Productivity Commission Study

Major Project Development Assessment Process

Submission

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Background

I have been an environmental consultant (Principal Environmental Scientist) with the national environmental and engineering consulting firm **pitt&sherry** since 1998. I am based in the Hobart office.

Previously I was statutory Director of Environmental Management in the Tasmanian Department of Environment and Land Management and a member Tasmanian Environmental Management and Pollution Control Board, which is now the Tasmanian Environment Protection Authority.

As Director of Environmental Management, I was Tasmania's principal statutory decision maker under the State's *Environmental Management and Pollution Control Act 1994*.

I also had 2 years experience as Regional Manager (North Coast) with the NSW Environment Protection Authority and prior to that as a regulator of the marine farming industry in Tasmania's Department of Sea Fisheries.

As a consultant, I have worked in various capacities on a number of Tasmanian Projects of State Significance, being Basslink, the Gunns Pulp Mill and Lauderdale Quay and numerous other large projects. I am actively working on several major mining projects proposed for the northwest region of Tasmania, known as the Tarkine.

I therefore have direct experience both as a regulator and as a consultant in major project assessments in Tasmania, a State well known for its highly charged environmental and conservation political environment.

This submission specifically relates to my Tasmanian experience but would have relevance to major projects anywhere in Australia.

The consequences of controversy

Tasmania has a sad history of controversy and division on large contentious projects.

Investors are rapidly losing faith in Tasmania's ability to deal with their proposals in a robust and confident manner. Potentially significant investors are becoming hesitant to consider Tasmania because of the high risk of new development proposals becoming mired in an extended and debilitating public debate.

We urgently need to improve the way we manage environmental assessments.

Something that strikes us strongly in the work that we do on environmental approvals is that the community's understanding of environmental management is very poor. Several decades of polarised debate on conservation issues in Tasmania has led the community to equate environmental management with conservation. This is fundamentally wrong.

Conservation is largely black and white. Either something is conserved or it is not. Either a project goes ahead or it does not.

Environmental management, by contrast, is complex and nuanced. Provided that a project has no environmental fatal flaws, environmental management decisions should not be about *whether* a project can go ahead but rather about *how* it should go ahead.   The question of *whether* a project

should go ahead is usually more relevantly a matter for planning and social considerations. It's rare that an environmental issue is so severe as to be unresolvable. However, because the environmental approval process is a very immediate and public decision making process it provides a vehicle for environmental arguments to be used as surrogates for what really are social (often political and philosophical) or planning (often amenity) objections.

Because of the long history of conservation debates in Tasmania, the distinction between conservation and environmental management is largely lost on the general community and the public is therefore highly vulnerable to scare campaigns from conservation groups. Simplistic demands to reject a project can easily override complex considerations, particularly when project opponents introduce fear into the equation (such as 'toxic discharge' or 'wilderness destruction').

This is the social environment within which major environmental decisions are made. Although decision making processes are arguably designed to shield decision makers from this social environment, so as to ensure that they make objective decisions, the reality is that no decision maker can be completely shielded and decision making is inevitably influenced by it. This is particularly so at the Commonwealth level because the decision maker is, by statutory design, a politician.

It is the social and, by extension, political environment that can be the cause of so much frustration for anyone trying to move a development from concept to reality.

Through decades of often bitter experience, Tasmanians are very aware that social and political debates can quickly dominate the public arena of environmental decision making, particularly for developments based on the use of natural resources, such as forestry, fishing and mining.

Basslink, Oceanport, the Bell Bay Pulp Mill and Lauderdale Quay are examples of major projects that have felt the brunt of public hostility. Basslink survived but the other three failed. The ongoing debate about mining in the Tarkine is another and current example of the development versus conservation debate.

The social environment is an emotional one. Like it or not, emotions are at the core of how humans think. A multitude of studies have demonstrated this[1]. Emotional thinking is what we do by default. We may like to see ourselves as naturally being rational but that's wishful thinking. We're naturally not rational. Ideas – good, bad, beautiful and ugly – regularly sweep through society like a virus, passed on from one person to another with only the briefest of thought and analysis.

This is the challenge facing developers on contentious environmental projects. Unfortunately, it doesn't really matter what the technical facts are. People will make up their minds using emotional gut-feel, consistent with their peer group, fuelled by a confirmation bias which ignores technical information and sticks to preconceived views. Of all the thousands of pages of technical information that developers must prepare for the environmental assessment process, the majority of people will only read one page (if any) – the front cover, the one that says what the development is and where it is going to be, and most will make their minds up immediately on that alone.

