

Avoiding madness in the method: best practice methodologies for regulatory biodiversity assessment

INTRODUCTION

IN recent years, several Australasian jurisdictions have developed methodologies for regulatory assessment of impacts of development on biodiversity. Some methodologies are gazetted (NSW Government 2005) and some are policies under legislation (Department of Natural Resources and Environment 2002; Department of Environment and Climate Change 2007; Department of the Environment, Water, Heritage and the Arts 2009; Norton 2009). Increasingly, the methodologies aim for no net loss of biodiversity or net environmental gain, or to improve or maintain environmental outcomes (Department of Natural Resources and Environment 2002; NSW Government 2005; Environmental Protection Authority 2006; Webb 2009).

Some methodologies are deemed as law, while assessments under other methodologies are subject to court challenges (Meyers 1996; Cabarrus 2009). Assessments using deemed methodologies cannot be challenged in court providing the methodology is accurately followed. Some jurisdictions have deemed methodologies to assess impacts of development on biodiversity in some circumstances, more open (and legally challengeable) provisions for biodiversity assessment in other circumstances, and direct Ministerial authority in other situations (NSW Parliament 1979, 1995, 2003). Some methodologies are accompanied by software tools and datasets (NSW Government 2005; Department of Sustainability and Environment 2006; Department of Environment and Climate Change 2009).

Most methodologies have been in operation for several years. During this time, much has been learnt

about best practice for preparing and implementing methodologies and their accompanying tools and datasets. The purpose of this paper is to provide principles for developing and implementing best practice methodologies for assessing impacts of development on biodiversity, for policy makers and their advisors. The principles apply to assessment of individual development applications and projects, rather than to strategic assessment (see Macintosh 2010), although many are relevant for strategic assessment also. Most of the principles also apply to assessment of biodiversity for non-regulatory purposes, such as incentive schemes.

PRINCIPLES FOR BEST PRACTICE METHODOLOGIES

The best practice principles are derived from Rimmer (2006), United Nations University (2007), Gibbons *et al.* (2009), Macintosh (2010), and the author's observations and experience during the several years of operation of the methodologies, primarily in New South Wales, Australia. The 10 principles for best practice methodologies for assessing impacts of development on biodiversity are listed and briefly described below.

1. Meet aims. The methodology must meet its primary goal to assess effects of development on biodiversity to determine whether development can proceed or not. Where there is a regulatory requirement to improve or maintain biodiversity and offsets are required to achieve this, the methodology also needs to provide formulae for calculating loss in biodiversity from development and gain in biodiversity from offsets. Offsets to balance loss of biodiversity can only

contribute to improving or maintaining biodiversity if biodiversity is improved or legally permitted loss is forgone. Biodiversity should be defined and measured in a tractable framework (Gibbons *et al.* 2009).

2. Efficient and focused on outcomes. The methodology should impose the minimum direct and indirect costs on proponents and on government to meet its aims. The methodology should strike a balance between inadequate assessment of biodiversity and non-specific rules for permitting or refusing development and offsetting its effects on biodiversity, and unnecessarily detailed assessment of biodiversity and rigid rules for allowing or refusing development and determining offsets. The methodology should take a risk weighted approach that focuses on outcomes.
3. Simple and practical. The methodology must be as simple and practical as possible to meet its aims. Methodologies should be written in plain language that is readily understood by policy makers, proponents, land managers, assessors, and other stakeholders. Complex survey procedures or calculations should be avoided; pressure to make methodologies and supporting datasets complex should be resisted. Tools must be able to test scenarios, without having to re-enter unvaried information. Updating datasets in the software tools should be a simple procedure.
4. Transparent and available. The methodology and its software tools and datasets must be transparent, and readily available to the public. Formulae must be clear, and the relationships between the software tool and the

data it draws on must be obvious to all users and other stakeholders. The rationale for the methodologies and data in the datasets should be publicly available, preferably as published papers in peer-reviewed journals.

5. Credible science. The methodology and associated datasets must use credible science. Methodologies and data for assessing effects of development on biodiversity are informed by science, but as policy instruments they are also informed by social and economic factors. The methodology and data should be applicable at relevant scales, and the calculations and datasets should avoid false accuracy. The methodology and its datasets should be tested to ensure they meet the goal of the methodology.
6. Clear policy framework and accountability. The methodology and its data need to sit in a clearly defined and understood policy framework, with accountability to the relevant Minister. The methodology, and its accompanying tools and datasets, must be managed by the section of the jurisdiction's department which has accountability for the legislation, to avoid misunderstandings and confusion about reviews, updates and revisions caused by unclear ownership and diffuse lines of responsibility.
7. Provide consistency, with flexibility for local conditions. Methodologies must be repeatable and provide certainty, with flexibility to deal with local or unanticipated circumstances. Local conditions often warrant variations to the methodology, and local data should be used where they are more accurate or more relevant than data in the datasets. The ability to apply discretion needs to be built into the methodology, and into the software tools and their datasets. Use of discretion should be documented on a simple form.
8. Minimize rent seeking. Rent seekers (Krueger 1974) seek to

capture monopoly privileges, for control or financial benefit. The risk of rent seeking (usually for control) is high when methodologies, tools and datasets are complex, and when few people understand them. The likelihood of rent seeking is reduced by having simple methodologies and tools, transparent datasets, and by training a wide range of people in the theory and practice of the methodologies, and their tools and datasets.

9. Incorporate monitoring and adaptive learning. The outcomes of applying the methodology need to be audited and monitored, and the methodology and the datasets need to be reviewed periodically. Assessments should be stored in a searchable database to allow monitoring and review (with personal details of proponents masked for privacy reasons where necessary). Reviewers should understand stakeholder sensitivities, risk management, policy drivers, and the methodology and its datasets. Reviews should improve, and where possible, simplify the methodology, tools and data through adaptive learning. Methodologies, tools and datasets can be simplified over time as experience shows which calculations and data affect the outcome; those that have no or low influence should be removed.
10. Provide adequate training and other resources. Resources are required to develop and implement the methodology and its software and datasets. Comprehensive training is essential to ensure the methodology is applied correctly (including its flexibility provisions), to ensure that assessors understand the reasons for the outcomes, to test outcomes from a range of scenarios, and to minimize rent seeking. The training must encompass the rationale and logic of the methodology, as well as the practical operation of the tools and datasets.

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