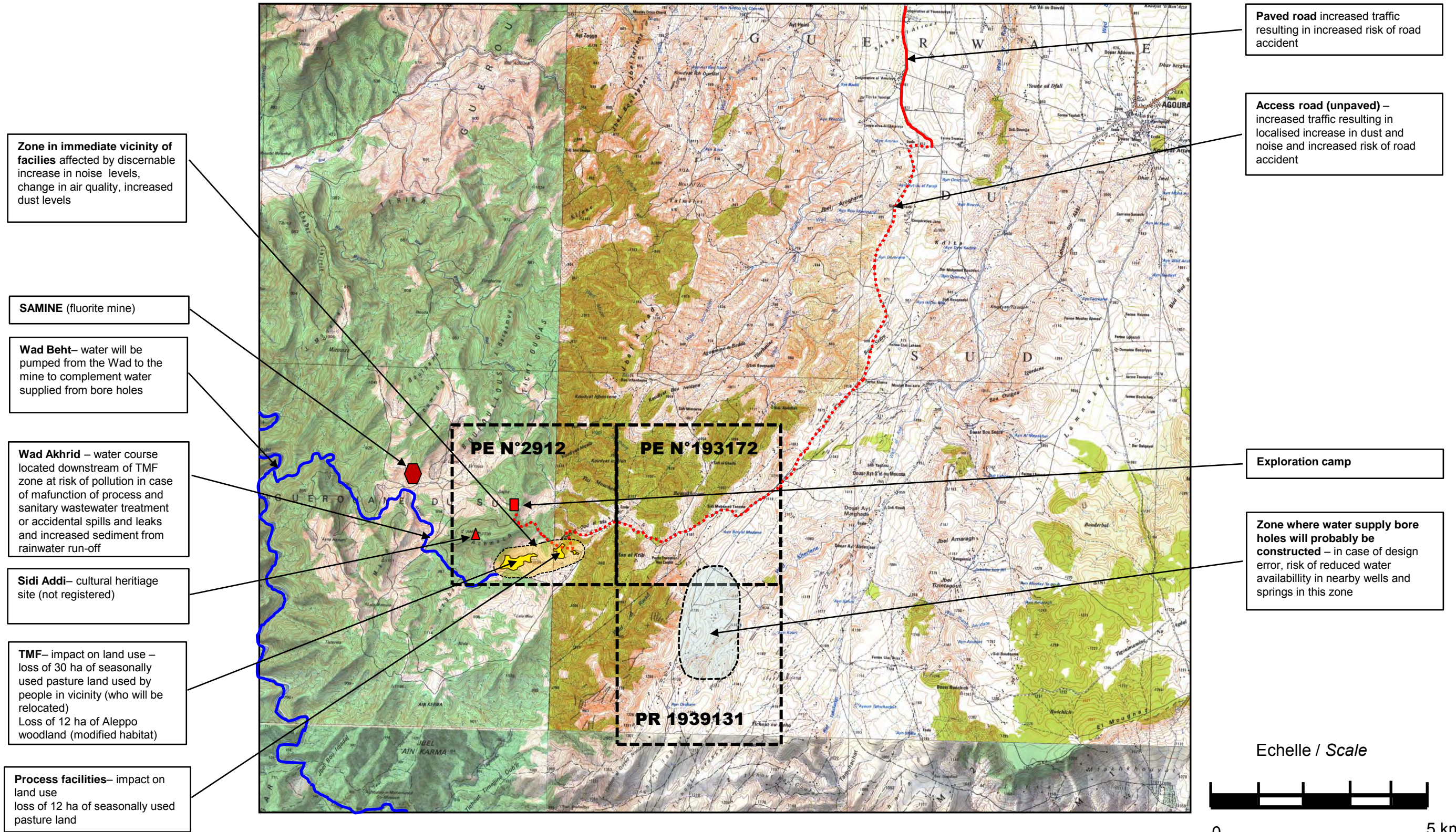
### NEGATIVE SOCIOECONOMIC IMPACTS

The negative project impacts comprise the following:

- ❖ Blocking of footpaths: Mining facilities will be constructed on only a relatively small part of the concession area. Whilst in projects of this nature, there is a possibility that the presence of the facilities may encroach on footpaths used by local people and their animals no footpaths will be compromised by project development at Achmmach. In order to protect the health and safety of local people access to site facilities will be prohibited and there will be a fence around such areas to prevent entry.
- ❖ Loss of pasture land: The mine facilities will encroach on land which is used part of the year for the grazing of animals by the people living in the immediate vicinity. The area of grazing land that will be affected during the life of the project is estimated to be 42.2 ha. Interviews with the inhabitants of the study area and local authorities confirmed that only the people living in the houses near this land use the land for grazing and these people will be relocated through the resettlement/compensation process.
- ❖ Increased road traffic: During the construction phase there will be a noticeable increase in road traffic along the mine access road and along the road from Meknes to the mine access road, which passes through the villages of Ras Ijerri and Agourai. In the concession the access road is very close to the Amoun Al Charif school: mitigation measures will be taken to avoid accidents and minimize dust impacts.
- ❖ Because Project facilities will be constructed on only a relatively small part of the concession, it has been possible for Kasbah to minimise the need to relocate people; 4 households will be affected.

The social survey has established that the project will not result in the need to modify the routes of footpaths.





ENVIRONMENTAL AND SOCIAL IMPACTS - LOCATION AND EXTENT OF IMPACTS



## STAKEHOLDER ENGAGEMENT

Kasbah has undertaken stakeholder engagement activities prior to and during the ESIA process, as described in the following paragraphs.

The stakeholder engagement activities carried out prior to the performance of the ESIA comprise both formal meetings with representatives of the government and informal encounters with local residents of the project area. Formal meetings include the following:

- ❖ The company has met with the Ministry of Energy, Mines, Water and the Environment in relation to the leasing of the Achmmach concession;
- ❖ The company has met with the chairman of the National Committee for Environmental Impact Assessment with respect to the environmental permitting process;
- ❖ The company has met with the Wali of Meknès region to discuss the public consultation process;
- ❖ The company accompanied by the ESIA Consultant has met with the Regional Director of the Ministry of Energy, Mines, Energy and the Environment to discuss public consultation;
- ❖ As a matter of routine the company has met with the presidents of the Communes where the site is situated and through which the access road passes. The subjects of the meetings have included the state and need of repair of the project access road which is a public road and maintained by the Communes and local employment opportunities;

Informal encounters have occurred between the exploration team resident at the project site and local residents in the project area. During these encounters information about the project has been exchanged. The local people know of the project and have not shown signs of being opposed to it. The exploration team resident has also encountered the Centre Regional d'Investissement (CRI) to discuss development strategy and timing for the project.

The IFC has also performed interviews with the following stakeholders:

- ❖ The Regional Wali;
- ❖ The Prefect of Meknes;
- ❖ The Centre Regional d'Investissement;
- ❖ The local mining authority and environmental authority "*Office National Des Hydrocarbures et Mines*" (ONHYM); and
- ❖ The Department of the Environment.

The ESIA process started with the preparation of a scoping study that was presented to the National Committee for Environmental Impact Assessment on 15<sup>th</sup> June 2011. Stakeholders consulted as part of the preparation of the scoping study are listed below.

- ❖ Meeting with the Centre *Régional D'Investissement*, Meknès on 12th April 2011;
- ❖ Meeting with the *Haut Commissariat aux Eaux et Forêts et à la lutte contre la Désertification* on the 14th April 2011 ;
- ❖ Meeting with the *Direction de l'Equipement*, service infrastructure on the 14<sup>th</sup> April, 2011;
- ❖ Meeting with the *Office National de l'Electricité*, Meknès on 14th April 2011;

- ❖ Meeting with the *Office National de l'Eau Potable*, Meknès, on 14th and 15th April 2011;
- ❖ Meeting with the *Inspection Régionale de l'Habitat, de l'Urbanisme et de l'aménagement de l'espace*, Meknès on the 14th April, 2011 ;
- ❖ Meeting with the *Agence Urbaine de Meknès* on the 15th April, 2011;
- ❖ Meeting with the *Agence de Bassin Hydraulique de Sebou* (ABHS), Fès on the 20th September 2010;
- ❖ Meeting with the *Office National Des Hydrocarbures et Mines*, Meknès on the 17th September 2010.