A development means change and change can be scary, particularly if it's pushed front and centre into the media by groups with a philosophical and/or political agenda. Our statutory assessment and approval processes are designed to largely remove emotion from environmental decision making and replace it with systematic, reasoned and rational processes and they do this reasonably well within their narrow boundaries, for non-contentious developments. However, once the emotional debate about a proposed development has reached a critical mass, fear campaigns and gut-feel opposition to developments grow unabated, with virtually complete disregard for the statutory assessment processes.

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[1] See, for example, Cordelia Fine (2007) *A Mind of Its Own: How Your Brain Distorts and Deceives* (Icon Books); Daniel Gardner (2008) *The Science of Fear: Why We Fear the Things We Should Not - and Put Ourselves in Great Danger* (Dutton); and Jonah Lehrer (2009) *The Decisive Moment: How the Brain Makes Up Its Mind* (Text Publishing).

Indeed, the statutory processes often become just as much victims of the confirmation bias of opponents as any other contrary view does. Opponents denigrate the statutory processes and decision makers as being incompetent or biased or superficial or inadequate. Opponents often say that they have no confidence in the abilities of decisions makers. They don't finish their sentence, however. What they really mean is that they have no confidence in the ability of decision makers to deliver the decision that opponents want, namely a project refusal.

This issue has become increasingly exacerbated in recent times by the growth of social media campaigns against projects. Social media can be used by project opponents to rapidly magnify the emotional debate, amplifying all its associated problems and superficialities. Social media doesn't always lead to a more informed debate but often leads to louder protests, which do not translate into better decision making.

Statutory decision makers usually respond to this criticism and to media and political pressure by requiring developers to undertake more and more studies and produce more and more supporting technical information, and they then impose more and more approval conditions. Decisions on contentious environmental projects are now often announced with a headline count of the number of pages of the assessment documentation and of the number of conditions imposed, using the physical weight of the assessment documents and the number of approval conditions as a measure of the assessment's rigour.

Developers become bound up in more and more green tape, which is more a consequence of appeasing opponents than it is of protecting the environment. Even with all this green tape, however, to strident opponents more assessment studies just become more hundreds of pages sitting behind the front cover of the document that they are even less likely to read.

The obvious question that arises from all this is: can society do things better and, if so, how?

Suggestions for improvements

I suggest that improvements could be made – for developers, the community, and decision makers alike – by introducing a staged approval process. Under this idea, the big picture issues would be dealt with up-front, to examine potential fatal flaws of a project first.

A staged approval process could be introduced to both the State and Commonwealth jurisdictions, ideally as a combined process. Note that the suggested staging is not equivalent to the Commonwealth's current controlled action approach. Under the controlled action approach, the initial decision is whether a project needs to be assessed (or not). Under the suggested staged approach, the initial decision is whether the project can proceed (or not).

A staged approval process would allow developers to focus their initial efforts on the go-no-go issues, with the more detailed examination of less significant matters to follow only if and when they pass through that development acceptability gate. Currently, all issues, large and small, need to be examined together before that gate is opened. This means that developers face high expenditure on environmental management plans before they know whether they have a project to manage or not.

Our current system is out of sync with the business investment cycle. With ever increasing information demands on developers, approval costs are becoming a significant burden on projects early in their life cycle. Not surprisingly, potential investors become nervous about committing significant funds to a project before they know whether or not a project will be allowed to proceed.

For investors, the absence of a definitive approval is equivalent to the absence of a definitive resource or market. While investors will fund approval investigations just as they will fund resource and market investigations, there will come a point where continued investment in a project without a known approval will become problematic, just as it would without a known resource or market.

1. Staged assessments – "Development Acceptability Assessments"

Under our present environmental assessment systems - to my knowledge this principle applies in all jurisdictions in Australia - the decision as to whether a project *may* proceed (ie. project approval) is made at the same time as the decision about *how* it must proceed (ie. permit conditions), and this decision occurs right at the end of the assessment process.

This means that public debate about whether a project can proceed is protracted – several months even for a small project to several years for a large project.

It comes as no surprise that the community becomes increasingly polarised and developers increasingly frustrated over protracted assessment periods.

Because of the immediate emotional reaction that most people have to a development, the mass of technical information that developers are required to prepare has little relevance to for-or-against viewpoints on a development. Requiring developers to prepare ever larger documents serves no purpose if the documents are not really read in the first instance – if someone won't read a large document they're even more unlikely to read a massive one.

