QUEENSLAND ENVIRONMENTAL PRACTICE REPORTER

VOLUME 16
ISSUE 74
2010 / 2011

QELA
QUEENSLAND ENVIRONMENTAL LAW ASSOCIATION INC.

QUT
QUEENSLAND UNIVERSITY OF TECHNOLOGY

ISSN 1323-7349

EDITORIAL BOARD

This publication should be cited as:
(2010/2011) 16 (74) QEPR 136

SUBSCRIPTION CONTRIBUTIONS

Contributions to the Queensland Environmental Practice Reporter are invited from environmental managers and advisers from any discipline.

Please address all correspondence regarding subscriptions and membership to:

The Executive Officer
Queensland Environmental Law Association
Level 5, 149 Wickham Terrace
SPRING HILL QLD 4000

Phone: 07 3832 4865
Fax: 07 3839 2239
Email: info@qela.com.au

Please address all correspondence regarding contributions to:

The Editorial Manager
QEPR
Faculty of Law
Queensland University of Technology
GPO Box 2434
BRISBANE QLD 4001
Fax: 07 3864 1161
Email: a.overell@qut.edu.au

SUBSCRIPTION COSTS

Hard Copy (Includes Online Access)

QELA Member	$160
QELA Non Member	$225
Student	$77

Online Access Only:

QELA Member	$110
QELA Non-Member	$176
Student	$44

CONTENTS

CONTRIBUTORS……..…….……...…….ii

EDITORIAL…….…….....iii

DECISIONS OF COURTS AND TRIBUNALS

1. The Planning and Environment Court ……....……..….136

2. The Court of Appeal ……148

PROFESSIONAL COMMENTARY AND CRITIQUE

PART I

1. Methods to achieve net environmental gain in the course of development in Queensland ……..149

2. A Site Selection Process for Environmental Offsetting Purposes in Queensland ……..157

3. Measurement of the net environmental benefit of offsetting in Queensland …….168

4. Management of a tributyl tin issue in a marina development in Queensland …….178

PART II

5. The Environmental Law Roundtable of Australia and New Zealand and the Biodiversity Offsets Project ……....184

6. Elements of an Environmental Offsets Policy: A Working Paper Towards a Policy for an Environmental Banking Scheme appropriate for Queensland …….. 193

CONTRIBUTORS

Michelle Gane BSc	Project Manager Institute for Sustainable Resources Queensland University of Technology
John Haydon LLB, MEIANZ, CEnvzP	Barrister–at–Law Environmental Dispute Resolution Consultant, EcoDirections International Convenor, Environmental Law Roundtable of Australia and New Zealand
Phil Jeston	Principal Environmental Scientist GHD Pty Ltd
Ben Job LLB, MURP	Barrister–at–Law
Tom Kirkpatrick MSc, PhD	Australian Environment International Pty Ltd
Hugh Lavery MSc, PhD, MEc, FEIANZ	Adjunct Professor of Environmental Systems Institute for Sustainable Resources Queensland University of Technology
Michael Walton BCom, LLB	Partner Norton Rose Australia
Andy Williams	Senior Engineering Geologist, Cardno Ullman Nolan Pty Ltd

EDITORIAL

Dear Readers,

Welcome to the first issue of the *Queensland Environment Practice Reporter* for 2011. I'm very pleased to present this special issue of the QEPR which addresses a range of topics associated with the generation and recognition of environmental offsets in Australia. This is an area of growing concern for land developers, regulators and legal advisors in Australia and this issue introduces some of the key principles and policy approaches to be addressed in the generation and recognition of credible environmental offsets.

Part One of this issue contains a series of papers, written by Adjunct Professor Hugh Lavery and his co-authors, addressing the key methodologies in the creation of appropriate environmental offsets in Queensland.

The first paper by Hugh Lavery provides an overview of the methods and techniques by which environmental benefits may be achieved from the use of offset land mitigation, particularly through enhanced private sector engagement.

