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Conservation Offset Policy for Alberta: A Comparative Legal Analysis

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UNIVERSITY OF CALGARY

Conservation Offset Policy for Alberta:

A Comparative Legal Analysis

by

David William Poulton

A THESIS

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Abstract

The Province of Alberta has expressed an interest in conservation offsets as a new policy tool to promote land stewardship. The tool is enabled by provisions of the *Alberta Land Stewardship Act*. This thesis explores what Alberta must do in order to develop and implement an effective and credible conservation offset mechanism. It reviews the concept of conservation offsets and some of the key issues inherent to it. Focussing primarily on legal and regulatory aspects, it reviews the experience of conservation offset regimes for wetlands in the United States and for native vegetation in the State of Victoria, Australia. Drawing lessons from each of these case studies, it considers Alberta's policy position and makes recommendations for bringing an Alberta conservation offset system to fruition.

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Table of Contents

Abstract.....	ii
Acknowledgements.....	iii
Table of Contents.....	iv
List of Figures.....	x
Chapter One: Introduction	1
1.1 Background	1
1.2 Research Question and Methodology	3
1.2.1 Research Question	3
1.2.2 Comparative Law and Policy Approach and Choice of Comparators	3
1.2.3 Methodology	5
1.3 Organization and Structure	6
Chapter Two: Market-Based Instruments and Conservation Offsets.....	8
2.1 Introduction	8
2.2 Market-Based Instruments	8
2.3 Conservation Offsets.....	14
2.3.1 The Concept of Conservation Offsets	14
2.3.2 Drivers of Conservation Offsets	17
2.3.2.1 Voluntary Conservation Offsets	17
2.3.2.2 Conservation Offsets Required Piecemeal by Regulators	19
2.3.2.3 Conservation Offsets Required by Regulation or Policy.....	20

2.3.3 Conservation Offset Delivery Mechanisms	23
2.3.3.1 Project-Specific, Developer-Led	23
2.3.3.2 Conservation Offset Banking	24
2.3.3.3 In-Lieu Fees	27
2.4 Conclusion	28
Chapter Three: Challenges and Issues with Conservation Offsets	29
3.1 Introduction	29
3.2 Equivalency, Fungibility and Currency	29
3.2.1 Equivalency	29
3.2.2 Values Clarification, Fungibility and Proxies	33
3.2.3 Currency Design	36
3.2.4 Like-for-like?	40
3.3 Additionality	42
3.3.1 Positive Management Actions	43
3.3.2 Averted Losses	45
3.3.3 Other Conservation Actions	49
3.4 Temporal Issues	50
3.4.1 Time Lags in Offsetting	50
3.4.2 Offset Duration	51
3.5 Uncertainty and Risk Management	52
3.5.1 Limits to the Use of Offsets	52
3.5.2 Research	53
3.5.3 Diversity of Techniques	53

3.5.4 Multiplier Ratios	54
3.6 Availability of Offset Opportunities	55
3.7 Conclusion.....	56
Chapter Four: Case Study: Offsetting for Wetlands In the United States.....	57
4.1 Introduction	57
4.2 Legislative Framework.....	58
4.2.1 Authority of Agencies	59
4.2.2 Scope of Application	60
4.3 The Evolution of No Net Loss and Compensatory Mitigation	61
4.3.1 Policy Development and Evolution	62
4.3.2 Policy Critiques	68
4.3.3 The Reforms of 2008.....	72
4.4 Current Operation.....	74
4.4.1 Mitigation Banking.....	75
4.4.2 In-Lieu Fees.....	77
4.4.3 Permittee-Responsible Mitigation	78
4.4.4 Preferences	79
4.5 Comparative Factors	80
4.5.1 Equivalency, Fungibility and Currency	80
4.5.2 Additionality.....	81
4.5.3 Timing and Duration	83
4.5.4 Uncertainty and Risk Management	85
4.6 Discussion	85

4.6.1 Third Party Credit Providers	85
4.6.2 Level Playing Field	86
4.6.3 Policy or Law?.....	86
4.6.4 Regulator/Proponent Relationships	87
4.6.5 Dual Agency Responsibility	88
4.6.6 Regional Flexibility	88
4.6.7 Public Land	89
4.6.8 The Mitigation Hierarchy	89
4.6.9 No Net Loss?	90
4.7 Conclusion.....	91
Chapter Five: Case Study: Offsetting for Native Vegetation in Victoria, Australia	92
5.1 Introduction	92
5.2 Legal Framework	93
5.3 Structure, Operation and Evolution, 2002 – 2013.....	94
5.3.1 Legislation and Policy	95
5.3.2 Basic Offset Framework	97
5.3.3 Critiques and Complications	102
5.3.4 The Evolution of Offset Supply Mechanisms 2002 - 2013.....	105
5.3.4.1 BushBroker	106
5.3.4.2 Native Vegetation Exchange	107
5.4 Review and Reform, 2012 – 2014.....	109
5.4.1 A New Purpose	111
5.4.2 New Guidelines	112

5.4.3 Summary of Reforms	118
5.5 Comparative Factors	119
5.5.1 Equivalency, Fungibility and Currency	119
5.5.2 Additionality	121
5.5.3 Timing and Duration	121
5.5.4 Uncertainty and Risk Management	122
5.6 Discussion	122
5.6.1 Values and Objectives	122
5.6.2 The Mitigation Hierarchy	123
5.6.3 Public Land.....	123
5.6.4 Information Cost.....	124
5.6.5 Dual Agency Responsibility.....	124
5.7 Conclusion.....	124
Chapter Six: Toward A Conservation Offset System for Alberta	126
6.1 Introduction	126
6.2 Policy Context.....	126
6.3 Independent Studies and Recommendations.....	131
6.4 Legal Framework	136
6.5 Key and Recommended Components for an Alberta Offset System	143
6.5.1 Ecosystem Objectives.....	143
6.5.2 Equivalency, Fungibility and Currency.....	144
6.5.3 Additionality.....	146
6.5.4 Timing and Duration	148
6.5.5 Uncertainty and Risk Management	149

6.5.6 Banking, Registry and Exchange	150
6.5.7 Responsibility and Oversight	151
6.6 Conclusion	153
Bibliography	156
Appendices	
Appendix I – Certification of Institutional Ethics Review	180
Appendix II – Interview Consent Form	181
Appendix III – Guidance Questions for Interviews	185
Appendix IV – List of Interviewees	187
Appendix V – Excerpts from <i>Alberta Land Stewardship Act</i> , SA 2009, c A-26.8	189

List of Figures

Figure 1: Conservation Offsets in the Mitigation Hierarchy	15
Figure 2: Victoria Location Risk Map	113

CHAPTER ONE

INTRODUCTION

The Province of Alberta has committed to explore the use of market-based instruments as a means of improving environmental protection and the conservation of natural resources. The purpose of this thesis is to explore what the Province must do to implement an effective and credible regime for one such instrument, conservation offsets.

1.1 Background

The *Alberta Land-Use Framework*,¹ (“the *Framework*”) released by the Province of Alberta in 2008, sought to address the complex impacts of the increasing demand on the Alberta landscape from a wide variety of activities. It expressed the situation as follows:

There are more and more people doing more and more activities on the same piece of land. This increases the number of conflicts between competing user groups and often stresses the land itself. Our land, air and water are not unlimited. They can be exhausted or degraded by overuse.²

To address the twin problems of user conflict and cumulative environmental degradation the *Framework* committed to the development of regional plans.³ With regions demarcated by the major watersheds of Alberta, the plans for each region were to define desired economic, environmental and social outcomes, determine specific trade-offs, and define a cumulative effects management approach.⁴

The pursuit of the *Framework*'s goals and the implementation of regional plans were to be facilitated by the development of new tools to encourage or require stewardship of the land,

¹ Government of Alberta, *Alberta Land-Use Framework* (n.p.: Government of Alberta, 2008) online: Alberta Environment and Sustainable Resource development <https://www.landuse.alberta.ca/Documents/LUF_Land-use_Framework_Report-2008-12.pdf> [the *Framework*].

² *Ibid* at 6.

³ *Ibid* at 22-27.

⁴ *Ibid* at 26.

among which are specified “market-based instruments.”⁵ The nature of such instruments will be examined closely in the following chapter. It is instructive here, however, to note the several benefits claimed for such instruments in the *Framework*. These include the equitable sharing of costs and benefits of conservation, the provision of incentives to conserve, the facilitation of innovation and “new stewardship opportunities,” and the attraction of new sources of funding for conservation and stewardship.⁶ Among the new instruments mentioned as applicable to both public and private lands were conservation offsets.⁷ Again, this term will be defined and explored in the following chapter, and throughout this thesis.

The *Framework* was enabled in law in 2009 by the passage of the *Alberta Land Stewardship Act*⁸ (“*ALSA*”). *ALSA* enables regional planning,⁹ with plans to be developed through a process of public consultation.¹⁰ The only mandatory elements of a regional plan are a vision and one or more objectives for the region.¹¹ Optional elements include trends, opportunities and challenges for the region,¹² policies to achieve or maintain objectives,¹³ the identification of thresholds and indicators,¹⁴ monitoring requirements,¹⁵ and actions to be taken.¹⁶

To date two regional plans have been completed: one for the Lower Athabasca region¹⁷ and one for the South Saskatchewan.¹⁸ The initial public consultation toward the development

⁵ *Ibid* at 33.

⁶ *Ibid* at 33-34.

⁷ *Ibid* at 34.

⁸ SA 2009, c A-26.8 [*ALSA*].

⁹ *Ibid*, s 3-22.

¹⁰ *Ibid*, s 5.

¹¹ *Ibid*, s 8(1).

¹² *Ibid*, s 7(b).

¹³ *Ibid*, s 8(2)(a).

¹⁴ *Ibid*, s 8(2)(b)-(c).

¹⁵ *Ibid*, s 8(2)(d).

¹⁶ *Ibid*, s 8(2)(f).

¹⁷ Government of Alberta, *Lower Athabasca Regional Plan 2012-2022* (np: Government of Alberta, 2012) online: Alberta Environment and Sustainable Resource Development

of the North Saskatchewan regional plan is commencing at the time of writing.¹⁹ Planning for the other regions has yet to formally commence.

ALSA also authorizes research and development toward the creation and implementation of new instruments, including market-based instruments, to support the purposes of *ALSA* and the objectives of the regional plans.²⁰ Among such instruments specifically enabled are conservation offsets, including a market in offset credits.²¹

1.2 Research Question and Methodology

1.2.1 Research Question

This thesis seeks to answer the question of what is required to give life to *ALSA*'s conservation offset provisions, to enable an effective and efficient offset system to develop. This includes more than simply legal aspects, but I shall focus first and foremost on the necessary legal elements for a viable conservation offset regime. I will also, however, consider institutional, information, and resource needs.

1.2.2 Comparative Law and Policy Approach and Choice of Comparators

The thesis employs a comparative law and policy approach. Using common factors, described and discussed in Chapter Three, it compares the development and operation of conservation offsets systems in the United States (respecting wetlands) and in the State of Victoria, Australia (respecting native vegetation). From these case studies it seeks to draw lessons applicable to Alberta.

<<https://landuse.alberta.ca/LandUse%20Documents/Lower%20Athabasca%20Regional%20Plan%202012-2022%20Approved%202012-08.pdf>>.

¹⁸ Alberta Government, *South Saskatchewan Regional Plan 2014-2024* (np: Government of Alberta, 2014), online: Alberta Environment and Sustainable Resource Development

<https://www.landuse.alberta.ca/LandUse%20Documents/SSRP%20Final%20Document_2014-07.pdf>.

¹⁹ Government of Alberta, Land Use Secretariat, Public Notice to “friends and followers” (May 16, 2014) (on file with author).

²⁰ *Supra* note 8, s 23.

²¹ *Ibid*, s 45-47.

These comparators were selected from dozens of potential candidate jurisdictions. The U.S. wetlands system was selected because it is the longest-running and most heavily studied and critiqued conservation offset system in the world. It may be considered to have set the early standard for the development of systems elsewhere. Further, its heavy reliance on market mechanisms (specifically offset credit banking and exchange) are of particular interest given the general approach of the Alberta *Framework* and *ALSA*. Finally, the fact that the U.S. shares the North American landscape with Alberta suggests that some of the practical ecological issues confronted by the U.S. might also face Alberta.

Victoria commended itself for study after a cursory review of the offset policies of several Australian states. It reportedly was one of the more well-developed and functional state systems in a country where several offset systems and experiments had been initiated. Because the Victorian system was developed well after the U.S., its founders had the opportunity to learn from the U.S. experience. They applied those lessons to a component of the environment, native vegetation, that was more pervasive than the wetlands that were the focus of the U.S. system. Some of the elements developed for the Victorian system, such as its metric of habitat loss and gain, have been internationally recognized and adapted for use elsewhere. Finally, Victoria is a useful object of study for Alberta, as a sub-national jurisdiction in a federal system with a common law and constitutional heritage and similar distribution of powers shared by Canada and Australia.

Both the U.S. wetlands regime and the Victorian native vegetation regime have undergone significant critiques and seen fundamental changes in direction and structure in recent years. In part these changes, and the perceived weaknesses they were intended to address, can be seen as governments struggling with the issues fundamental to offsets as a concept. The

evolution of both systems allows us to see them as dynamic systems. It also means that each of these two jurisdictions contain the substance of more than one static case study, offering a much richer basis for analysis.

1.2.3 Methodology

I conducted research for the thesis through three means: primary sources of law and policy, secondary literature, and interviews. With respect to the concepts and issues of market-based instruments and conservation offsets I consulted the broad and growing literature from the fields of law, economics, political science, ecology and geography. One of the fascinating aspects of this area of study is how it exists at the confluence of these different disciplines, and thereby illustrates complementarities and conflicts in their respective approaches and doctrines.

The studies of Alberta, the United States and Victoria, were all founded on a review of primary legal and policy sources including legislation, case law, and policy documents. This was usefully supplemented by a review of secondary literature. Some of the secondary literature was from official sources (such as the U.S. Government Accountability Office and the Victorian Competition and Efficiency Commission), but most was from academic scholars, interested stakeholders or lay commentators.²²

I supplemented the documentary research with a series of interviews in each of the three jurisdictions. Interviewees included government officials and former officials, scholars, and representatives of stakeholders. This was intended to gain insight into operations and challenges arising from practical experience which might not be reflected in the primary or secondary literature.

²² Materials were accessed in part through online databases and search engines including Google Scholar, Quicklaw, Westlaw, the Social Science Research Network, AustLii, etc. using search terms such as “market-based instruments,” “conservation offsets,” “biodiversity offsets,” and “mitigation banking.”

In order to carry out these interviews permission was sought and obtained from the University of Calgary Conjoint Faculties Research Ethics Board (CFREB). The CFREB certification of this work may be found in Appendix I. In accordance with the conditions of the CFREB certification, each potential interviewee was, at the time the interview was requested, provided with a consent form in the form found in Appendix II. Consent to the conditions set out therein was received either in the form of a signature on the form or an e-mail message confirming consent. All conditions in the CFREB approval and the consent form have been complied with.

Interviews were semi-structured, guided by the questions set out in Appendix III. Interviews were conducted either in person or by telephone or Skype. In total twenty interviews were conducted with twenty-two people (two interviews had two interviewees together). A list of interviewees may be found in Appendix IV. In addition to those listed, one person freely consented to speak to me on condition that they remain anonymous, and therefore did not agree to the terms of the consent form. That person did, nevertheless, provide useful information and insights.

1.3 Organization and Structure

In this thesis I start with a general consideration of market-based instruments for environmental protection, moving to focus on conservation offsets. A conceptual discussion of issues associated with conservation offsets sets a comparative framework for the two case studies which follow. It concludes with a focus on Alberta's current policy initiatives and recommendations for the development of a conservation offset system for the province.

