



**Queensland University of Technology**  
Brisbane Australia

This is the author's version of a work that was submitted/accepted for publication in the following source:

Lavery, Hugh (2012) Regulatory compliance as a means to achieve environmental sustainability at some large coastal developments in Queensland. *Queensland Environmental Practice Reporter*, 17(79), pp. 240-251.

This file was downloaded from: <http://eprints.qut.edu.au/69337/>

**© Copyright 2012 Please consult the author**

**Notice:** *Changes introduced as a result of publishing processes such as copy-editing and formatting may not be reflected in this document. For a definitive version of this work, please refer to the published source:*

# QUEENSLAND ENVIRONMENTAL PRACTICE REPORTER

VOLUME 17  
ISSUE 79  
2011 / 2012



ISSN 1323-7349

# PROFESSIONAL COMMENTARY AND CRITIQUE

## 1. Regulatory Compliance as a Means to Achieve Environmental Sustainability at Some Large Coastal Developments in Queensland

*By Hugh J Lavery*

### Summary

The growing public concern about the complexity, cost and uncertain efficacy of the statutory environmental impact assessment process applying to large-scale projects in Queensland is reviewed. This is based on field data gathered over the past six years at large-scale marina developments that access major environmental reserves along the coast. An ecological design proposal to broaden the process consistent with both government aspirations and regional ecological parameters – termed Regional Landscape Strategies – would allow the existing Environmental Impact Assessment to be modified along potentially more practicable and effective lines. The result should lead to easier collaboration with peak industry organizations that are seeking higher standards of practice in the field of environmental management. It offers private enterprise the incentive for more effective operational planning and corporate policy with respect to the environment and, in turn, translates to long-term economic viability in any business with respect to their natural resources.

### Introduction

Environmental management, nowadays aimed to achieve sustainable development,<sup>1</sup> has historically been pursued in Queensland through Crown devices – national parks, endangered species lists, and environmental impact assessments.<sup>2</sup> Only the last of these (EIA) engages the private sector, where prospective environmental disturbances that may be anticipated in the course of a proposed large-scale development can be addressed in an Environmental Impact Statement (EIS).<sup>3</sup> For this, measures prescribed in appropriate legislation are required to be followed. Increasing amounts of time and money are being expended satisfying the constantly refined regulations, though with growing doubt about both ecological and economic value.<sup>4</sup>

Studies of this approach have been made in respect of sustainability at large downstream marina developments in Queensland, and results reported recently in a series of papers.<sup>5</sup> Matters such as benchmarking, core remnant areas, ecological strategies, ecological landscaping, linear buffer zones, offsetting, and social surveys have been examined and techniques for their implementation created by way of case studies. Critical attention has thus been paid to spatial and temporal factors broader than those applying on site. The result has been the definition of a ‘tool kit’, with strategic regional

---

<sup>1</sup> *i.e.* acknowledging that harvest rates should equal regeneration rates and that waste emission rates should equal the natural assimilative capacities of the ecosystems into which these wastes are discharged (*after* HE Daly ‘Toward some operational principles of sustainable development’ (1990) 2 *Ecological Economist* 1).

<sup>2</sup> HJ Lavery, *National Parks – A Vital Concept on the Verge: 15<sup>th</sup> Romeo W Lahey Memorial Oration* (National Parks Association of Queensland, 2005).

<sup>3</sup> Queensland Department of Infrastructure and Planning, ‘Guidelines for Environmental Impact Statements under the Integrated Planning Act 1997 Version 2, September 2007’ (2007), <http://www.dip.qld.gov.au/resources/ipa/infrastructure/guidelines/eis>

<sup>4</sup> See *e.g.* L Brown, ‘Can we have it all? – Planning at the interface of development and environment’ (2000) 8 *Griffith University Professorial Lecture*, 1.

<sup>5</sup> A list of references is provided in the Appendix to this article.

landscape plans designed to overlap and enhance those of the EIA process.<sup>6</sup>

This paper investigates the overlap in the interests of implementing a more effective and efficient means to attain ecologically sustainable development (ESD).<sup>7</sup>

### **Methods**

Regional Landscape Strategies<sup>8</sup> prepared for four major gateway marinas being developed along the Queensland coastline (from Moreton Bay in the far south of the State, 1,850 km northwards to Port Douglas) were examined for their relationship to the EIA techniques as evolved over decades by the (now-called) Queensland Department of Environment and Resource Management (DERM) (previously the Environmental Protection Agency, EPA). These latter techniques were also studied in relation to Construction Environment Management Plans specifically conceived for two of the study marinas (Meridien Marinas (MM) Port of Airlie in the Whitsunday region of central Queensland, and MM Horizon Shores in Moreton Bay).<sup>9</sup> With regard to post-construction functions not covered by the EIA, these two localities, along with MM Port Douglas, were studied also in relation to operations manuals prepared (or presently being compiled) for the four marinas and with respect to industry initiatives that are increasingly being instituted.

