ENGINEERING ASPECTS OF MINING DEVELOPMENTS

by J. W. Ridley MA (Oxon) BE, BSc F. N. Z. I. E.
Minning and Development Manager of New Zealand Steel Limited.

SYNOPSIS

This paper, as part of the Legal Research Foundation's Symposium, is essentially concerned with the engineering of a mining project and its effect on the community. The paper also highlights the reasons for changes in mining techniques and compares mining operations in Western Australia and those in New Zealand. Finally on the carrying out of large developmental projects such as are at present being undertaken in mining, a plea has been made for simplification in presenting and meeting all requirements in order that such projects are not subjected to too heavy an administrative load, and because of this become a less profitable enterprise or even fail to get underway.

1. MINING BILL.

The Mining Bill which was introduced by the New Zealand Parliament in 1969 is essentially a legal document and it is not an Engineer's place to pass any critical comment on it but it does present engineering with some problems which must be taken into account in assessing the feasibility of a project.

The Mining Bill is under consideration by a Select Committee of the House and it will no doubt contain changes when it is reported back.

However, because of the many classes of land now under the general administration of various Ministers e.g. National Parks, Scenic reserves, State Forests, Wildlife sanctuaries etc., consent to prospecting and mining have to be obtained from the appropriate Minister in Charge additional to any grant by the Minister of Mines. It may also be necessary to obtain special legislation or a specified departure from any Town Planning Scheme as was the case when New Zealand Steel was established in the Franklin County.

Co-ordination of these requirements can become a

in any water race, or any watercourse with which any such race is connected or by which it is fed to be used for the carrying off of any tailings, mining debris, or waste water from mining operations within the meaning of the Mining Act 1970, if the race is held by a local authority for the purpose of supplying water to the inhabitants of any borough or town.

The distinction is that, under the old Mining Act, pollution is not permitted, whereas, under the new Bill, water is not allowed to enter a river or stream. Many of the provisions of the Water and Soil Conservation Amendment Bill are repugnant to the mining industry and while it is conceded readily that proper steps have to be taken by any mining operation to avoid pollution or other damage as a result of mining operations, nevertheless, there will be occasions when some compromise must be adopted if mining is to develop in New Zealand in the interests of the country's economy. There are likely to be occasions, where some damage could be suffered to rivers or streams, but if this is to be permitted it could only be done by an impartial and responsible body.

In my submission, the new Mining Bill is incomplete without the provisions relating to water rights being contained therein and being granted by the same authority, namely the Minister of Mines or the Magistrate's Court.

FORFEITURE OF MINING PRIVILEGES.

The new Bill provides for forfeiture, but only at the suit of the Minister on receipt of a report. Under the 1926 Mining Act, similar provision is made entitling an Inspector of Mines to apply to the warden for forfeiture on basically the same grounds as outlined in the Bill. It is significant, however, that it is not often that an Inspector of Mines has taken any such steps.

One of the best methods of ensuring reasonable work is carried out, is that employed in the Mining Act 1926, whereby the holder of a miner's right can apply directly to the warden for forfeiture on the grounds that the holder of a particular mining privilege is not working it as therein provided; in the event of the warden ordering that the privilege be forfeited, the particular applicant has priority to apply for the area himself, provided he makes application within
able and a review of the times within which certain things must be done and the dates upon which they must be made could be usefully done. The Bill incorporates all the necessary ancillary licences necessary in establishing a mining operation and improves certain aspects, particularly relating to the need to acquire easements to access, and otherwise.

