



Submission to:

Productivity Commission

'Inquiry into the non-financial barriers to mineral and energy resource exploration"

ASSOCIATION OF MINING AND EXPLORATION COMPANIES (AMEC)
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Introduction

Thank you for the opportunity to provide input to the Productivity Commission's "Inquiry on 'non -financial' barriers to mineral and energy resource exploration".

The Association of Mining and Exploration Companies (AMEC) is the peak national industry body for mineral exploration and mining companies within Australia. The membership of AMEC comprises over 360 explorers, emerging miners and the companies servicing them.

AMEC's strategic objective is to secure an environment that provides clarity and certainty for mineral exploration and mining in Australia in a commercially, politically, socially and environmentally responsible manner.

In preparing this submission AMEC has met with the Productivity Commission on two occasions in the presence of a number of AMEC members who provided real life case studies to the Commissioners. This submission summarises those case studies into a number of areas which create key barriers to current and future exploration in Australia, and where appropriate, provides the specifics of the cases as examples. However, due to the commercial sensitivity of these cases, some which are still 'live', AMEC is not able to identify the companies involved. AMEC also has a long standing position in advocating for approvals reform across all jurisdictions (and approvals reform across the entire mine cycle) and this submission draws upon this position and the information and data collected in its support.

In this submission the terms 'exploration', 'mineral exploration', 'exploration industry' all refer to minerals exploration only and does not include any reference to petroleum, oil, gas or coal seam gas.

An exploration licence provides the holder with exclusive rights to explore for specific minerals within a designated area, with special conditions attached to the licence. The exploration licence does not permit mining, nor does it guarantee a mining lease will be granted. An often cited figure is that only 1 in 100 exploration programs find a potential economic resource and 1 in 1000 programs discover a globally significant resource.

The range, number and complexity of approvals processes are constantly increasing, resulting in unnecessary delays, additional costs and ultimately taxpayer revenue foregone. Prior to minerals exploration and mining activities commencing a large number of local authority, state / territory government and federal government approvals are required, for such issues as land access, cultural heritage, native title, environmental, water and planning matters. Streamlining approvals processes is not about reducing environmental protection in anyway, but doing things better with the available resources, that is, improving the productivity of the regulatory system.

The adage that 'time is money' is nowhere more pronounced than in the exploration industry. Explorers by their very nature do not have production revenue – they rely upon equity raised from the market or private sources to fund their activities. Therefore every expense reduces their equity and when they run out of equity the exploration stops until another tranche of funding can be raised. While some of the barriers discussed below have direct costs involved, for example aboriginal heritage surveys, all of them have a time component. Explorers have small windows of opportunity to actually explore or undertake preliminary studies. If delays in any of the areas discussed below result in them missing their window, they are often forced to wait until the same time the following year. This is in addition to issues such as inclement weather conditions, drill rig equipment and crew availability and the remote location of the tenement. In the meantime they will be covering their fixed business costs from their equity, in turn reducing the amount of money they can put into exploration activities.

Mr Barry Carbon¹, Chairman of Bauxite Resources, in correspondence to AMEC writes:

'It takes about 1.5 million dollars a month for a new developer to stay active and afloat while they seek approvals for a medium-sized new project.

It takes about five years in most of our jurisdictions to get approval processes to the stage of starting the project.

You do the simple mathematics over 60 months. If you have less than 90 million dollars when you start your proposal, you will go broke or you will sell your company or your control, probably overseas.'

As a nation with significant minerals endowment, it is imperative that Australia maintains and enhances its competitive edge and market share over other emerging and multiplying jurisdictions in order to take immediate advantage of the significant social and economic dividends. This means having an inventory of mineral resources from which to develop the mines of tomorrow. This inventory is filled through exploration, particularly greenfields exploration.

The genesis for this Productivity Commission inquiry was the `Policy Transition Group Report to the Australian Government – Minerals and Petroleum'.

During its Minerals Resource Rent Tax (MRRT) deliberations the Policy Transition Group recognised there were a number of barriers to exploration in Australia and recommended that:

- 'The Council of Australian Governments (COAG), through the Ministerial Council on Mineral and Petroleum Resources (MCMPR), should review its current work program aimed at improving the regulatory environment faced by explorers with a view to energising outcomes from this work.
- As part of this effort the Australian Government should commission the Productivity Commission to undertake an examination of regulatory barriers faced by exploration companies and present its report to the COAG for action by Australian jurisdictions.²

The Fraser Institute³ is a respected research organisation based in Canada. Its annual Survey of Mining Companies monitors perceptions about jurisdictions attractiveness as a place to invest in exploration. Unfortunately the survey shows that Australia has slipped in the rankings from 8 out of 45 jurisdictions in 2001/02 to 30 out of 96 in 2012/13. This means Australia is seen as a less attractive place to invest in exploration now than it was 12 years ago.

The Metals Economic Group annual World Exploration Trends⁴ shows that Australia's share of non-ferrous exploration expenditure has declined from 20% in 1996 to 12% in 2011. The implications of this decline are summarised in The World Bank Report *"Mining Royalties -*"

A Global Study of Their Impact on Investors, Government, and Civil Society"5

'One of the dangers for public policy is that the decline may take some years. The large economic rent associated with mining in the short run (the quasi-rent, other rent, and pure rent) means that higher tax rates on mining almost inevitably raise government revenues at first. The negative effects on mine output, and in turn revenues, may take years to become apparent; likewise, they take many years to reverse. Fortunately, there is an earlier indicator that mining taxes are too

4 www.metalseconomics.com/sites/default/files/uploads/PDFs/meg_wetbrochure2013.pdf

¹ In addition to being Chair of Bauxite Resources Mr. Barry Carbon has held the positions of Chair and Chief Executive of the WA Environmental Protection Authority, Chief Executive of the Commonwealth EPA and concurrently Supervising Scientist for the Alligator River Region and inaugural Chair of the Standing Committee for the National Environment Protection Council, Director General for the Queensland EPA and Parks and Wildlife, CEO for the New Zealand Ministry for the Environment and Secretary for Environment for New Zealand.

² Policy Transition Group - Page 7 and repeated on page 17

³ Fraser Institute, 2001/02 to 2012/13 Survey Results.

⁵ http://siteresources.worldbank.org/INTOGMC/Resources/336099-1156955107170/miningroyaltiespublication.pdf

onerous. A decline in exploration expenditures relative to other countries often provides the first indication that a country is losing its competitiveness in attracting investment into its mineral sector' (emphasis added).