The following chapter first examines the broad concept of market-based instruments and the economic theory underlying it. It sets out some of the economic and ecological advantages

which are claimed for this set of policy tools. The latter part of the chapter focusses on the specific instrument of conservation offsets, examining the concept, some of the forms it may take, and some of the Canadian experience with it.

Chapter Three goes on to explore some of the key challenges and issues of conservation offsetting. It examines four issues which are inherent to almost any notion of conservation offsetting: issues of equivalency, additionality, time and duration, and uncertainty and risk management. This examination serves both to draw out some of the nuances of the offset concept as applied to biodiversity, and also provides a framework of comparison for the case studies which follow.

Chapter Four is a case study of the federal United States experience with applying conservation offsetting to wetlands. In it I describe the legal framework and the historical evolution of the program, the critiques to which it has been subject, and its current operations. I review some of the U.S. treatment of the key issues discussed in Chapter Three, and conclude by drawing some key lessons from the case study.

Chapter Five is a case study of the system for offsetting of native vegetation in the Australian State of Victoria. Again, I examine the legal framework of the system, its evolution, and current operation, drawing on both primary and secondary literature. Again, lessons are drawn.

Finally, Chapter Six deals directly with Alberta's circumstance. It reviews the various proposals which have been made for the use of offsets in Alberta, looks at the adequacy of the legal framework provided by *ALSA* and other legislation, and makes recommendations.

CHAPTER TWO

MARKET-BASED INSTRUMENTS AND CONSERVATION OFFSETS

2.1 Introduction

This chapter is an introduction to the concept of conservation offsets, placing them in the context of the larger category of market-based instruments (MBIs) for environmental protection. It begins with an examination of the nature of MBIs, and the benefits which are often claimed for them. In the latter section, I examine conservation offsets, first as a concept. I then review the primary drivers leading development proponents to use offsets, and then the mechanisms by which offsets may be delivered.

2.2 Market-Based Instruments

ALSA authorizes the Lieutenant-Governor in Council to support, research, and encourage pilot studies, to develop instruments “including market-based instruments” in support of the implementation of the purposes of the Act.²³ With this reference, the Alberta government joins a large international community of academics and policy specialists amongst whom MBIs have become a commonly-discussed means for achieving improved environmental management and outcomes.

Perhaps the most cited definition of MBIs in the academic literature is that of Robert N. Stavins:

Market-based instruments are regulations that encourage behavior through market signals rather than through explicit directives regarding pollution control levels or methods. These policy instruments, such as tradable permits or pollution charges, are often described as “harnessing market forces” because if they are well designed and implemented, they encourage firms (and/or individuals) to undertake pollution control efforts that are in their own interests and that collectively meet policy goals.²⁴

²³ *Supra* note 8, s 23

²⁴ Robert N Stavins, , *Experience with Market-Based Instruments* (Washington DC: Resources for the Future, 2001) online: Resources for the Future < <http://www.rff.org/documents/rff-dp-01-58.pdf>> [Stavins, *Experience*].

While Stavins refers to pollution controls, the concept is usually applied more widely to include a variety of environmental protection measures, including preservation and enhancement of habitat and biodiversity.

There are two features of Stavins' definition which distinguish MBIs from other policy treatments of the environment. The first is that these instruments use market forces to influence behavior. The second is that, notwithstanding their market features, MBIs *are* regulations aimed at meeting policy goals.

The invocation of market forces presumes that the behaviour in question remains voluntary to some extent, but subject to influence by considerations of self-interest. The primary influence will be by means of price signals. This is in contrast to the "command and control" model of regulation that aims to prescribe or prohibit particular behaviours. It can also be seen to contrast with the moral suasion which is often used by both governments and advocates to influence behaviour with respect to the environment.

This aspect of MBI theory is closely related to the common economic critique that conventional economic relations externalize environmental costs and benefits such that they are not taken into account in economic decision-making.²⁵ To illustrate this, consider that persons A and B voluntarily undertake an exchange of goods and services. In the simplest economic model

²⁵ This discussion of externalities draws upon Economics for the Environment Consultancy (eftec) & Institute for European Environmental Policy (IEEP), *The Use of Market-Based Instruments for Biodiversity Protection - The Case of Habitat Banking - Technical Report* (London: European Commission Director-General Environment, 2010) at 28-30, online: European Commission <http://ec.europa.eu/environment/enveco/pdf/eftec_habitat_technical_report.pdf> [eftec & IEEP]; Basil Sharp, "Institutions and Decision Making for sustainable Development", (Auckland: New Zealand Treasury, 2002) at 4-6, online <<http://ideas.repec.org/p/nzt/nztwps/02-20.html#download>>; Tom Tietenberg, , Elizabeth Wilman & Peter Tracy, *Environmental Economics and Policy*, Canadian Edition, Preliminary Version (Toronto: Pearson Addison Wesley, 2009) at 56-59. Two classic works in the analysis of externalities and their policy treatment are AC Pigou, *The Economics of Welfare* 4th ed (London: MacMillan & Co Ltd, 1952) and Ronald H Coase, "The Problem of Social Cost" (1960) 3 JL & Econ 1.

we assume, because the exchange is voluntary, that the welfare of both is increased, else the transaction would not be undertaken. The accumulation of such transactions at the societal level moves the society to a Pareto-optimal distribution of goods and services.

This proposition, however, is clouded, when the activities surrounding A and B's exchange have consequences for person C, or perhaps persons C through N, including the whole world in some cases. Because those consequences, whether positive or negative, do not attach to either A or B, neither A nor B has an incentive to manage the consequences in either his or her own self-interest or the societal interest. That is, the consequences are an externality to A and B's transaction, sending them distorted price signals not reflective of overall social welfare. In the case of negative externalities, this will often lead A and B to sustain behaviour which is in each of their self-interest but contrary to the interests of society as a whole. It is important to note that environmental externalities may be positive or negative. For example, a beekeeper may provide pollination services as a positive externality to his neighbours. However, the degradation of the natural environment and the goods and services it provides is often attributed to the accumulation of negative externalities, representing a serious market failure.

A common theme in MBIs, therefore, is the attempt to internalize the positive and negative environmental by-products of economic transactions, so that actors may modify their behaviours to avoid or mitigate negative environmental outcomes, and enhance positive ones. These are the market signals, or price signals, of which Stavins' definition speaks.

The second distinctive aspect of Stavins' definition is that these instruments are regulations which serve to meet policy goals. In this respect MBIs are distinct from the school of thought that would simply create private property rights in components of the environment, allowing them to be traded on the open market to find levels of supply and demand based on

subjective consumer preference.²⁶ This aspect emphasizes the *instrumentality* of MBIs in service of policy goals set by government. Stavins himself has identified this subordination of market means to policy ends as a key to the success of MBs in the field of pollution abatement in the United States:

[D]eliberations regarding the SO₂ allowance system, the lead system, and CFC trading differed from previous attempts by economists to influence environmental policy in an important way: the separation of ends from means, i.e. the separation of consideration of goals and targets from the policy instruments used to achieve those targets. By accepting – implicitly or otherwise – the politically identified (and potentially inefficient) goal, that ten-million ton reduction of SO₂ emissions, for example, economists were able to focus successfully on the importance of adopting a cost-effective means of achieving that goal.²⁷

The proponents of MBIs point to a variety of economic benefits to be derived from the use of MBIs, in particular when contrasted to “command and control” regulation. Such benefits typically include:

- *Lowering Societal Cost* – By allowing economic actors to choose their own means of compliance with policy objectives, and to voluntarily exchange the benefits and liabilities of compliance, those who can meet those objectives at least cost will be incented to do so, conveying cost savings to others, resulting in an overall saving to society.²⁸ As an example of this, the United States’ early “cap-and-trade” system for

²⁶ For a spirited argument for such “free market environmentalism” see Terry L Anderson and Donald R Leal, *Free Market Environmentalism*, revised ed (New York: Palgrave, 2011). Stavins has specifically referred to this work as “another train of literature” distinct from his own: Stavins, *Experience*, *supra* note 24, at n 3.

²⁷ Robert N. Stavins, “Market-Based Environmental Policies” in Paul R. Portney and Robert N. Stavins, eds, *Public Policies for Environmental Protection* (Washington: Resources for the Future, 2000) at 33, online: Harvard <http://www.hks.harvard.edu/fs/rstavins/Papers/Market-Based_Envir._Policies.pdf>. As suggested in this quote, however, Stavins and a co-author have elsewhere argued that economists should be more involved in the selection of policy goals: Robert W Hahn & Robert N Stavins, “Economic Incentives for Environmental Protection: Integrating Theory and Practice” (May 1992) 82-2 *The American Economics Review* 464 at 467.

²⁸ *Ibid* at 464-465; Robert N Stavins, “Harnessing Market Forces to Protect the Environment” (1989) 31:1 *Environment* 5 at 8 [Stavins, “Harnessing”]; TH Tietenberg, “Economic Instruments for Environmental Regulation” (1990) 6:1 *Oxford Review of Economic Policy* 17 at 17.

air emissions has been estimated to have achieved cost savings in pursuing the policy objective of over \$10 billion, while simultaneously increasing compliance.²⁹

- *Facilitating Innovation* – Because MBIs typically allow actors to determine their own means to comply with environmental objectives, they provide an incentive to innovate and undertake technological improvements in the pursuit of cost-effective compliance.³⁰
- *Enabling Price Discovery* – The voluntary trading of a large number of actors in a transparent market may reveal prices based on aggregated supply and demand, which may then improve the accuracy of price signals for competing types of behaviour.³¹
In a variation on this point, the internalization of environmental costs and benefits into the economic calculation will result in a form of “full cost accounting” whereby economic actors, especially consumers, will bear the actual total cost of their decisions. This will create the incentive to make more environmentally-benevolent choices.³²

A wide variety of policy tools have been encompassed by the term “market-based instruments”. Typically the list includes some combination of:

- The removal of perverse subsidies;
- Environmental fees, charges and taxes;
- Deposit-refund systems and environmental performance bonds;
- Tradable permits;

²⁹ *Ibid* at 19. See also Stavins, *Experience*, *supra* note 24 at 27 for estimates of cost savings under the SO₂ allowance trading system.

³⁰ *Ibid* at 2-3; eftec & IEEP, *supra* note 25 at 29; Barton H Thompson Jr, “Markets for Nature” (2000) 25:2 *Wm & Mary Envtl L & Pol’y Rev* 261 at 262-263.

³¹ eftec & IEEP, *supra* note 25 at 29; Romain Pirard, “Market-Based Instruments for Biodiversity and Ecosystem Services: A Lexicon” (2012) 19-20 *Environmental Science and Policy* 59 at 63-64.

³² Stavins, “Harnessing”, *supra* note 28 at 8.

- Reductions in policy barriers to market functions;
- Creation of specialty markets;
- Incentives for environmentally-benevolent behaviour;
- Environmental liabilities;
- Enhanced information disclosure on environmental performance.³³

With the wide variety of instruments in this list, some have questioned the degree to which any unifying concept actually exists among this diversity. Romain Pirard, for one, has commented:

Given the insistence on pointing out significant differences between MBIs, one can reasonably wonder whether it is legitimate to have such a broad and vague category and whether some of the instruments do not share more characteristics with instruments outside this category than with MBIs.³⁴

Despite this reservation, Pirard does conclude that the invocation of price signals to create incentives to behaviour is the distinctive element of MBIs.³⁵ Importantly, however, he points out that notions of the “the market” (i.e., the global open market of all goods and services) and “markets” (limited exchanges of particular goods or services) vary widely between MBIs, as does how those markets might function and contribute to environmental stewardship.³⁶ The experience and lessons of one MBI, therefore, may not necessarily apply to others. With that admonition in mind, I will turn to the MBI which is the main focus of this thesis, the conservation offset, starting with an examination of its nature and its invocation of market signals.

³³ This list is an amalgam of similar lists from Stavins, *Experience*, *supra* note 23; Pirard, *supra* note 31 at 98-99; *Framework*, *supra* note 1 at 33.

³⁴ Pirard, *supra* note 31 at 61.

³⁵ *Ibid* at 61-62. This element may not apply to enhanced information disclosure on environmental performance, which is not included in Pirard’s consideration.

³⁶ *Ibid*.

2.3 Conservation Offsets

In this thesis I use the term “conservation offset” since it is the term used in Alberta law and policy³⁷ but I treat this term as synonymous with “biodiversity offsets,” which is commonly used internationally and in other jurisdictions. Other terms which are largely or entirely synonymous which are referred to elsewhere in this thesis are “habitat compensation”, “compensatory mitigation,” and “conservation allowances.”

2.3.1 The Concept of Conservation Offsets

Biodiversity offsets have been defined by the Business and Biodiversity Offsets Programme (BBOP)³⁸ as:

[M]easurable conservation outcomes resulting from actions designed to compensate for significant residual adverse biodiversity impacts arising from project development after appropriate prevention and mitigation measures have been taken.³⁹

The concept proposes that the environmental degradation from the development of one site (the “development site” or “impact site”) will be compensated for by an equivalent or greater

³⁷ ALSA, *supra* note 8, s 45-47; *Framework*, *supra* note 1 at 34.

³⁸ According to its website the Business and Biodiversity Offsets Programme “is an international collaboration between companies, financial institutions, government agencies and civil society organizations. The members are developing best practice in following the mitigation hierarchy (avoid, minimize, restore, offset) to achieve no net loss or a net gain of biodiversity.” (Online: BBOP <<http://bbop.forest-trends.org>>.) (The concept of the mitigation hierarchy is discussed more fully later in this chapter.)