There was one grave omission however which has been adverted to earlier and that is the complete omission to include in the Mining Bill provisions to water rights. There is presented to parliament a Water and Soil Conservation Amendment Bill which is intended to provide the procedure for the grant of these types of rights. However, this Bill has various provisions which could cripple an otherwise viable mining proposition. It is important to appreciate that water is an essential ingredient to the processing of minerals in connection with their extraction; the party charged with the granting of privileges relating to the usage of water for mining purposes must in the interests of mining, have some reasonable understanding and appreciation of this essential need. The body charged with the granting of the water rights under the Water and Soil Conservation Act 1967 is an ad hoc body which is basically charged with the duty of ensuring the purity and non-contamination of streams and other waterways. The Water and Soil Conservation Amendment Bill creates the situation where the Board to determine the grant or otherwise of water rights for mining purposes will be in a position of being a judge of its own cause with no right of appeal to an impartial authority. As an instance of the attack against mining and its essential requirement for water, it is pertinent to point out that under S126 of the Mining Act 1926, it is provided:

"It shall not be lawful to pollute the water in any water race or in any water course of which such race is connected or by which it is fed, if such race is held by local authority for purposes of supplying water to the inhabitants of any city, town, or township." This is entirely reasonable, and mining operations must respect the interests of others in the community; however, in the Water and Soil Conservation Amendment Bill, the following is provided:

Section 9 (a). It shall not be lawful to allow the water

formidable task for the mining industry but such a procedure cannot be avoided and the industry has to accept a responsibility for the protection of flora, fauna and unique features. Requirements in this respect must be incorporated in any plan for developing the project.

2. ENGINEERING DESIGN.

In order to present the engineer's problems relative to meeting the requirements of the Bill, and so that these can be appreciated, it has been thought desirable to devote some time to setting out and explaining the stages in engineering design. These, as far as possible, are listed in chronological order:-

(a) Geological and Geophysical Exploration

Under a Prospecting Licence this is usually the first operation as it provides the greatest amount of mining information at the least cost. In such an exploration there would be a geological and/or geophysical survey which could include such modern methods as magnetometer and gravimeter surveys where appropriate.

(b) Drilling and Sub-Surface Surveys

With the modern methods of geophysical exploration whereby the measurement of vibrations produced in shallow drill holes by detonating charges produce a reasonably accurate idea of the sub-surface strata there is still however, a need for drilling. This will inevitably start at a very early stage in the prospecting of a mining area. Such drilling, particularly in alluvial strata takes a great deal of time and it is usually essential for this work to be carried out before any major commitment is made. However, it can effect the operations of the land owners and disturb the countryside and the clauses on prospecting in the Mining Bill provide for compensation to be paid for all damage done and for the rehabilitation and restoration of the area as far as practicable.

(c) Land Surveys

Most projects require a land survey which is necessary not only for locating of the project's mineral re-
sources but to delineate the plant sites to be established on or near these and it is also usually necessary to delineate boundaries of the land for the purposes of the Mining Act where a mining licence is required and to meet any requirements where Land Transfer titles are involved.

(d) Layout of Plant etc.

With completion of the above surveys and also having determined sufficient mineral resources to justify economic study, the next stage usually involves site surveys on plant buildings etc. This work is a normal function of any preliminary engineering design and is necessary to produce a reasonably accurate estimate of costs. Again the work involved at this stage should not cause any inconvenience and would generally be carried out during the term of either the prospecting licence or mining lease. However, usually the formalities for the latter which take a considerable time cannot reach finality before the feasibility of the project is established. In determining the layout of the plant there are various approaches which need to be made to local bodies and Government Departments to ensure that any such plant will meet the requirements of these Government and Local Bodies. The various items which come to mind are, in addition to those covered in the Mining Act, those associated with usage of water, polluting areas adjacent to waterways, also such matters as safeguarding areas which are of interest to the National Historic Places Trust and meeting requirements of soil conservation or afforestation. Whilst at this stage all of these matters may not have reached finality, the requirements must at least be known so that these can be assessed in making financial studies on capital and operating costs.

(e) Estimate of Capital Cost.

This follows on from the preliminary design of the layout of the plant and accuracy will depend very largely on the accuracy of the designs and the amount of time which has been possible to spend on these. Normally because finance has not been arranged at this stage, the amount of money available for preliminary designs to bring out is whether or not New Zealanders wish the mining exploration scene in New Zealand to be totally taken over by large overseas companies, or whether they wish to preserve a reasonable opportunity of participation in exploration. I submit that, in view of the present considerable interest in exploration existing in New Zealand, that there is no justification to extend the maximum area to be prospected beyond 10,000 acres bearing in mind that any applicant can apply for as many prospecting licences as he so wishes.

