

Mineral Development – The Owner’s Perspective

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Key words:

SUMMARY

Land Economy Surveyors throughout the world have various roles to play. One of their primary functions is to enable the development of land and natural resources. The exploitation of natural resources has enabled the human race to survive and grow; to construct pyramids and to evolve into the modern world as we know it.

In most cultures land is “owned” by individuals or groups or governments and in many different ways. The surveyor can form the link between owner and prospective developer. His or her role is to ensure that the development is brought to fruition to mutual benefit.

This paper highlights mineral development as an example and briefly explores how rights of ownership must be understood by the surveyor to protect the owner’s interests. The paper divides these interests into three.

Firstly: environmental. The role of Environmental Impact Assessment is as important for the owner as it is for the local community or the nation. The paper highlights the issues which the surveyor must identify.

Secondly: financial. When an owner is approached by a developer who seeks to exploit a resource, the owner must know what revenue is appropriate and how it should be paid.

Thirdly: social. How will the host society relate to the development?

The paper considers not only issues when minerals are being worked but also when mineral working ceases.

The surveyor must have a good working knowledge of the proposals, their objectives, implications and affects if the development is to be successful and the owner’s interests are to be protected.

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1. INTRODUCTION

Over 4,000 years ago the Pharaohs quarried huge blocks of limestone and granite to build the Pyramids. They were hewn from the rock by hand and transported by barge and on land, without the use of the wheel, and cut and dressed to build the structures. Even in today’s terms when millions of tonnes of stone are being used every year to build our roads, airports, houses, this must have been a gigantic quarrying project. It is interesting to reflect what the people who lived at the quarry sites gained from the project. Their lives would have been dominated by the industry, perhaps many were conscripted for life to work in the quarries. Thousands of workers and their families had to be fed and housed while the pyramids were being built and this must have been of great importance to the economic development of the region for many years.

Mineral development today is of vital importance. Minerals are the broad spectrum of construction materials, energy minerals, precious and non-precious metals etc. This paper generally relates to the raw construction materials which provide building and construction products to supply our increasing populations, but the principles apply to the whole of the extraction industry. Our cities consume vast quantities of stone, clay, gravel, sand and other non-energy minerals. A global market in some of these materials has developed despite their densities which mean that it is heavy and therefore difficult and expensive to transport. Marbles are brought from Brazil and China to Europe and North America. Norway provides coastal protection stone throughout Europe. Cheap stone, probably based on child labour, is exported from India and south America. However, for basic construction of roads and dwellings, most stone is used close to its source.

In this paper I hope to provide a glimpse of the rights of owners of land which overlies minerals resources, and the benefits and disadvantages that mineral development can produce. However, I can only generalise because ownership of the land and the underlying geological deposit varies from nation to nation. Owners, whether they are governments, other bodies or individuals, need expert advice if they are approached by mineral developers. Mineral developers may not always be altruistic in their intentions when seeking to develop and may not divulge the whole picture. The development scheme must be fully understood and the owners’ rights must be identified. Unless their entitlement is precisely known, they will not be able to make the best advantage of an opportunity which can only be taken once. This advice is provided in the United Kingdom by Chartered Mineral Surveyors and it is the professional surveying discipline which should take the lead in advising on the practical implication of natural resource management throughout the world.

Some owners may live and work in countries with sophisticated land management systems, having access to lawyers to determine their legal rights, and valuers and land economy surveyors to negotiate on their behalf. Most owners will probably not know all their rights;

some may even assume that they have no rights. In any case, where advice is sought, the surveyor must understand the minerals industry comprehensively to ensure that the owner will achieve the optimum advantages or the least disruption from mineral working.

1.1 Ownership

Knowledge of the precise interest in the land or mineral deposit which is owned and will be disturbed is fundamental. Disregarding occupation of the land, although an occupier may also have rights which must be considered, the surveyor must understand if rights of ownership are of:

- The land surface; and / or
- The geological deposit; and / or
- The right to work the geological deposit.