If this trend continues, Australia has only one choice for its exploration industry and that is to provide more support to the exploration sector in order to return Australia to its previous standing. In the main, most initiatives are likely to be financial in nature, thus not within the terms of reference of the Productivity Commission's Inquiry. Therefore, for the purposes of this inquiry, Australia must increase efficiency and productivity by removing as many regulatory barriers as possible for mineral exploration. The challenge is to get decision and policy makers to look beyond the three year electoral cycle and understand the long-term bottlenecks and barriers and have them remove them.

State of the Industry

Australia's mining industry is no longer as cost competitive as it once was with exploration, development and production costs continuing to rise dramatically. Port Jackson Partners released a report⁶ in late 2012 which clearly identified that Australia was now far less competitive than its international counterparts.

Amongst other matters, it found that:

- 'Capital costs are rising more rapidly here than in the rest of the world, with iron ore projects now 30% more expensive than the global average and thermal coal 66% more expensive,⁷
- By 2020, Australian projects beyond the Pilbara are forecast to have higher delivered costs than benchmark Brazilian producers and will cost up to 75% more to build than projects in West Africa,⁸
- 'Nearly half of Australia's production is now in the most expensive 25% of mines globally. Even in iron ore we have lost our operating cost advantage for all but established Pilbara producers, 9
- '75% of all projects included in the BREE major projects list remain uncommitted.'10

Small mining and junior mineral exploration companies are currently experiencing increased cost pressures due to a range of additional operating expenses; taxes and levies that will bite further into limited working capital and cash flows. Many of these increases are outside the control of the individual company, but still require internal cost saving adjustments.

The industry is also facing an environment where discoveries are reducing, getting deeper and harder to find¹¹, and equity investment is being lost to competitive offshore projects¹².

An analysis of the ASX Small Resources Index (Figure 1) – which captures resource / mining companies with market capitalisation between \$100 million to \$2 billion - clearly shows that this market has collapsed by at least 45% since the start of 2011.

⁸ Ibid – page 10

⁶ Regaining competitive edge report, Port Jackson Partners, September 2012

⁷ Ibid - page 10

⁹ Ibid – page 25

¹⁰ Ibid – page 50

^{11 &#}x27;Where are Australia's mines of tomorrow?', September 2012 University of Western Australia – page 8

¹² Ibid - page 1 states 'The trend for Australian based companies to devote an increasing proportion of their budget to explore abroad has continued with about half of their funds now being diverted from domestic exploration to jurisdictions such as Africa, Canada and Latin America'

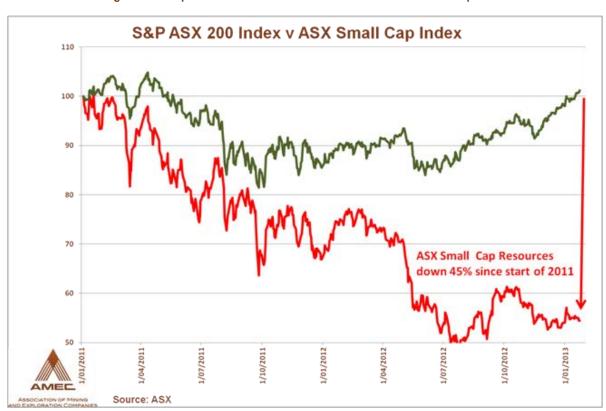


Figure 1 - Comparison of the S&P ASX 200 Index and the ASX Small Cap Index

Regular face to face confidential discussions with AMEC members and review of the ASX database confirms that many companies under the \$100million market capitalisation level (the majority of which are junior exploration companies) have also experienced share prices falling by more than 50% over the past two years.

Research by the University of Western Australia (UWA) in September 2012 states 'The challenge for industry is the fact that our existing mines have a median life expectancy of 7-18 years and that it takes on average, 7 years to convert a new discovery into an operating mine. Consequently, to be sustainable in the longer term, the mining industry needs to continuously build up a strong pipeline of projects at or close to the development stage. This, in turn, is only possible on the basis of an active and successful exploration sector feeding the pipeline. ¹³

The UWA research clearly enforces the need for Government and the mining industry to be planning and preparing for future growth and productivity by increasing greenfields mineral exploration.

Unfortunately, as a proportion of total metres drilled, the trend line of Australia's greenfields share of exploration has fallen from around 45% to just over 30% since 2003, as described in Figure 2.

¹³ Ibid - page 18

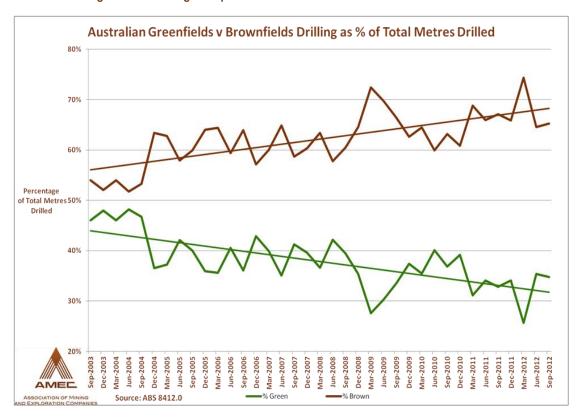


Figure 2 - Percentage comparison of Greenfields and Brownfields metres drilled

All of these signs should be of extreme concern for governments, noting taxation and royalty revenue streams, jobs, social and economic dividends will be threatened and probably reduced unless further public policy reform action is implemented.

Quality versus Quantity of Exploration

The accumulated impact of each of these issues to the quantity of exploration conducted is significant. Evidence strongly suggests that it is impacting on Australia's credibility and attractiveness as a place to invest.

The underlying theme in AMEC's submission is that regulatory barriers through time and cost reduce the quantity of minerals exploration undertaken in Australia. If governments can reduce these barriers Australia would be able to increase efficiency and productivity and ultimately the amount of exploration.

The quality of the exploration and the geoscience underpinning Australia's exploration industry is sound. The Fraser Institute asks in their survey whether the quality of a jurisdictions geological database either encourages or deters investment. For every jurisdiction in Australia the 90% of the respondents answered 'encourages investment' or 'not a deterrent to investment'.

In reading this submission, the reader should consider that every issue raised is a potential time delay that is a barrier to exploration.

Financial Barriers to Exploration in Australia

A significant factor in the decline in Australia's standing in global exploration has unfortunately been omitted from the terms of reference of this inquiry - financial barriers. While there are many factors that impact exploration are outside of the control of Australian governments, such as the state of the global equity markets, their fiscal policies of taxes and royalties is one area that has a significant impact on investor's decisions to invest in Australia. Furthermore, in the main, support to increase exploration activity

is likely to be financial in nature, and thus not within the terms of reference of the Productivity Commission's Inquiry.