The second paper, co-authored by Hugh Lavery and Michelle Gane, considers methods for the selection of sites for offsetting purposes. That paper presents the Wide Bay Burnett catchment region of South-East Queensland as a case study for the application of site selection technique to identify lands with environmental value to be recognised.

The third paper, also co-authored by Hugh Lavery and Michelle Gane, considers the issues associated with measuring the 'functional lift' or net environmental benefit from offsetting activities. This paper presents the Meridien Marina redevelopment at Horizon Shores as its case study for functional lift and highlights the potential benefits of establishing an environmental bank across the larger local area.

The final paper, by Hugh Lavery, Phil Jeston, Andy Williams and Michelle Gane, considers the functional lift of relocating contaminated soils from land and suggests that these benefits could be recognised, through credits or other incentives, under an enhanced environmental offset scheme. This paper considers these issues in the context of the rehabilitation of contaminated land, from tributyl tin deposits, at Boat Haven, Airlie Beach in Queensland.

Part Two of this issue continues the offsetting theme with a paper by John Haydon describing the work of the Environmental Law Roundtable of Australia and New Zealand (ELRANZ) and, in particular, the Biodiversity Offsets Project which was discussed at the recent National Environmental Law Annual Conference on 21 October 2010 in Canberra. A paper titled, 'Elements of an Environmental Offsets Policy (A Working Paper Towards a Policy for an Environmental Banking Scheme appropriate for Queensland)' was prepared by Michelle Gane and distributed to delegates for consideration prior to the interactive workshops at that conference. That working paper by Michelle Gane is also contained in this special issue to assist in continuing the dialogue on the best way forward. Anyone with comments in relation to the ELRANZ project generally, or the

working paper in particular, can contact John Haydon johnhaydon@ecodirections.com or Michelle Gane m.gane@qut.edu.au.

As usual, this issue also contains the valuable summaries of the decisions of the Queensland Planning and Environment Court and Court of Appeal by Michael Walton and Ben Job.

My thanks go to Anne Overell for her excellent editorial work in 2010 and to QELA for their ongoing assistance in bringing the QEPR to our readers.

Dr Nicola Durrant
Editor
Lecturer
Faculty of Law
Queensland University of Technology
n.durrant@qut.edu.au

PROFESSIONAL COMMENTARY AND CRITIQUE

1. Methods to achieve net environmental gain in the course of development in Queensland

By Hugh J. Lavery[1]

Summary
To achieve best environmental management practice in Queensland, effort needs to be extended into the private sector. A Regional Landscape Strategy compiled for any substantial new proposal must identify the most promising technique(s) (from an available tool kit of 13) by which a developer (of any type) is more likely to sustain on-site resources while assisting government deliver its future plans in any region of the State.

Offsetting may prove to be one of the most effective of these tools. However, policy must address 'offset land mitigation', whereby the necessary financial incentives are introduced. Practicable methods by which offset sites can be selected, and measurement of their consequent environmental benefit, have now been devised and tested to assist this process.

Approach to the problem
Wide-ranging experience has been gained in the course of addressing environmental management problems in the field in Queensland - a resource-rich quarter of the Australian continent. Results have been derived from successive eras of inventory surveys, ecological studies, ecological planning, and now ecological design.

The conclusions outlined here draw on case studies described in an integrated series of detailed technical papers this edition and in recent editions of the Queensland Environmental Practice Reporter.[2] These address, in particular, environmental management related to the field construction and operation of modern large marinas, and have a principal function to provide access to the World Heritage Areas, Biosphere Reserves, RAMSAR Wetlands, Marine Parks and island National Parks for which eastern Australia is internationally recognized and visited.

Present day management in these coastal regions, as indeed elsewhere in Queensland, suffers now from widely perceived shortcomings in the three main 'devices' by which the regulatory agencies seek to ensure sustainability: the national park; the endangered species list; and the environmental impact assessment (EIA). The failures (respectively) to cope with the unavoidable paucity of funds to maintain large, remote and disturbed lands; to engage local communities in official lists for effective conservation; and to overcome the limitations of mandatory EIAs over individual properties to address the extensive spatial and temporal dimensions of most Australian ecosystems, are becoming increasingly evident. There has been a tendency to overlook the fact that an underlying feature of the survival strategies of many native species on this continent is their essential adaptive opportunism, as dictated by an unpredictable climate with its great extremes of drought and flood.