It would be much clearer and more efficient for all parties – developers and opponents alike – if the detailed technical assessment of a proposal was preceded by an initial high level issues assessment phase.

The way our approval systems work at present, if someone has a visceral, emotional opposition to a proposed development they must mount a political campaign against it outside the formal approval process and/or they must use the tools available to them within the formal process, as surrogates for their real concerns, to try and achieve their objective.

For example, someone may oppose a proposed mine for aesthetic or emotional reasons – perhaps they don't like mining in any form or they may have a particular attraction to an area and don't want mines there. Our approval system is not set up to deal with these higher level aesthetic and emotional concerns.

In theory, these concerns should have been dealt with by the overarching planning schemes that zone land for particular uses. If the community's planning scheme allows mining, for example, that should be the end of the question about whether a mine can be approved or not – the only decision should be the particular environmental impacts of a specific development and how they will be managed. However, this is not how things work in reality. It is impossible for a planning scheme to anticipate the specifics of an individual development.

To try and stop a development through the formal environmental approval process, opponents therefore use Trojan horse technical concerns as surrogates for aesthetic or philosophical concerns. For example, while their real concern might be aesthetic they are effectively forced to use, say, water quality (or, in a recent mining case, even car parking) as a surrogate, trying to find a flaw in the development's water quality management systems so as to stop the development being approved. In response to this pressure, the decision maker is likely to require more information from the proponent about, say, water quality when this is not actually the real point of contention. The opponents are not really trying to achieve a more refined water management system, they're trying to stop the project outright for other reasons.

In response to this pressure, the demands put on developers by decision makers for more and more technical documentation get progressively ratcheted up. Environmental assessments become more time consuming and more expensive and environmental impact documents become more bloated but they become no more relevant to the real concerns of opponents.

My suggestion is that a preliminary assessment stage is placed between the overarching planning schemes and the detailed technical assessments. It could be called something like a *Development*

Acceptability Assessment.   It would be a fatal flaws analysis of a proposed development, allowing the high level pros and cons of a development to be tested and decided upon.   High level social, economic and environmental benefits and costs could be examined in this assessment to determine the triple bottom line acceptability of the project to the community.

The decision about whether a project can proceed would then be separated from the how, and the *whether* decision could be made at the beginning of the assessment process, with the *how* decision occurring at the end.

Under this concept, a developer would initially submit a Notice of Intent (NOI) (or its equivalent in different jurisdictions) to the decision maker. The NOI would have to describe the project and the key potential planning, environmental and social issues and impacts that it raises. The decision maker would examine this document and if necessary require the developer to revise it to include any other such issues that have not been addressed.

The NOI would not be expected to describe the intricate detail of how environmental impacts might be managed but rather to describe what those potential planning, environmental and social impacts could be and to demonstrate that there is no in-principle reason why potential impacts could not be mitigated to a level of acceptability.

Once the decision maker was satisfied that the NOI addresses all foreseeable potential significant impacts, the NOI would be advertised for public submissions.

The NOI process would allow proponents to present their case at a high level as to why the development should be allowed to proceed and opponents could present their case as to why not. Massive amounts of technical information would not be required to support either cases, only high level arguments and information.

At the end of the public comment period the decision maker would undertake a DAA of the project to determine whether there is any insurmountable planning, environmental or social matter that causes the project to be fatally flawed, referencing relevant legislation, planning schemes, environmental guidelines and social and economic considerations.

Examples of fatal flaws are that the project is inherently unsuited to its proposed location or that even with state of the art engineering the project could not achieve environmental quality objectives because of the sensitivity of the receiving environment or that the project presents an unavoidable unacceptable social impact.

After considering public submissions and holding round table discussions (see suggestion two below), the decision maker would make a DAA decision to either refuse the project or approve it. This decision would be appealable by the proponent and by persons who lodged a submission on the NOI.

If a project is approved and survives any appeal, the developer and the public know that the project can proceed and only the *how* questions (ie. permit conditions) remain to be dealt with. Conversely, if the project is refused, and the refusal is confirmed by any appeal, that would be the end of it.

This go-no-go decision could be reached without developers or opponents having to present huge amounts of technical information that is irrelevant to the critical go-no-go issues.

For an approved project, the decision maker would then issue their environmental management guidelines and the developer would then proceed to undertake all the necessary investigations and design work to prepare their Environmental Management Plan (EMP).