³⁹ Business and Biodiversity Offsets Programme, *To No Net Loss and Beyond An Overview of the Business and Biodiversity Offsets Programme* (Washington, DC: Forest Trends, 2013) at 4, online: BBOP <http://www.forest-trends.org/documents/files/doc_3319.pdf> [BBOP Overview]; BBOP, *Glossary*, 2d ed (Washington, DC: Forest Trends, 2012) at 8, online: BBOP <http://www.forest-trends.org/documents/files/doc_3100.pdf> [BBOP Glossary]. This definition is an appropriate and welcome refinement on an earlier, much-cited definition, offered by Kerry ten Kate and co-authors in 2004: “conservation activities intended to compensate for the residual, unavoidable harm to biodiversity caused by development projects.” (Kerry ten Kate, Josh Bishop & Ricardo Bayon, *Biodiversity Offsets: Views, Experience, and the Business Case* (Gland, Switzerland: IUCN and Insight Investment, 2004) at 13 [ten Kate, *Offsets*]). The relationship between the two definitions can be appreciated when it is noted that ten Kate is the director of BBOP. The new definition focusses on the measurable outcomes of the conservation action, as opposed to the action and its intent, which is central to the 2004 definition.

environmental enhancement on another (usually more or less proximate) site or suite of sites (the “offset site(s)”). The BBOP definition above goes on to set out its goal:

The goal of biodiversity offsets is to achieve no net loss and preferably a net gain of biodiversity on the ground with respect to species composition, habitat structure, ecosystem function, and people’s use and cultural values associated with biodiversity.⁴⁰

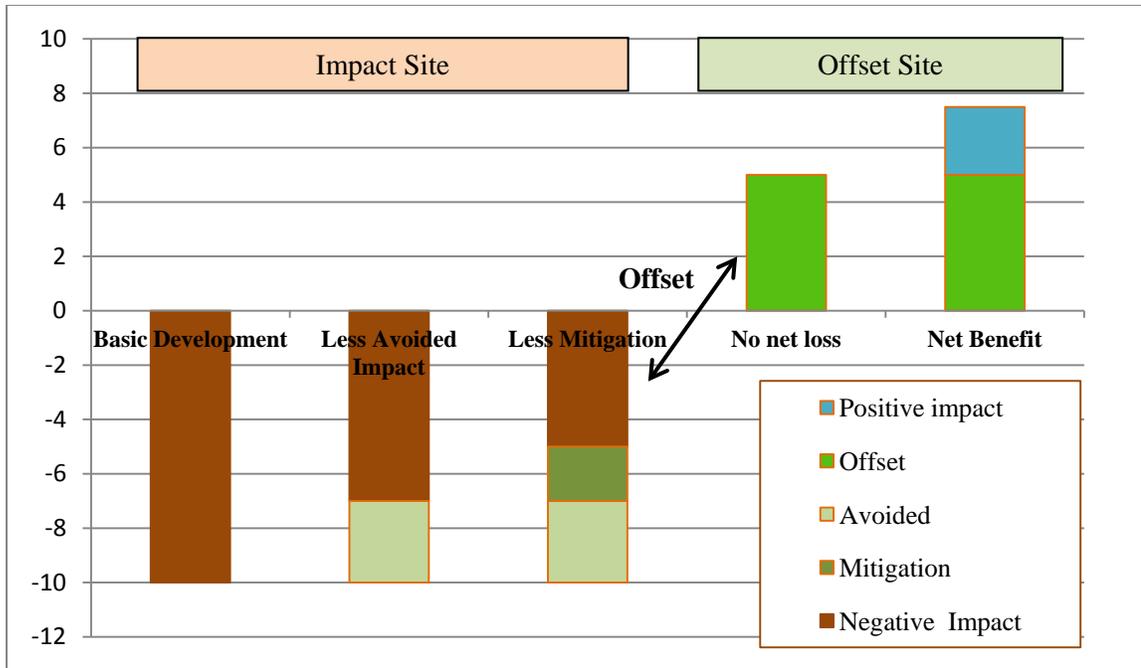


Figure 1: Conservation Offsets in the Mitigation Hierarchy⁴¹

Figure 1 depicts graphically the basic concept of conservation offsets. One site (the impact site on the left side of the graph) is slated for development. The three bars indicate the development impact under three scenarios of diminishing environmental impact as the developer incorporates appropriate design and mitigation (including onsite restoration) measures to minimize the environmental impact. Having achieved that minimum impact through design and mitigation (as represented by the brown part of the third bar), the developer or its agents will

⁴⁰ BBOP Overview, *supra* note 39 at 3; BBOP Glossary, *supra* note 39 at 8.

⁴¹ While this chart is the author’s own conception, similar graphics may be found in BBOP Overview, *supra* note 39 at 5; International Council on Mining and Metals (ICMM), *Biodiversity Offsets – A Briefing Paper for the Mining Industry* (London, UK: 2005).

assess and quantify that residual impact, and undertake an environmental improvement of the same extent on another site of similar environmental features (as presented by the green fourth bar). The goal, once again, is generally to produce no net loss of natural values as a result of the development when the changes in both sites are considered together. The option of performing extra work to create a net environmental improvement is also available (represented by the blue portion of the fifth bar). Because it is expected that offsets will only be used after the primary impact is minimized, first by avoidance and second by mitigation, this progression is often referred to as “the mitigation hierarchy”, and has received widespread endorsement.⁴² Put another way, the mitigation hierarchy expresses the expectation that the option of offsetting will not be used as an excuse for a developer or regulator to lower its standards with respect to avoidance and mitigation.

Framed in this way, the attractiveness of the offset concept may be obvious. It allows a means by which the social and economic benefits of development may be aligned in interest with positive measures for environmental protection and enhancement. The objective of no net increase in the total amount of ecological disturbance from development is achieved by the exchange of new negative impacts for the ecological benefits created as offsets.

The concept invokes market forces sufficiently to qualify as a market-based instrument. While there are some variations between types of offsets, the market mechanism which is

⁴² BBOP Overview, *supra* note 39 at 5; ten Kate, *Offsets*, *supra* note 39 at 9; eftec & IEEP, *supra* note 25 at 48. Unfortunately, compliance with the mitigation hierarchy is often difficult to monitor and assess, leading some to identify this as an important challenge for offset systems: Bruce A McKenney & Joseph M Kiesecker, “Policy Development for Biodiversity Offsets: A Review of Offset Frameworks” (2010) 45 *Environmental Management* 165, 173; Palmer Hough & Morgan Robertson, “Mitigation Under Section 404 of the Clean Water Act: Where it Comes From, What It Means” (2009) 17 *Wetlands Ecology and Management* 15 at 30,33 (the latter regarding U.S. wetlands compensation). For a discussion of some of the conceptual, structural and cultural difficulties in enforcing the requirement of avoidance, with a particular emphasis on North American wetlands policies, see Shari Clare et al “Where is the Avoidance in the Implementation of Wetland Law and Policy?” (2011) 19 *Wetlands Ecology and Management* 165.

common to them all is the inclusion of the environmental cost of a development within that development's financial cost. By undertaking to expend funds to create an environmental enhancement equal to or greater than the degradation caused by its development, a development proponent effectively accounts for the environmental cost in monetary terms. That financial cost can be internalized into the cost of the development, and thereafter into the products and services that flow from it. This can be seen as a form of "full cost accounting" which flows through the supply chain to the consumer, possibly affecting demand to encourage sustainability.

2.3.2 Drivers of Conservation Offsets

In this section I will examine the mechanisms by which a developer may be motivated to dedicate the resources and effort necessary to produce the "measurable conservation outcome" which is an offset.

2.3.2.1 Voluntary Conservation Offsets

A developer may voluntarily undertake a conservation offset for a number of reasons. Kerry ten Kate and co-authors compiled the following list of elements for the "business case" for voluntary offsets (undertaken either wholly voluntarily, or as an option for regulatory compliance) based upon interviews with thirty-seven people with experience in the area, including nineteen company representatives:

- Enhanced license to operate, reputation management, and regulatory goodwill;
- Enhanced access to capital (partly as a result of risk managed by above factors);
- Lower costs of regulatory compliance;
- Opening of new market opportunities;
- First mover competitive advantage, and the power to influence emerging regulations;

- Allowing a “clean break” from ongoing reclamation or other obligations;
- Enhanced employee satisfaction and retention.⁴³

There are current examples of voluntary projects approximating offsets in Alberta. For example, Shell Canada Ltd. announced in 2012 that it was purchasing 740 hectares of boreal forest habitat to establish a conservation area under the joint management of Shell and the Alberta Conservation Association. On its website Shell Canada described the rationale for the action in offset terms:

The Athabasca Oil Sands Project (AOSP) has been conserving habitat in the boreal wilderness since 2007 as part of a commitment with the Oil Sands Environment Coalition (OSEC). The AOSP committed to spend \$2 million over ten years to help mitigate, *and partially offset*, land and habitat disturbances resulting from existing mining operations. With the addition of the True North Forest, we have now conserved over 3000 acres of *habitat offset land*.⁴⁴

In a similar vein, Terasen Pipelines Inc., and its successor Kinder Morgan Canada, committed to create a fund of three million dollars for environmental improvements in Jasper National Park and Mount Robson Provincial Park, as part of a bargain reached with environmental groups concerned with its expansion of the Trans Mountain Pipeline through the two parks. The explicit goal of the parties was to create a net benefit to the ecological conditions of the two parks taking into account the residual negative impact of the pipeline expansion.⁴⁵

Developers will generally undertake such voluntary offset schemes through consultation and negotiation with both the resource managers having jurisdiction over each of the

⁴³ ten Kate, *Offsets*, *supra* note 39 at 38-45.

⁴⁴ “The Shell True North Forest”, online: Shell Canada <<http://www.shell.ca/en/environment-society/true-north.html>> [emphasis added].

⁴⁵ David W Poulton, “Conservation Offsets and Pipeline Construction: A Case Study of the TMX Anchor Loop Project”, Proceedings of the 2012 9th International Pipeline Conference, September 24-28, 2012, Calgary, Alberta [Poulton, “Conservation Offsets”]; David W Poulton, “Biodiversity Offsets and Pipelines: A Case Study of the TMX Anchor Loop”, presented to 10th International Symposium on Environmental Concerns in Rights-of-Way Management, September 30 – October 3, 2012, Phoenix, Arizona (Publication of proceedings pending) [Poulton, “Biodiversity Offsets”].

development and offset sites, and community and environmental groups having a relevant interest.⁴⁶

The voluntary nature of these offsets constrains the breadth of their application. It is extremely unlikely that a profit-motivated proponent will invest in an offset that makes its project unprofitable or uncompetitive, even if that were what was required to meet the standard of “no net loss” of biodiversity.

2.3.2.2 Conservation Offsets Required Piecemeal by Regulators

Regulators may, on a project-by-project basis, require developers to offset the residual impact of proposed developments. As an example of the application of the offsets concept, the National Energy Board has, since 2010, issued three decisions wherein it approved new gas transmission pipelines in caribou habitat, on the condition that the proponent (Nova Gas Transmission Ltd. in all three cases) develop a plan for habitat mitigation and offset acceptable to the Board.⁴⁷ This was done in the absence of a policy or regulatory framework specifically prescribing this measure.

As a second example, the federal Joint Review Panel charged with examining the impact of the Northern Gateway pipeline project recommended approval of the project subject to 209 conditions including nineteen conditions requiring five different kinds of biodiversity offsets

⁴⁶ ten Kate, *Offsets*, *supra* note 39 at 72-75. In some cases the negotiation of an acceptable offset plan may take participants outside their conventional roles. This may result in ambiguity and tension between parties, complicating the task of arriving at an agreement. For my comments on this aspect of the Kinder Morgan project see Poulton, “Biodiversity Offsets”, *supra* note 45 at 6, 7.

⁴⁷ National Energy Board, *Reasons for Decision: NOVA Gas Transmission Ltd. GH-2-2010* online: NEB < https://www.neb-one.gc.ca/ll-eng/Livelihood.exe/fetch/2000/90464/90550/554112/590465/601085/665334/665172/A1X3T2_-_Reasons_for_Decision_GH-2-2010.pdf?nodeid=665173&vernum=0>; National Energy Board, *Reasons for Decision: NOVA Gas Transmission Ltd. GH-2-2011* online: NEB < https://www.neb-one.gc.ca/ll-eng/livelihood.exe/fetch/2000/90464/90550/554112/666941/685859/793577/793570/A2Q5J5_-_Reasons_for_Decision_-_GH-2-2011.pdf?nodeid=793571&vernum=0>; National Energy Board, *Reasons for Decision: NOVA Gas Transmission Ltd. GH-004-2011* online: NEB < https://www.neb-one.gc.ca/ll-eng/livelihood.exe/fetch/2000/90464/90550/554112/666941/704296/833910/833909/A2V3A0_-_Reasons_for_Decision_-_GH-004-2011.pdf?nodeid=834064&vernum=0>.

(caribou habitat, wetlands, rare plants and ecological communities, fish and fish habitat, marine habitat).⁴⁸

The conditions imposed in these decisions seek to address particular environmental impacts in a particular circumstance, rather than as a part of a co-ordinated conservation strategy. This means of encouraging offsets has several limitations. It does not provide businesses with the regulatory certainty that a clear policy framework would provide. Because environmental values are only considered in the context of particular development proposals, we get piecemeal environmental direction, rather than the consistent and optimal application of relevant environmental goals and principles. Finally, the project-by-project nature of these decisions does not foster the development of expertise, standards, and economies of scale which might reasonably be expected in an offsets regime of broader application.

2.3.2.3 Conservation Offsets Required by Regulation or Policy

Whether voluntarily or by regulatory order, these “one-off” piecemeal efforts are unlikely to affect changes on the landscape at the order of magnitude which is required if environmental values are to be maintained. That level of positive impact requires a regulatory regime which provides for offsets to be used routinely, as part of a co-ordinated landscape plan and strategy. For the business community, the mainstreaming of offsetting for biodiversity allows developers to anticipate costs and adjust their behaviour. It also fosters the development of a core of expertise in offset design and implementation. For land managers, it assures that offset measures will be complementary to other land management activities, all in pursuit of co-ordinated objectives.

⁴⁸ Canada, National Energy Board, *Report of the Joint Review Panel for the Enbridge Gateway Project, Volume 2: Considerations* (Calgary: National Energy Board, 2013) online: NEB <<http://gatewaypanel.review-examen.gc.ca/clf-nsi/dcmnt/rcmndtnsrprt/rcmndtnsrprt-eng.html>>.

A regulatory regime should both enable the use of offsets by giving guidance as to what counts as a permissible offset, and by giving credit for them. It should also drive demand for offsets through strict requirement or strong incentives.

Canada's most extensive experience with conservation offsets prescribed by regulation or policy has been in the area of fish habitat. From 1985 to 2013 the *Fisheries Act* contained a provision prohibiting any "harmful alteration, disruption or destruction of fish habitat" unless permitted and pursuant to conditions imposed by the Department of Fisheries and Oceans (DFO).⁴⁹ Based on that legislative foundation, in 1986 DFO released a policy which committed to a goal of no net loss of fish habitat, and to "strive to balance habitat losses with habitat replacement on a project-by-project basis."⁵⁰ Since the release of that policy developers affecting fish habitat have frequently faced conditions requiring them to create or rehabilitate fish habitat as compensation. The offsets requirement has been administered as part of the ordinary environmental assessment and permitting process which is applied to each project individually. Up to 2013 DFO provided periodic guidance on compensation expectations through the publication of a series of "practitioner's guides" to the authorization process, which delved into the principles and practices of the program.⁵¹

DFO's administration of the fish habitat compensation program has been criticized both academically and officially for insufficient documentation and monitoring to determine whether

⁴⁹ *Fisheries Act, 1985*, RSC 1985, c F-14, s 35.

⁵⁰ Department of Fisheries and Oceans, "Policy for the Management of Fish Habitat" (Ottawa: Communication Directorate, DFO, 1986) at 7.

⁵¹ Department of Fisheries and Oceans, *Practitioner's Guide to Writing an Authorization for the Habitat Protection Provisions of the Fisheries Act, Version 2.0* (Ottawa: Department of Fisheries and Oceans, 2010); Department of Fisheries and Oceans, *Practitioner's Guide to the Risk Management Framework for DFO Habitat Management Staff Version 1.0* (Ottawa, Department of Fisheries and Oceans, nd).

the no net loss goal was actually being met.⁵² In 2011 officials responsible for the program reportedly testified to a public inquiry that the no net loss goal was only a guiding principle and not a literal measure of program performance.⁵³

In 2012, the Canadian government significantly amended the fish habitat protection provisions of the Act as part of the controversial omnibus Bill C-38.⁵⁴ The amendments came into force on November 25, 2013, and they potentially could magnify the use of offsets in this arena. They require the Department to consider “whether there are measures and standards to *avoid, mitigate or offset* serious harm to fish.”⁵⁵ This explicit reference to offsetting elevates the concept from policy preference to legislated mandate.

Because they are so new, the full significance of these amendments is not clear at this time. Concurrent with the coming into effect of the new provisions, DFO has issued a “Proponent’s Guide to Offsetting,” which gives some interesting guidance.⁵⁶ The guide emphasizes the importance of the mitigation hierarchy, and that impacts are to be avoided and minimized (“mitigated”) before offsets measures are considered.⁵⁷ It also gives direction on some of the issues which will be discussed later in this paper, including the significance of time lags,⁵⁸ proximity,⁵⁹ like-for-like,⁶⁰ and additionality.⁶¹

⁵² DJ Harper & JT Quigley, “No Net Loss of Fish Habitat: A Review and Analysis of Habitat Compensation in Canada” (2005) 36:3 *Environmental Management* 343; Auditor General of Canada, *Report of the Commissioner of the Environment and Sustainable Development*, ch 1 (Ottawa: Office of the Auditor General, 2009).