AMEC considers there are a number of financial-based policy solutions that can assist the exploration industry. AMEC is a strong advocate of the Minerals Exploration Tax Credit (METC). The METC model recommended by AMEC is a combination of the very successful Canadian Flow Through Shares (FTS) model, Australia's franking system and a tax credit.

The model proposes that accumulated losses incurred by Australian companies with 'no assessable' income can voluntarily pass those losses, by way of the tax credit, through to their Australian resident shareholders at the company tax rate by using a system that is based on Australia's well known franking system.

Australian shareholders would therefore receive a benefit after the eligible expenditure has been incurred, rather than the current situation where the losses are 'trapped' in the company for many years or never used at all.

The model will promote direct investment in on-the-ground greenfield exploration drilling programs, i.e. metres drilled, because participating companies will be able to voluntarily pass a percentage of 'eligible exploration expenditure' to a specific class of shareholders through the METC.

Key Barriers to Exploration in Australia

Land Access

Negotiation with Landholders and the Power of Veto

There is a clear distinction between mineral rights and landholder rights. It is often enshrined in legislation that minerals below the surface belong to the Crown and the right to explore and mine those minerals is granted by the Crown. Landholder rights relate to the use of the surface of the land. However access to those mineral rights often means infringing on the rights of the landholder. Therefore negotiation between the owner of the mineral rights and the landholder rights takes place such that the infringement on the rights is appropriately compensated. This is a land access agreement. However in some jurisdictions landholders have the power of veto to prevent mineral rights holders from entering their property. This is a significant barrier to exploration.

As exploration companies are required to advise landowners of their intention to apply for an exploration licence, some Australian jurisdictions have developed a standard template to assist landowners and explorers to negotiate land access arrangements. The jurisdictions are also not consistent with their land access regimes. AMEC's understanding from its members is that the differing regimes create confusion and unrealistic expectations amongst the landholders they deal with.

Specifically, in Queensland the government has developed a Land Access Code and associated templates, in New South Wales a Deed of Entry document has been drafted, and in South Australia a Deed of Access to the Woomera Protected Area has been released. These documents not only meet notification requirements, but also encourage negotiation.

These negotiations are further complicated by the nature of the landowner as they vary significantly and include:

- Freehold landowners
- Pastoral lease holders
- Aboriginal groups
- Crown land and land managed by government agencies for conservation purposes, and defence land
- Farmers

Individuals, companies etc

Each of these groups of landowners creates different challenges, some of which could result in objections, dispute and a court hearing (such as the Wardens Court in WA or Land Court in Queensland). Unfortunately, these objections result in a delay of the granting process. There do not appear to be set timeframes for these objections to be resolved and this must be addressed.

In recognition of competing land interests in all Australian jurisdictions the Standing Council on Energy and Resources (SCER) has recommended that its Land Access Working Group fully develop and implement a minerals and petroleum sector Multiple Land Use Framework by no later than 2013. This process has commenced.

Local Councils

AMEC has seen a number of local councils exert influence in determining access to land through planning laws. One of the ways that councils create a barrier is by breaking up land into smaller allotments, meaning explorers are required to negotiate access with multiple landholders.

In WA, the Mining Act has primacy, however, local governments are having an impact through their planning and zoning powers — although local government involvement is generally much less at the exploration stage compared to the production stage. Nonetheless, there needs to be an awareness of the possible negation of the ability to exploit an economic resource in the future by Local Government planning. Notwithstanding the Mining Act's primacy, the perception that local councils give through their planning schemes to their local community's means the 'social licence to operate' is in jeopardy and that land access conflicts can arise.

Exploration Licensing

Each State has differing exploration licence terminology and length of validity as shown by Table 1 below. All jurisdictions have 'drop-off' provisions where after the expiry of the licence the company is forced to drop a percentage of its tenements unless they are being actively explored in which case exemptions can be sought. In this way governments promote turnover of tenements and provide opportunities for other explorers.

Table 1 - Comparison of jurisdiction exploration licences

State	Maximum Length of Exploration Tenure	Description	Issuing Department
Western Australia	6 years	Exploration Licence	Mines and Petroleum
Queensland	5 years	Exploration Permit	Natural Resources and Mining
New South Wales	5 years	Exploration Licence	Division of Minerals and Energy
South Australia	5 years	Exploration Licence	Department for Manufacturing, Innovation, Trade, Resources and Energy (DMITRE)
Northern Territory	6 years	Exploration Licence	Department of Mines and Energy

AMEC recognises that the timeframes are a compromise between the need for turnover by the government and the need for certainty for the explorer. However, there needs to be flexibility in the system to allow extensions of tenements under extenuating circumstances and unforeseen events.

Licensing Timelines

In granting these licences, using the Western Australian licensing process as an example, there are several stages that must be complied before the Department of Mines and Petroleum issues an exploration licence before the proponent can start any exploration activities.

The process in WA involves:

- 1. Applicants must **advertise** their application and advise relevant landholders etc within a 35 day objection period
- After the objection period, the Mining Registrar recommends the Minister grants or refuses and application based on applicants meeting their objections. If there are any objections to licence application, then it is listed before a Warden (a Stipendiary Magistrate). There is no time limit for this process (see below).
- 3. Licence application is then submitted to the expedited procedure under the **Native Title** Act; minimum four month process
- 4. The exploration licence is then granted, but the holder must meet requirements of the following stages before exploration can commence
- 5. The holder must carry out on-site **heritage surveys** with claimants groups. There is no time limit for this process.

The WA DMP has a target timeframe of 13 weeks or 65 business days for approving an exploration licence. In NSW this process takes 16 weeks or 90 days. Based on information provided by the WA Department of Mines and Petroleum, in 1993 it took an average of 205 days to grant an exploration licence. The timeframe peaked at 952 days in 2001. For the period 1994-2013 it took on average 542 days to grant an exploration licence. It should be noted that the timelines were significantly increased by the introduction of the Native Title Act 1993.

Despite the reduction in time, AMEC is of the view that this timeframe is far too long, and is a significant barrier to investment in exploration activities. These timelines must be addressed to provide greater certainty and must shortened wherever possible

Tenement Auctions

AMEC strongly opposes the cash-bidding auction systems for exploration tenements. AMEC views the introduction of cash auctions as discriminatory and counterproductive to the development of the exploration industry.

AMEC considers that this process simply allows the companies with the access to the largest amount of cash to warehouse tenements. In AMEC's view the proposed cash-bidding tenure process enshrines a system where those companies with the largest cash reserves win the most prospective tenure, not the company most likely to develop any discovery.

Mid-tier miners and explorers have a greater economic imperative to develop projects quickly (for reasons such as cash-flow, shareholder returns, share price growth) and in doing so provide a more immediate royalty income. The need for mid-tier companies to develop their projects within funding constraints and operate efficiently aligns with Australia's goal to provide long-term benefits to the state.