Exploration and mining are risky, but considerable exploration can be done within the financial limits of New Zealand risk capital, as the rewards for success can be great. The opportunity should not be lost by New Zealanders through legislative action to participate effectively in exploration, in the hope of gaining those rewards, so that they can be later converted into a reasonable share in the equity of a large, viable mining operation. It appears to me clear that if a large scale economical ore body of any mineral is found in New Zealand, it is almost certain that the capital required to set up the mining operations that would follow would not be able to be found entirely in New Zealand and that, therefore, overseas capital will necessarily have to be brought into New Zealand at that stage. The exploration licence as set out in the Bill at present so favours overseas interest that I fear that, through these licences, New Zealanders will rapidly find themselves without any worthwhile stake in the future of mineral mining in New Zealand.

MINING LICENCES.

In this connection the Bill provides for one type of licence for mining activities, doing away with the multiformarious types under the 1926 Act. Under Clause 90 of the Bill, returns are to be made by the licensees under mining licences before the 31st January in each and every year in respect of the year ending 31st December. Bearing in mind the New Zealand practise of Christmas holidays, it is suggested that the timing of these requirements be varied to coincide with the financial year commonly adopted, viz, the 31st March, so that reports might be provided by the 30th April as a more practical date. In other aspects, the same lack of appreciation is shown elsewhere in the Act, where dates are specified which are substantially impractic-
EXPLORATION LICENCES.

This is a new concept which is quite foreign to the provisions of the Mining Act 1926 and envisages prospecting rights over very large areas of land up to a maximum of 200 square miles for a term of two years. The interesting aspect of this concept of exploration licence is that it does not require the owner's consent and can be likened to a blanket over the top of all existing mining privileges.

The Bill, I submit, creates a conflict between prospecting licences and exploration licences. prospecting licences are stated under Clause 61 (2) to entitle the holder to the exclusive right to prospect over the area granted. The conflict arises in that an exploration licence incorporates the authority of Clause 44 by virtue of which the holder of an exploration licence is entitled to enter any land. This would imply that the holder of an exploration licence, granted without the consent of the owner, would be entitled to prospect an area already granted to another under a prospecting licence. My view is confirmed, I submit, by Clause 72 of the Bill, which reads as follows:

"Every exploration licence shall be deemed to be granted subject to the condition that the licencee will not interfere in any way with any mining operations or prospecting being carried out under the mining privilege, other than a prospector's right."

If the Bill is not altered to remove exploration licences or to limit their overriding authority, it could cut across the rights and security of the holders of prospecting licences. Worse than this, the favoured few who are granted exploration licences, could invoke the provisions of Clause 38 of the Bill, under which any person may apply in the prescribed manner to the Minister for the taking of any land under Clause 39 of the Bill. On such application being made, the Minister is obliged to call for a report and if from that report it appears that the land contains any mineral in payable quantities, or is of geological interest, he may take the same under the Public Works Act. I submit that this leads to a situation where the large overseas mining company gains a considerable advantage in that only those companies could mount a programme of exploration in the short period of two years to do justice to areas as large as 200 square miles. The point that I would wish to is limited as it will be wasted if the project does not get under way. As these capital costs are based on the preliminary studies an accuracy of ± 10% is usually all that can normally be warranted at this stage and any estimates quoted more accurately than this should be viewed with suspicion.

(F) Feasibility and Profitability as a Mining Operation

Following on the estimate of capital cost of the project preliminary arrangements will be necessary to raise finance for such projects or at least have a clear indication that capital will be forthcoming as the servicing of such capital is one of the largest items in mining operations, and capital cost of plant and equipment being high. At this stage in the profitability care should be taken to include provision for any additional costs which might be incurred in the carrying out of operations in accordance with the various Government Acts and with local authorities requirements. This has been covered further in the concluding sections of this paper.