National Committee for Environmental Impact Assessment has approved the scoping report and issued the Terms of Reference for the ESIA report, and which has been used in the preparation of this document.

For the needs of the Social Baseline Study, as part of the ESIA, individual household consultations have been carried out in the project area in April 2013. More than 30 households have been visited and interviewed through structured and semi-structured questionnaires. Social, economic and cultural issues have been discussed, as well as concerns, expectations and perceptions about the Project.

In the next stage in the ESIA process, public participation will be conducted in line with Moroccan Decree n° 2-04-564 regarding public involvement. This requires that an ESIA summary document be presented in a public hearing, and that the findings of the public hearing be taken into consideration by the National Committee for Environmental Impact Assessment when approving the report.

## ENVIRONMENTAL AND SOCIAL MANAGEMENT AND MONITORING

The key elements of the management organisation for the implementation of the Environmental and Social Management and Monitoring Plan (ESMMP) are described as follows:

- The Kasbah Executive Management Team will have the oversight for the ESMMP and will be provide leadership and the resources necessary for effective implementation.
- The Site General Manager will be responsible for the implementation of the ESMMP and will be assisted by the site's Environment, Health and Safety (EHS) Coordinator.
- The different contractors will be required to nominate an EHS coordinator and staff who will be responsible for the effective implementation of the contractual EHS requirements. Kasbah's EHS coordinator will supervise and ensure that the actions are effectively carried out as per contract requirements.

The different environmental and social plans that will be prepared as the project moves forward and responsibilities are summarised as follows:

### PLANNING PHASE

The plans and action for the planning phase are as follows:

- i) The environmental and social management recommendations applicable to facilities design and operation will be integrated into the Definitive Feasibility Study by Kasbah's project team.
- ii) Prior to contracting the services of the construction contractors and contracting mining engineer, Kasbah will prepare environmental and social specification for the contractors. The contractors will be required to prepare their own environmental and social management plan which will address the following themes: waste management, spoils and stockpiles – erosion and sediment control, hazardous substances, air, dust and noise emissions; health safety, security and emergency preparedness and response, and workforce recruitment.



iii) At the same stage, Kasbah will develop specific environmental and social management and monitoring plans, taking into account final design, planning and work organisation. These plans will include:

- Plan for environmental and social monitoring of contractor works;
- Waste management plan;
- Plan for the management of spoils, stockpiles and erosion and sediment control;
- Hazardous substances management plan;
- Management plan for air, dust and noise;
- Water resources management plan;
- Management plan for workforce recruitment and contracting of services.
- Management plan for workforce health, safety, security and emergency preparedness and response;
- Community health and safety plan;
- Resettlement action plan / livelihood restoration framework (Resettlement and livelihood restoration is implemented by local authorities);
- Social monitoring plan, and
- Outline Mine Reclamation and Closure Plan (MRCP)

### **CONSTRUCTION PHASE**

The plans and action for the construction phase are as follows:

- The construction contractor will implement the environmental and social management plans prepared in the planning phase, and
- Kasbah will monitor construction contractor to ensure compliance with the environmental and social management plans.

### **OPERATION PHASE**

The plans and action for the operation phase are as follows:

- The contract mining engineer will implement the environmental and social management plans prepared in the planning phase;
- Kasbah will monitor the contract mining engineer's activities to ensure compliance with the environmental and social management plans.
- Kasbah will implement their environmental and social management and monitoring plans, and
- In the years leading to the end of the mine life, Kasbah will further develop the outline Mine Reclamation and Closure Plan (MRCP) into a detailed MRCP.

## MINE CLOSURE

Prior to the start of production activities, an outline MRCP will be prepared, then over the project operating life a detailed MRCP will be prepared and finalised at least three years prior to the end of the mine life. Once the mine has finished producing, the detailed MRCP will be implemented.