### **Environmental Impact Assessment**

The purpose of this mainstream statutory process, culminating in an Environmental Impact Statement (EIS), is stated to be *'To protect Queensland's environment while allowing for development that improves the total quality of life, both now and in the future in a way that maintains the ecological processes on which life depends'*.<sup>10</sup> Generic Terms of Reference (TOR) for an EIA have been provided,<sup>11</sup> though these were designed for use by mining projects. No such Terms exist for the largest spread of land utilizers in Queensland *viz.* the agricultural and pastoral industries.<sup>12</sup> Moreover, the TOR guidelines do not represent government policy, nor is it intended to establish mandatory requirements for either government or (the mining) industry. Importantly, the TOR document *'may not be exhaustive. It should not be interpreted as excluding from consideration matters deemed to be significant but not incorporated in them, or matters currently unforeseen (and) that emerge as important or significant from environmental studies or otherwise.'* The rationale is that the TOR is not comprehensive or limiting because *'there cannot be complete knowledge in advance of undertaking an EIA of what the EIA studies may find'*. In due course, the EIS purportedly *'addresses all relevant matters concerning environmental values, impacts of those values and proposed mitigation measures'*.<sup>13</sup> These efforts are required to have particular regard to the principles of ESD.<sup>14</sup> The coastal environment attracts special attention (TOR s.4.6) about potential impacts and mitigation

---

<sup>6</sup> HJ Lavery, 'Methods to achieve net environmental gain in the course of development in Queensland' (2011) 16 (74) QEPR 149.

<sup>7</sup> ESD objectives are broader than those considered in this paper e.g. in the Melbourne Planning Scheme (2006), the ESD Guide for Melbourne Docklands aims not only to 'conserve and protect natural resources', but also to 'create long-term value', 'maximize precinct opportunities', 'balance economic, social and environmental outcomes', 'set standards, requirements and benchmarks (on all precinct features)', 'develop a collaborative approach (about all sustainability issues)', 'promote alternative transport opportunities' and 'create a healthy urban environment'.

<sup>8</sup> Commercial-in-confidence technical documents prepared by specialist consultants at the earliest possible stage of project design (see Lavery above n 6).

<sup>9</sup> By private sector consultants GHD Pty Ltd, Brisbane, Q. 4000.

<sup>10</sup> This follows Institute of Environmental Assessment UK, 'Principles of environmental impact assessment best practice' (1999) International Association for Impact Assessment <http://www.greenchannel.com/iea/>. See also n 49.

<sup>11</sup> Queensland Department of Environment and Resource Management, 'Terms of reference for <enter project name> project environmental impact statement (EIS)' (2011) <http://www.derm.qld.gov.au>.

<sup>12</sup> See e.g. MA Burgman & DB Lindenmayer, *Conservation Biology for the Australian Environment* (Surrey Beatty & Sons, 1998).

<sup>13</sup> DERM above n 11.

<sup>14</sup> As listed in Council of Australian Governments, *National Strategy for Ecologically Sustainable Development* (1992).

measures – in this instance in the context of the State Coastal Management Plan and Regional Coastal Management Plans.<sup>15</sup>

Other special policies also apply along the Queensland coastline related, for instance, to the adjacent Great Barrier Reef,<sup>16</sup> Moreton Bay (a RAMSAR Wetland Site<sup>17</sup>), regional coastal plans<sup>18</sup> or broader regional matters.<sup>19</sup>

A vital part of the EIS is the Environment Management Plan (EMP) required for each component of a proposal. In Queensland, guidelines for these operational elements of the project require their essential components to address performance criteria and objectives, strategies for controlling environmental impacts, and monitoring about a comprehensive list of issues during the construction, operational and decommissioning phases of the project.<sup>20</sup>

### **A Queensland example of the EIA process**

MM Port of Airlie is a sizeable example of the application of the EIA process. This ‘Significant Project’ (under State jurisdiction) and ‘Controlled Action’ (under Commonwealth jurisdiction) is a planned 47-ha development being created in Boat Haven, a shallow (‘muddy’) bay to the immediate south of Airlie Beach in the Whitsunday region of central coastal Queensland. It is adjacent to the Great Barrier Reef World Heritage Area, to which it acts as one of two major regional gateway marinas accessing large areas of marine parks and island national parks. In such a prominent coastal location, the developers have been especially mindful of public scrutiny of potential environmental impacts. Currently, some 20 State and Commonwealth Acts of Parliament make provision for relevant conservation actions, with a plethora of guiding policies, plans and regulations. Any activity also must be consistent with local authority by-laws and their dictates. At a less formal but more vocal level, an audience of some one million visitors each year is on hand to express their interests in the on-going conduct of activities related to this major tourist destination.