[1] Institute for Sustainable Resources, Queensland University of Technology, Brisbane, Q.4000, Australia.
[2] HJ Lavery et al, 'Managing the Winds of Change' (2009) 15(68) QEPR 27; HJ Lavery, 'Benchmarking the Standard of Environmental Management Practised in Marinas' (2010) 15(71) QEPR 226; Hugh Lavery, 'The Relationship of Boat Movements to Environmental Management at some Queensland Marinas', (2010) 16(72) QEPR 40; and Hugh Lavery and Tom Kirkpatrick, 'Environmental Management and Wildlife in Queensland: A review of Queensland mammal species designated as scarce' (2010) 17(73) QEPR 103.

The matter of perspective/scale

A lack of suitable databases is being offered as the prime reason for still degrading landscapes. This issue with databases is clearly a matter of scale/perspective in a state the size of Queensland.

- The State (1,727,000 km^2) is managed, of necessity, at a scale of 1 : 100,000, while government prescribes that individual property owners should manage at the scale of >1 : 10,000. To manage scarce resources, this scale needs to be much larger still.
- Existing policies in Queensland are overwhelmingly designed by government for government, based on public lands or on lands managed primarily by broad regulation.
- The fact is that 96% of Queensland is privately managed land, where there is dubious attention to regulations over non-urban lands where sustainability is imperative.
- Most naturally fertile land is (understandably) in these hands, with natural resources of an order of magnitude more extensive than in national parks and the like, and with the ultimate drought refugia under corporate pastoral regimes[3].
- The private sector also has the intimate local knowledge, the funds and the entrepreneurial potential and nimbleness to tackle sustainable land management, particularly with regard to scarce resources.
- The private sector cannot be engaged in such a large task without attention to the essential mechanism of financial incentive.
- Such a mechanism demands attention to issues of business case, the costs of addressing real problems, and practicable techniques.

Logically, governments have approached their statutory responsibilities in two ways: either by tackling a specific environmental management problem at a large scale (e.g. as in its substantial dam projects); or by a broad overview at a small scale. Confronted by an unprecedented spread of settlement (in all its forms), these efforts are currently expressed mostly in terms of regional management plans distinguishing between grouped urban and rural zone outcomes.

Such a boundary is extremely complex in the instance of a major new marina, where these are highly popular for their service in accessing our natural environment but vigorously opposed because of concern for their potential impact on mangroves and other littoral resources. Moreover, any impact may well be more attributable to upstream sources of disturbance, often overlooked because they are far less obvious.

A new way

The application of ecological design principles to these planned marina developments has yielded a perspective that complements the regional aspirations of government, while adding a much larger scale of information and attention, active community involvement with its cost-effective benefits of local knowledge and vested on-going interests, and a selection of techniques with which to approach the real complexity of the task of securing on-site ecological viability.

The most promising techniques in this tool kit are defined by way of a Regional Landscape Strategy, a technical document that reviews all existing relevant data about the catchment in which the proposed development is located, examines the history of its land use, scrutinizes resource inventories (with particular regard to regional characteristics on the one hand and missing species on the other), ascertains the underlying 'ecodynamic patterns' of major resource behaviour, determines potential sources of upstream and downstream environmental impacts, interprets regulatory standards in the context of industry best practice, and ensures 'community reference' to all relevant

[3] See HJ Lavery, *National Parks: A Vital Concept on the Verge*, 15th Romeo Watkins Lahey Lecture (National Parks Association of Queensland, 2005).

construction and operational issues. These efforts identify the relative values of a set of techniques with purposes described as in Table 1.