By imposing cash-bidding components to tenure application, governments make cash reserves the overwhelming major factor in determining tender winners as opposed to proponent capacity and capability. AMEC draws this conclusion assuming all exploration activities will be indistinguishable between proponents, given the known reserves. In effect governments are placing the most prospective ground with companies that have little or no incentive to develop the project.

As part of a worldwide suite of exploration permits, multinational miners have a commercial interest to progress those tenements that offer the best commercial return for shareholders. Cash-bidding for coal exploration permits in Queensland simply allows the largest companies to add to their stockpile of permits, removing the ability of mid-tier miners to contest these permits.

Exploration Expenditure Conditions

AMEC accepts the broad policy principle of 'use it or lose it'. To give effect to this policy AMEC accepts that regulators place conditions on the exploration licence to ensure that the jurisdiction is getting the best return from its mineral assets. Other than drop-off provisions, in the main these conditions relate to exploration activity measured by expenditure and 'holes in the ground', which comes from the proponent's licence application. The proponent's application is in effect a notice of intent they will carry out a substantial amount of exploration on its tenement.

However, the nature of exploration means it is not uncommon for a proponents exploration program to remain incomplete and therefore in breach of the conditions. This is particularly the case in the first year where the proponent is often waiting for approvals beyond its direct control. In addition, companies are paying rental charges and fees for their exploration tenements when they possibly are not able to access the land for exploration.

With approvals secured, there are a number of valid reasons for which proponents will not complete an exploration program that will meet the conditions imposed, including weather, access to workforce and equipment and potentially a change of plans due to geological results.

Regardless of the issue for not meeting the conditions, AMEC recommends that the regulatory agencies take a 'strict versus substantial compliance' approach to enforcement. That is, when assessing whether the proponent has met the conditions, it should be whether a substantial or material level of activity occurred on the tenement. AMEC argues that if the application is a letter of intent, then a substantial or material level of activity meets the conditions, even if the plan was not carried out as described in the application.

For example, the application may state that it is the proponent's goal is to spend \$4 million and drill 25 holes. However, due to unforeseen circumstances the proponent spends \$4 million and only drills 10 holes. While in strict breach of the conditions, AMEC argues they have substantially met them. In this case there would be no penalty.

Appeals and Dispute Resolution

All jurisdictions have a mechanism by which appeals and dispute resolutions are resolved. However, the process has become bogged down in litigious and vexatious cases, predominately from unrelated and ill informed third parties who use and abuse the system to advance agenda's unrelated to the actual administration of exploration licences. For companies involved in these cases, appeals and disputes are time and resource consuming and act as an effective barrier for exploration. In many cases, this is clearly the objective of the unrelated and ill informed third parties.

In WA for example, the Wardens Court is a court to resolve administration issues associated with the Mining Act and is not a place for issues relating to the environmental policy.

A good case study that AMEC considers highlights the issue is that of Darling Range South P/L v Ferrell & ors [2012] WAMW 12¹⁴. In this case the Warden has recommended the Minister for Mines and Petroleum not grant the exploration licence based on the premise that exploration will inevitably lead to mining and that mining will be incompatible with the environmental values contained within the exploration lease. The Minister has yet to make his decision adding further delays and uncertainty to the company's operations. Notwithstanding the evidence of the appellants was taken as expert, the case highlights how the Warden's Court has been hijacked by unrelated and ill informed third parties.

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¹⁴ www.dmp.wa.gov.au/wardens court/2012WAMW12.pdf

A further case study is that of Poelina v Blackfin [2012] WAWM 34¹⁵. In this case Dr Anne Poelina lodged objections on the basis that the applications, if granted will have a deleterious effect on the environment, social and traditional way of life of the Nyikina people and Aboriginal heritage. Following the granting of a 110 day extension to lodge the objection, [2011] WAMW 20, Dr Poelina sought orders that the hearing of the objections [sic] be stayed until the Minister for Environment made a determination as to whether or not the Duchess Paradise Project be implemented.

The Warden stayed the hearing of the applications and objections pending the decision of the Minister for Environment. The stay is subject to Blackfin and Dr Poelina 'advancing' the grounds of objection that do not relate to environmental issues (ie those grounds that relate to social, cultural and heritage).

In this case the Warden appears not to fully understand the environmental approval process and conflate the hearing of the applications/objections of mining tenure with the environmental impact assessment process, and potentially create a case law precedent.

In NSW, where there is no power of veto, parties are forced into arbitration if landholders will not sign an access agreement. The matter is considered by the Land and Environment Court should the arbitration result be challenged. However there is no timeframe for this process. AMEC members have reported that a full arbitration process takes at least 12 months and this was with a settlement before going to court. A court decision could extend the process out to 18 months or more. AMEC points out that the arbitration process in the NSW Mining Act was established prior to mandatory written access agreements when there was a Mining Warden, not the Land and Environment Court. The entire system has not moved with the fundamental change to written agreements. AMEC considers the introduction of prescribed time frames for all steps in the arbitration process would be a very useful reform for industry.

Native Title and Aboriginal Heritage

AMEC acknowledges a genuine connection between Aboriginal people and large areas of Australian land and sea. Aboriginal heritage is acknowledged and respected in terms of both the significance to the local people and communities; and the value to Australia's national cultural heritage.

However, the recoverable resources within Australian land and sea are the property of the Crown and their extraction and commercial realisation should therefore be managed by government for the maximum benefit of all Australians.

Where a native title determination has been made, AMEC acknowledges the Traditional Owners and conditions detailed in the native title determination.

Similarly, AMEC acknowledges the legal rights afforded to Native Title claimants and advocates for mutually respectful, expedient consultations and negotiations to enable reasonable access to the Crown's resources while title is being determined.

Negotiations between minerals exploration and mining companies and Traditional Owners and native title claimants should be carried out in good faith. Minerals exploration and mining companies may offer some form of benefit should the companies gain any commercial value from the resources contained within the claimed area.

The minerals exploration and mining sector requires clarity and certainty in the approvals process in order to enhance the investment and decision making processes. Clarity is required on the relevant consultation processes where there is more than one group of registered claimants or other stakeholders in the tenement area. Certainty can be delivered through a renewed priority focus on resolving outstanding native title claims.

¹⁵ www.dmp.wa.gov.au/wardens_court/2012WAMW34.pdf

Native Title Determinations

Native Title is defined as the rights and interests that are possessed under the traditional laws and customs of Aboriginal people, and that are recognised by common law. In some areas, native title has been deemed to be extinguished, such as freehold land, but in other areas native title may continue to be active.