3. COMMENTS ON PRESENT DAY TRENDS.

(a) Earthmoving Operations.

Whereas in the past mining was generally considered as an underground operation by far the largest proportion of mining these days is by open pit methods, where the materials being considered are of a sand or alluvial nature. The principle factor in bringing about this change has been the ease with which the earthmoving can be carried out using large modern equipment and the relatively low costs of this work. It is most interesting to note on costs, that whereas the construction costs over the period of 1950-1970 in New Zealand have risen at the rate of between 4-5% per annum, that for earthmoving alone, particularly over the first 10-15 years of this period, has remained practically constant. The same applied in most other parts of the world and only in recent years has there been a slow increase. This change in the cost structure naturally has been taken advantage of by mining engineers and has meant that where
as underground operations were usually undertaken.

it is now far more likely that open cast works which

generally disrupt the countryside more, will be under-
taken. This is to be regretted in some respects but

the low cost of earthmoving has also the advantage

that more effort can be economically spent on restoring

land so that it can be made as workable as it was

previously, and in some cases improved upon even to

the extent of creating new facilities such as race tracks,

and lakes for wildlife and recreation.

(b) Environmental Conditions

The heaps of gravel which were the result of alluvial
dredgings particularly in the South Island of New Zea-
land have been commented on by prominent visitors
and when visiting New Zealand Steel's iron sands at
Waikato North Head they have pleaded that New Zea-
land Steel should not do likewise. However, it has
been possible at Waikato North Head due largely to
the type of material we are using and the ease with
which earthmoving equipment can be used, that an
area which previously grew forest can be reinstated
with the planting of marram grass and lupin to grow
forest again and generally speaking on land which is
much more easily traversable than previously.

(c) Afforestation

New Zealand with its evenly spread rain fall can bene-
fit greatly from the fact that our open cast areas can
be planted readily. Particularly in areas where, due
to mining operations tailings are of a sandy nature and
poor from the point of view of growing normal pasture,
they can nevertheless be afforested readily. There
is no reason why this should not be done and by using
New Zealand's natural advantage in growing trees
make any mining operation a two-fold economic pro-
position.

(d) Comparison of Western Australia and New Zealand.

Many of the aspects of mining and environmental
conditions mentioned above do not occur in Australia
and particularly Western Australia. Here there are

justifies mining, it can take many years before
mining operations can effectively commence, during
which time feasibility studies and the design of con-
struction and processing mill may need to be carried
out. It can be fairly said, therefore, that six years
from the time of the original grant of a prospecting
licence to the ultimate proof of an economic ore
body and then to the completion of the establishment
of an actual mining operation ready to commence
mining would prove to be inadequate. This period
should be covered by prospecting licences and only
towards the latter stages when the holder is about
to commence mining should it need to apply for the
necessary mining licence, under which a minimum
royalty and ground rent is payable. Furthermore,
it is often desirable for the holder of a mining licence
to protect his mining area by continuing to hold pros-
pecting rights over surrounding ground even though
prospecting over this area is entirely subservient
in importance to actual mining operations. In order
to preserve the possibility of future ore reserves
extending beyond the area in mind, it is important
that there be provisions for the holder of a mining
licence to hold reasonable surrounding ground
under prospecting licences for as long as the mining
licence is current. The importance of this aspect
can not be over-emphasized, but no provision is
made in the Bill.

The right of renewal provided for in Clause 55 is unduly
onerous in that it provides that the application must be made
not later than seven days after the date of expiry of the licence
and include a statutory declaration of work done and money
expended during the term of the expired licence. The pre-
paration of such a declaration, the completion of it before
a J.P. or a solicitor and the transmission of it to Wellington
by post, make it a practical impossibility to comply with.
It is submitted that no such statutory declaration is either
necessary or warranted as regular reports have to be put
in to the Department of progress of work during the term
of licence, and if further information is necessary from the
date of the last report, then it seems preferable that on
making application for a renewal, the Minister or the Sec-
retary can request such further specified information as
they may reasonably require.
to the flexibility that exists under the present Act. It also contemplates that the applicant will negotiate with the Department before an application is granted as to the programme of work intended, methods of prospecting and expenditure of money, which may suit the large corporate mining enterprise but not suit the smaller company of prospector.