⁵³ Mark Hume, “Bureaucrats Questioned on Principle of Fisheries Act at Cohen Commission”, *The Globe and Mail* (22 September 2011).

⁵⁴ SC 2012, c-19.

⁵⁵ *Ibid*, s 6.

⁵⁶ Fisheries and Oceans Canada, *Fisheries Productivity Investment Policy: A Proponent’s Guide to Offsetting, November 2013* (Ottawa: Ecosystems Policy Program, Fisheries and Oceans Canada, 2013), online: Department of Fisheries and Oceans <<http://www.dfo-mpo.gc.ca/pnw-pppe/offsetting-guide-compensation/offsetting-guide-compensation-eng.pdf>>.

⁵⁷ *Ibid* at 6-9.

⁵⁸ *Ibid*.

⁵⁹ *Ibid* at 7.

⁶⁰ *Ibid* at 10.

⁶¹ *Ibid* at 11.

More general federal policy guidance on the use of conservation offsets came in 2012 when Environment Canada released its *Operational Framework for Use of Conservation Allowances*⁶² (“conservation allowances” being the new term coined, synonymous with conservation offsets). The *Operational Framework* briefly reviews the federal experience with offsets in fish habitat, wetlands, and a few other circumstances. It lays out a set of guidelines and principles for their further use, including many of the subjects covered in this thesis. The release of the *Operational Framework*, corresponding with the amendments to the *Fisheries Act*, may be seen as an indication of a rising willingness to use and institutionalize this conservation tool.

2.3.3 Conservation Offset Delivery Mechanisms

There are three commonly-accepted means by which conservation offsets may be delivered: project-specific and developer-led, banking, and fees in-lieu. Each will be described and evaluated in this section.

2.3.3.1 Project-Specific, Developer-Led

The simple model of offsets I have described contemplates the offset project (whether voluntary or mandated) being established in conjunction with, and concurrent with or following, a specific development project. This type of offset is also known sometimes as “bespoke.” Generally the offset work is initiated and led by the developer and its contractors, though usually under the supervision of regulators. This has the advantage of a close identification of the two projects, thereby fostering the public goodwill which is one of the incentives for voluntary offsets. It may also be required by regulator-imposed conditions, as discussed above.

Regardless of the motivation, such project-specific offsets have considerable transaction costs as

⁶² Environment Canada, *Operational Framework for Use of Conservation Allowances* (Ottawa: Environment Canada, 2012) online: Environment Canada < <http://www.ec.gc.ca/ee-ea/default.asp?lang=En&n=DAB7DD13-1&printfullpage=true>>.

the developer must deal with each situation anew. As discussed above, project-specific offsets are unlikely to produce a concerted or consistent pattern of environmental improvement beyond the local scale.

2.3.3.2 Conservation Offset Banking

A common prescription to make offsets more routine and easier to implement is the development of conservation or biodiversity banking. The key to a banking system is the uncoupling of the offset project from a particular development. A competent entity may undertake the development of an offset project (the “bank”), have the offset assessed and accredited by the relevant authority, and then make the resulting credits available, usually for a price, to developers who require them to meet the regulatory requirements of their proposed developments. The United States led the way in this regard, developing a system for banking wetland credits over twenty years ago, a system which will be examined in greater detail later in this thesis.

Proponents of banking systems claim that they bring both ecological and economic benefits. Ecologically, a banking system enables offsets to be established in advance of development projects, avoiding or minimizing the temporary loss of biodiversity which occurs if the offset is not planned until development is underway.⁶³ As well, landscape or conservation planners may guide bank site selection and conservation actions to advance the goals and strategies of an overall land-use plan, biodiversity strategy, or species recovery plan.⁶⁴

⁶³ ten Kate, *Offsets, supra*, note 39 at 14, n 8; Deborah L Mead, "History and Theory: The Origin and Evolution of Conservation Banking" in Nathaniel Carroll, Jessica Fox & Ricardo Bayon, eds, *Conservation & Biodiversity Banking: A Guide to Setting Up and Running Biodiversity Credit Trading Systems* (London: Earthscan, 2008) 9 at 17.

⁶⁴ *Ibid* at 17; Simon Dyer et al, *Catching Up: Conservation and Biodiversity Offsets in Alberta's Boreal Forest* (Ottawa: Canadian Boreal Initiative, 2008) at 10 online: Canadian Boreal Initiative <http://www.borealcanada.ca/documents/Boreal_offset_E.pdf>.

Often conservation banks will be located on a few larger sites, and this may produce more ecological benefits than a scattering of smaller sites produced *ad hoc* on a project-specific basis.⁶⁵

In some cases the developer itself may undertake a bank in order to build up credits in anticipation of applying them to its own later developments. Typically this has been done by developers with ongoing activities, such as transportation agencies. This is commonly known as “self-banking,” and it gives the developer the possible advantages of economies of scale and certainty. Self-banking of fish habitat, while not commonly practiced, has been allowed by Canadian policy for several years.⁶⁶

Much greater economic benefits are claimed, however, when third parties are allowed to undertake banking. Here the banker may transfer credits, usually by commercial sale, to any developer active on similar landscape. This means that the offset has a monetary value, which is a price incentive for conservation for both landowners and for those who would restore and steward the natural landscape. In contrast to the conventional situation where development is an economic opportunity and the conservation of nature an external cost, an offset market creates economic value in undeveloped ecologically-valuable land, and in the restoration of ecosystem functions and values.⁶⁷

Further, this economic incentive encourages the development of specialized skills and economies of scale as organizations (either non-profit or profit-motivated) undertake the offset work on a regular and planned basis. The existence of this community of specialized skill and

⁶⁵ It is important to note, however, that there is nothing inherent in a banking system which necessarily produces better ecological outcomes: Julie Sibbing, “Mitigation Banking: Will the Myth Ever Die?” (Nov-Dec 2005) 27 National Wetlands Newsletter 5; Society of Wetland Scientists, “Wetland Mitigation Banking: Clarifying Intent” (Sept – Oct 2005) 27 National Wetlands Newsletter 5. Each offset project, whether project-specific or banked, must be judged on its own merits.

⁶⁶ K Hunt, P Patrick & M Connell, *Fish Habitat Banking in Canada: Opportunities and Challenges*, Economic and Commercial Analysis Report 180 (NP: Her Majesty the Queen in Right of Canada, 2011) at 6-7, 16-25.

⁶⁷ ten Kate *Offsets*, *supra* note 39 at 20.

knowledge, and the creation of an inventory of offset credits, likely substantially lowers the information and transaction costs for developers seeking offsets. It may also lead to selection of better offset sites, or better offset implementation methods, because of the expertise developed. As well, the creation of routine offset measures through banking protocols may bring economies of scale to regulators and monitoring systems.⁶⁸

While there may be some small voluntary demand for offset credits, the viability of a banking system relies heavily on government policy. The legal requirement of offsetting will be a driver of demand for offset credits, making conservation banks economically viable. Likewise, the official oversight of performance standards and accreditation of offsets will assure the ecological *bona fides* of the system, help foster confidence in the commercial exchange, and influence the supply of credits.

The design and implementation of an offset bank may require a substantial investment – in land, research, restoration activities, etc. – and there may be a delay, while the project proves its viability, before even part of that investment is recoverable through credit sales. This means that a conservation bank is often a long-term investment, which requires a stable policy environment. Given the critical role of government policy in both the supply and demand of offset credits, any indication that the policy influencing those factors is flexible or likely to change as result of election results or political fashions may well undermine the foundations of a banking system.

A banking system also requires a well-developed legal infrastructure in the form of clear and enforceable private law instruments such as property and contract.⁶⁹ As in any other legal market relationship, these underpin the ability of parties to deal with one another with

⁶⁸ eftec & IEEP, *supra* note 25 at 95-96.

⁶⁹ Hunt et al, *supra* note 66 at 44.

confidence. These matters cannot be taken for granted in new environmental markets, such as offset banking. There are many aspects of the environment that we have not conventionally thought of as property or objects of commerce. Indeed, some may find attaching notions of property to aspects of nature to be offensive. Any banking system will depend on the resolution of these issues with some significant certainty.

2.3.3.3 In-Lieu Fees

As an alternative to a strict offset program, developers may be required to pay fees into a fund to be used for future environmental protection and enhancement. Because the fees are in lieu of specific offset obligations, such programs are usually called in-lieu fees. In-lieu fees are not usually considered to be a form of offset because they do not match particular environmental losses and gains. They do, however, operate on a similar general principle, that of compensation.

An in-lieu fee program may have some of the advantages of a banking system in that it can produce a well-planned concerted effort at environmental improvement under the oversight of a central authority. Often in-lieu fees programs are seen as having lower transaction and administration costs than strict offsets, whether project-specific or banked. These lower costs, however, may be based upon a lowering of standards of assessment of development impacts, and a lack of rigour in matching losses and gains in quality and extent. The higher the standards that are applied to these matters, the more closely will the system resemble true offsets, and the less likely the cost savings of the in-lieu fee program.

While each program must be judged on its own merits, we will see that one of the criticisms applied in the past to the U.S. in-lieu fee program for wetlands was that the resulting funds lacked the governance to assure that they were used for the purpose intended at the time the fees were charged. Because such fees create a pot of available money, it is necessary to be

clear as to when and how it will be expended, if it is not to attract the attention of others with their own ideas.

2.4 Conclusion

Conservation offsets are one form of MBI. In this chapter I have examined the nature of both MBIs and conservation offsets, as well as the variety of forms that both may take. In the following chapter I will examine more closely some of the components of conservation offsets and the key issues which they raise for the development of any offset system. In doing so, I will develop a framework for the analysis and discussion of the case studies that follow in subsequent chapters.

CHAPTER THREE

CHALLENGES AND ISSUES WITH CONSERVATION OFFSETS

3.1 Introduction

Despite its attractiveness, the concept of a conservation offset is more complex and challenging than appears at first glance. This chapter will explore some of the major issues which must be confronted in order to design an ecologically credible offset regime, and lay the framework for the case studies which follow.

3.2 Equivalency, Fungibility and Currency

3.2.1 Equivalency

The foundation of the concept of offsets lies in the notion of equivalency of the ecological values of the impact and offset sites. The degradation of one and the enhancement of the other can only result in “no net loss” if the qualities of the two (or at least the qualities to which we attach significance) are equivalent.

We can easily imagine examples where equivalency is not an issue. Such is the case when the substance in question is generic in type and diffuse in impact, the archetype being carbon dioxide. The concept of carbon trading is legitimized in part by the fact that a tonne of carbon dioxide emitted in one place on earth has essentially the same environmental impact as one emitted, or sequestered, elsewhere, making them interchangeable. This establishes the market condition of fungibility.

When applied to habitat, however, the notion of equivalency collides with the reality that no two sites share identical ecological characteristics or functions. Even if they are of the same type of habitat and close in proximity, they may have different mixes of species and different natural processes at work. Our knowledge of such differences may be complicated by the fact

that some significant aspects may only be present at particular times of day or of the year. A site may act as a wildlife corridor for nocturnal species, for example, or as winter grazing range.

Salzman and Ruhl refer to this difference between different pieces of habitat as “nonfungibility of type.”⁷⁰

Salzman and Ruhl go on to point out that in the case of habitat trading this will often correspond to “nonfungibility of space.”⁷¹ This refers to the fact that one piece of habitat necessarily exists in a different geographical location than another, meaning that their ecological functions serve different human populations:

[O]nce the trading area exceeds the area of harm or benefit, affected populations are no longer indifferent to the trades. Rather than simply allocating among parties for greater efficiency, there are now clear winners and losers.⁷²

Outdoor recreationalists -- hunters or birdwatchers – who live close to the impact site, then, are required to lose opportunities for their chosen activity, while the offset may create new such opportunities for another community close to the offset site. This may create social or political tensions which could threaten the acceptance or effectiveness of the offset scheme.⁷³ Cognizance of the possible inequity created by offset schemes, particularly with respect to the livelihood of local populations, has led BBOP to issue a handbook on evaluating the costs and benefits of potential offsets to local populations.⁷⁴

This nonfungibility of space is not only relevant to social considerations, but also to ecological ones. A piece of habitat is not self-contained in its ecological components, but exists

⁷⁰ James Salzman & JB Ruhl, "Currencies and the Commodification of Environmental Law" (2000) 53:3 Stan L Rev 607 at 626, 629-630.

⁷¹ *Ibid* at 626-629.

⁷² *Ibid* at 627 [footnotes omitted].

⁷³ Further, this shifting of benefits from one location to another may in part have a social or economic determinant. King and Herbert in a 1997 study found that wetlands in Florida were tending to move away from populated areas because of the lower land prices in areas of sparser settlement: Dennis King & Luke Herbert, “The Fungibility of Wetlands” (1997) 19 National Wetlands Newsletter 10.

⁷⁴ Business and Biodiversity Offset Programme, *Biodiversity Offset Cost-Benefit Handbook* (Washington, DC: BBOP, 2009) online BBOP: <http://www.forest-trends.org/documents/files/doc_3094.pdf> at 10.

in relationship with its surroundings. This means that alteration of a single piece of habitat, by development or as an offset, may ripple throughout a regional ecosystem. Noss and Cooperrider describe this dynamic as follows:

Adjacent habitats affect each other in many ways, including by microclimatic effects and transfer of nutrients, propagules, and disturbances across edges and ecotones. Because human activities often change landscape patterns, they have impacts on biodiversity that ripple through other levels of organization, affecting species composition and abundances, gene flow, and ecosystem processes. If a forest landscape is fragmented into small patches those patches may experience a dryer microclimate than the original forest, increasing susceptibility to windthrow, loss of forest interior species, reduced genetic diversity within remaining populations, and invasion by weedy and exotic species. These problems cannot be solved patch by patch, but only across all patches and their matrix. Hence, the regional landscape is an appropriate scale at which to identify important sites and patterns and to manage and restore land for conservation purposes.⁷⁵

This suggests that the location of the manipulated habitat within the larger ecosystem is an important factor. We should thus be cognizant of the significance of shifting the location of ecosystem components which is inherent in conservation offsets. A system which aims to assure no loss in biodiversity through no loss to ecosystem function will need to address this challenge.⁷⁶

The goal of fungibility of land also challenges the common law, particularly as reflected in the equitable remedy of specific performance for contracts for the conveyance of land. Justice Sopinka summarized the traditional rule in *Semelhago v. Paramadevan* as follows:

[T]he concept of uniqueness has traditionally been peculiarly applicable to agreements for the purchase of real estate. Under the common law every piece of real estate was generally considered to be unique. Blackacre has no readily

⁷⁵ Reed F Noss & Allen Y Cooperrider, *Saving Nature's Legacy: Protecting and Restoring Biodiversity*, (Washington, DC: Island Press, 1994) at 11 [citations omitted].

⁷⁶ Business and Biodiversity Offset Programme, *Resource Paper: No Net Loss and Loss-Gain Calculations in Biodiversity Offsets* (Washington DC: BBOP, 2012) online: BBOP <http://www.forest-trends.org/documents/files/doc_3103.pdf> [BBOP *Loss-Gain*].

available equivalent. Accordingly, damages were an inadequate remedy and the innocent purchaser was generally entitled to specific performance.⁷⁷

To reframe this statement, the fungible currency embodied in a monetary damages award for a real estate contract is an inadequate substitute for the unique nonfungible qualities embodied in a particular piece of land. In *Semelhago* the Supreme Court of Canada removed this presumption, but did so based on a rationale specifically based on modern real estate development:

While at one time the common law regarded every piece of real estate to be unique, with the progress of modern real estate development this is no longer the case. Residential, business and industrial properties are all mass produced much in the same way as other consumer products. If a deal falls through for one property, another is frequently, though not always readily available.⁷⁸

Subsequent decisions still permit the remedy of specific performance but the plaintiff now bears the onus of establishing the uniqueness of the subject property⁷⁹ through consideration of both the subjective value of the property to the particular plaintiff and the objective circumstances.⁸⁰ In at least two subsequent cases the natural values associated with a piece of land were influential in determining the uniqueness necessary to justify an award of specific performance.⁸¹ These decisions indicate that the common law joins those contemplating

⁷⁷ *Semelhago v Paramadevan*, [1996] 2 SCR 415 at 425.