If a development gets through the fatal flaws gate, the developer can then proceed to spend their hundreds of thousands of dollars (or more) of assessment money on preparing technical documentation genuinely relevant to environment protection rather than on surrogate issues. Opponents would still be able to make technical submissions as part of this detailed assessment process but the go-no-go decision would be finished with and the arguments would only be *how* a project must proceed not *whether* it can proceed.

Once prepared, the EMP would itself be advertised for public submissions and the decision maker would consider these when determining permit conditions. If, but only if, new fatal flaws emerge through the EMP the decision maker could revisit the original project approval and remake that decision (possibly rejecting the project) and there would then be a fresh round of appeal rights as before.

For a project that has survived the DAA and its appeal process to be approved, the permit conditions set by the decision maker would be subject to appeal by the proponent and by persons who lodged a submission but any appeal would be limited to the permit conditions and could not revisit the original project approval.

Separating the *whether* and *how* decisions in this manner will not in any way remove the rights of people to object to a proposal. Indeed, it will allow opponents to have their objections heard and considered very early, rather than both proponents and opponents being subjected to months or even years of bitter anxiety.

The suggestion for a preliminary development acceptability assessment would allow emotional considerations to be heard through the environmental decision making framework. Opponents may still choose to run political and media campaigns if the development acceptability assessment allows a development to proceed but they could no longer reasonably claim that their concerns have not been heard or considered. Developers would have the certainty of knowing very early in the process that their development will be approved or refused, in contrast to the current situation where this is not known until the very end, by which time hundreds of thousands of dollars (or more) will have already been spent.

It is risky and therefore difficult for company boards to find and commit to high levels of investment funds in a project that has no certainty of proceeding.

Some people may say that this risk is not really an issue. After all, the majority of developments that get through to the end of our statutory approval processes do get approved. My recollection of a Tasmanian survey done a decade or so ago is that only something like 5% of development assessments are refused by decision makers and the figure may be about the same today. However, this is a very incomplete statistic.

What those sorts of surveys don't count are the large numbers of proposed developments that don't even make it to the formal process due to the frustrations and enormous costs confronting prospective developers. Nor do those surveys measure the frustrations and costs that successful proponents have to carry to get all the way through to receive a decision, nor do they measure the frustration and cost of the increasing number of approval conditions that get imposed by decision makers to appease development opponents.

During the assessment process, proponents are to a large extent held hostage by the need to not get the decision maker offside. If decision makers are presenting what otherwise would be unreasonable information demands so as to appease project opponents, proponents have little choice but to accede to these demands. To do otherwise would be to get the decision maker offside and put the approval at risk.

Tasmania has a well-deserved reputation amongst potential investors for being actively hostile to development due to the disproportionate attention that the community, politicians and the media give to philosophically driven opponents of development. Unfortunately, protest marches and negative media campaigns are a stand-out success story of Tasmania's approval system and developers are being worn down and worn out. Other States have had similar experiences, probably to not the same proportional extent as Tasmania, but no doubt developers and investors are similarly being impacted in those jurisdictions too.

The suggested Development Acceptability Assessment process would be much more consistent with the investment cycle of developments because the critical go-no-go decisions by company boards and approval authorities would be made around the same time, at the start of the cycle. Under the current system, these decisions are made at opposite ends of the approval timeline - company boards must commit substantial funds up-front before they even know whether they have a live project but they don't find out whether their project can proceed until the end of the process, when all that money has been spent, possibly to no avail.

If the commercial and statutory go-no-go decisions were both made at the start of the assessment process rather than at separate ends, a company's commitment of funds wouldn't be so speculative and risky, and after that threshold decision had been settled they would be able to finance detailed design and hence more operationally relevant studies and environmental management plans.

There would be no less protection of the environment because once through the fatal flaws gate developers will still need to spend their money on environmental impact assessment and mitigation but this spending could be focussed on things that matter.   With more detailed design, more detailed impact management measures can be prepared for the approval authority to assess and approval conditions could therefore be more focussed.   This approach is similar to that of building approvals, where planning approval is given on a high level concept design and then developers can progress to the much more detailed building design knowing that they are allowed to construct a building in that location.

Environment protection would therefore actually improve as a consequence of the suggested approach, not decrease.

2. Round table discussions

Public hearings are a feature of major project assessment processes.

However, public hearings are formal, legalistic, adversarial and intimidating to both proponents and opponents. They act to further polarise the debate when what is needed is a bringing together not a separation of minds.