**TERM OF PROSPECTING LICENCES.**

The Mining Act of 1926 provides that mineral prospecting warrants shall be for a term of five years with rights of renewal in priority to the holder; no limit is expressed as to the number of terms that a holder may renew for. Under Clause 55 of the Bill, prospecting licences are to be for a period of only three years with a right of renewal for only one further period of three years and no provision for any further extension. This is consistent with the tenor of the Bill in endeavouring to enforce more intense exploration by the holder of a privilege, but is unrealistic and in many ways again greatly favours the large corporate mining company as against the local prospector. It is submitted that the term of a prospecting licence should initially be for a period of five years with further rights of renewal of three years and the minister should have the power to grant more than one right of renewal; in fact, no limit should be set as to the number of renewals for the following reasons:

1. Some areas are far more difficult to prospect than others by reason of various factors such as access, establishment of camps, the employment of sufficient geologists; also certain areas are snow bound and are totally unworkable for six months of the year. This particularly applies to areas of Westland and the southern part of the South Island, which under the present Mining Act are protected and do not need to be worked for the winter months of the year. This practical aspect of prospecting has been entirely lost in the new Bill.

2. Prospecting can be done by knowledgeable people who are not necessarily qualified as geologists and they, as individuals, should not be unduly penalised if they are carrying out satisfactory work and reporting progress to the Mines Department.

3. After prospecting reveals an economic ore body which vast areas quite uninhabited and without water except where it can be obtained from artesian sources. Consequently the very large mining operations in the West can be undertaken without upsetting the natural environment. Nevertheless the Western Australian Government has seen fit to ensure that any areas into which mining companies move are not only left in good condition but there is an improvement in the environment to ensure that these areas can be permanently inhabited if this is at all possible. In New Zealand, however, we do not have great isolation, natural resources are much more abundant, and we should take even greater steps to ensure conservation and provide adequately for financing this at the time capital and operating costs are being determined for the project. After all, developments in New Zealand even in our most isolated parts are relatively easy of access because of the compact nature of the country and its equitable climate, and these conditions also lower a project's cost.

4. **ADMINISTRATION OF DEVELOPMENTAL PROJECTS**

Mining in New Zealand and Australia comes in the category of a major developmental project and in addition to the technical requirements mentioned above it involves any project organisation in many administrative complexities and the following are some of the aspects which have been of concern to administrators in both these countries.

(a) **Computer Checking of Law Statutes.**

Amongst the many aspects of administration which are complex, one problem in the initial stages which is important, and no doubt has been considered by the Legal Profession, is the need for a readily available system of checking statutes which impinge on mining legislation both those in the Mining Bill but more particularly those throughout the statutes of a number of Government Departments. It would seem that to avoid overlooking any requirement such a computer programme on statutes should be readily available to those embarking on large developmental projects and in particular those concerning mining, so that for any particular project the programme will bring to the
Project Manager's notice the various obligations he has to honour as regards land tenure and in the use of all natural resources.

(b) Western Australia's North West Planning & Co-Ordinating Authority.

At this stage some comments on the administration of Development Projects in Western Australia would be appropriate and the Minister for Industrial Development in Western Australia, the Hon. Charles Court, on his recent visit to New Zealand made many comments on administration. Although these were largely directed to engineers (he was present at the New Zealand Institution of Engineers Conference) they do indicate the need for a co-ordinating Government Department of Development.

In Western Australia a study was made of alternative ways and means of co-ordinating and activating development - especially in the remote and underdeveloped North, and the North West Planning and Co-ordinating Authority was constituted to cope with this.