Table 1. Techniques involved in a Regional Landscape Strategy

Technique ('tool')*	Main reason for use
Reference benchmarks	To establish highest industry standards
Core remnants	To recognize basic natural ecosystems
Natural characterization	To appreciate characteristic values and identify signal/sentinel species
Ecological strategies	To understand the holistic behaviour of relevant native umbrella species
Eco-dynamic patterns	To identify key monitoring sites
Ecological landscapes	To maximize vegetation viability (and to minimize long-term costs)
Offset land mitigation	To maximize both environmental and development outcomes
Linear buffer zones	To enable management (by education) of off-site 'catchment drivers'
Social surveys	To discover facts about relevant potential impacts
Community reference	To ensure local engagement in environmental management
Regulatory compliance	To meet prescribed statutory requirements
Regional audits	To ensure reporting of off-site impacts on the development site
Research	To resolve still-required new knowledge for sustainability practices

* For full descriptions of the tools and examples of their use in Queensland, refer to the relevant QEPR paper.[4]

Table 2 shows the basic difference of approach between the Regional Landscape Strategy and the alternative (current) device of an Environmental Impact Assessment.

[4] Above n 2.

Table 2. The basic differences of approach between an Environmental Impact Assessment and a Regional Landscape Strategy

Environmental Impact Assessment	Regional Landscape Strategy
Requires compliance with prescribed statutes	Aims at observed best-practice standards
Undertaken at any time prior to Development Application	Undertaken from outset of concept planning
Conducted for compliance purposes	Undertaken voluntarily
Examines the individual development site	Examines the ecological and social catchment of the development site
Hydrodynamic considerations only (at best)	Recognizes ecodynamics of system
Studies site and immediate surrounds	Studies catchment records and land-use history
Employs private-sector consultants	Employs scientific research organizations
Discredited technically	Still being tested
Commercial-in-confidence clauses	Provides for technical publication
Regulator oriented	Operator oriented
Defines a perimeter buffer zone	Identifies and manages core remnant areas with linear extension into catchment
Prohibits use of gazetted weeds	Encourages characterization by local species' propagation
On-site land management	Encourages additional offset land management (of 'cleared' lands)
Site protection only	Seeks drainage catchment protection
Audits in accordance with site behaviour	Audits in accord with overall ecosystem influences
For government information	Provides for community education and engagement
Aimed at construction stage	Aimed at life of development (i.e. including operations)
Addresses government	Addresses community
Report shelved on completion of construction	Report retained as on-going reference document

The tools do not replace such existing devices, but complement them by encouraging participation in environmental management over a wider area (nominally a river catchment basin). They lessen significantly the burden of effort and cost on government and the taxpayer. As with any set of tools, not all are suitable for the purposes of any one strategic plan. Though all tend to be of some general value, some are of more use, and others need to be used predominantly. This planned pattern of tool usage gives rise to a distinctive environmental management 'signature' for each proposed development, as in Table 3.

Table 3. The environmental management 'signature' of a planned marina development at Meridien Marinas Horizon Shores, Steiglitz, Q., indicating the main tools (dark grey boxes) and secondary tools (pale grey) determined (by way of a Regional Landscape Strategy) to be used to attain official objectives (as well as sustainable site development).

	KEY CHALL-ENGES*							
KEY ENVIR. MNGMT. TOOL	Disposal of dredge material	Protection of water quality	Protecting coastal bio-diversity	Rehabil-itation of degraded wetlands	Maintain-ing public access to the coast	Planning for erosion/climate change	Retaining undeveloped land	Minimizing surface & ground-water impacts
Reference b'marks								
Core remnants								
Natural character.								
Ecological strategies								
Eco-dynamic patterns								
Ecological landscapes								
Linear buffer zones								
Offset land mitigation								
Social surveys								
Community reference								
Regulatory compliance								
Regional audits								
Research								

* The 'key coastal management outcomes' sought in South-east Queensland Regional Coastal Management Plan (Queensland Environmental Protection Agency 2004).

Completion of four Regional Landscape Strategies, together with a review of lead-up studies across all parts of Queensland, reveal 'offset land mitigation' as one of the most frequently used tools required to achieve government's 'key challenges'. While offset policies are becoming commonplace around Australia, these policies must be crafted to engage private enterprise if this sector is to respond constructively to official regional plans. (Other reasons for private sector engagement in conservation land management include the much larger scale at which problems can be addressed

quickly, its intimate local knowledge with which to respond to problems and the availability of entrepreneurial skills with which to conceive new solutions.)