In many countries minerals are owned by the state but the working rights may not necessarily be controlled by the state. In that case a surface owner may also benefit from the mining proposal or may have the right to be compensated for the loss of the use of the surface of that land or for the disturbance which may occur if the mineral is worked on his land or transported across it. In the United Kingdom non-energy minerals are normally owned by the surface owner. The rights to work them are also owned by the surface owner although these rights have to be sanctioned by the state in the form of planning permission. Subject to planning permission the owner can exploit the mineral deposit selling the materials to the highest bidder on the market.

In Fiji, a country with which I am familiar, the surface of the land is largely owned by family clans but the underlying minerals of every description are owned by the state. The working rights may be granted by the state in mining leases but provision is made in law for the surface landowners' protection to ensure that they will receive compensation for the disturbance which they might suffer. In that case, the advisors for surface owners must be able to quantify what compensation is payable and how it should be paid, in money or in kind, when the mineral is exploited.

Having identified that an owner of land is entitled either to benefits arising from the development or to the alienation of his rights, or compensation for disturbance which might arise, we can subdivide the issues arising from Land Ownership into:

- Environmental;
- Financial;
- Social.

1.2 Environmental

In this context there is a need to understand how mines and quarries work and how the existing land use will be changed. What are the characteristics of the mine and where will it be? How big will it be? This will vary enormously from taking a few lorry loads of gravel out of a river bed to removing a mountain. How long will the development take? What population

will be effected? How will it be worked? An underground mine may have less implications for the environment than an open cast quarry. Where will the mineral be stockpiled? Where will the waste and overburden be dumped even before the mineral can be removed? How will the mine waste be disposed of? Will the mineral be processed and if so will a processing plant be built on the site? What transportation will be used? What transportation routes will be designated and are the roads or routes adequate? The effect of mineral working whether small or large and the effect upon the owner or the host society must be fully understood. The Mine Plan must be clear and sustainable.

Commonly, throughout the world, the Environmental Impact Assessment method of determining the effect will be considered in cases where a mineral development will potentially have a significant effect. This means, in terms of mining, that a developer must research, in detail, the effect that the development will have, either directly or indirectly, permanently or temporarily, positively or negatively. It will include:

- An understanding of the magnitude and complexity of the development;
- The extent of local impacts such as noise, dust, visual intrusion;
- The aspects of the environment likely to be significantly affected such as the fauna, flora, water, air, climate;
- The possibility of pollution of water or land;
- The overall effect on the human population;

This assessment will either prove the ability of the natural environment to absorb the impacts or alternatively show how the effects may be mitigated. To do this the Environmental Impact Assessment must be thorough and comprehensive. What it must not be is a support statement backing the proposal by assessing only the positive or neutral impacts.

1.3 Financial

In equilibrium with the environmental implications is the need to achieve the optimum financial gain for the landowner depending directly upon the rights which are owned and which will be upheld by law. So the questions must be asked: What will the owners gain financially? How much and how will it be paid? Will it be paid as a lump sum or in stages throughout the development? What documentation structure will be necessary to guarantee as far as possible the financial benefits both during mineral exploitation and after the land has been reinstated.

The surveyor or adviser must, on behalf of the mineral owner, whether a government, group or individual, identify those financial benefits and ensure that the owner gains the optimum reward from exploitation. In doing this the surveyor must know the values involved. What is the mineral worth? What are the developer's costs from exploration, which may involve years of expensive drilling and assessment techniques; opening the mine, which could have extensive infrastructural and financial costs, to processing and transporting the products and the waste and managing the whole operation? The landowner, or his surveyor, needs to know the potential profit (or even the likely loss) to be achieved because the landowner's share will be a proportion of the profit (although it may not necessarily be expressed as a percentage of

the profit), bearing in mind that the developer will seek a reward for his entrepreneurial skills and the risk he has taken and the landowner will be reimbursed for providing the mineral or access to it.