This Authority has no statutory authority whatsoever, and it is something created by Cabinet direction and therefore has the maximum flexibility. Simply stated, it is a means of bringing together the senior people in all the various Government departments so as to cut a lot of the red tape and try to make sure that everyone knows what is going on as well as achieving the maximum co-ordination.

It is also a valuable means of consultation and co-operation with the big private projects in the North. This Authority has earned a reputation for speed of decision, commonsense in their study of projects, and appreciation of the practical problems of industrial firms as well as a general capacity to see the broader picture that is inseparable from these huge projects.

They must have recognised that the project itself is not the goal, but a means to an end. The ideal end

1. Prospectors right.

This is similar to the old miner's right and is a necessary requirement to prospect over unoccupied Crown land and to apply for an exclusive prospecting licence.

2. Prospecting Licences.

These are simplified into two classes, those of 100 acres or less and those for more than 100 acres up to 10,000 acres. With the smaller area, the applicant has to peg before applying, whereas with the larger one he does not, and with the small area the applicant is entitled to prospect for all minerals, whereas with the larger only those that he specifies with a right to apply for additional minerals. These distinctions tend to preserve the old Mining Act distinctions and do not appear entirely necessary.

There appears to be no reason why the larger area should not be for all minerals and thereby avoiding the necessity to include a large list of minerals on application, as the right granted under such a prospecting privilege is exclusive to prospect over the areas specified. Again, I suggest that there is no need to peg on the smaller area if an adequate description such as complete title references based on existing surveys and deposited plans can be included in the application and the area is not part of a title. If this were done, applicants for the smaller prospecting areas of 100 acres or less would therefore tend to try and follow existing titles and this would assist in the concept of registration as later provided in the Bill. The problems of pegging and then relating it to titles and exact location are not easy.

Under Clause 59 of the Bill it is provided that prospecting licences for the larger areas are granted subject to various conditions as determined by the Minister. It is submitted that other than the general conditions set out in Clause 57 to carry out prospecting operations vigorously and continuously and to conform with certain other terms therein laid out, no specific conditions should be attached to prospecting licences as this will tend to stultify exploration programmes to the level of that laid down by the Minister's advisors, who may or may not be as knowledgeable or as competent as those employed or engaged in the actual exploration for the particular area concerned. This appears to be an undesirable, unnatural condition, contrary
reasonable decentralisation and enable applicants for privileges to ascertain the position of competing applications in the area of interest to them, without the need to travel to Wellington. Most District Commissioners of Crown Lands are situated in the largest town of the area over which they have jurisdiction and are readily accessible within a reasonable distance by car.

6. Insofar as the Commissioner of Crown Lands is required to report on a mining application, e.g. where Crown land is affected, that department is in itself interested in mining applications.

7. The Mines Department should not be charged with the procedural side of the making of applications, but should be concerned with prospecting and mining and free from the burden of processing applications throughout New Zealand. The Mines Department should not only actively support and promote the mining industry in New Zealand, but should appear to do so and should not, therefore, be put in a position of having to adjudicate on applications for mining privileges.

8. A useful distinction might be introduced into this concept by allowing all prospecting applications to be dealt with by District Commissioners of Crown Lands, but all mining applications to be applied for direct to the Minister of Mines in Wellington. The former are applied for in the hope of finding something worthwhile and the prime necessity is to ensure that they do not overlap other claims and are accurately described, whereas the latter are made with knowledge of the existence of an ore body and involve the more technical problems of setting up an actual mining operation which would normally relate to an area which fell within a prospecting privilege already held by the applicant. For these reasons the skills and advice of the Mines Department would be more pertinent to a mining application.

MINING PRIVILEGES UNDER THE BILL.

Mining privileges were varied and many under the 1926 Act, some of them relating back to the particular era of gold mining. The new Bill streamlines these privileges and simplifies them in a desirable way. Under the new Bill, the following privileges are provided for:

should be the betterment of mankind. The big challenge has been to achieve the betterment everyone wants at the price everyone can afford - and this is where the real excitement of development lies.