The public hearing approach, whereby decision makers adopt a disconnected judicial approach, is not producing good outcomes and is really an abdication of responsibility by decision makers who should be engaging with participants, not sitting above them.

Lawyers should not be involved in the round table discussions.   The discussions should focus on identifying areas of difference by testing the technical merit of opposing views, seeking additional information and then distilling differences down to their fundamentals, so that a decision can ultimately be made on a fully informed merit basis.

Even without hearings, the underlying statutory processes suffer from the same defects. All too often, proponents feel as if they are on trial, defending themselves against a charge of conspiracy to destroy the environment. They must prepare and present evidence to prove their innocence under a reverse onus of proof and then be cross examined on it in excruciating detail from all quarters, as if the question before the court was one of guilt or innocence. The real questions, however, are nothing of the sort. The real questions are scientific questions, not legal evidentiary ones, and their proper answers are not simplistic innocence/guilt, yes/no, decisions but rather complex management prescriptions.

Scientific questions cannot be decided through stilted adversarial evidence. They must be examined through free ranging discussions between experts, culminating in management prescriptions that protect the environment. Our statutory approval processes not only make no provision for these sorts of discussions (to my knowledge), they effectively prevent them from occurring. The statutory public consultation processes that we currently have split proponents and opponents either side of

the public advertising of the proponent's environmental documentation. If they are brought together it's only through adversarial hearings.

On one side of the advertising, the proponent works feverously to prepare the documentation and then on the other side opponents work feverously to destroy it. Throughout this they remain kept apart like two frustrated tennis players forced to hit a ball to each other over the top of a high brick wall.

It is left to proponents to attempt to engage with opponents outside the formal system and, indeed, decision makers like to encourage this. However, I think that this is an abdication of responsibility by decisions makers. It is they who are charged with the responsibility of arriving at the best decision for the environment and to do so they should implement the best decision making process, and not expect the proponent to undertake what they themselves should be doing.

To answer the real scientific questions of a development proposal, I think that decision makers should convene *public discussions* rather than *public hearings*. The difference – *hearing* versus *discussion* – is much more than just a name. Instead of opposing sides alternatively presenting evidence through lawyers to a panel of passive environmental judges, and then cross-examining witnesses like in a criminal court, the decision makers should convene informal round-table discussions, without lawyers.

At a round table discussion, all view points could be freely discussed, concerns could be raised and responded to, information gaps could be identified, commonalities agreed and differences delineated. The convenor could test the technical validity of those differences by asking questions and prompting further discussions. The opposing parties could also ask questions of each other. If more information is required from the developer to justify their position, that would be requested. If more information is required from an opponent to justify their opposition, that would be requested.

A series of discussion sessions might be required, but eventually all the various views would be distilled down to their fundamentals, allowing the decision maker to then move into the subsequent decision making process knowing that everything that should have been put on the table has been. The developer and opponents would also know that they have been heard to exhaustion and that the ultimate decision will have been fully informed, even if they might not like the outcome.

3. Decision maker public profile

Regrettably, the public often has little knowledge of, or confidence in, the bureaucratic decision makers. Decision makers are often seen as a faceless government committee, with no connection with the public.

I think that decision makers should more proactively educate and engage with the community to explain how decisions are made, and in active cases being made, and how the environment is protected.

To this end, decision makers should develop a much higher public profile and have an expressed intent to overtly respond to community concerns about development decisions, to explain how those decisions protect the environment. Importantly, this suggestion is not about taking sides and defending any individual development against criticism but rather it is about explaining and defending the decision making process and the guidelines, principles and procedures that inform it – and to do so not just once but continually on a routine, ongoing basis.

Environmental decision makers place a great onus on developers to consult with the community early and well, to explain what they are proposing and how they are going to mitigate environmental impacts. This is certainly important. However, I think that decision makers have an equivalent responsibility to engage with the community themselves, both in a general sense and about individual projects.

Unfortunately, statutory decision makers see themselves as judges, sitting up on a high bench, passively absorbing evidence from both sides and then making a determination. While it is absolutely imperative that decision makers maintain the independence of a judge, I do not accept that they should be passive recipients of evidence. Environmental assessments are not murder trials. Environmental decision makers should openly and actively engage with both the developer and opponents to not only hear their opposing views on a development but also to test those views face to face.