Industry proponents and government approval agencies therefore need to ascertain whether the proposed tenement area is the subject of native title.

The Federal Court determines the validity of a claim for native title by hearing evidence presented in a native title claim by the claimants and makes a decision based on the evidence provided. The claim must meet all 12 conditions contained in a registration test in order to be entered on the Register of Native Title Claims.

A registered claim provides a native title party certain procedural rights, such as the 'right to negotiate' with others (such as any associated compensation from mining and exploration companies) in relation to the grant of an exploration licence or mining lease on an area covered by the native title claim.

If native title is determined, the determined holder of native title may be granted 'exclusive' or 'non exclusive' native title rights and interests.

Not all land in Australia is subject to native title.

Despite the fact that the *Native Title Act 1993* (Cth) is nearly 20 years old, AMEC understands there are still approximately 450 native claims throughout Australia requiring resolution. Various attempts have been made by governments to streamline the process, however more work needs to be done to reduce the current timeframes and subsequent costly delays.

Under the Native Title Act (NTA), the Federal Court may refer native title matters to the National Native Title Tribunal (NNTT) for mediation. The NNTT assists parties to reach agreements in relation to the existence of native title and related issues. These agreements then become the subject of determinations or other orders made by the Federal Court.

When an exploration company makes application for a licence they are normally asked to nominate a preferred native title process, such as an expedited procedure, right to negotiate, private indigenous land use agreement (ILUA), a State ILUA, or a combination thereof.

Each of these options requires close analysis and consideration by the exploration company prior to deciding which option to take as significant delays can occur. The process is further complicated where native title has still not been determined, a native title claim not yet submitted or registered, and where there may be several native title stakeholder groups with an interest in the licence area.

Costly and time consuming cultural heritage processes

Given the major proportion of minerals exploration and mining activity occurs in Western Australia, it is relevant to note the existence of the WA Aboriginal Heritage Act 1972 and that it explicitly provides for sacred sites as well as for the preservation of Aboriginal historical and archaeological sites that will continue to be valued by future generations.

The Act is the State's principal legislation enabling protection of Aboriginal cultural heritage. A breach of the Act will result in financial penalty and reputational damage. For company Directors this is a significant governance issue and over time the industry has attempted to fill its heritage obligations by commissioning heritage surveys.

A heritage survey industry has grown from this requirement for company due diligence and is now a significant 'industry' in its own right. Issues of supply and demand of qualified persons plus unrealistic expectations on the exploration industry's capacity to pay have meant the industry sustains a large number of anthropologists, archeologists and native title representatives. In combination they are costing the industry \$100 millions of dollars annually – money not being spent on the ground exploring.

Under the current scheme, a landowner (such as an exploration or mining company) is expected to lodge consultants' reports detailing site surveys (heritage surveys) to ensure compliance with the Act by protecting Aboriginal sites.

Following assessment of a Notice to use land for a purpose (Section 18 notice), the Minister for Indigenous Affairs makes a decision whether to consent to the landowner using the land after considering advice or recommendations from the Aboriginal Cultural Materials Committee (ACMC).

AMEC members have consistently expressed deep concern with the time delays and increasing costs in undertaking a heritage survey, and in progressing Section 18 consents. Some progress has been made in respect of the latter through the administrative processes of the ACMC, however, the high costs that are incurred by industry in obtaining a heritage survey continue unabated.

Based on member feedback the average cost of a heritage survey has increased from \$11,000 per day in 2010 to the current approximate cost of \$15,000 per day. There have also been examples where the daily cost of undertaking the survey has exceeded \$20,000. There is limited opportunity for exploration companies to negotiate these costs. AMEC has reproduced an actual fee schedule from a Standard Heritage Agreement for conducting a heritage survey in the North West of Australia.

Category	Qty	Description	Rate	Amount
1. Advisors				
1a.		Anthropologist, ethno- biographical, environmental, archaeological consultants.	ТВА	
Land Council Representatives				
2a.		Professional Fees		\$2,550
		Operational and Logistical Fees		\$7,500
Work Program Survey Team				
3a.	8	Filed Inspection Work Clearance Team Owners/Cultural Advisers/Senior Cultural Advisors	\$500-\$1000pp (number of senior cultural advisers is capped at 4 per survey)	\$4,000 - \$8,000
Camping and Supplies				
4a.		Accommodation		\$2,000
b.		Food		\$750
C.		Equipment/Out of Pocket expenses/incidentals		\$350
5. Vehicles				
5a.		Vehicle Costs		\$1,950
First Sub-Total				\$19,100 - \$23,100 + cat 1
6. Admin Fee				
6a		Administration fee 20% first sub-total		\$2,865 - \$4,620
7. Heritage Impact Assessment costs				
7a.		Cost of meeting with TO's varies according to context. Note Heritage Protection Agreement clause 41.1 cost included		\$5,000 - \$20,000
7b.		Airfares and air charter costs dependent on context		
Second Sub Total				Not more than \$22,865 - \$26,865 + air travel and expenses

The costs shown are in addition to those paid to anthropologists/archaeologists, consultants, lawyers; and a lesser percentage to native title representative bodies and Traditional Owners themselves. It is has been estimated that only 10-15% of all monies paid by companies for heritage purposes are received by the Traditional Owners. One member company reported that of a four million dollar exploration program they budgeted \$500,000 for heritage surveys and agreements. This represented approximately \$30,000 per day.

This is a significant issue that must be addressed as the finalisation and execution of heritage surveys is being used as a lever for excessive and an increasing number of financial demands on industry.

Despite the fact that these payments are the subject of contractual Heritage Agreements between two parties, AMEC has previously suggested that an agreed 'capped fee schedule' should be implemented to avoid extortionate and unreasonable fees being charged by representatives of native title groups or Traditional Owners.

There appears to be a need for the nature and extent of these payments to be benchmarked and where possible standardised Australia wide.

In Queensland the Traditional Owner groups have grown to appreciate that exploration is a short term transient activity and that it is highly unlikely that a mine (with a potential stream of royalties) will be the end result. Their response to this has been to insist that all operations, despite already receiving prior approval, are monitored by the local Aboriginal people to ensure no heritage values are impacted. This monitoring is paid for by the companies. Companies have borne these costs but find them unpalatable given that a drilling rig, once set up, is stationary and may not move for days at a time. And yet the Aboriginal monitors are paid when it has already been established there is no risk to heritage values.