The bottom line is that the financial benefits, to an owner whether an individual or nation state, determines whether the mine or quarry will be worked at all. If there is no incentive for an owner to give up his land to exploit the mineral, the resource will simply stay in the ground. The greater the value and higher the expectation of profit, the more likely the resource is to be exploited.

1.4 Social

The impact of quarrying may impound not only on the environment of the local population but possibly upon the social fabric of a rural area. In its favour there will be employment opportunities both in the development itself and in associated or indirect service industries so economic development of an area may be highly beneficial. Mining companies, particularly foreign investors in developing countries, will offer shareholdings in the company or directorships for the landowners' representatives. They may offer housing, medical facilities and schools. But what is that worth, how can that value be quantified and offset against the social and environmental costs?

The Bougainville Copper Company's experience in Papua New Guinea was not a happy relationship between the mine operator, one of the region's largest and most successful mining companies, and the local people of an undeveloped island. Quantities of money were injected into a quiet island population, incomers flocked to the mine towns resulting in transformation of the social fabric to a crime ridden, violent society, war and closure of the mine with wide ranging economic, cultural and political consequences.

Some delegates today will come from smaller or less developed nations which will be approached by multinational enterprises to carry out mining projects. I have seen tiny South Pacific Island nations Lands Department's staff struggling valiantly to negotiate on behalf of their governments with the best of intentions but with only a very limited knowledge. They were up against major operators whose staff have the knowledge and experience of conducting similar negotiations around the globe. My advice here – get expert help.

At the early stages of any proposal for a major mineral development the social fabric of the area must be considered. Without doubt the best way to deal with that is to consult the local people. The mineral developer should meet them. Gain their views. Understand their concerns. Only in that way can any accord be reached which will help to protect their interests.

1.5 Afteruse

Although often not seen to be as important as the arrangements for mineral working to protect the owners' financial and environmental interests, there is a need to understand how the mine or quarry will be restored at the end of working. This is important, even if working will be long term, both because the rehabilitation should be progressive where possible and because adjustments to the design made at the outset can make all the difference between an afteruse which will be efficient for the purpose for which it is designed and one which could fail. Also the reinstated land should be left in a safe condition.

In the United Kingdom there is a tendency to seek the use of old mineral workings for nature conservation but there are many other potential uses which the landowner may gain benefit from provided the development is designed properly from the outset. If there is a hole in the ground remaining from an open cast working it is important to know whether it will remain dry or will it be inundated with water. If wet there are opportunities for fishing, amenity and tourism, if dry there may be possibilities for building uses – hiding industrial developments in an old quarry is common but can only be successful if the floor of the quarry is left flat, dry and accessible. Waste disposal is a common use of an old quarry but the environmental effects of landfill may prevent such a use. Alternatively the land can be used for agriculture, provided the soils have not been permanently lost, or forestry.

2. CONCLUSION

The environment, financial standing and social fabric of the whole of Egypt were changed possibly for ever by the building of the pyramids 4,000 years ago. In modern times we need to be aware of the likely changes which mineral working can inflict upon the host society, owners, occupiers, neighbours and others in the short and long terms. Some of these changes may be good, some bad, and others may be detrimental but manageable. Thus the land and mineral owners, or their advisers, must have a good working knowledge of the industry, understand the aims of the mine plan, the effects upon the human population and the environment and the benefits or compensation to which they are entitled if they are to succeed in negotiations and provide a balanced, sustainable framework for the development to work to best advantage.

BIOGRAPHICAL NOTES

John Salmon is a Chartered Surveyor who has been actively involved throughout his professional career in the management, planning and development of land and natural resources in the United Kingdom, Africa and the South Pacific. Currently he heads a small company engaged in advising mining and quarrying corporations and landowners in the United Kingdom.

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