

Sustainability Assessment Symposium

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**The challenge of integrated evidence and buried uncertainty
for sustainability assessment: the Basslink process.**

by

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**This symposium paper is a presentation of the following published
paper which details appropriate sources:**

**Duncan, R. (2008) Problematic practice in integrated impact
assessment: the role of consultants and predictive computer models
in burying uncertainty, *Impact Assessment & Project Appraisal*, 26(1),
pp. 53-66.**

**This published paper can be obtained direct from
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<http://eprints.utas.edu.au/6487/>**

My presentation today focuses on a foundational element of sustainability assessment, and that is knowledge. In particular, I examine the implications of what has become standard assessment practice, whereby an array of consultants from different fields using a range of predictive models are pulled together by a proponent to produce a unified assessment statement. I will argue that such practice has the potential to diminish process transparency and proponent accountability.

I use as a case study the integrated assessment process for Basslink, a 360-kilometre overland and sub-sea power cable that now plugs Tasmania into the national electricity market. The project proponents were National Grid, a UK energy transmission company, which built the cable and Tasmania's state-owned hydro-generator which leases access to the cable. The assessment process began in 2000. The project was approved by an independent assessment body and then by the federal and state governments of Tasmania and Victoria in 2002. Electricity started flowing in 2006.

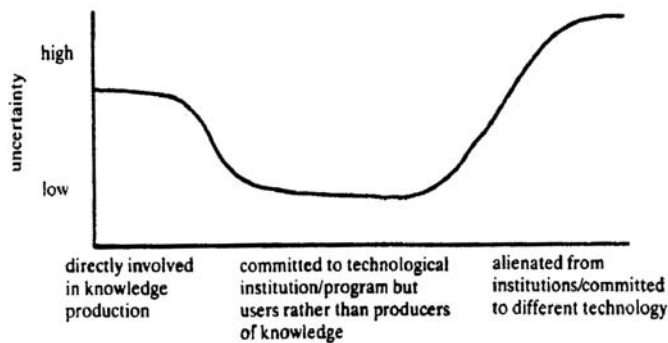
To briefly explain the institutional and policy context of the Basslink process, Tasmania's Resource Management and Planning Scheme or the RMPS as it is known, provides an overarching legislative framework for natural resource management, planning and development in Tasmania.

The RMPS contains specific objectives for sustainable development and requires projects deemed to be of state significance to be assessed by Tasmania's Resource Planning and Development Commission. This statutory body is required to undertake an integrated assessment of the social, economic, environmental and community aspects of such projects. Although it might have been intended otherwise, the assessment of projects of state significance has not yet turned out to be a 'fast-track' route. Indeed, since Gunns withdrew its \$2 billion pulp mill from assessment, the process has been attacked from many quarters as the 'far too slow track'.

Given its capital cost of around \$750 million and its role as major infrastructure, Basslink was declared a project of state significance in 1999. The proponents' Integrated Impact Assessment Statement of more than 6000 pages involved no less than 30 consultant firms. To achieve the mandated integration, conclusions about environmental impacts and mitigation were derived from modelling of the economic aspects of the project, in particular, simulated arbitrage revenues from the wholesale electricity market.

My analysis of the case for Basslink draws theoretical insight from constructivist theories of knowledge in the field of Science and

Technology Studies. I've used Donald MacKenzie's 'certainty trough' to map the knowledge production process as set out below.



The Certainty Trough (MacKenzie, 1990: 372). © MIT Press

To give you a brief overview, along the x-axis is social distance from the site of knowledge production on the left (closest) to right (most distant).

On the y-axis is uncertainty from low to high. On the left, actors are closely involved in the production of knowledge – designing and conducting experiments, making direct observations, undertaking statistical analyses, writing up results. Uncertainty here is in the medium range. On the right, at greatest distance from the site of knowledge production, uncertainty is at a very high level. The middle section is conceived as 'the certainty trough' as it is here that uncertainty is at its lowest and so certainty is at its highest.