Since the first development proposal to the Queensland Government in 1988, documents about Boat Haven site have been produced in the form of Initial Advice Statements, Terms of Reference for the Preparation of an Impact Study, Draft Planning Frameworks, Draft Impact Assessment Studies, Impact Assessments, Preliminary Environmental Assessment Reviews of Draft Impact Assessment Studies, Public Environmental Reports and Supplementary Environmental Impact Statements, together with a range of associated documents (*e.g.* Material Change of Use and Environmentally Relevant Activities for Marinas Applications for Approval) and technical reports about such broad matters as coastal processes, coastal management, flora and fauna (lists), seagrass distribution, aquatic ecology and fisheries, and on such specific planning knowledge matters as archaeology, soils, air and noise quality, rubbish and boat salvage, water quality/effluent discharge, quarrying/extraction, remediation, dredging/sediment disposal, contamination and de-contamination management, marine wildlife salvage, open space and recreation, and user demands. Other topics

---

<sup>15</sup> Queensland Department of Environment and Natural Resources, State Coastal Management Plan – Queensland’s Coastal Policy (2002).

<sup>16</sup> See *e.g.* M Bugler, Environmental Guidelines for Marinas in the Great Barrier Reef Marine Park (Great Barrier Reef Marine Park Authority, 1994); Department of Environment and Heritage, Reef Water Quality Protection Plan (2006), <http://www.deh.gov.au/coasts/pollution/reef/>

<sup>17</sup> See *e.g.* Queensland Department of Environment and Heritage, Proposal for Nomination of Moreton Bay, Queensland, Australia, as a Site for Listing under ‘The Convention of Wetlands of International Significance especially as Waterfowl Habitat (Ramsar Convention) (1991).

<sup>18</sup> See *e.g.* Ecograph, Nature Conservation Strategy, (Gold Coast City Council, 1988).

<sup>19</sup> See *e.g.* Queensland Department of Infrastructure and Planning, Draft South East Queensland Regional Plan 2009-2031 (2008).

<sup>20</sup> Queensland Environmental Protection Agency, ‘Preparing environmental management plans’ (2011) <http://www.derm.qld.gov.au>. See also Lavery above n 2.

have environmental relevance but were undertaken primarily for engineering purposes *e.g.* hydrology surveys and hydrodynamic modelling, geotechnical investigations, stormwater run-off assessments, acid sulphate soils mapping, and traffic studies. Such documents were accompanied by Concurrence Responses, Review Reports on Impact Assessment Studies, Management Plans, Internal Audits and multiple requested Versions, plus copious other official correspondence.

### **Construction Environment Management Plans**

EMP guidelines<sup>21</sup> include to *'propose the indicators to be measured to demonstrate the extent to which the environmental protection is to be achieved'*. Innovative Construction Environment Management Plans (CEMP), as designed for MM Port of Airlie and MM Horizon Shores, have focused mostly on local and practical matters *e.g.* staff training, monitoring, incident responses and corrective actions, recording and communications, and community awareness. They were much more dynamic in approach than the preceding EIAs, including that they were reviewed and updated on a regular basis to accommodate new knowledge; the CEMP thus analysed EIA material but also summarised the results of a range of subsequent studies. This provided for the determination (in due course) of procedures for environmental management during operation and maintenance of the development.

These CEMPs had a crucial role in reporting – and acting on – local community interests in the course of the conduct of the projects. They provided for specific on-site and off-site actions relative to construction through appropriate organizational responsibilities, including sponsorship of a Community Reference Group (CRG) with a range of best-qualified professional and community representatives. The MM Port of Airlie CEMP was revised four times during the three-year term of the CRG. While each CEMP had some restrictions on its community use,<sup>22</sup> local engagement was thorough.<sup>23</sup> Regular community newsletters were produced and distributed, along with Fast Fact Bulletins addressing more immediate issues. Central to this effort was the routine public reporting of independent environmental audits.