The Hon. Charles Court, even though himself an accountant and closely associated with economists has stressed the engineering content of administration as being the most important.

Too often the stress on administration is placed first on "money" which is only one of the three "M's" of management, the other two "M's" of management, "men" and "materials" are equally important. Many projects fall down because these two "M's" are made subservient. A great deal of our social and industrial problems result from too great an emphasis on money and on exclusion of the environmental considerations associated with men and materials which of themselves are the real creators of wealth.

Multiplicity of Government Departments in New Zealand.

In a recent statement by New Zealand's Ombudsman Sir Guy Powles, who has, in a different capacity had close association with administration difficulties such as we have encountered in furthering new projects in New Zealand, has been most forthright in pointing out the difficulties of dealing with a multiplicity of Government Departments. Sir Guy speaking on complaints which he has received as Ombudsman said:

"The reasons for most complaints were faults in administration and departmental delays. Delays, however, were a major problem. The time factor rises in geometric proportion to the number of departments involved. If two departments are involved it takes four times as long. If two departments and one board are involved it takes nine times as long, and I've had this happen.""
and ensuring satisfaction in meeting the requirements of these statutory bodies is a major undertaking in itself in addition to the need to get the project under
way.

(d) Parkinson's Third Law

Finally and with some misgivings Parkinson's third law is quoted which states "Perfection of planned layout is achieved only by institutions on the point of collapse". Like the two earlier laws of Prof. Parkinson this one is somewhat cynical but it does also have some considerable truth in it. During a period of exciting discovery or progress such as we have now in Australia and New Zealand it is difficult to reach perfection in planning. This is not meant to condone any incompetence or lack of efficiency (the misgivings mentioned above) and as an engineer this would be inexcusable but perfection for its own sake will achieve nothing and could in fact prevent a project getting underway by the mere complexity involved in trying to meet this perfection.

5. CONCLUSION

In the planning stages if it is not always possible to make detailed provision for environmental conditions and it is suggested that monetary provision as a percentage of capital and operating costs be made, so that when the time comes to make any adjustment in the later planning stages this could be done without upsetting the assessment of profitability. It is only natural that those responsible for the development project would be against doing more than had been provided for when it is no longer possible to alter financing arrangements. But a method such as the above where the monetary provision was made as a normal percentage is usually all that is necessary. With acceptance of this at the time of initiation of the project there need no longer be a source of frustration to those carrying out the project and the goodwill of the community is assured.

only obtainable with ministerial approval. The real change therefore is that the Mines Department under the Bill is charged with administering the procedural side of applications as well as acting as the final arbiter. The Bill does, however, provide for the preservation of the following concepts:

1. The right of the earlier applicant to priority in the grant of the application.
2. The right of objection to a magistrate on questions of law.
3. The right of objection to the Minister on questions other than of law which may be remitted to a magistrate for hearing before decision by the Minister if he sees fit to do so.

The most valid arguments against the concept of centralisation contained in the Bill are the following:

1. The prospector cannot find out what the position is in the area of interest without personally going to Wellington.
2. The centralisation concept heavily favours the overseas mining company or large mining company with an office in Wellington.
3. Apart from those able to apply direct in Wellington, their applications would normally be mailed.
4. The most important aspect of mining privileges under the new Bill is the need to describe the land affected accurately, bearing in mind the provision for registration under the Land Transfer Act of the mining privilege after it is granted. This contemplates searching titles which can only be done in the various district land registries and not in Wellington. Decentralisation into districts, similar to those of the District Land Registry offices is therefore desirable.
5. The Mines Department itself will rely on the service of the District Commissioners of Crown Lands to obtain the necessary searches and details of description of land applied for. It follows, therefore that insofar as the District Commissioners of Crown Land, who at present act as wardens under the present Act in respect of land that is outside a mining district, could at least from the point of view of clearly defining land descriptions, best deal with applications for mining privileges. This would give

62