Environmental Approvals

Timelines, Timing and Financial Costs

In all jurisdictions, following the granting of an exploration licence, the holder must apply for an environmental approval of their proposed exploration activities. This approval is called different things in different states. A summary is provided in the below table:

Table 2 - Comparison of Jurisdiction Exploration Environmental Approvals				
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State	Description	Length of Environmental Approval	Issuing Department	Reporting
Western Australia	Program of Works (PoW)	2 years (increased from 1 year on 18 December 2012)	Mines and Petroleum	Annual
Queensland	Environmental Authority (EA)	In perpetuity	Environment and Heritage Protection	Annual
New South Wales	Surface Disturbance Notice (SDN) or, Referral of Environment Factors (REF)	If low level risk, until the end of the exploration licence, if higher risk, for a period of up to two years.	Division of Minerals and Energy	Annual
South Australia	Declaration of Environmental Factors (DEF)	Not clear from AMEC research ¹⁶	Department for Manufacturing, Innovation, Trade, Resources and Energy (DMITRE)	Six-monthly Summary Report, Annual Technical Report
Northern Territory	Mining Management Plan (MMP)	1 year	Department of Mines and Energy	Annual

In granting the approvals the regulating authorities all have differing timelines. The WA Department of Mines and Petroleum has a target of approving 80% of PoW's within 30 business days. In NSW explorers are provided notice of the outcomes of the assessment within 4 weeks of submission. In Queensland there is no published timeline.

This extensive process can also involve other approvals agencies at both the state and federal levels subject to the location of the proposed activity and the potential impact on cultural heritage and environmental values of significance.

Each of these stages is a very time consuming and costly impediment to exploration, depending upon issues that arise during each stage of the approvals process. Collectively, they represent a long, arduous and robust approvals process involving several statutes, regulations, policies, systems, procedures,

¹⁶ AMEC was unable to find the length of environmental approvals in South Australia, which potentially highlights issues of transparency and accountability

guidelines, forms, measurement and reporting requirements. One company reported to AMEC that from designing an exploration program (in this case drilling program) and gaining additional environmental approval, to actually getting a hole in the ground can take (on average) 6 to 9 months. This was in addition to the other licensing and approval processes.

Various environment protection agencies assess to varying degrees mineral, petroleum and geothermal exploration applications at state, territory and federal levels.

In Western Australia alone, there are five government agencies that have a role in the regulation of mining and exploration activities, namely:

- Department of Mines and Petroleum Mining Act
- Department of Environment and Conservation Conservation and Land Management Act, Contaminated Sites Act, Wildlife Conservation Act
- Department of Water Rights in Water and Irrigation Act
- Environmental Protection Authority
- Federal Department of Sustainability, Environment, Water, Population and Communities Environmental Protection and Biodiversity Conservation Act

Regulation of environmental issues associated with exploration and mining are managed through various sections under Mining legislation and Regulations by use of tenement conditions and guidelines.

The length of the validity of the approvals can also be a barrier to exploration. Longer timeframes are preferred by industry as they allow more flexibility for managing the exploration programs. Short timeframes means that, should the explorer miss their window of opportunity, they have to go back to the regulatory agency for an extension of time or apply for a new approval, which costs time and resources. Ideally environmental approvals should have the same timeframe validity as the exploration licence.

WA has recently increased the validity of its PoW's from one year to two years. Not only does this remove a barrier to exploration, but it is expected to reduce the workload on the Department who in effect have halved the number of applications they would expect to see in a year. This should allow for the reallocation of resources to other priority areas. AMEC considers there is the option for further extension which would be in line with other states.

Uranium Approvals

The process to gain a licence to explore for uranium in Western Australia provides a good case study of the length and complexity of the approvals process. The WA DMP has produced a Gantt chart¹⁷ of the process. It shows that the minimum time it would take to get an approval to explore for uranium would be 358 days. The Gantt chart goes further and follows the whole process through to the final approval of a uranium mine – in total 1135 days from exploration to production.

Costs of Preparing Environmental Approval Applications for Assessment

Australian mining legislation governing exploration has historically only been concerned with the orderly allocation of land for exploration. However as societal demands have changed, there is now more emphasis placed on the environmental impacts of exploration. Environmental impacts are managed through conditions on licences which are based upon the environmental approval application made by the explorer.

Depending on the location of the exploration program the level of detail and the process of obtaining the information required for environmental approval can be extensive. In some cases these can include longitudinal environmental studies which can only be conducted at certain times of the year. Information provided to AMEC by its environmental consultant members shows that the cost for a basic flora and fauna

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¹⁷ www.dmp.wa.gov.au/documents/000464.rachel.maiden.pdf

survey in an area of low biodiversity starts at around \$20,000 and increases with increasing levels of biodiversity. This includes 3-4 days of field surveys, 2-3 days of data analysis and 2-3 days of report writing. If the survey is being conducted within the conservation estate where the level of detail required is considerably higher, then the costs subsequently increase.

To illustrate the extensiveness of the size of the documentation required (although for development projects, not exploration) the following graph was prepared by the Chairman of the WA EPA. It shows the number of pages of environmental impact statements has multiplied significantly over the last decade.

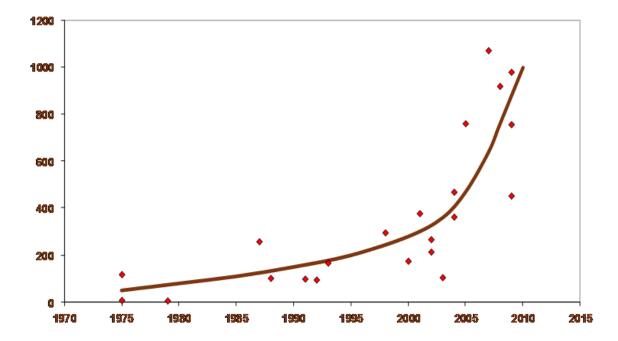


Figure 3 - Size of Environmental Impact Statements

Notwithstanding this, the real issue lies with the level of detail requested, and then provided and the level of environmental risk posed by the exploration activity. Exploration is transient in nature and following rehabilitation the disturbed ground is returned back to the environment. However regulating agencies tend to take an overly conservative approach to managing risk which manifests itself as micro-managing exploration activities at considerable costs to explorers and regulatory agencies. AMEC is a strong advocate of risk-based outcome focused assessments discussed below.

Risk Based Outcomes Focused Assessments

'Risk-based' means the existence of systematised decision making frameworks and procedures which are able to prioritise regulatory activities and deploy resources against the **real risks** that regulated firms pose to the regulator's policy objectives. 'Outcomes focused' means a regulatory system that focuses on high-level principles and a requirement to achieve the best outcomes for the environment, business and the community. It should enable business to use appropriate methods of achieving outcomes which suit their business, their type of operation and their workplace without having to follow prescriptive rules.