### **Environmental Management Systems**

The official guidelines<sup>24</sup> conclude that an EMP *'may relate'* to post approval operations. An initial form of these has been the integrated Environmental Management System (EMS).<sup>25</sup> The International Organization of Standardization (ISO) has defined the requirements for an EMS and guidelines for its use (Quality Management System document ISO14005: 2010). It provides a self-declaration of compliance by an organization with the provisions of an approved EIS (presently generated from EIAs).

In an MM Horizon Shores (May 2000) example of such a document<sup>26</sup> – *'detailing how the potential environmental impacts will be managed'* – issues such as sewage treatment, abrasive blasting, metal surface coating, motor vehicle repair, boat maintenance and mooring operations were the focus of attention. It laid down policy and commitments which address the efficient and demonstrable management of natural assets in its care, optimal utilization of non-renewable resources and legal compliance relating to the environment and the use of natural resources, without expounding further on these activities.

---

<sup>21</sup> EPA above n 20.

<sup>22</sup> ISO9001: 2000 Standard of Quality Assurance Clause 4.2.3 stated that 'documents are distributed to those who perform the tasks that are described in them; controls for external users of documents are imperative, and; the organization must prevent the unintended use of obsolete copies of documents'.

<sup>23</sup> Including that interested parties had personal access to a digital copy of the latest CEMP version held at the site offices.

<sup>24</sup> EPA above n 20.

<sup>25</sup> Australian EMS Manual Committee, *The Australian EMS Manual* (Greenridge Press, 2003).

<sup>26</sup> Horizon Shores Holdings Pty Ltd, 'Integrated environmental management system Horizon Shores Marina' (2000) unpublished technical report.

Subsequent reports of ecological monitoring<sup>27</sup> – measuring possible immediate environmental degradation – are still inconclusive about long-term effects; efforts should be considered more as a contribution to devising a meaningful sustained monitoring program. The considerable efforts over years to monitor seagrass distribution at both Airlie Beach<sup>28</sup> and Port Douglas<sup>29</sup> recognize that with or without human impact, the species come and go seasonally under circumstances not yet predictable.

### **Operations Manuals**

Government has paid comparatively little attention to operations manuals that address the on-going aspects of environmental impact. Anti-pollution regulations are based on standards usually applying at an industry level (rather than local or regional environmental level).<sup>30</sup> This tends to apply worldwide.<sup>31</sup> In the event, most operational plans currently are so pragmatic, detailed and activity-focused that they tend to be outside the active interest (or experience) of governments.

As an example, although the MM Horizon Shores Operations Manual<sup>32</sup> (currently being revised) prescribed that staff have a duty to comply with environmental legislation, report breaches, and ensure that other involved parties comply, it addresses in particular only dust control, contamination of water, stormwater management and fire.

Such manuals are distinct from local instructions to boat operators/crews (marina 'by-laws'), which mostly address safety issues rather than environmental protection.<sup>33</sup>

### **Other environmental prescriptions**

There is an increasing number of industry-supervised schemes which advocate better environmental management performance.<sup>34</sup> The Clean Marina Program of the Marina Industries Association of Australia<sup>35</sup> (and of other organizations overseas) is based on ISO14001 standards, with attention again mostly directed towards on-site issues (*e.g.* clean boats, boat maintenance, engine maintenance, boat operation and fueling, garbage and fishing waste) arising from construction and subsequent

---

<sup>27</sup> See *e.g.* GHD, 'Meridien Marinas Pty Ltd Report for Horizon Shores Marina Redevelopment Ecological Monitoring Program' (May 2007, September 2007, January 2008, February 2008) and supplementary unpublished technical reports including GHD Pty Ltd, 'Meridien Marinas Horizon Shores Coastal Environmental Management System Manual' (May 2007), Belleng VDM Pty Ltd 'Sewage Treatment Plant Horizon Shores Marina, Steiglitz, Site-based Management Plan' (November 2006), and Precise Environmental Pty Ltd, 'Monthly monitoring report' (September 2010).

<sup>28</sup> See *e.g.* FRC Environmental, 'Pioneer Bay environmental monitoring program: tenth monitoring event, April 2003' (2003) unpublished technical report to Windward AB Pty Ltd.

<sup>29</sup> See *e.g.* FRC Environmental, 'Port Douglas harbour dredge impact assessment study: aquatic ecology' (2004) unpublished technical report to Kellogg, Brown & Root, 7-1.