Of course, decision makers must remain objective and be seen to be objective. They should not become supporters of a development or opponents to a development. However, remaining objective does not mean that they must remain disengaged. They should provide a service to the public by helping the public understand the issues that they consider to be significant and to actively facilitate an exchange of information between the proponent and the community.

4. Social contract (not social licence)

In recent years, the concept of social licence has crept into environmental debates in Australia. To my knowledge, this concept has its origins in projects undertaken by developed nation companies in undeveloped countries. The concept properly requires those companies to develop an acceptance of their project by the local community rather than forcing themselves on an unwilling community.

In Australia, this concept has been transmogrified by project opponents who demand that a project should not be allowed to proceed without a 'social licence'.

A 'social licence' in the Australian context is something that developers would have to somehow 'obtain' from the community as part of their approval process. As envisaged by social licence advocates, failure to so obtain a social licence would mean that the project could not go ahead even if the formal statutory process approved it.

While seemingly high minded and for the benefit of the whole community, in reality the call for a social licence comes from project opponents and is a call to set up a system where projects cannot proceed without the consent of them, the opponents, which is circular reasoning of a high order.

The call for a social licence ignores the fact that Australia has a well developed system of planning schemes, environmental guidelines, independent assessments and third party appeal rights, all of which already provide a whole-of-community acceptability test. The call for a 'social licence' is simply a call by development opponents to add another hurdle in front of projects.

While I reject the concept of a social licence in the Australian context, I do see value in a 'social contract' concept.

A 'social contract' means a process whereby developers enter into an ongoing engagement with their local community to demonstrate the implementation of their environmental and social commitments and to receive feedback about how the operation is integrating with the community.

Under this concept, there would not be an additional 'social licence' hurdle in front of project approvals but successful proponents would enter into a form of 'social contract' with their community to ensure that they deliver on the commitments made as part of their development assessment. By definition, a contract is a two-way thing and a social contract would also mean that there would be obligations on the community as well as the proponent.

Just as social contracts should oblige industries to engage with and support their community, so should the community engage with and support their industries. Industries should not be penalised or criticised if their attempt to engage with communities falls flat through no fault of their own.

A social contract would be a post-approval management process (but which may begin much earlier), in contrast to a social licence approval hurdle.

As social contract approach would recognise that developments are cornerstone investments in regional prosperity and are vital to building community resilience and self-esteem. Industries and

the community have a mutual dependence on each other and social contracts would be a way of formalising this interdependence to the benefit of both.

Of course, it is already open to developers to engage with their community at any time to establish some form of social contract and I do not think it appropriate that the establishment of a social contract should become a statutory obligation. However, I think that the statutory and associated administrative processes could be improved to make it easier and more attractive for developers to develop social contracts voluntarily.

For example, reduced statutory assessment times could be offered by decision makers if proponents demonstrate that they have engaged with their community and developed the framework for a social contract that will extend for the life of their project. The round table discussions suggested earlier could be the foundation for such a framework. Reduced regulation and reduced annual licence fees might similarly be offered.

5. Electronic structured permits

With the ever increasing number of conditions and subclauses being imposed on major projects the compliance burden is becoming increasingly onerous and more and more difficult to manage (the Bell Bay Pulp Mill approval, for example, was 544 pages long and contained in the order of 5000 conditions and subconditions).

Adding more and more conditions and subconditions makes it more and more likely that one will be overlooked or forgotten about.

To my knowledge, all jurisdictions in Australia issue their permits as text documents. While they are available in electronic form, this is only in the sense of being electronic text. They are not structured in a form that is readily amenable to electronic interrogation.

I think that there would be a great benefit from permits being written in a common electronic format that is readily able to be managed and interrogated by computer databases. This would allow operators to better track their obligations and compliances with them.

In addition to making compliance much more certain, electronically structured permits would also make them more suitable for companies to present their ongoing compliance achievements to the community, including as part of the suggested social contract above.

All project permit conditions that require some action of an operator have a similar basic tree structure, as follows:

Project → Permit (the permit which specifies conditions – a project may have multiple permits)

→ Component (the physical component of the project to which a condition relates)

→ Event (could be a calendar date or a project event or activity)

→ Trigger (fired by the event)

→ Obligation (the triggered permit condition)

→ Compliance (with the obligation)

If permits were structured to present action conditions in this common electronic format, they would be readily imported and interrogated and managed in computer databases.

Other types of permit conditions, such as those that simply impose a prohibition, are much simpler but could also benefit from a structured, electronic expression.