Accessing the Conservation Estate

While modern technology can predict where minerals may occur, the quality of those mineral deposits can only be ascertained by exploration drilling. They can occur anywhere, including inside Australia's conservation estate. However, just because this is the case should not mean that exploration should be restricted or banned. Australia's overarching goal should be to document its entire mineral resource inventory. Even where discoveries are not viable at current commodity prices, they may become so if prices rise or mining techniques improve that lower the costs of extraction. These currently sub-economic

deposits therefore have public information value in terms of future development potential. These deposits may also represent mineralisation systems and point to the possibility of finding additional deposits in the same area.

Restricted access to the conservation estate leaves significant gaps in our knowledge of our mineral resources. AMEC is aware of an example where a series of aerial surveys excluded a conservation estate resulting in a blank spot in the data set. Aerial surveys are a low impact exploration activity.

Access to the conservation estate is strictly regulated. In the case of WA, a conservation management plan (CMP) also needs to be submitted to the Department of Environment and Conservation in addition to the DMP's PoW and must be approved before the land can be explored. The CMP requires far more detail than the PoW as outlined below by the WA Department of Environment and Conservation Guidelines for Conservation Management Plans¹⁸.

These lands have been set aside or are proposed to be set aside by the state for best management of the state's wealth of conservation values. Mineral exploration needs to consider community expectations regarding impacts on conservation lands. They include lands with the following tenures:

- national parks
- nature reserves
- conservation parks
- state forests
- timber reserves
- CALM Act section 5(1)(g) and 5(1)(h) reserves
- proposed reserves.

Access into these lands for exploration activities is likely to require additional planning and research in order to minimise impacts on the values that the areas were set aside for. Rehabilitation of any remnant impacts will be essential in order to avoid the exploration activities leaving a heritage of problems requiring later remediation at state cost. While it is acknowledged that if exploration is successful and a mine is later approved and the consequential impacts accepted by the state, the preliminary exploration activities should leave no long-lasting evidence.

In AMEC's view CMP's are a duplication of regulatory effort for which the extra environmental benefit is marginal. They should be removed as a condition of PoW's.

Heritage and Conservation Estate Declarations

Jurisdiction Creep

Of major concern is the growing expansion of federal involvement in environmental matters without changes to the underlying legislation. Leaving aside the proposed amendments relevant to large coal mining and CSG activities, the Commonwealth only has the power to regulate matters of national environmental significance under the EPBC Act.

National heritage is one of these matters and has been used to bring a whole region within the scope of the EPBC Act (i.e. the West Kimberley). During the listing process for the West Kimberley, strong submissions were put to the Commonwealth by AMEC and others pointing out that use of the national heritage regime to facilitate landscape scale assessment in this way is inappropriate.

www.dec.wa.gov.au%2Fpublications%2Fdoc_download%2F5172-guidelines-for-conservation-management-plans-relating-to-mineral-exploration-on-lands-managed-by-dec.html&ei=Ud5GUYrcNofqmAXar4G4Dg&usg=AFQjCNHdFh6kTdd-27-h1sW3dCRzBXfzmw&sig2=IEauOcAeDF4tT9DOXq2MdQ&bvm=bv.43828540,d.dGY

The West Kimberley is not uniformly pristine or "iconic". AMEC however recognises that the West Kimberley is potentially a region with natural, Indigenous and historic heritage values. AMEC considers that the concept adopted by the government to date is a radical departure from established processes for listing specific, rigorously evaluated "places of outstanding heritage value to the nation".

AMEC also considers the EPBC Act process does not contemplate that a "place" comprises such a vast, diverse, loosely interconnected region. In taking such a broad-brush approach, the Commonwealth has made serious errors in ascribing "iconic" heritage values to large tracts of land in the region without any apparent scientific rigor.

The impact for the industry is duplication in existing regulation of environmental and heritage values, increasing regulatory constraints on resource and infrastructure development in the region without any associated net heritage, environmental, economic or social benefit. The listing of the Kimberley has set a precedent that could be replicated elsewhere with the same impacts.

Federal Environment Protection and Biodiversity Conservation approvals

Significant impact

Although Environment Protection and Biodiversity Conservation (EPBC) Act approvals mainly relate to mining activities, there is a requirement within the Act that 'an action (such as exploration or mining) will require the approval of the Minister if an action has, will have, or is likely to have, a significant impact on a matter of national environmental significance'.

In turn, 'significant impact' is defined as 'an impact which is important, notable, or of consequence, having regard to its context or intensity. Whether or not an action is likely to have a significant impact depends upon the sensitivity, value, and quality of the environment which is impacted, and upon the intensity, duration, magnitude and geographic extent of the impacts'.

The Matters of National Environmental Significance guidelines issued by the Australian government state that 'you should consider all of these factors when determining whether an action is likely to have a significant impact on matters of national environmental significance'.

AMEC members continue to express concern for the lack of clarity and certainty surrounding the definition of 'significant impact' under the EPBC Act, and therefore consider that it should be reviewed and amended, particularly in the context of low impact exploration, advanced exploration and mining activities.

Duplication between State and Federal Approvals

AMEC has raised the issue of duplication of federal and state approvals as a barrier to not only exploration but mining development more broadly. Duplication is not only contained in multiple approvals, but the submission of the same information to more than one agency.

Historically, land-based mineral exploration activities are not often referred for approval under the EPBC Act. Only 18 land-based mineral exploration projects (to 2010-11) have been referred since the EPBC Act came into force. All have been referred in the last 5 years.

However, a recent example highlights the duplication and potential for further duplication. The Tropicana Gold project is a joint venture between AngloGold Ashanti Australia Limited (AngloGold) and Independence Group NL in the Great Victoria Desert bioregion of Western Australia. The Tropicana Gold project referred itself under the EPBC Act because it had potential significant impacts on three rare animal species. This was deemed to be the case and the project underwent an assessment. The Approval Conditions¹⁹ have two areas of duplication. The first is Condition Six referring to the rehabilitation plan. Under a WA Department of Mines and Petroleum PoW, one of the conditions applied is that rehabilitation must occur

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www.environment.gov.au/epbc/notices/assessments/2008/4463/2008-4463-decision-notice.pdf and subsequent variation

within six months of the activity ending. AMEC argues that Condition Six is a duplication of this requirement.

However, the level of duplication is succinctly summarised in the footnote to the conditions which states:

To avoid doubt, if a condition of State (WA) approval held by the person taking the action requires a plan or report relating the EPBC-listed species, the proponent may simultaneously meet the relevant requirements of these conditions by submitting a single plan or report to both governments.

In AMEC's view this is blatant duplication of regulatory effort that could have been dealt with by the state agency.

Environmental Offsets

AMEC has been clear in its desire to see the environmental impact assessments (including the determination of a 'significant impact'), avoidance and mitigation and environmental offsets policies exist under a quantitative risk-based assessment framework.