⁷⁸ *Ibid* at 428.

⁷⁹ *Marvost v Stokes* (2011) CarswellOnt 8105, 2011 ONSC 4827 (Ont SCJ), aff'd (2012), 2012 CarswellOnt 1241, 2012 ONCA 74 (Ont CA); *Covlin v Minhas* (2009) 2009 CarswellAlta 1948, 2009 ABCA 404, 86 R.P.R. (4th) 161, 16 Alta. L.R. (5th) 63, [2010] 3 W.W.R. 48, 469 A.R. 250 (Alta CA); *Deacon v Baron* (2008) 2008 CarswellBC 2833, 2008 BCSC 1249, 79 R.P.R. (4th) 133 (BCSC)

⁸⁰ *Marvost*, *supra* note 78.

⁸¹ *Erie Sand and Gravel Limited v Seres' Farms Limited and Tri-B Acres Inc* (2008) 2008 CarswellOnt 5159 (Ont SCJ); *Hanen v Cartwright* ((2007) 2007 CarswellAlta 372; 2007 ABQB 184, 71 Alta LR(4th) 284, 54 RPR(4th) 66, [2007] WWR 481 (Alta QB), aff'd on other grounds (2007) 2007 CarswellAlta 1641, 2007 ABCA 388, 87 Alta. L.R. (4th) 77, 422 A.R. 218, 415 W.A.C. 218, 66 R.P.R. (4th) 161, [2009] 3 W.W.R. 304 (Alta CA). The Court granted specific performance of an option to purchase a piece of ranchland based on the subjective value the plaintiff placed on its proximity to her existing ranchland and "her sentiments" with respect to the region in general (at para 50). Strangely, however, neither the Alberta Court of Queen's Bench nor the Court of Appeal refer to *Semelhago*, and appear (at para 50) to place the onus on the defendant to show why specific performance should not be awarded.

conservation offsets in struggling with the notion that particular pieces of land, unique in their natural aspects, may be made interchangeable.

3.2.2 Values Clarification, Fungibility and Proxies

The many aspects in which each piece of land is unique require that we clarify specifically which values we seek to protect through the use of the offset mechanism. Are we seeking to preserve viewscales, recreational opportunities, water filtration and flow regulation, carbon sequestration, a particular species or biodiversity in general? Wild habitats may well serve many or all of these functions simultaneously, but it is extremely unlikely that any two pieces of habitat will serve them in the same manner and in the same proportion. If the trading mechanism is to preserve the object that we value, we must identify that object and design the offset mechanism with that aspect in the forefront.

The identification of the value at the foundation of an offset system has two important implications. First it provides guidance as to the appropriate scope of offset sites available. How are we to decide the degree of similarity required for an offset site to be deemed comparable to the impact site? How proximate must the two sites be? The answers to these questions -- answers which should be based upon the value we seek to protect -- will decide the scope of the offset market. This is usually referred to as the “service area” or “trading area” of the offsets. A broad service area will provide for a large market, with many sources of potential offsets. Conversely, a more constrained notion of comparability will restrict the market and the options it offers. Thus, the breadth we give to the notion of equivalency will be a major factor in determining the liquidity of the resulting offset market.⁸²

Secondly, clear identification of the core value of the program will help to identify the units which form the substance of the comparison and exchange which is the essence of the

⁸² Salzman & Ruhl, *supra* note 70 at 638-642.

offset. This conversion of a potentially vague value to a precise unit of measure is likely to produce some tension between the two, requiring the designers of an offset system to be as clear and transparent as possible in the logic of their design.

As an illustration consider three possible values and measurements for an offset system to protect a water supply. If our foundational value is water quality for human health and we look to the impact and offset sites as sources of water filtration then we will want to arrange the trade to assure that the measures of water quality at the point of human consumption offset each other, with the improvement downstream of the offset site being equal to or greater than the degradation of water quality downstream of the impact site. Our unit of measure will be the level of human-relevant contaminants per unit of water, again as measured at the site of human consumption.

If, on the other hand, we seek to protect water quality to maintain the aquatic habitat of a particular sensitive species, then we will undertake measurement where that species is actually or potentially found, and will seek to control the level of contaminants that may affect that species specifically. These considerations may prescribe a very different upstream offset.

Finally, if we are looking to protect a flow of water for either habitat needs or human purposes, we will not measure and offset contaminants, but simply measure flow from time to time at the particular sites where our valued benefits occur. Again, this will likely prescribe quite a different third type of action to create the qualifying offset.

These three scenarios show that a broad environmental value such as “protection of water supply” might be amenable to at least three (probably many more) quite different applications of the offset concept. In each the upstream activity might be quite different in order to obtain the

particular desired environmental outcome that is valued. Hence the importance of clarity of values.

The clarification of values, however, may not directly yield a unit of measure. Salzman and Ruhl point out that the object that we actually value may be inherently difficult to detect or measure. In that case we must rely on a *proxy* which is easier to detect, quantify or control, and which approximates the object which we actually value.⁸³

The question of the degree of correspondence of the proxy with the object of actual concern magnifies the difficulty in designing an adequate metric for an offset scheme. We must first probe for the actual value to be protected and convert that object into a detectable and measurable proxy without losing or distorting its essential elements.⁸⁴

Commonly we use a combination of habitat type and area as a proxy for biodiversity. This relationship is concisely summarized by Environment Canada on its webpage explaining the significance of protected areas:

Protected areas have long been recognized as one of the most effective tools for the conservation of natural capital, its biodiversity and the complex interactions among the elements of the biosphere.

Wildlife and wildlife habitat are vital to the ecological and biological processes that are essential to the preservation of life. Sufficient high-quality habitat is of utmost importance for the survival of wildlife populations, and essential for the maintenance of ecosystems on which all beings depend for their survival. The conservation of these ecological processes is essential for fresh water and clean air, the protection of soil resources, climate regulation, the capture and storage of carbon, and pest and disease control, among other valuable functions.⁸⁵

⁸³ *Ibid* at 623-624.

⁸⁴ A very helpful discussion of some of the difficulties and options respecting the conversion of notions of equivalent values to practical measurement may be found in Fabien Quétier & Sandra Lavorel, “Assessing Ecological Equivalence in Biodiversity Offset Schemes: Key Issues and solutions” (2012) 144:12 *Biological Conservation* 2991.

⁸⁵ “Protected Areas” online: Environment Canada < http://www.ec.gc.ca/ap-pa/default.asp?lang=En&n=7FC45404-1&?WT.mc_id=rt5>.

It is important to note that this process of analysis and conversion must often occur despite a dearth of empirical information. Our current knowledge of the ecological characteristics of most habitats is obtained through an environmental assessment process which is site-specific, the specific site being the impact site. There is not usually a convenient mechanism to determine the characteristics of candidate offset sites. There may be multiple candidate sites but the interested parties may have no special knowledge of any of them. It would likely be prohibitively costly to prepare a full inventory of environmental elements, including those which may be present only occasionally, on all prospective offset sites, especially since much would be speculative. As a result, an offset site will often be chosen on the basis of incomplete and perhaps wholly inadequate information. That information, in whatever state of completeness or incompleteness it may be, will form the base that is converted into the metric by which the offset exchange is governed.

3.2.3 Currency Design

Our goal in undertaking this analysis is to arrive at the unit of measure of equivalency of the offset. This may also be seen as the *currency* of the offset scheme as whole.⁸⁶ Salzman and Ruhl consider the importance of this concept to the operation of environmental trading markets (ETMs), of which an offset market is one:

To achieve the optimal outcome from ETMs, we need to understand and account much better for the qualities being traded. To do so requires careful consideration of the measure of exchange – the currency – since in the final analysis the currency forms the very basis of the transaction. The trading

⁸⁶ In the case of an *ad hoc* voluntary offset, there may be no explicit reference to any currency. The developers, community groups and government agencies who might typically be expected to take part in the negotiation of the project-matched offset will likely have their own particular motivations and interests, which they negotiate without explicit reference to any broader framework. Such transactions tend to be distinctive to their particular circumstances, often taking the form of barter rather than a currency-based exchange. Because the experience is seen to be a singular event, there may be no need to articulate a larger principle or set of values. So long as all parties agree to the particular outcome, seeing their values represented in either the industrial development or the conservation offset, there may be no need to express that satisfaction by reference to any particular measure.

currency superficially makes the commodities fungible, determining what is being traded, and, therefore, protected.⁸⁷

They later add:

If the currency cannot incorporate the environmental values we care about, these become external to the exchange and, as a result, trades may actually worsen the environmental or natural services delivered. Inadequate currencies allow externalities to bleed out of the trading market.⁸⁸

One may distinguish, as Salzman and Ruhl do, between simple and complex currencies.⁸⁹ A simple currency is a one-dimensional easily-identified and quantifiable measure which acts as a proxy for the whole combination of values which might be in play in the offset exchange.⁹⁰ The most obvious example is that of area as a measure of habitat values. If one hectare of habitat is assumed to be the equivalent of another then the problem of nonfungibility is assumed away. Just for that reason, the simple measure of area has broadly been found inadequate as a currency for biodiversity.⁹¹

In a much more sophisticated approach, Boyd and Banzhaf have proposed some concepts toward the development of a standard accounting unit for the flow of ecosystem services.⁹² They propose an aggregation of all of the non-market services performed by particular pieces of ecosystem into a single accounting unit. The objective of this is to allow for cost-benefit analyses of all human interaction with nature, with the ultimate goal of a set of ecosystem ledgers from which a “Green GDP” might be derived.⁹³ While their suggestion is fairly

⁸⁷ Salzman & Ruhl, *supra* note 70 at 612.

⁸⁸ *Ibid* at 624.

⁸⁹ *Ibid* at 630-637. In this section Salzman & Ruhl also describe universal currencies which are interchangeable for other non-ecosystem based values, the foremost example of which is money. For another discussion of the various levels of complexity which may characterize currencies see Quétier & Laval, *supra* note 84.

⁹⁰ The example of area is taken from Salzman & Ruhl, *supra* note 70 at 631.

⁹¹ *Ibid*; Quétier & Laval, *supra* note 84 at 2993; BBOP *Loss-Gain*, *supra* note 76 at 11.

⁹² James Boyd & Spencer Banzhaf, “What Are Ecosystem Services? The Need for Standardized Environmental Accounting Units” (2007) 63 *Ecological Economics* 616.

⁹³ *Ibid* at 624-626.

complex, their prescription is ultimately for a simple currency for the assessment and comparison of ecosystem services.

The advantage of a simple currency is that it is extremely fungible. Because the units of exchange can be easily measured, without detailed investigation into the particularities of any situation, exchanges can be made with few information or transaction costs. Market theory, then, suggests that a simple currency would facilitate low-cost transactions, bringing market efficiency and an efficient allocation of resources.

This is, however, a high-risk proposition. The degree to which the real world does not correspond to that assumption or claim of equivalency is the degree to which the currency distorts the natural values. If the currency does not adequately represent the key values, then trading in that currency may well not advance those values. The advancement of efficiency may be a mirage if what is produced is not of actual value. This is precisely the risk Salzman and Ruhl warn of in the passage quoted above.

A complex currency seeks to add one or more factors to the base currency to reflect the specific value(s) to be served by the regime. For example, we might add to the simple currency of area an assessment of quality of habitat, or of particular characteristics, functions or values. These may be as broadly or narrowly tailored as fits the needs of the program.

Several formulations of such complex currencies have been proposed. A sophisticated example of a complex currency for wetlands has been proposed by Lisa A. Wainger *et al.*⁹⁴ They propose four broad components. First there is a biophysical assessment of the characteristics of the particular site, which yields a rating for its functional capacity.⁹⁵ Second, the actual utilization of that capacity would be assessed in the context of the landscape features

⁹⁴ Lisa A. Wainger et al., “Wetland Value Indicators for Scoring Mitigation Trades” (2001) 20 Stan L Rev 413.

⁹⁵ *Ibid* at 431-433.

of the location which might serve to limit or enhance actual functions. This would include both biophysical and socio-economic factors on the surrounding landscape, such as prevalent land uses or economic trends.⁹⁶ This would yield a picture of the actual functions performed by the wetland in the context of its particular location. The third step would be to examine the scarcity or substitutability of those functions in that landscape and community.⁹⁷ Finally, the risks to the maintenance of those services would be assessed.⁹⁸ The result of this process would be a non-monetary “adjusted wetland value index” in the form of a percentage rating for the characteristics and context of a particular site.⁹⁹ This would allow for the comparison of the merit of a series of sites.

Closer to home, the Alberta Biodiversity Monitoring Institute has for several years been developing a methodology for assessing the intactness of biodiversity and habitat at a large series of sites across Alberta.¹⁰⁰ The methodology considers the ecosystem type of the site (within what appears to be a broad classification scheme), and indexes (as a percentage) the biodiversity and habitat conditions at that site against a reference state set by the presumed state in the absence of human influence. The result is a complex currency called “impact adjusted area”, which is the product of the multiplication of area by a factor of condition. We will return to this proposed system later in this thesis.

BBOP points out that even within the concept of complex currencies, particular measurements may be direct or surrogate (i.e., proxies), aggregated or disaggregated, site-specific (that is, limited to the site itself) or context dependent (taking into account the

⁹⁶ *Ibid* at 433-434.

⁹⁷ *Ibid* at 436-437.

⁹⁸ *Ibid* at 437-438.

⁹⁹ *Ibid* at 460-465.

¹⁰⁰ Alberta Biodiversity Monitoring Institute, *Manual for Estimating Species and Habitat Intactness at the Regional Scale*, Version 2011-07-07 (Edmonton: ABMI Information Centre, 2011) online: ABMI <<http://www.abmi.ca/abmi/reports/reports.jsp?categoryId=61>> .

surrounding landscape).¹⁰¹ In each of these dyads a choice is implied between a more precise, context-specific mode of measurement (direct, disaggregated, and context dependent) with one more easily administered (surrogate, aggregated, and site-specific).

Because of the complexities and inadequacies of particular currencies, BBOP counsels that often multiple loss-gain assessments using different currencies may need to be taken into account in a single offset scheme, in order to encompass all of the biodiversity components at stake.¹⁰²

It may be that cost and timing concerns promote the choice of simpler currencies over more complex ones. Indeed, Salzman and Ruhl, in their study of the U.S. wetlands banking system, found that there was, despite scientific advice to the contrary, constant pressure toward currency over-simplification.¹⁰³ The general admonition of BBOP, therefore, is:

[C]aution is needed when applying such simpler approaches. It is particularly important to resist the temptation of 'spurious certainty' -- where misleading or meaningless measures are used to guide management just because they are available and allow for satisfying quantitative assessment.¹⁰⁴

This fundamental challenge in currency design is similar to that described above with respect to the definition of the pool of candidate sites for an offset scheme. The greater attention to particularity of ecological features, the more the information and transaction cost, and the less fungibility and liquidity in the market.

3.2.4 Like-for-Like?

This discussion of equivalency invites the question of whether offsets must necessarily seek to replicate ecological conditions of the impact site on a like-for-like basis. Certainly the standard notion of offset suggests that the offset outcomes should perpetuate the ecosystem

¹⁰¹ BBOP *Loss-Gain*, *supra* note 76 at 10.