To proceed with such best practice offset policy, the matter of 'additionality' must be addressed. That is, there must be net environmental benefit from the exercise. To measure this, a uniform method of determining the functional lift of the offset land must be available for any selected site. Prior to this, a standard method also must be devised for selecting workable offset sites.

The current ecological design in respect of the natural environment of marinas has examined these problems. In the case of site selection, the Wide Bay Burnett Region (56,618km^2) was chosen. It has a long history of international exploitation of its inherently rich natural resources but is only now being threatened with intensive settlement. A method by which promising offset lands can be selected was devised, essentially using the State-wide evaluation of Regional Ecosystems,[5] on the one hand, and a similar state-wide evaluation of land production capability.[6]

The approach to site selection

While any offset site must (under current policies) be a 'like-for-like' ecosystem, the search is not simply for a substitute parcel of land. These parcels may be unprocurable and/or already protected by other means. Moreover, such recognizable lots will offer little (if any) net environmental gain through offset management; functional lift is important if a credit system is to be instituted that provides incentive for private sector action.

Sequencing provides that offsetting (especially offset land mitigation) follows only after all efforts are made to avoid or minimize any prospective on-site disturbance. As a course of last resort, a standardized process is desirable to identify alternative sites.

At this point, without reference to 'demand side' (actual development site) matters, guidelines for a site selection process can be set out.

1. Within a region, all core natural asset lands, sites of Aboriginal significance, Crown managed environmental lands (e.g. national parks), designated prime urban and agricultural lands, and highly contentious sites, are eliminated as possible offsets.
2. Lands not eliminated from the above are mapped in relation to the development site, and those areas with advantage of upstream eliminated lands are then identified.
3. Official Regional Ecosystem (RE) maps are overlaid on this result.
4. The scale of work is then changed (from 1 : 100,000 to around 1 : 10,000) and appropriate Land Capability[7] maps are overlaid.
5. Land designated as 'Cleared' on the RE maps are located.
6. Particular land parcels are then identified taking into account (a) areas identified as of 'Of High Concern' and 'Essential Habitat; (b) 'Cleared' land adjacent to these.
7. Such sites with Land Capability Class IV, particularly with riparian access are located.
8. On site inspection is then undertaken for ground-truthing, particularly with respect to regional ecosystems.

[5] VJ Neldner, et al, *Methodology for survey and mapping of regional ecosystems and vegetation communities in Queensland*, Version 3.1 (Unpublished report, Queensland Herbarium, Department of Primary Industries, 2005).

[6] J Rosser, et al, *A land capability classification for agricultural purposes* (Technical Bulletin No.14, Division of Land Utilization, Queensland Department of Primary Industries (1974).

[7] Land capability measurement originated in USA following the infamous 'Dust Bowl' of 1933, through the new office of the US Soil Conservation Service.

Matters of site availability are later considerations, depending on calculated function lift of the selected site. Environmental and regulatory additionality can then be demonstrated, though financial additionality remains to be tested.

Application of the above process thus gives rise to questions about the level of acceptability of these offsets. While official measures of 'value' are reflected by Regional Ecosystem definition,[8] an independent free market price needs to reflect rehabilitation management effort. For example, in a study where land near Meridien Marinas Horizon Shores was selected by the above process, measures of the prospective outcomes were compared. That is, sets of results were calculated (a) by area, simply retaining the existing remnant site, by retaining the remnant offset site, and by rehabilitating the remnant offset site and the balance of that Lot. and (b) by numbers of threatened mature trees at the same three sites (Table 4).

Table 4. Some absolute measures of benefits – by area and by individual mature trees of cabbage tree palm (Livistona australis) – at a development site and an offset site, Steiglitz area, Q.