The relationship identified by MacKenzie suggests that those closest to where knowledge is constructed, that is, on the left, those doing the

experiments or, in the case of Basslink, developing the model functions and deciding upon model inputs, know that their conclusions are contingent upon particular circumstances being in place or that there are limits to the applicability of their projections. In the context of impact assessment, these actors would be consultants who develop models to provide outputs to other consultants or who use the outputs of others for their own model runs. These actors are conceived as knowledge producers.

Committed to an alternative strategy or project, those on the far right are outsiders or critics. This group will be alienated from the existing proposal and will attribute a relatively high level of uncertainty to a proponent's knowledge claims. In the context of impact assessment, I see these actors as interest groups opposed to a particular project.

Between those closely involved in knowledge production and those alienated from the project is an in-between group that will attribute a relatively low level of uncertainty to the knowledge claims with which these actors are presented. These are the knowledge users. In the context of impact assessment, this group might be proponents that have commissioned studies or government departments in support of a project.

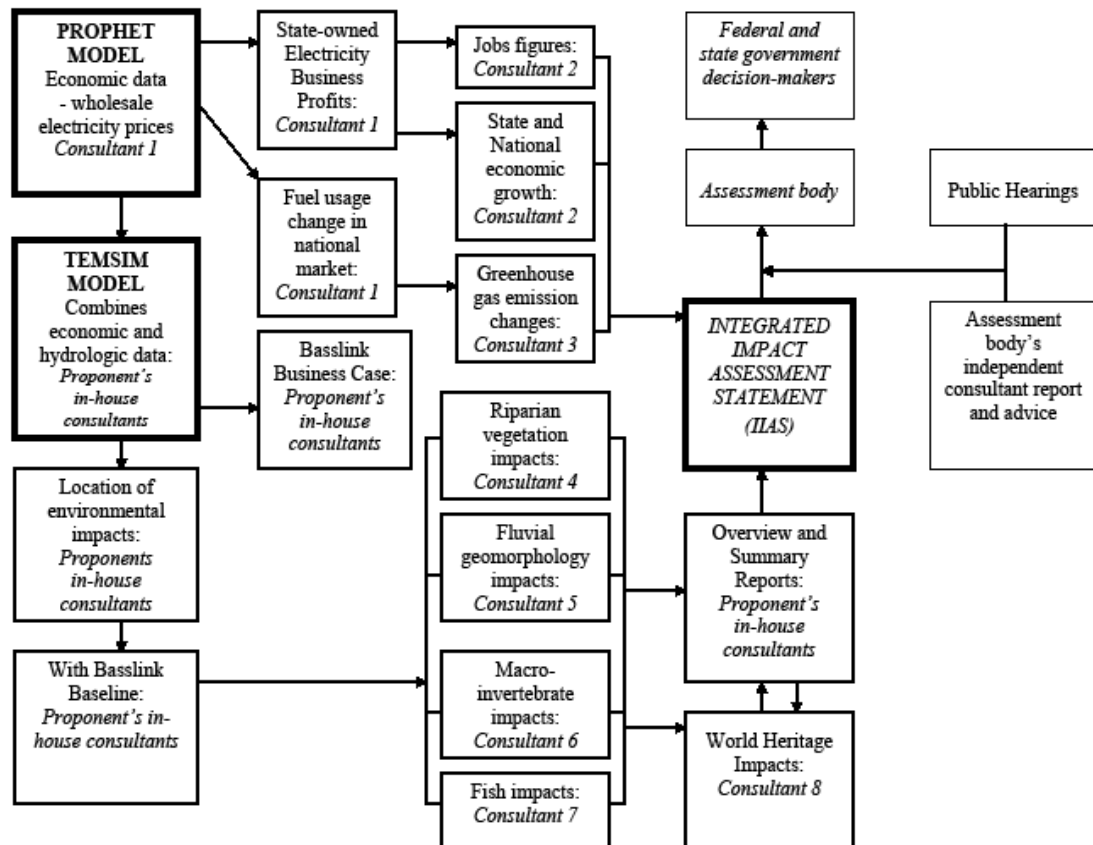
They are also likely to be decision-makers, members of the public or interest groups not necessarily opposed to a particular project.