¹⁰² *Ibid* at 4.

¹⁰³ Salzman & Ruhl *supra* note 70 at 658-661.

¹⁰⁴ BBOP *Loss-Gain*, *supra* note 76 at 13.

values compromised at the impact site. This is the essence of the goal of no net loss. This pursuit of like-for-like has the considerable advantage that it allows for the direct comparison of impact and offset site losses and gains, based upon discrete empirical evidence.

Many proponents of offsets recognize, however, that there may be some circumstances where offsets can be used to advance ecosystem values beyond those found at the impact site. This may be found, for example, in the goal of *net gain* articulated by BBOP in the passage quoted above on page 15. This is also often summarized as “like-for-like or better”. If one is to pursue this path it is important to recognize that a notion of net gain or betterness inherently suggests a goal preferred to the status quo. This calls for the articulation of that goal and the values which it embodies. It also calls for clear guidance on what standards and measures are to be employed in pursuit of the target state.¹⁰⁵

This is best done through the clear tools of public policy, such as land-use planning or species recovery plans.¹⁰⁶ *ALSA*, for example, provides for the drawing up of regional plans which are to contain a vision and objectives for a planning region.¹⁰⁷ Market-based instruments, including biodiversity offsets, are to be developed to enhance and implement the objectives of the plan.¹⁰⁸ One might imagine that a regional plan might contain an objective of restoring some ecosystem feature or function that, having existed historically, has over time diminished on the landscape. Offsets then might be used to enhance that feature, notwithstanding that it may not have been a current feature of the impact site.

Thomas J. Habib and co-authors have recently published an analysis of the costs (including opportunity costs) of offsetting on a like-for-like basis versus in pursuit of strategic

¹⁰⁵ McKenny & Kiesecker, *supra* note 42 at 173-174.

¹⁰⁶ It should be noted that the public policy process by which such plans are developed may well bring in considerations other than environmental ones.

¹⁰⁷ *Supra* note 8, s 8(1).

¹⁰⁸ *Ibid*, s 23.

conservation objectives in the context of Alberta's oil sands. They found the pursuit of strategic objectives to be significantly more cost-effective than the pursuit of like-for-like.¹⁰⁹

In the absence of such a clear articulation of strategic policy objectives, however, it is not advisable that private parties or regulators depart from the like-for-like model in pursuit of their own goals. To do so risks an *ad hoc* pursuit of disparate goals, achieving neither the perpetuation of existing values nor the systematic, consistent and effective pursuit of other objectives, however legitimate.¹¹⁰

3.3 Additionality

Regardless of how one chooses to resolve issues of currency and fungibility, one must also consider the related fundamental question of the kinds of activities and impacts to count in an offset scheme. With respect to the offset site, this is typically referred to as "additionality", the requirement that "Gains in biodiversity from conservation activities at offset sites need to be additional to those that would occur if no offset investment was made by the developer."¹¹¹

Before considering what might count as a notional credit at the offset site, however, it is necessary to consider what should count as a debit at the development site. The most common evaluation focuses on the direct ecological footprint of the development itself, but this fails to take into account the possible indirect impacts of the development.¹¹² For example, the

¹⁰⁹ Thomas J Habib et al, "Economic and Ecological Outcomes of Flexible Biodiversity Offset Systems" (2013) 27:6 Conservation Biology 1313.

¹¹⁰ In a different take on this issue of departing from like-for-like, in some cases offsets have been undertaken in a manner to protect the same valued ecosystem features found at the development site, but by managing different factors than are disturbed. For example, petroleum and natural gas development in Uzbekistan is intruding on the habitat of the rare and sensitive saiga antelope. Loss of habitat is a significant threat to the species, but its migratory nature (including transboundary migrations) and the lack of practical opportunities to secure other habitat have led the developer to consider supporting anti-poaching enforcement as an offset mechanism (poaching being another major threat): Joseph W Bull et al, "Conservation When Nothing Stands Still: Moving Targets and Biodiversity Offsets" (2013) 11:4 Frontiers in Ecology and the Environment 203, DOI: <10.1890/120020>. In this case the currency can be seen to be population numbers of the antelope, rather than area of habitat.

¹¹¹ BBOP *Loss-Gain*, *supra* note 76 at 4.

¹¹² Kerry ten Kate & Mira Inbar, "Biodiversity Offsets" in Carroll et al, *supra* note 62 189 at 199; see also ten Kate, *Offsets*, *supra* note 39 at 56.

development may bring an influx of new people to the region, who in turn will place an added burden on the landscape through their activities unrelated to the original development. Similarly, one might inquire into the environmental impacts of activities upstream and downstream in the supply chain of the project. Ten Kate and Inbar note that such indirect impacts are generally not thought of as solely the responsibility of the developer, though drawing a clear line delineating the extent of that responsibility may be difficult.¹¹³

Turning to the question of what types of activities and outcomes are legitimately to be counted as offset credits, there are three categories that may be eligible. These are a) positive management actions, b) averted losses, and c) other conservation activities. Each of these entails some controversy and risk.

3.3.1 Positive Management Actions

Positive management actions are direct physical actions, carried out on the offset site, intended to improve ecological conditions or functions. Typical examples are the construction of a new wetland where one did not exist, the active revegetation of a denuded landscape, the reintroduction of an extirpated species, or the removal of artificial barriers to connectivity.

Positive management actions have been divided into two categories: restoration and enhancement.¹¹⁴ Restoration "refers to activities that specifically aimed to return an area to its original (pre-disturbance) ecological condition prior to some anthropogenic impact."¹¹⁵ Enhancement refers to similar activities with the distinct objective of ecological improvement toward a state other than an original one.¹¹⁶ Positive management actions best fit the concept of

¹¹³ ten Kate & Inbar, *supra* note 112 at 199.

¹¹⁴ BBOP *Loss-Gain*, *supra* note 76 at 5.

¹¹⁵ *Ibid.*

¹¹⁶ *Ibid.*

conservation offsets, in that their objective is a demonstrable ecological gain, which can be compared against the demonstrable ecological loss at the development site.

The challenge with positive management actions lies in the gap between objectives and their execution. Such actions combine human action – presumably expert and well-intentioned – with natural factors that are inherently complex, dynamic and only partially understood. This means that there is significant uncertainty as to whether the actions will in fact produce their intended outcomes.¹¹⁷ This uncertainty may take several forms:

- 1) Incomplete data on either development site ecological losses or offset site characteristics;
- 2) Development site ecological features which simply cannot be offset;
- 3) Ecological differences, perhaps imperceptible or not understood, between the development and offset sites;
- 4) Uncertainty in the performance of positive management actions due to a lack of data;
- 5) Uncertainty in the performance of positive management actions due to unproven techniques, or the use of techniques in unfamiliar conditions;
- 6) Uncertainty due to stochastic events, either natural (fire, floods, insect infestation) or anthropogenic (climate change, industrial accident) interfering with the intended succession of factors necessary to attain the intended outcome;
- 7) Human failure due to ignorance, incompetence, dishonesty, lack of resources, or other factors.¹¹⁸

¹¹⁷ For a brief review of the conceptual inadequacies of restoration science see Robert H Hildebrand, Adam C Watts & April M Randle, “The Myths of Restoration Ecology” (2005) 10:1 Ecology and Society 19; For a consideration of the range of uncertainties in restoration and their implications for offset policies see Martine Maron et al, “Faustian Bargains? Restoration Realities in the Context of Biodiversity Offset Policies” (2012) 155 Biological Diversity 141.

¹¹⁸ This list is derived in part from Hildebrand et al, *supra* note 117 and in part from BBOP *Loss-Gain*, *supra* note 76 at 18.

These risk factors are compounded if a similar restoration or enhancement technique is used on multiple similar sites, which creates the possibility that all might fail simultaneously.¹¹⁹

3.3.2 Averted Losses

When an existing ecosystem is provided greater security to thwart an anticipated threat, this is referred to as an “averted loss”. This usually takes the form of the acquisition of freehold title, the acquisition of a conservation easement or comparable interest, or some other means of increasing the legally-enforceable protection of habitat values on a given piece of land.¹²⁰

The major advantage of averted losses as a means of offsetting development is their relative certainty, in physical, financial, and legal aspects. Physically, because one is dealing with an existing site in an existing state, it is much more feasible to carry out the necessary studies and, within the limits of the applied methodologies, arrive at an understanding of current ecosystem values and functions. Financially, the acquisition of an interest in land, whether title or some more limited interest, takes place within the larger open real estate market, making costs relatively predictable. This is an important consideration for commercial developers, in the form of either industrial developers or habitat bankers.

Legally, an owner of freehold title may choose to preserve the natural values on his or her land, and the law will generally protect that choice as a legitimate use. Also, Alberta legislation, as that in many other jurisdictions, has created the conservation easement as a legally-

¹¹⁹ Atte Moilanen *et al*, "How Much Compensation is Enough? A Framework for Incorporating Uncertainty and Time Discounting When Calculating Offset Ratios for Impacted Habitat" (2009) 17:4 Restoration Ecology 470.

¹²⁰ Much less likely to be applicable in the Alberta context, averted losses can also refer to “tackling the drivers of background losses”: BBOP, *Loss-Gain*, *supra* note 76 at 5. BBOP gives the example of providing an alternative protein source to a local population which is depleting wildlife to meet its nutritional needs: *Ibid*. Another example might be the establishment of an alternative energy source where a community is turning to deforestation to meet its fuel needs.

enforceable instrument short of fee simple ownership for “the protection, conservation and enhancement of the environment” among other nature-related values.¹²¹

These considerations do not mean that averted losses are free from uncertainty. It is important that we view these questions of security in the context of time. Most frequently, we aim to secure natural values “in perpetuity”, or at least for a very long time. Of course, the longer the time, the greater number of risks that must be faced.

Stochastic events, ignorance, incompetence, and lack of resources can all intervene to undermine the proper management of a site, before or after acquisition, so as to diminish its ecological value below that intended.

Conservation easements are subject to legal challenge. While an easement may be originally negotiated in good faith with the holder of the freehold interest in the site, a subsequent owner of the freehold may be less committed to the restrictions which a conservation easement allows, and to the diminished monetary value which corresponds to those restrictions. Given that there will be an indefinite series of freehold owners over time, the likelihood that one or more will challenge the validity of an easement is reasonably high,¹²² manifesting a risk that the easement may be found technically deficient. (The prospect of such litigation is also an important cost consideration for the holder of the easement.)

¹²¹ *ALSA*, *supra* note 8, s 29.

¹²² On the long-term vulnerability of conservation easements see Federico Cheever, “Public Good and Private Magic in the Law of Land Trusts and Conservation Easements: A Happy Present and A Troubled Future” (1990) *Denv UL Rev* 1077. The susceptibility of conservation easements to challenge was exhibited in the recent decision of the Alberta Court of Queen’s Bench in *The Nature Conservancy of Canada v Waterton Land Trust Ltd*, 2014 ABQB 303. In that case the (plaintiff) holder of a conservation easement sought to enforce its provisions respecting fencing. The defendant challenged the validity of the easement on the basis that it was *ultra vires* the provisions of *ALSA*, and also on the basis of the relationship between the plaintiff and a third party who had earlier held the easement. The court upheld the validity of the easement itself, but declined to enforce the fencing provision, finding that provision to be too imprecise to allow compliance to be ascertained. In making this ruling, the Court illustrated another source of potential vulnerability of easements.

Secondly, under Alberta law, the “Designated Minister” of the provincial government may modify or terminate a conservation easement if he or she considers that it is in the public interest to do so.¹²³ This authority appears to be exercisable without reference to the intentions or wishes of the original parties to the easement. Notwithstanding these sources of uncertainty, the central concern with averted losses is the extent to which they can legitimately be considered to create a gain for biodiversity. While they enhance the legal security of habitat, they do not in themselves add anything to the ecological function of the offset site, nor to the larger landscape. This is, of course, in contrast to the development site where ecological losses are real and current. The combination of the business convenience and ecological shortcomings of averted losses as offsets is succinctly expressed by Fleischer and Fox in the context of American biodiversity banking:

While some conservation banks incorporate restoration activities, the majority are focused on the acquisition and preservation of existing habitat. The concern among nearly all stakeholders is that this is resulting in a net loss of habitat.¹²⁴

If one accepts, as most in this field do,¹²⁵ that, notwithstanding these limitations, the securing of existing natural habitat makes an important contribution to conservation, and therefore has a place within an offset system, then the next question is how we ought to evaluate that contribution. That evaluation will be expressed in terms of the currency agreed to for the scheme, but upon what is it to be grounded? BBOP offers an important principle in this regard, but also identifies a major sticking point:

Averted loss offsets are made possible through the abatement of background threats to biodiversity that are independent of the planned development project. Benefits can be measured as a positive deviation from background rates of loss

¹²³ *ALSA*, *supra* note 8, s 31(b).

¹²⁴ Deborah Fleischer & Jessica Fox, “The Pitfalls and Challenges” in Carroll et al, *supra* note 63 at 43.

¹²⁵ See, for example, ten Kate, *Offsets*, *supra*, note 39 at 68; BBOP *Loss-Gain*, *supra*, note 76 at 5,20; Dyer et al, *supra* note 64 at 10; Marian Weber, *Experimental Economic Evaluation of Offset Design Options for Alberta: A Summary of Results and Policy Recommendations* (n.p., Alberta Innovates Technology Futures, 2011) at 7.

following the start of the offset. However, measuring the marginal gain is confounded by uncertainty in the extrapolation of historical background rates of loss into the future and/or uncertainty in predicting the likely effectiveness of any offset activity to abate the background threat.¹²⁶

The assessment of the value of averted losses involves the comparison of the ecological values anticipated in the absence of conservation action, with those actually in place after the action. J.W. Bull and co-authors have recently called for explicit specification of the baseline state on any offset calculation, noting that often offset projects implicitly assume a baseline state (or counterfactual).¹²⁷ They note that variations in the baseline can dramatically affect the assessment of the value of offset actions, and therefore call for close scrutiny of this component.

On whom ought to burden fall of establishing that biodiversity has benefited from an averted loss? BBOP places that burden squarely on the shoulders of the offset developer:

“[O]ffset developers need to demonstrate that the condition of additionality has been satisfied.”¹²⁸ The same BBOP publication specifies that the developer must prove:

... that any impending threats are highly likely to occur in the imminent future (certainly within the timeline with the project), and are also likely to have a significant impact on local biodiversity.¹²⁹

This would seem to suggest that the value of the averted loss is to be measured by reference to a “highly likely” and “imminent” threat, and that the failure to demonstrate these conditions would negate the value of the averted loss.

This position, while logical, contains within it a disturbing moral hazard. If the value (ecological value, but following upon that, financial value) of an offset is to be determined by contrast with an apprehended threat, does this not give the developer or landowner a perverse

¹²⁶ BBOP *Loss-Gain*, *supra* note 76 at 20 [references omitted].

¹²⁷ JW Bull et al, “Importance of Baseline Specification in Evaluating Conservation Interventions and Achieving No Net Loss of Biodiversity” (2014) 28:3 Conservation Biology 799. The authors distinguish between a “baseline” (a known historical state) and a “counterfactual” (a projected alternative scenario of what would have taken place without the intervention): *ibid* at 800.

¹²⁸ BBOP *Loss-Gain*, *supra* note 76 at 20.

¹²⁹ *Ibid* at 5.

incentive to enhance the size or imminence of that threat? Might it not induce a threat where one might not otherwise exist? This possibility illustrates the importance of Bull and co-authors' call for specification and scrutiny of baseline and counterfactual assumptions.