<sup>30</sup> See *e.g.* Business Environmental Guidelines: A guide to Pollution Solutions for Marine Service Industries (Brisbane City Council, 2007); and *Environmental Guidelines for Boat Maintaining and Repair: Environmentally Relevant Activity*, 49 (Brisbane City Council, 2009).

<sup>31</sup> See *e.g.* Anon. *Environmentally friendly practices for users of moored vessels in Puerto José Banús, S.A.* (2008), <http://www.puertojosebanus.es/mbpa/ing.htm>.

<sup>32</sup> C Hannah, 'Environmental responsibility and procedures for Horizon Shores Marina staff' (2004) unpublished report.

<sup>33</sup> Thus the operational Rules and Regulations at MM Port Douglas (as at 2009) addressed 29 matters, only six of which could conceivably contribute to environmental conservation. (The actual *Operations Manual* [2005] addressed only safety, operation of fuel pumps, boat fuelling procedures, inspection and maintenance procedures for fuel plant and equipment, maintenance of the marina and shopping centre, and construction activities).

<sup>34</sup> Ranging from *e.g.* UNEP Working Group for Cleaner Production, *Eco-efficiency for the Marine Industry* (Queensland Government, 2006) to *EnviroDevelopment Standards Version 2.0* (Urban Development Institute of Australia [Queensland], undated).

<sup>35</sup> Marina Industries Association of Australia, *Clean Marinas Handbook* (2007), [http://www.marinas.net.au/clean\\_handbook.php](http://www.marinas.net.au/clean_handbook.php).

particular activities. Other initiatives underway overseas (such as The European Eco-Management and Audit Scheme,<sup>36</sup> The Blue Flag<sup>37</sup>) remain to be introduced into Australia. Schemes with much broader but relevant application also now exist e.g. AGIC Sustainability Ratings.<sup>38</sup>

All serve best as encouraging guidelines and incentive for better environmental results to be sought by individual marina managers.

### **Regional Landscape Strategies**

A series of papers<sup>39</sup> has described how a *Regional Landscape Strategy* (RLS) has been compiled using 13 techniques ('tools') in order for development projects to achieve sustainable outcomes. The stated purpose of each tool was explicit, mostly addressing ecological matters beyond the scope of current EIAs. Thus, 'reference benchmarking' sought to establish highest industry standards; 'core remnants' to recognize basic natural ecosystems; 'natural characterisation' to appreciate characteristic values and identify signature species; 'ecological strategies' to understand the holistic behaviour of relevant native 'sentinel' species; 'eco-dynamic patterns' to identify key long-term monitoring sites; 'ecological landscapes' to maximize vegetation viability and for educational and promotional purposes; 'linear buffer zones' to enable management (by education) of off-site drivers of the catchment's natural systems; 'offset trading' to maximize both environmental and development outcomes; 'social surveys' to discover facts about relevant potential impacts; 'community reference' to ensure local engagement in environmental management; 'compliance operations' to meet prescribed statutory requirements; 'regional auditing' to ensure reporting of off-site impacts on the development site; and 'research' to resolve still-required new knowledge for sustainability practices.<sup>40</sup>

This new process is presently being tested successfully at – and applied over – some large greenfield developments in Queensland. Interim results indicate comparisons between the EIA and RLS processes as outlined in Table 1.

---

<sup>36</sup> European Economic Community, *EMAS - Performance, Credibility, Transparency* (2008), <http://www.ec.europa.eu/environment/emas/documents/legislative>.

<sup>37</sup> The Foundation for Environmental Education (2007). *The Blue Flag Eco-label for Beaches and Marinas*, <http://www.blueflag.org>.

<sup>38</sup> Australian Green Infrastructure Council's *Sustainability Ratings Scheme*, [http://www.agic.net.au/agic\\_annual\\_report\\_2010](http://www.agic.net.au/agic_annual_report_2010).

<sup>39</sup> Listed in Appendix.

<sup>40</sup> e.g. as for MM Port of Airlie in N Gribble et al, 'Port of Airlie Marina Development Project: Fisheries resources monitoring in Boathaven Bay' unpublished report by Fisheries Queensland for Meridien Pty Ltd, 2010.