Measure	Location	Quantity
Area	Development site core remnant	<1ha
	Offset site core remnant	4.29ha
	Offset site restored total Lot (Environmental bank)	34.01 ha
Number of mature trees (L. australis)	Development site core remnant	3
	Offset site core remnant	83
	Offset site restored total Lot (Environmental bank)	est. 660

Applying these figures to the existing successful North American mitigation banking scheme Ratio Method (used to determine Credits),[9] the Compensatory Ratios lie on the scale: 1:2.9 (low quality ecosystem), 1:4.8 (medium) and 1:8.4 (high). That is, assuming the regulating agency resolved that development within the surrounding drainage catchment (watershed) needed to compensate for impacts to <1ha of medium quality ecosystem, then 5 Credits (= 5 hectares) would be needed from the above Environment Bank to compensate for those functional losses. With 34 hectares of proposed offset bank, there is a notable increase in environmental performance (even without considering the probable alternative of obliteration of this resource in the catchment). By any international standard, this represents significant environmental additionality.

'Offset land mitigation' will achieve further benefit when employed in association with other tools (see Table 1 for list). For example, 'linear buffer zones' have the potential to provide wildlife movement paths within and across regions. 'Core remnants' clearly play a part in identifying offset

[8] See above n 5.

[9] A technique in which base ratios are set for the type of mitigation (restoration, enhancement, creation, preservation) in respect of the perceived value of impacted resources (low, medium, high). Disagreements over the value of a credit can be contentious, in part because alternative methods for calculating these values are available.

ecosystems, while the social surveys, community reference, regional audits and research also can be brought to bear to achieve long term management goals.

A corollary to this usage lies in the tool of ecological landscapes, where regional knowledge gained in the course of 'offset land mitigation' can assist in using the tools of 'natural characterization', 'ecological strategies', and 'ecodynamic patterns' to the proposed development site.

Compliance is regarded as an essential on-site tool, benefiting significantly from the tool of 'reference benchmarks'. While the current plethora of regulations must be observed, it is anticipated that these will be modified, in due course, to take advantage of the efficiencies and results caused by managing with broader horizons.

Discussion

Engaging the private land managers in effective environmental management is a challenge not yet faced in Queensland, despite it clearly being an essential need. A basic reason for this hesitancy is not only the need for new practicable techniques (of landscape husbandry) but also for a process to address the inherent need for financial incentive. One key technique in a tool kit devised for developers now tested in coastal Queensland is offset land trading, undertaken when all other conservation options are exhausted.

Methods are proposed using wide-ranging official databases, to select sites that serve as alternative lands when all other methods of on-site preservation are clearly impracticable. The values of the underlying natural ecosystems involved are recognized in accordance with Queensland Department of Environment and Natural Resources measures. Moreover, by aiming such alternative land efforts at strategically located designated 'cleared' lands, a net environmental gain can be measured to serve the necessary pricing purposes for the 'credit system' of the offset site (legally constituted as an 'environmental bank').

The outcome meets an urgent need in sustainable development terms. That is, it creates a new and potentially profitable rural enterprise (assuming this is legally protected for enduring financial and environmental reasons). If implemented in the first instance by leading large corporations in Queensland, it will quickly be adopted by individual 'champions', with the local knowledge, enthusiasm, and land management skills to deliver valuable results to themselves and their regional communities. Offsetting also has the potential to service other development relating to decontamination and dredging.

Using the above methodology, action is possible only when there is enough disturbed land to rehabilitate. Questions have arisen concerning the availability of a sufficient supply of land for offsetting purposes. Regrettably, disturbed land is in abundance, with much (understandably) located near urban areas where development proposals are commonest.

A final consideration at this point relates to the various biophysical purposes which environmental banks serve. The above examples are based on biodiversity credits, but there seems no reason why this should not include various associated components of such an ecosystem such as carbon, wetlands, scarce species, etc. The problem is to avoid credit 'double dipping', and a formula to overcome this is a priority task ahead for resource economists.

Such new tools, when used in conjunction with others highlighted through the Regional Landscape Strategy process, hold promise of a feasible way through the confusion, costs and delays associated with current legitimate demand for development.

Hugh Lavery