A final issue which arises in considering additionality and averted losses is what happens to those threats which are averted. What if they *diverted* to another piece of the landscape rather than *averted*? In such a case the ecological value of the averted loss to the landscape as a whole may be significantly diminished or lost altogether. BBOP refers to this as “leakage” in the pursuit of no net loss.¹³⁰

3.3.3 Other Conservation Actions

Another potential source of offset credits is a residual category of activities which can loosely be described as “other conservation actions.” This encompasses a range of activities such as research, education, and capacity-building that are intended to enhance the capacity of a community to carry out conservation, but do not directly produce conservation gains. These often include fees and payments to regulators or third party conservation organizations in lieu of strict offsets activities. Ten Kate and co-authors consider whether these activities might legitimately be considered as credits in an offset calculation, but recommend against it.¹³¹ Their reasoning is based on the lack of any direct and tangible conservation benefit from such actions. They also referred to a perception issue brought out in their interviews: “Several [interviewees] referred to the ‘cynicism’ stakeholders and observers would feel if companies presented training and scientific research in lieu of damaged ecosystems.”¹³²

Notwithstanding this position, the BBOP does reserve a place in its mitigation hierarchy graphic (comparable to Figure 1 above) for “additional conservation actions” (a term completely

¹³⁰ BBOP *Loss-Gain*, *supra* note 76 at 4, 20.

¹³¹ ten Kate, *Offsets*, *supra*, note 39 at 69-70.

¹³² *Ibid* at 70.

unexplained but seemingly corresponding to this category we are considering), as amounting to something additional to, but distinct from an offset.¹³³ This is appropriate in that a developer undertaking such actions certainly deserves recognition but such should not enter into the offset calculation.

3.4 Temporal Issues

3.4.1 Time Lags in Offsetting

The development of natural ecosystems does not generally occur on the same time scale as human developments. This means that if development and restoration activities are initiated at the same time, the one intended to offset the other, the development and its attendant ecological degradation, will come to fruition before, perhaps long before, the benefit intended by the restoration. The result is a loss to biodiversity, at least temporarily.

Further, as Atte Moilanen and co-authors point out, the “head start” that development enjoys may have a ripple effect on other human activities:

[I]t is not fair to compensate immediate loss by hypothetical distant future gain. Presumably, the conversion of the development site would produce immediate economic return in the order of some percents per year. This revenue could plausibly be used for further environmentally harmful activity either directly or indirectly. On the other hand, conservation benefits arising from restoration effort may take a very long time to materialize fully, e.g., if one needs to wait for a forest to grow.¹³⁴

The need for time to effect restoration, of course, magnifies all of the uncertainties of that process discussed above. The more time that is needed, the more opportunity there is for events to intervene to frustrate restoration objectives.

¹³³ BBOP Overview, *supra* note 39 at 3.

¹³⁴ Moilanen, *supra* note 119 at 472.

A special concern in this regard is the permanent loss of ecosystem components due to a loss in temporal continuity in the ecosystem.¹³⁵ For example, if a species is dependent upon a mature forest ecosystem and vacates a region due to development, that species may not be available to recolonize the offset site at the future point at which the site reaches the necessary maturity. The species then will be permanently lost.

One of the advantages of a banking system is that it can easily manage this problem by requiring a certain stage of maturity or viability in a restoration or enhancement effort before certifying the offset for use.¹³⁶ This effectively means that the offset activity must precede the development.

3.4.2 Offset Duration

Another issue of time for any offset system is that of duration. This is dealt with succinctly in one of the principles of BBOP:

8. Long-term outcomes: The design and implementation of a biodiversity offset should be based on an adaptive management approach, incorporating monitoring and evaluation, with the objective of securing outcomes that last at least as long as the [development] project's impacts and preferably in perpetuity.¹³⁷

The goal of long-term, and preferably perpetual, conservation raises important questions of the security of land tenure, of financing, and of governance.¹³⁸ All of these will have to be provided throughout the life of the offset if the objective is to be successfully met.

¹³⁵ BBOP *Loss-Gain*, *supra* note 76 at 15.

¹³⁶ ten Kate, *Offsets*, *supra* note 38 at 26; Deborah L Mead, "History and Theory: The Origin and Evolution of Conservation Banking" in Carroll et al, *supra* note 63 at 17; Dyer, *supra* note 64 at 10; Moilanen, *supra* note 119 at 471.

¹³⁷ BBOP Overview, *supra* note 39 at 8.

¹³⁸ Business and Biodiversity Offset Programme, *Biodiversity Offset Implementation Handbook* (Washington, DC: Forest Trends, 2009) online: BBOP < http://www.forest-trends.org/documents/files/doc_3092.pdf>.

3.5 Uncertainty and Risk Management

The above discussion reveals the many sources of risk and uncertainty in the concept and design of conservation offsets. This is a significant issue for the credibility of any proposed offset, as recognized by BBOP:

Due to the complexity of biodiversity, along with relatively limited scientific understanding, and relatively low priority for investment when set against other societal values, the practice of biodiversity conservation is associated with significant levels of uncertainty and risk. Biodiversity offsetting is no exception. In practical terms it is impossible to 'prove' that a no net loss (or net gain) of biodiversity has been achieved through offset activities and many existing projects are likely to fall significantly short of achieving this goal. Many offsets involve certain biodiversity losses in exchange for uncertain, spatially and temporally disjunct gains. Moreover, and irrespective of the quality of baseline information that is available, losses and gains will always, at some level, be biologically dissimilar.¹³⁹

The management of this risk is therefore a major concern of those in this field. There are several suggestions to address this suite of challenges, none of which are mutually exclusive.

3.5.1 Limits to the Use of Offsets

The first safeguard is to limit the exposure to risk by limiting the application of the offset tool. This would dictate that where the development would endanger irreplaceable ecosystem components or where the difficulty of designing an effective offset is high that those considerations would weigh against the use of the offset (and thus, presumably, of the development).¹⁴⁰ The BBOP prescribes a “strong presumption” against offsetting where there is a high risk of “non-offsetable” impacts.¹⁴¹ Gibbons and Lindemayer, writing in the context of Australia’s effort to limit the clearing of native vegetation, seem to take this approach slightly further, suggesting that offsetting only credibly contributes to a no net loss objective where the

¹³⁹ BBOP *Loss-Gain*, *supra* note 76 at 17 [references omitted].

¹⁴⁰ Business and Biodiversity Offset Programme, *Resource Paper: Limits to What Can Be Offset* (Washington, DC: Forest Trends, 2012).

¹⁴¹ *Ibid* at 8-9, 12.

exchange is for “relatively simplified native vegetation” and related ecosystem functions where we have a high level of confidence in success.¹⁴² They appear to suggest that there be a general presumption against reliance on offsets except in the most clear and certain cases.

John D. Pilgrim and co-authors have recently taken a more nuanced and analytical approach to the question of when project impacts are and are not likely to be offsettable.¹⁴³ They recommend that this assessment be made by reference to biodiversity policies and strategies, and by quantitatively weighing the severity of the biodiversity concern arising from the development, with the magnitude of the residual loss, the offset opportunities, and the feasibility of successful offsetting. In recommending this process, Pilgrim *et al.* agree with the BBOP position that the burden of proving offsettability should be on the proponent developer.¹⁴⁴

3.5.2 Research

Another prescription to limit risk is simply to assure that any offset scheme include rigorous research and application of offset methodologies.¹⁴⁵

3.5.3 Diversity of Techniques

Risk-spreading is another means of risk management. In the context of offsets this means that not all of an offset or set of offsets should rely upon the use of a single technique, or be applied to similar landscapes. This avoids widespread failure due to a single source of risk.¹⁴⁶

Moilanen and co-authors, for example, prescribe that no single offset ought to be reliant on either

¹⁴² Philip Gibbons & David B Lindemayer, “Offsets for Land Clearing: No Net Loss or the Tail Wagging the Dog?” (2007) 8:1 Ecological Management & Restoration 26.

¹⁴³ John D Pilgrim et al, “A Process for Assessing the Offsetability of Biodiversity Impacts” (2013) 6:5 Conservation Letters 376.

¹⁴⁴ *Ibid* at 384. This is not surprising as several of Pilgrim’s co-authors are active in BBOP, including Kerry ten Kate and Amrei von Hase who are on the BBOP staff.

¹⁴⁵ BBOP *Loss-Gain*, *supra* note 76 at 20.

¹⁴⁶ *Ibid* at 20; Moilanen, *supra* note 119 at 476.

restoration or loss avoidance, due to the weaknesses in each, but consist of a combination of the two.¹⁴⁷

3.5.4 Multiplier Ratios

Many prescribe that a “multiplier” be applied to offset calculations as a means of compensating for the risk inherent in the exercise.¹⁴⁸ This approach would see an offset being larger (as measured in the appropriate currency) by some multiple than the development impact for which it is to compensate. In some cases the prescription of a multiplier is based upon the calculation of particular risks such as data inadequacy, time delays, uncertainty of restoration techniques, and so on.¹⁴⁹ In many cases, though, a multiplier is used as gross compensation for a whole host of risks, known and unknown.¹⁵⁰

BBOP summarizes the strengths and weaknesses of using multipliers to mitigate risk:

The advantage of multipliers is that they tend to be easy to understand, implement, and audit. Yet in practice, they are difficult to calculate accurately and thus do not meet with broad agreement. Where uncertainty is high, multipliers may need to be very large (e. g., an order of magnitude increase in basic offset size) if they are to provide adequate protection against failure to deliver no-net loss. Moreover, **multipliers are not a silver-bullet solution and are inappropriate for dealing with many types of risk.** Thus, area-based multipliers cannot account for the risk that an offset activity may fail (as opposed to falling short of achieving complete success). If a restoration project uses untested techniques and fails to secure any measurable biodiversity benefits, increasing the size of the offset will contribute little towards improving the chance of success. Despite these concerns multipliers have been inappropriately used in this context by some existing offset programs (e.g., in methods used as part of the United States wetlands mitigation banking).¹⁵¹

¹⁴⁷ *Ibid* at 476.

¹⁴⁸ BBOP *Loss-Gain*, *supra* note 76 at 19-20; Business and Biodiversity Offset Programme, *Biodiversity Offset Design Handbook* (Washington, DC: Forest Trends, 2009) at 89-94.

¹⁴⁹ Moilanen, *supra* note 1219.

¹⁵⁰ BBOP *Loss-Gain*, *supra* note 76 at 19.

¹⁵¹ *Ibid* at 20 [emphasis in original, references omitted]. With respect to the size of multipliers needed to attain no net loss, Curran *et al.* have recently concluded, based on a statistical comparison of the ecological richness of old growth ecosystems and actively restored second growth ecosystems, that multipliers must be very large (from 20:1 to 100:1) if that goal is to be met within decades: Michael Curran, Stefanie Hellweg & Jan Beck, “Is There Any Empirical Support for Biodiversity Offset Policy?” (2014) 24:4 *Ecological Applications* 617.

The liberal use of area-based multipliers gives rise to another socio-economic concern if one considers it beyond the context of biodiversity protection. If one assumes that one of the goals of an offset program is to provide for socially and economically beneficial development to occur in concert with biodiversity protection, then the application of restoration or protection measures on land multiple times larger than that dedicated to development, and intended to apply in perpetuity, may result in an imbalance in the long-term mix of benefits sought by society.

3.6 Availability of Offset Opportunities

The issues and challenges discussed above are all conceptual and related to the very idea of offsets. All are important in the design and implementation of an offset scheme, either at the level of individual projects or at the program level. Often, however, the application of those concepts runs into a very real practical challenge with the availability of sites on which offset activities can be carried out.

This problem was recently demonstrated in the case of the Kinder Morgan Canada Anchor Loop project.¹⁵² The company planned to expand its oil pipeline through sub-alpine forest within a national and a provincial park. In working with environmental groups to explore how a “like-for-like” offset project might proceed, it ran into the fact that all similar forests in the region were either already protected, or, if disturbed, under the control of third parties who had no interest in changing their use of the land.¹⁵³

Every offset requires an available site. In the case of private land, this requires a willing and co-operative landowner. If the offset is deemed valuable, then such co-operation can presumably be purchased through negotiation. Further, where there is sufficient demand for

¹⁵² Poulton, “Conservation Offsets,” *supra* note 45; David W Poulton, “Biodiversity Offsets” *supra* note 44.

¹⁵³ Poulton “Conservation Offsets,” *supra* note 45 at 5.

offsets, that demand will add to the value of appropriate offset sites, bringing more onto the market.

There is a special challenge, however, where the most appropriate sites for offsets are on public land. In Alberta there is no mechanism (such as a tool comparable to a conservation easement) by which a private party may secure ecological values on public land. Approximately sixty percent of the province, including some of its most ecologically valuable areas, is public land. This situation places a significant limit on the availability of offset options. This issue will require more attention if Alberta, or other similar jurisdictions, wish to develop a widespread system of conservation offsets.

3.7 Conclusion

This chapter has reviewed the many issues that arise in the application of the concept of conservation offsets. The effort to apply ecological calculations and economic doctrines to the complexity of the natural world lies at the root of many of these issues. The challenge that these issues combine to describe is whether we can design an offset regime which is both viable in its economic operation and sufficiently robust that it actually protects nature as it is intended to do.

The following two chapters will consider two case studies of legally mandated offset regimes. I will use the list of issues reviewed in this chapter as a framework for examining how these regimes address these difficult issues. Further, I will be seeking lessons and drawing conclusions as to how the goal of no net loss, or positive gain to biodiversity is served by each of these regimes, in light of the manner in which they address the issues of equivalency and currency, additionality, time and duration, and uncertainty and risk management.

CHAPTER FOUR

CASE STUDY: OFFSETTING FOR WETLANDS IN THE UNITED STATES

4.1 Introduction

This chapter examines how the United States federal regime for wetland preservation has applied the concept of offsetting, and how it has dealt with the issues discussed in the previous chapter. It begins with a review of the legal framework of the wetlands program, established under the *Federal Water Pollution Control Act* (passed in 1972, and codified as the *Clean Water Act* (CWA)).¹⁵⁴ Second, I will examine how that jurisdiction has been used to create a regime of conservation offsets taking three forms. Third, I will give a brief overview of how permitting under the relevant statutory provisions and policies has operated since a broad set of reforms in 2008. Fourth, I shall move to my main focus, the examination of the issues of equivalency and currency, additionality, time, and risk management. Finally, I will reflect on an assortment of features that the program exhibits.

Throughout this chapter I will use American terminology, which is somewhat different from that used by BBOP and otherwise in this thesis. The terms which embody the most significant differences are as follows:

- I have thus far used “mitigation” to refer to the second stage of the elimination of net impact, as exhibited in the mitigation hierarchy described on pages 15-16. In American parlance, however, “mitigation” refers to the whole suite of steps in the hierarchy, of which the progressive components are called “avoidance,

¹⁵⁴ 33 USC 1251.

minimization, and compensatory mitigation.” The last term refers to a suite of measures including project-specific offsets, banking and fees in-lieu.¹⁵⁵

- Whereas I have referred to the situation where a developer undertakes an offset project to correspond to the particular residual impacts of a single development project as a “project-specific offset,” American policy-makers and authors most frequently use the term “permittee-responsible mitigation” which encompasses both the one-to-one correspondence to which I refer and also a single user banking arrangement whereby a developer might establish a bank to offset a series of development projects. The term reflects the fact that the U.S. program is driven by the application for development permits, and does not easily encompass voluntary offsets.

4.2 Legislative Framework

The statute which forms the foundation for the United States’ complex system of assessing, banking, and trading credits to offset the development of wetlands makes no direct reference to any of those processes, and only scant reference to wetlands. The *Clean Water Act* contains a broad prohibition in Section 301(a) against “the discharge of any pollutant by any person.”¹⁵⁶ This prohibition, however, is subject to Section 404, among other exceptions.¹⁵⁷

The core of Section 404 provides:

Sec. 404 (a) The Secretary may issue permits, after notice and opportunity for public hearings for the discharge of dredged or fill materials into the navigable waters at specific sites.¹⁵⁸

¹⁵⁵ This broad definition of mitigation is found in regulation: *Council on Environmental Quality, Terminology and Index*, 40 CFR §1508.20.