MacKenzie maintains that the durability of technical facts is “hardest” in the location of the certainty trough. The reason for this is that the social distance between knowledge producers and knowledge users is such that the contingencies and uncertainties that might be well-understood by the producers (on the left) are not disclosed to the users (in the centre). For instance, it might not be practical or possible to do so or it might not be seen as necessary. Importantly, without resources or processes to unearth the contingencies and risks of what are represented as facts, the uncertainties are likely to fade from view. In other words, by virtue of their distance from the location of knowledge production and the lack of an intimate connection with the experiments or models, knowledge users will attribute a relatively low level of uncertainty to the knowledge claims with which they are presented.

Using the certainty trough as conceptual framework to map the implications of what has become standard procedure, the following figures illustrate the challenge for sustainability assessment.

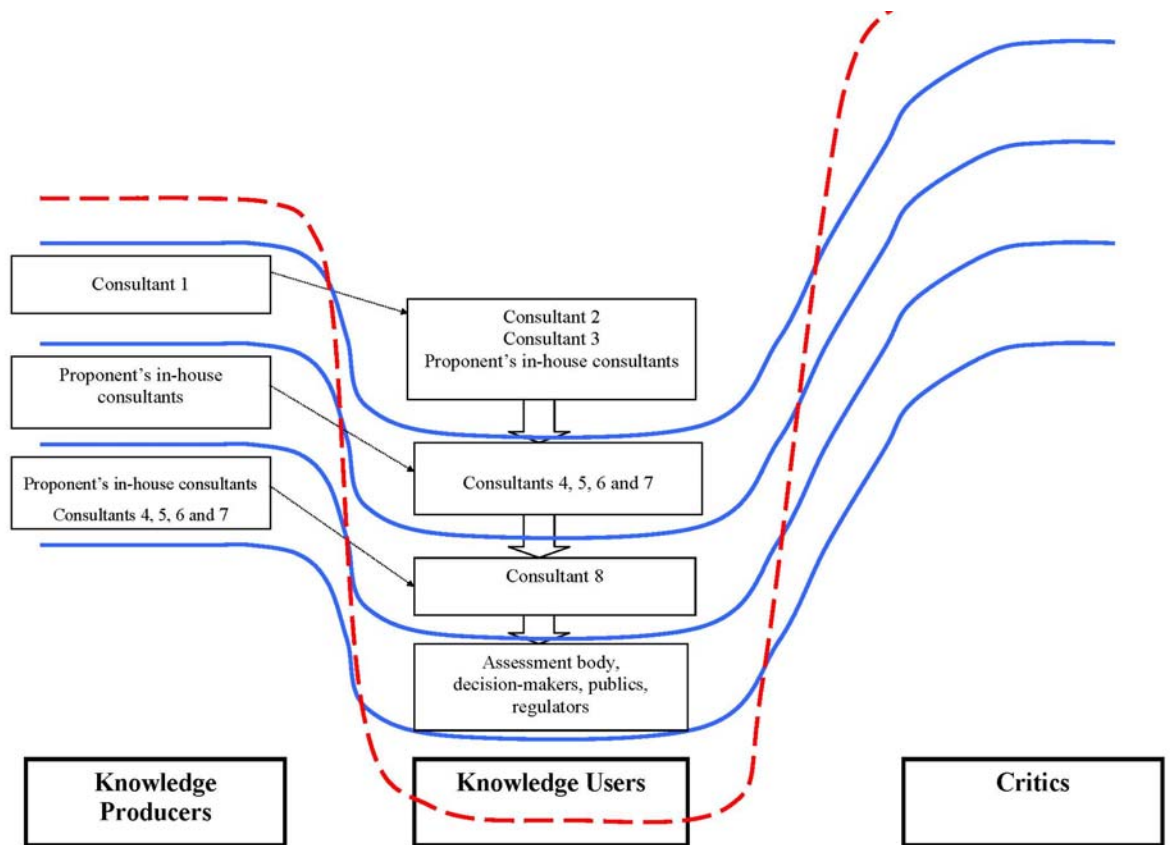
- The first provides an overview of the Basslink consultants and the predictive models. It shows how the conclusions presented in the

impact statement (on the right) were anchored solely to the findings the economic simulations of consultant 1 (on the far left).