**Table 1. List of prescribed EIA activities/actions gainfully supplemented by using RLS tools**

<i>EIA requirement</i>	<i>RLS need</i>
Statewide common-denominator compliance levels during the course of the development	Planning and performance standards based on benchmarking to industry-best practice aspirations prior to Development Application (outset of concept planning)
Setting aside of some undefined land (usually a perimeter band), off-site regulator-managed	Identification and management planning of core natural sites (within the regional context of its pre-settlement ecosystems), on-site operator-managed
Identify all current native and introduced species on site	Highlight native species with signal values (umbrella/sentinel species, regional icons, flagship species) at catchment level
No specified landscaping (beyond prohibition of gazetted weeds)	Landscape in accordance with local nature and history of catchment land-use
No understanding demanded of the broad ecological behavior of relevant species	Priority conservation efforts for selected species based on their overall ecological behaviour
No regional ecological patterning prescribed	Illustrate the broad pattern of behavior of major elements of the environment to determine site place and role
Sacrifice 40m-wide perimeter area as buffer	Manage (by offsetting and/or education) those upstream areas instrumental in downstream environmental performance
On-site offsetting (and land management) only (under review)	Catchment-wide offsetting (and management) to maximize net environmental gain and functional lift
No local community surveys specified during the term of construction	Knowledge of relevant prospective impactors sought indefinitely
Regulatory compliance (only) – regulator-oriented and on-site	Proactive steps beyond compliance, in accord with immediate catchment ecosystems, aimed at reducing EIS dictates – operator-oriented and region-wide
Contain behaviour to within limits perceived by government to be acceptable, for government information	Engage the community – for community education – particularly because of its working relationship with site performance, for community education
Meet broad-based standards (only)	Provide leading-edge exemplars
Audits in accordance with site behaviour	Audits in accordance with overall ecosystem influences (see following)
Short-term investigations, mostly of available information, to meet compliance questions, usually conducted by consultants and appearing in interim commercial-in-confidence reports*	Indefinite scientific research to define priority ecological sustainability questions, best undertaken through universities and published in archived technical journals

\* Clearly there are exceptions; the work of Netherlands Commission for Environmental Assessment is one example.

Despite the attention paid to the need for environmental indicators,<sup>41</sup> the on-going problem with environmental performance at any one site is that it relies, more often than not, on factors off-site. Thus, for example, at MM Horizon Shores, the effluent pond for Rocky Point Sugar Mill lies along the low-profile drainage line of a flood plain that discharges almost directly into the marina. It does so frequently (when rainfall exceeds some 25mm), flooding the roadways in passage. At MM Port of Airlie, seven off-site point sources were identified with the potential to exceed the potential impact that two carefully monitored sources might have on-site. Moreover, the monitoring of 'sentinel' natural resources may well be conducted more accurately off-site (and thus be predicted on-site), as for the coral reef and associated mangrove forest at Airlie<sup>42</sup> or for the primary ecosystem of MM Horizon Shores.<sup>43</sup> Clearly, monitoring (and auditing) of a site should extend regionally, all the more so in the case of downstream marinas. Because of trans-boundary problems (such as access, regulatory backing, good neighbour relations and cost), the subject of regional auditing remains to be studied in more detail – with an appropriate methodology devised. Recognition of the problem and its essential need will be a start towards suitable assessments of terrestrial geological, groundwater, surface water, biological and land-use systems, people impacts and hazards, and marine hydrodynamic processes, water quality, biological systems, people impacts and hazards.

Legislative provision does exist for such wide-ranging work in Queensland: '*Existing environmental values of the area to be affected, localized and cumulative impacts on these values, management including offsetting, monitoring and auditing of resources*'; the depth of data required is illustrated by vegetation, which requires that '*in addition to the species found in the field survey, provide an indicative list of all the known or likely species within a 100km area around the project and the local bioregion, highlighting any threatened or near threatened species*' and '*correlate the occurrence of animals of conservation significance to mapped vegetation units or habitats to facilitate the development of measures for their protection*'.<sup>44</sup> It is indicative of the magnitude of a task with these criteria to note that the on-going Jackson Hole Elk and Bison EIS has been in preparation since 1912.<sup>45</sup>

The 13 tools of an RLS<sup>46</sup> may be used at different levels of priority according to local environmental conditions, and may be used in different combinations again according to the circumstances applying. Their use in the routine development process is integral, and predictable; pre-planning is possible, including through the eventual recognition and definition of a suite of environmental management 'signatures' that will undoubtedly appear for developments of similar type (Table 2).

---

<sup>41</sup> See e.g. Environment Australia, *Environmental Indicators for National State of the Environment Reporting: Estuaries and the Sea* (Department of Environment and Heritage, 1998).

<sup>42</sup> HJ Lavery et al, 'Management of a tributyl tin issue in a marina development in Queensland' (2011) 16(74) QEPR 178.

