



DHI SOLUTION

MINING AND ENVIRONMENTAL IMPACT ASSESSMENT

Mandatory for all mining activities

ENVIRONMENTAL IMPACT ASSESSMENTS FOR THE MINING INDUSTRY

Mining activities cover a diverse range of environments and the challenges are often unique and specific to each mine site. However, mining activities will invariably have an impact on water environments through direct or indirect contact of either the surface or groundwater. The mining activities can also produce contamination of water through tailing discharges or other direct or indirect contacts, mixing or use of water in the processing of the ores.

A key element of the Environmental Impact Assessment [EIA] process will focus on the impact of mine development and operations on water resources and the associated water environments. Our experiences in working with all aspects of water environments ensures that we have a comprehensive set of in-house knowledge, experience and tools that can be applied to almost any water challenge.



It takes a good overview to develop a good EIA and it is very important that the EIA approach does include, a wide range of aspects, and also the positive effects that mining can cause; in areas of employment, infrastructure and economic growth both locally and regionally.

DHI has developed a scoping tool, which enables us to provide a large degree of transparency in our consulting work. For providing risk assessments, we also have wide experience in working with the potentials for risk and for providing suggestions for minimising the risk factors, thereby allowing the clients to have a better foundation for their mining activities.

SUMMARY

CLIENT

The mining industry and associated industries and consultants

CHALLENGE

- Finding sustainable solutions
- Mitigating negative impacts
- Promote positive impacts

SOLUTION

To use a holistic approach in the EIA methodology, providing professional and pragmatic solutions.

VALUE

- Transparency
- Model-based water resource assessments
- Paving the way for permits



DHI OFFERS SUSTAINABLE SOLUTIONS

In working with EIA's, it is important to take an approach that encompasses a wide range of impact areas. In the DHI approach, we put focus on 4 main impact areas:

- **Physical-Chemical:** These impacts are mostly related to impacts on water in terms of changes in quantity and quality, but can also be related to changes in the landscape, which is very obvious in pit-mining systems or also with traditional mines, where access to the mining area, mine-tailing and other changes to the landscape are taking place.
- **Biological-Ecological:** Changes in the biology/ecology can be the most tangible result from developing mining industry and unfortunately, it is not uncommon to see severe impacts on the biology. However, by scoping and assessing the impacts properly, it may also be possible to reduce or eliminate the impacts through mitigating measures.
- **Social-Cultural:** The impacts on this section can be decisive for the final approval of an EIA, as the impacts on the society can be of such magnitude, both positive and negative, that the society can change dramatically
- **Economical-Operational:** Mining activities are usually associated with high costs, a substantial portion of which goes directly into establishing and functioning of the mine. However, with the various developments in the amenities and the opportunities created for the locals, it is a positive and income generating change. And at the same time the income from the export of mining material and other related activities is beneficial on a national scale.

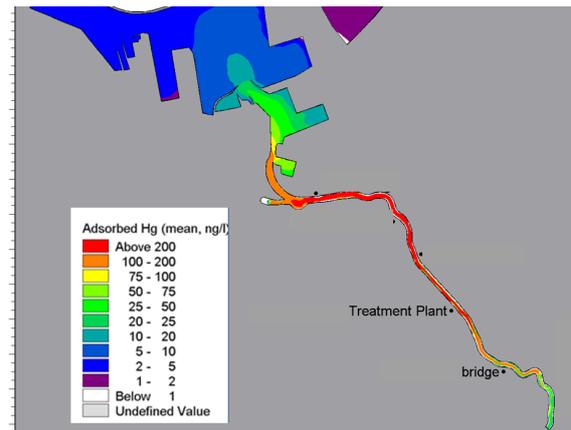
For each of the groups above, a number of specific impacts will be identified and based on availability of data the consequences for each specific impact can be described and evaluated. Through our experience each impact can be classified, using the following scorings:

- The spatial aspects (geographical importance)
- Magnitude (positive or negative)
- Permanency
- Reversibility
- Cumulative effects/impacts

The better, the above areas are described and assessed, the better the EIA will help in identifying constraints and impacts, which will have to be reduced to an acceptable level, before any mining operation can take place.

MITIGATING MEASURES

In reality no EIA comes out with all lights green and it is therefore necessary to work with mitigating measures to reduce impacts to acceptable levels or to comply with national standards. At DHI, we provide services that make use of our modelling tools and knowledge to demonstrate the effectiveness of mitigation measures. A typical example will be the demonstration of water quality conditions or discharge limits, which will comply with national or regional legislation. The figure below shows the modelling results of Mercury deposits in a river which can be used to develop and assess alternative treatment options or for demonstrating acceptable discharge limits where treatment is not viable.



Modelling results from assessment of spreading of adsorbed Mercury in a river. Models can be used to predict future impacts or "hind-cast" spill events for compliance purposes.

REPORTING

The EIA report is the final input from a mining company to the permitting authorities. A transparent and well-structured EIA report will ease the work done by the authorities and will also pave the way for getting the necessary permits for operation.

TAKE ADVANTAGE OF FREE SOFTWARE RIAM, THE DHI-DEVELOPED SCOPING TOOL FOR EIA

Go to our homepage at www.dhigroup.com and search for RIAM.

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For more information visit: www.dhigroup.com