Overview of connections between predictive models, consultants' reports and process documentation in respect of conclusions on environmental impacts for Tasmania's Gordon River (Duncan, 2008: 58)

- The second figure overlays multiple certainty troughs to depict the cascade of connections between the teams of consultants and subsequent actors. Once again, consultant 1 is the only team not constituted in the certainty trough.



Overlaid certainty troughs (bold line) and combined certainty troughs (dashed line) (Duncan 2008: 61)

- The dashed line combines the certainty troughs to illustrate the compounding nature of the reliance on the initial economic simulations. When the troughs are visualised as ‘in phase’ the implications are acute – both the peaks and troughs are amplified. Inordinately high levels of uncertainty are perceived by the critics and worryingly low levels of uncertainty are perceived by the knowledge users.

We can see how the various sets of consultants that were each required to undertake a particular piece of work and reliant upon the model outputs of another were constituted simultaneously as knowledge ‘producers’ *and* knowledge ‘users’ except for consultant 1. As a result, at each translation step, the contingencies arising from the assumptions and values embedded in the foundational models were progressively cordoned off from each subsequent team. In effect, the recipient of another team’s model outputs was, willingly or not, constituted at increasing distance away from the location of knowledge production and, thereby, within the certainty trough. All actors were knowledge users with the exception of consultant 1 upon whose model outputs all others were contingent.

So what can be buried by the process I have described? An example is the assumption that the past will be repeated in the future. The business case for Basslink was based on the assumption that future storage inflows would be as they had been in the long distant past and that the influence of climate change would be negligible. This proposition has caused considerable financial hardship for the state government and its hydro-generator. Given continued record low storage inflows, Hydro Tasmania has to date had few opportunities to export electricity to raise revenue to pay the annual access fee of \$92 million. As a result, the hydro’s dividend to the government has had to be cut from above \$40 million to

\$10 million subject to profitability for 2008 and electricity prices have risen 20% in the last 18 months. In addition, the government has recently announced it will have to spend \$340 million to complete a gas-fired power station to keep the state's lights on in the short term.

What occurred here was that the proponent's partisan worldview about how it expected or hoped Basslink would operate in the future, which has turned out to be completely at odds with reality and broader community expectations, was not only obscured from view but perpetuated by the practice that I've outlined. Indeed, the cumulative epistemic outcome of integrated impact assessment practice – which could also be seen as its triumph – is the diminution of uncertainty. As the credibility of a proponent's claims appears to strengthen, the contingencies would be multiplying with each modelling iteration. Hence, unless explicit clarifications are called for, what has become standard procedure would serve to isolate actors contributing to the development of an integrated impact statement. This isolation would diminish disclosure between collaborating consultants as well as to the impact assessment audience be they supporters, critics, decision-makers or regulators. Therefore, the reliability of the conclusions presented in impact statements would not be attributable to the peer-review of a proponent's claims but rather to

imposed trust between actors required to collaborate at the behest of a proponent and a proponent's skill in managing information.

What I have described here are 'epistemic blind spots' or 'knowledge risks' that I contend need to be adequately recognised for their potential to diminish process transparency, proponent accountability and, ultimately, the workability of regulation, monitoring and adaptive management of development projects. These shortfalls could be addressed with changes in governance that would allow scenario building to be undertaken by a broad range of stakeholders at the outset of an assessment process rather than left to proponents or their consultants to be presented after the proverbial horse has bolted.

Mandatory post-project auditing would be another means by which to test the veracity of proponent's claims and to learn for future projects.

Structures could be established that allow consultants and scientists to be brought together to understand and question the models and model outputs of others.

These are just a few examples and I'm hoping that my further research will identify others. I think the first step is to recognise that these

knowledge risks exist and I hope that I've provided to you some insight on that today.

Core References:

Duncan, R. (2008) Problematic Practice in Integrated Impact Assessment: the role of consultants and predictive computer models in burying uncertainty, *Impact Assessment & Project Appraisal*, 26(1), pp. 53-66.

MacKenzie, D. (1990) *Inventing Accuracy: A Historical Sociology of Nuclear Missile Guidance*, MIT Press, Cambridge, MA.