<sup>43</sup> HJ Lavery and MA Gane, 'Measurement of the net environmental benefit of offsetting in Queensland' (2011) 16(74) QEPR 168.

<sup>44</sup> DERM above n 11.

<sup>45</sup> S Clark, *Ensuring Greater Yellowstone's Future* (Yale University Press, 2008).

<sup>46</sup> Described in Lavery above n 6.

Table 2. Timing of the use of Regional Landscape Strategy tools in the course of development planning

Development stages Components	PRE-APPLICATION	DA PROCESS	CONSTRUCTION	OPERATIONS
<i>Concept design</i>				
<i>Financial plans</i>				
<i>Regional landscape strategy*</i>	Reference benchmarks			Reference benchmarks
	Core remnants			Core remnants
	Natural characterization			Natural characterization
			Ecological strategies	
	Ecodynamic patterns			
			Ecological landscapes	Ecological landscapes
			Linear buffer zones	Linear buffer zones
			Offset land mitigation	Offset trades
	Social surveys		Social surveys	Social surveys
		Community reference	Community reference	Community reference
		Regulatory compliance	Regulatory compliance (CEMP)	Regulatory compliance (Ops. Manual)
			Regional audits	Regional audits
	Research (signatures)		Research**	Research**
<i>Architectural/engineering drawings</i>				

\*Documented in Pre-application stage as a *Regional Landscape Strategy*, and perceived to be undertaken first - a once-over-lightly use of all tools, then applied more effectively during the ensuing development stages as above [subject to signature priority].

\*\* As found necessary when applying the priority tools.

The outcome of an RLS which pays due regard to EIS mandates is a much more disciplined and focused effort that is both more cost-effective and environmentally-effective.

### A new corporate Environmental Management System for marinas

The differences between the outcomes of an EIA and a combined EIS/RLS process have been described.<sup>47</sup> In essence, the distinction lies in the larger spatial and temporal dimensions of the latter – essential if any development is to be in keeping with the dynamics of the Australian environment. Thus benchmarking is undertaken on a broader basis; focus is placed on core remnant natural resources; the unique character of sites is promoted; attention to ecological design is from the onset of concept planning; the lessons of history are absorbed; the perturbations of the environment over time are addressed; sustainability is pursued voluntarily; independent research is conducted where needed; performance assessments are more indicative; and management effect is both tightened and extended.

Most new marinas are, in reality, the product of redevelopment works. To the strategic ecological outlook provided by an RLS, and the realities of compliance with existing EIA requirements, the approach to any desirable new EMS inevitably demands an environmental audit of existing operations and activities.

The resultant corporate EMS would then address matters throughout the life of the development *viz.* in its planning phase<sup>48</sup> (using an EIS/RLS), implementation (construction) phase (using a CEMP), and an operational (including monitoring and review) phase (using an Operational Environmental Management Plan [OEMP]). The first of these would cover policy and vision; risk assessment; legal, policy and best-practice requirements; existing environment, objectives and targets; the long-term program. The second phase would cover control procedures (EIS, CEMP); roles, responsibilities and resources; training, awareness, competencies; communications; incident preparedness and response; document control and record keeping. The last phase (OEMP) would cover operations; auditing and evaluation; and corrective actions. Such an 'audit' is an integral part in the successful delivery of environmental management.

### Discussion

There is no doubt that nautical activities can and do impact on the environment.<sup>49</sup> In recognition of this, the Queensland Government (as elsewhere) has instituted the EIA process. Its purpose at the level of the *Sustainable Planning Act 2009* is 'to help the assessment manager and any concurrence agencies to make an informed decision about the development application'.<sup>50</sup> As always, such matters demand that the correct questions to be asked about the relevant higher priority issues. Moreover, the Act limits the duration of a State Planning Policy to 10 years (generally), an extremely short period in environmental terms.

Inescapably, sustainability in ecology involves 'the optimization of tangible and intangible social and economic benefits which ecosystems can provide the community [and this sets] the goals of maintaining the functional basis of ecosystems, biodiversity and the options available for future generations'.<sup>51</sup> 'The effective management of any ecosystem is

---

<sup>47</sup> Lavery above n 6.

<sup>48</sup> The two different but closely related processes involved in environmental planning – the institutional approach and the commercial approach – have been highlighted by SO Ryding, *Environmental Management Handbook* (IOS Press, 1994).

<sup>49</sup> See e.g. R Moreau, *Nautical Activities: What Impact on the Environment?* (European Confederation of Nautical Industries, 2007).