The current assessment of environmental impacts has been in the main, in AMEC's opinion, a process too open to subjectivity. Science should underpin protection of all eight matters of national environmental significance and therefore AMEC sees no reason why this cannot be used to support the development of a quantitative risk-based assessment framework, including in the application of offsets.

AMEC is cognisant that the use of environmental offsets 'as a last resort' is a developing policy area. However, AMEC has and continues to express concern at the manner in which environmental offsets have been applied to date. Furthermore AMEC is concerned with the plethora of offset policies guidelines being produced by agencies and understands others may be in development. Each jurisdiction has their own version, with different terms, definitions, approaches and methodologies.

Environmental offsets are not often applied to impacts resulting from exploration, but AMEC is concerned that as they appear to be applied as a matter of course as part of the approval process for all impacts; it is likely they could be applied to exploration. This would be completely inappropriate given their role is to offset significant residual impacts.

Approvals Efficiency

Clarity and Certainty

In order to plan their exploration programs, explorers need clarity and certainty from the regulatory system. In this sense by 'clarity', AMEC means the government has articulated its policy position and desired outcome publically and in a manner which is not ambiguous and is easy to understand. By 'certainty' AMEC means the policy will remain in force for a timeframe that is relevant and appropriate to business planning and investment decisions.

For example, that the Native Title system won't change while they are negotiating heritage agreements or they know when they will receive their approval.

Regulatory Agency Structures

As an aspirational goal AMEC would like to see a one-stop-shop approvals system for exploration and that this should lie within the relevant agency for the regulation of minerals exploration and mining. In AMEC's view these agencies have the expertise to properly determine the risk of the activity on the environment.

Streamlining Approvals Processes

AMEC has made a number of approvals related submissions and representations to various state/territory and federal governments over the past few years in an attempt to streamline the approvals process and improve efficiency and productivity.

AMEC considers that where duplications have been identified strategies should be implemented to eliminate any unnecessary overlapping and decision making processes.

Efficiencies can also be driven by all agencies through:

- 1. Reviewing and promoting a reduction in timelines (including the 'stop the clock' mechanism),
- 2. Developing and implementing clear escalation policies,
- 3. Parallel processing,
- 4. Delegation of responsibilities,
- 5. Development of an approvals related training package
- 6. Risk based outcomes focused assessment
- 7. Reporting and design of performance targets
- 8. Wider adoption of information communication technology (Online Approvals Systems)
- 9. Integration of geographic and geophysical information databases

Timelines

AMEC is of the view that the regulatory timelines for approvals are not reflective of the low level of complexity and risk that exploration poses. Furthermore little justification and evidence is provided by agencies for the setting of timelines. The variety (from published timelines to no timelines at all) of approval timelines across the jurisdictions suggests that efficiencies can be made with a requisite reduction in timelines.

Stop-the-clock

When measuring their approvals performance, regulatory agencies exclude the time taken by processes outside their control. When an application process is outside of its control (i.e. with the proponent or another agency), the time taken during this process is not included when calculating the agency's approval performance. In effect the "clock is stopped". The clock is started again when the regulatory agency receives other agency advice or proponent information.

AMEC considers that while the primary regulatory agency is the one that accepts the application, approval timelines should be whole-of-government. That is there should be no stop-the-clock mechanism at all when the application is referred to other agencies.

Escalation Policies

The ability of a proponent to escalate an assessment or approval decision in a timely and orderly manner from the assessing officer to higher levels of the agency is a key component of an efficient approvals system. The experience of AMEC members has been one of frustration at the seemingly ad hoc nature and slow manner in which regulatory agencies approach a proponent's appeal for a review of the administrative decision.

Parallel Processing

'Parallel processing' means that multiple approval processes can occur simultaneously within and across government agencies. Where there is no legislative or regulatory link between one process and another, one approval should not be a prerequisite for another.

Delegation of Responsibilities

Under a risk based outcomes focused approvals system, AMEC considers that lower level officers are capable of approving low risk exploration activities. However, AMEC is aware that in some agencies delegated authority is utilised at a minimal level, and in some cases possibly enshrined in legislation. AMEC's view is that delegated approval will reduce costs (because lower level officers are capable of approvals) and minimise bottlenecks (therefore reducing timeframes) because there will be a greater number of possible delegated officers, so that the approval is not reliant solely on one or two officers.

Approval Officer Training

In conjunction with the previous point, AMEC believes that assessing and delegated officers should have approvals related training, focusing on administrative decision making. This will ensure their decisions are consistent, open and transparent and that the right decisions are made at the right time.

Reporting and Design of Performance Targets

Government agencies have internally developed their own key performance indicators and targets. However, the methodology and design of these monitoring programs is not communicated to industry.

AMEC considers that current reporting of performance targets is overly simplified and that the key performance indicators (KPI's) have no real commercial meaning or context. AMEC is of the view that the design of key performance indicators and targets varies between agencies and often the way performance is reported can disguise delays in processing applications.

Opening the design and methodology of these to industry scrutiny is a key component of improving the Governments openness, transparency, accountability and increased efficiency.

Wider Adoption of Information Communication Technology

AMEC considers online application lodgement and electronic tracking systems are important and necessary tools to improve the efficiency, effectiveness, openness, transparency, and accountability of the approvals process.

In the past, after a proponent submitted a development application, they have had few mechanisms of knowing at what stage of the approvals system the application was. This uncertainty translated into the inability of the proponent to properly plan the development.

However, the advances in information communication technology (ICT), including the internet, should be fully utilised and provide proponents with real-time tracking of the progress of their application. The use of ICT in the approvals process will improve the transparency and accountability of decision making of the approval agencies.

AMEC acknowledges that many jurisdictions have or are moving towards integrated electronic lodgement and tracking system for applications. Notwithstanding this, AMEC is concerned that it will take a number of years before these systems are universally implemented across government because of resource constraints and difficulties arising from the different ICT and information technology platform systems in agencies.

Contemporary ICT has a number of benefits that combined make them useful tools for proponents and government throughout the approvals process, including:

- reducing paper use,
- provision of real-time information,
- improved proponent and regulator relations,
- increased agency productivity,
- improved agency demand responses, and
- improved collaboration, integration and sharing of information between agencies

Integration of geographic and geophysical information databases

Governments should have an emphasis on integrating the geographic information system (GIS) databases held by their various agencies. Integrated databases, such as environment, heritage, and water, are extremely valuable tools in the approvals process because they allow proponents to understand better environmental and cultural heritage sites surrounding their development. Further integration of GIS databases would greatly improve its value to industry. For example, inclusion of environmental offsets locations would ensure greater consistency in their application.