<sup>50</sup> Chap 9 Part 2. That is, to deliver sustainable outcomes, manage the effects of development on the environment, and coordinate and integrate planning; DERM, *South East Queensland Natural Resource Management Plan 2009-2031* (2009). Under the *Integrated Planning Act 1997*, it was 'to provide sufficient information to the assessment manager, concurrence agencies, designators and the Commonwealth Minister for the Environment and Water Resources to enable them to fulfill their duties'.

<sup>51</sup> The Ecologically Sustainable Development Working Groups, *Final report: Forest use and Final report: Tourism* (Australian Government Publishing Service, 1991).

*dependent upon at least a rudimentary understanding of its major components, the key processes which underpin its function, and its response to the impacts of perturbations such as disturbance*.<sup>52</sup> For even the most straightforward of resources in the case of any particular marina (e.g. mangroves, fish, coral), such understanding is clearly lacking. Given that many environmental issues are complex, plagued with uncertainty and highly political, it is not surprising that the EIA alone has long been viewed as ‘a highly stable formal and informal process that circumvents the environmental problems they generate’.<sup>53</sup>

The TOR requirement<sup>54</sup> to ‘describe the existing ecological values that may be affected by the project – in terms of the terrestrial and aquatic ecosystems and their interaction, biological diversity, the existing integrity of ecological processes, including habitats of threatened or near threatened species, the integrity of landscapes and places, including wilderness and similar natural places – illustrated by maps, diagrams and photographs’ is a monumental task that still begs scientific direction, methodological guidelines (including nomination of relevant indicator species), and prioritization, if the initiative is to retain any semblance of governance and affordability. Poor results will be observed readily on Queensland coastlines because of both downstream vulnerability and public sensitivity about these areas. Reliance on ISO standards, especially where best-practice results are desired, will not be sufficient.

More advanced frameworks are increasingly being employed for the development and application of measures of sustainable development.<sup>55</sup> Previous development sub-divisions, typified by numerous small freeholdings, will need a broader local oversight if sustainable landscapes are to be secured. Local Governments have the regulatory authority but not the funds needed to patrol these. The alternative is that outcomes will be directed through the applied discipline of engineering – with dire consequences forecast if this is allowed to happen.<sup>56</sup>

There must be an outlook in development that seeks net environmental gain over and above the minimization of impacts inevitably brought about by that development. Such gain needs to be manageable in terms of land tenure and cost. The approach in this paper offers private enterprise – as well as government – an incentive to operate accordingly, and thus to pursue pragmatically an appropriate corporate policy with respect to the environment. This, in turn, translates to long-term economic viability in any business with respect to the local community and its environment.

### **Acknowledgement**

Use of the relevant *Regional Landscape Strategy* and other corporate documents was generously permitted by Meridien Marinas Pty Ltd in the interests of more effective sustainable development.

*Hugh Lavery*

---

<sup>52</sup> Burgman & Lindenmayer above n 12 (who add ‘There is presently relatively poor understanding of many of these principles for virtually every Australian ecosystem’).

<sup>53</sup> WA Rosenbaum, *The Politics of Environmental Concern* (Praeger, 1973).

<sup>54</sup> DERM above n 11.

<sup>55</sup> LF Mortensen, ‘Measuring sustainable development’ in B Nath et al, *Environmental Management in Practice Vol 1: Instruments for Environmental Management* (Routledge, 1988), 124.

<sup>56</sup> See e.g. E Wolanski, *The Environment in Asia Pacific Harbours* (Springer, 2007) and FA Comin et al ‘Uses, abuses and restoration of the coastal zone’, in *Ecological Restoration: A Global Challenge* (Cambridge University Press, 2010) 189.

**Appendix**

- 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.
- 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.
- HJ Lavery, 'Methods to achieve net environmental gain in the course of development in Queensland' (2011) 16(74) QEPR 149.
- HJ Lavery and MA Gane, 'A site selection process for environmental offsetting purposes in Queensland' (2011) 16(74) QEPR 157.
- HJ Lavery and MA Gane, 'Measurement of the net environmental benefit of offsetting in Queensland' (2011) 16(74) QEPR 168.
- HJ Lavery et al, 'Management of a tributyl tin issue in a marina development in Queensland' (2011) 16(74) QEPR 178.
- HJ Lavery, 'A history of environmental management in the field in Queensland: episodes of activity' (2011) 17(76) QEPR 29.
- HJ Lavery et al, 'Ecological design with respect to the environment of large-scale marina developments in Queensland' (2011) 17(77) QEPR 135.