¹⁵⁶ 33 USC § 1251, § 301(a).

¹⁵⁷ *Ibid.*

¹⁵⁸ *Ibid.*, § 404(a).

4.2.1 Authority of Agencies

“The Secretary” refers to the “Secretary of the Army, acting through the Chief of Engineers.”¹⁵⁹ Thus the U.S Army Corps of Engineers (or USACE) has the primary authority for the implementation of the Section 404 regime. It does not, however, have sole authority over the program. According to Subsection 404(b) the Secretary is to specify “each such permit” for “each such disposal site” “through the application of guidelines developed by the Administrator, in conjunction with the Secretary”¹⁶⁰ This refers to the Administrator of the Environmental Protection Agency (EPA), who has primary responsibility for the administration of the rest of the CWA.¹⁶¹ Section 404 is therefore administered primarily by the USACE, but according to “guidelines” developed by the EPA. Those guidelines have the authority of law, having been made in the form of regulation,¹⁶² but are still commonly referred to as the “Section 404(b)(1) Guidelines.” Reinforcing the weight of the EPA, the CWA also grants its Administrator the power to prohibit or withdraw the specification of an area as a disposal site,¹⁶³ though this overriding power has rarely been exercised.¹⁶⁴

According to Royal C. Gardner, this divided jurisdiction was the product of a divided Congress which, on the one hand, wished to draw on the experience of the USACE with respect to dams and flood control, but on the other, was suspicious of the Corps’ environmental sensitivity (or lack thereof).¹⁶⁵ Hough and Robertson have also suggested that the USACE was

¹⁵⁹ *Ibid.*, § 404(d).

¹⁶⁰ *Ibid.*, § 404(d).

¹⁶¹ *Ibid.*, § 101(d)

¹⁶² 33 CFR § 325, § 332; 40 CFR § 230.

¹⁶³ 33 USC 1251 § 404 (c).

¹⁶⁴ A list of the thirteen occasions when the Section 404(c) authority has been exercised, and the details of each, may be found online at EPA “Chronology of 404(c) Actions” online: EPA <<http://water.epa.gov/lawsregs/guidance/wetlands/404c.cfm>>.

¹⁶⁵ Royal C Gardner, *Lawyers, Swamps and Money: U.S. Wetland Law, Policy and Politics* (Washington, DC: Island Press, 2011) at 37-38, 73-75. Gardner offers a clear guide through much of the legislative complexity and judicial interpretation of the treatment of wetlands under the CWA.

also protective of its jurisdiction over water control projects, and did not want another administrative agency intervening in the field.¹⁶⁶ The relationship between the two agencies has sometimes been fractious,¹⁶⁷ sometimes more co-operative. Interviewees in both agencies reported a cordial relationship currently, with a healthy tension between the administrative and technical research role of the USACE and the policy and research role of the EPA.¹⁶⁸

The CWA also provides that individual states may apply to the EPA to institute their own permit programs for federal waters, one condition of which is the application of the Section 404(b)(1) Guidelines.¹⁶⁹ While this thesis focuses on the federal program under the CWA several states have complementary programs of wetland protection, which extend the national protection effort.¹⁷⁰

4.2.2 Scope of Application

The EPA on its own authority¹⁷¹ has defined “navigable waters” to include wetlands,¹⁷² including those which are not navigable in themselves but flow into, and have “significant nexus” to downstream navigable waters.¹⁷³

¹⁶⁶ Hough & Robertson, *supra* note 42 at 16.

¹⁶⁷ Gardner, *supra* note 165 at 73-92; Hough & Robertson, *supra* note 42 at 16.

¹⁶⁸ Interview with David B. Olson, Regulatory Programs Manager, United States Army Corps of Engineers (Washington, DC, April 25, 2013); Interview with Palmer F. Hough, Environmental Scientist, Wetlands Division, and Jenny Thomas, Environmental Protection Specialist, Office of Wetland, Oceans, and Watersheds, Wetlands Division, United States Environmental Protection Agency (Washington, DC, April 26, 2013).

¹⁶⁹ 33 USC 1251 § 404(g).

¹⁷⁰ Committee on Wetland Losses Under the Clean Water Act, Board on Environmental Studies and Toxicology, Water Science and Technology Board, Division on Earth and Life Studies, National Research Council, *Compensating for Wetland Losses under the Clean Water Act* (Washington, DC: National Academy of Sciences, 2001) at 12 online (National Academies Press): <http://www.nap.edu/catalog/10134>.

¹⁷¹ The authority of the EPA to construe Section 404 was confirmed in 1979 by the Attorney General: Benjamin R. Civiletti, “Administrative Authority to Construe § 404 of the Federal Water Pollution Control Act” 43 Op Att’y Gen 197 (1979), online: EPA <<http://water.epa.gov/lawsregs/lawsguidance/cwa/wetlands/upload/1979-civiletti-memorandum.pdf>>.

¹⁷² 33 USC 1251 § 502(7); 40 CFR § 230.3(s).

¹⁷³ The “significant nexus” test was first enunciated in the reasons for judgement of Justice Kennedy in the fragmented ruling of the U.S. Supreme Court in *Rapanos v. United States & Carabell v. United States* 126 S Ct 2208 (2006). The USACE and the EPA have interpreted and applied this doctrine: EPA and USACE, “Clean Water Act Jurisdiction Following the U.S. Supreme Court’s Decision in Rapanos v. United States & Carabell v. United States”, December 2, 2008, online: EPA

The activity for which a permit is required, the deposit of dredged or fill material, is defined in the regulation, so as to cover the redeposit of material taken from included waters (other than incidental fallback) or the deposit of any material which renders wetland dry or changes the bottom elevation.¹⁷⁴

To summarize the scope of Section 404, the section describes an exception to the general prohibition (*CWA*, Section 301) to the discharge of any pollutant into a waterway within federal jurisdiction. Within these waters, Section 404 allows the permitting of the deposit of material dredged from that or other waterways, or materials to change the bottom elevation of the water body, but that permitting is to be applied in accordance with the Section 404(b)(1) Guidelines.

It is important to note that neither Sections 301 nor 404 of the *CWA* contain a general prohibition on any activity detrimental or destructive to wetlands. Land-clearing, ditching, channelization or other excavation *per se* are not prohibited. It is merely the deposit of dredge material incidental thereto that is prohibited. As well, the incidental discharge of dredge and fill material from a series of routine activities in agriculture, forestry, irrigation and construction is exempt from regulation, so long as the discharge is not incidental to an activity whose purpose is to impact waters.¹⁷⁵ These boundaries to the regulatory regime indicate that the statute in itself does not seek to provide comprehensive protection for all federal wetlands.

4.3 The Evolution of No Net Loss and Compensatory Mitigation

The development of the current offset, banking, and in-lieu fee programs has been an incremental process, built on amendments to the Section 404(b)(1) Guidelines, frequent policy interpretations and occasional judicial rulings. It is not my intention here to trace this

<http://water.epa.gov/lawsregs/guidance/wetlands/upload/2008_12_3_wetlands_CWA_Jurisdiction_Following_Rapanos120208.pdf>.

¹⁷⁴ 40 CFR § 232.2.

¹⁷⁵ 33 USC 1251 § 404(f).

development in detail. Rather, I will focus on those major developments which are relevant to the themes of this thesis.

4.3.1 Policy Development and Evolution

The Section 404(b)(1) Guidelines were first promulgated by the EPA in 1976.¹⁷⁶ At no time since then have the Guidelines themselves contained any explicit reference to a goal of no net loss. Signposts pointing in that direction, however, have existed since Section 404's inception. That first version of the guidelines stressed the importance of wetlands saying, "The guiding principle should be that destruction of highly productive wetlands may represent an invaluable loss of a valuable aquatic resource."¹⁷⁷ That wording has been carried through consistently to the present.

Also the USACE in considering the granting of permits under Section 404 has been bound since at least 1979 by guidelines under the *National Environmental Policy Act*¹⁷⁸ for all permitting agencies including the direction that "mitigation" is to include avoidance, minimization, rectification, reduction, and "[c]ompensation for the impact by replacement or providing substitute resources or environments."¹⁷⁹ This, with the statement in the Section 404(b)(1) Guidelines, suggests that a net loss of wetlands was neither desirable nor to be considered inevitable. Together they laid the groundwork for the later adoption of the goal of no net loss.

The CWA Section 404 program evolved from a permitting and impact minimization program, to an explicit offset program in 1990.¹⁸⁰ In 1989 President George H.W. Bush

¹⁷⁶ 40 CFR § 230 (1976)

¹⁷⁷ 40 CFR § 230.4-1(a)(1).

¹⁷⁸ 42 USC § 4321

¹⁷⁹ 40 CFR § 1508.20.

¹⁸⁰ The foundation for the evolution can be found in a 1986 regulation of the USACE, which allows for compensation as a means of mitigation: 33 CFR § 320.4(r). The regulation remains in force and informs the

announced his administration's adoption of the national goal of no net loss of wetlands,¹⁸¹ and in 1990 the goal was set out in a Memorandum of Agreement between the EPA and the USACE ("1990 MOA").¹⁸² That memorandum does not have the force of law, but rather was an agreement between the two agencies "intended to provide guidance regarding the exercise of discretion under the [CWA Section 404(b)(1)] Guidelines" by "articulat[ing] the policy and procedures to be used in the determination of the type and level of mitigation necessary to demonstrate compliance" with the Guidelines.¹⁸³ The 1990 MOA contained three elements important for the development of the offset and banking system.

The first element was a commitment to the goal of "no net loss" of the remaining wetlands base.¹⁸⁴ This commitment was somewhat equivocal and was framed in aspirational language:

The Corps [i.e., the USACE] will *strive* to avoid adverse impacts and offset unavoidable adverse impacts to existing resources, and for wetlands to achieve a goal of no overall loss of values and functions. . . . However, the level of mitigation determined to be appropriate and practicable under Section 23 0.10(d) *may lead to individual permit decisions which do not fully meet this goal* because the mitigation measures necessary to meet this goal are not feasible, not practicable, or would accomplish only inconsequential reductions in impacts. Consequently, *it is recognized that no net loss of wetlands functions and values may not be achieved in each and every permit action.* However, it remains a goal of the Section 404 regulatory program to contribute to the national goal of no overall net loss of the nation's remaining wetlands base. EPA and Army are committed to working with others through the Administration's interagency task force and other avenues to help achieve this national goal.¹⁸⁵

The goal of no net loss has been a virtual constant, explicitly or implicitly, in wetland policy documents since the 1990 MOA. While it has not been brought explicitly into the CWA

application of the Section 404(b)(1) Guidelines: e-mail from David B Olson, Regulatory Program Manager, United States Army Corps of Engineers (July 21, 2014, 7:21 MDT) (on file with author).

¹⁸¹ *Supra* note 170 at 2; see also Hough & Robertson, *supra* note 41 at 29.

¹⁸² 55 Fed Reg 9210 (1990).

¹⁸³ *Ibid* at 9211.

¹⁸⁴ *Ibid*.

¹⁸⁵ *Ibid*. [emphasis added].

nor the Section 404(b)(1) Guidelines, Congress has given the USACE statutory direction that its interim goal for water resources development is to be “no net loss of the Nation’s remaining wetlands base, as defined by acreage and function,” and its long-term goal the increased quantity and quality of wetlands by the same criteria.¹⁸⁶

The second important element of the 1990 MOA was enhanced clarity of the validity of habitat compensation, in the context of the mitigation hierarchy.¹⁸⁷ It specified that in most circumstances environmental harm was first to be avoided by the selection of least environmentally damaging practicable alternative appropriate to the purpose of the project, this to be determined without reference to any compensatory actions.¹⁸⁸ Secondly, adverse effects were to be minimized.¹⁸⁹ Finally, the use of “compensatory mitigation” was affirmed to be an acceptable measure in some circumstances to address the remaining unavoidable adverse impacts. The applicable paragraph warrants quoting in its entirety:

3. Compensatory Mitigation. Appropriate and practicable compensatory mitigation is required for unavoidable adverse impacts which remain after all appropriate and practicable minimization has been required. Compensatory actions (e.g., restoration of existing degraded wetlands or creation of man-made wetlands) should be undertaken, when practicable, in areas adjacent or contiguous to the discharge site (on-site compensatory mitigation). If on-site compensatory mitigation is not practicable, off-site compensatory mitigation should be undertaken in the same geographic area if practicable (i.e., in close physical proximity and, to the extent possible, the same watershed). In determining compensatory mitigation the functional values lost by the resource to be impacted must be considered. Generally, in-kind compensatory mitigation is preferable to out-of-kind. There is continued uncertainty regarding the success of wetland creation or other habitat development. Therefore, in determining the nature and extent of habitat development of this type, careful consideration

¹⁸⁶ 33 USC § 2317(a)(1).

¹⁸⁷ The concepts of habitat compensation, and banking of habitat, had been under active consideration since the early 1980s by the U.S. Fish and Wildlife Service, so that work was available to draw on for the framework set out in the 1990 MOA: Hough & Robertson, *supra*, note 42 at 20. Hough & Robertson suggest that the move by the USACE and EPA to accept habitat compensation may have been less of a forward-looking and principled decision than a compromise forced by the USACE’s liberal granting of permits, even where harm to wetlands was evident, and the EPA’s reluctance to exercise its overriding veto power: *Ibid* at 17.

¹⁸⁸ 55 Fed Reg 9210 at 9212 (1990).

¹⁸⁹ *Ibid*.

should be given to its likelihood of success. Because the likelihood of success is greater and the impacts to potentially valuable uplands are reduced, restoration should be the first option considered.¹⁹⁰

The 1990 MOA, then, validated the use of offsets by development proponents seeking to neutralize their net impact on wetlands so as to qualify for a Section 404 permit. This is the basis for the use of the term “permittee-responsible mitigation” for those circumstances in which a developer directly undertakes the compensation project.

Thirdly, the 1990 MOA opened the door to habitat banking: “Mitigation banking may be an acceptable form of compensatory mitigation under specific criteria designed to ensure an environmentally successful bank.”¹⁹¹ Additional guidance was promised.

The promised additional guidance came in November 1995 in the form of a document entitled “Federal Guidance for the Establishment, Use and Operation of Mitigation Banks” (“1995 Banking Guidance”).¹⁹² It stated that the goal of mitigation banking was “to provide economically efficient and flexible mitigation opportunities, while fully compensating for wetland and other aquatic losses in a manner that contributes to the long-term ecological functioning of the watershed within which the bank is located.”¹⁹³ In some cases this would complement the goals of watershed management plans or other resource objectives.¹⁹⁴

The 1995 Banking Guidance confirmed the foundation of the banking system in the mitigation hierarchy, saying that banking credits could only be applied to compensate for

¹⁹⁰ *Ibid.* It is important to note that in this passage, and in the commitment to no net loss, the focus is on the function and value of the wetlands as the key aspect, not on area. This currency issue has been an ongoing matter of controversy, as will be discussed more fully below.

¹⁹¹ *Ibid.* Again, there had been some precedent for this. State transportation agencies and other large-scale developers had developed their own banks, to build up credits to apply to their own projects, since the early 1980s. A commercial bank (though selling to only one customer) was established in Louisiana in 1986: Hough & Robertson, *supra* note 42 at 25.

¹⁹² 60 Fed Reg 58605 (1995). An interim guidance was issued earlier, in 1993, in the form of a Memorandum to the Field, 60 Fed Reg 13710 (1995).

¹⁹³ 60 Fed Reg 58605 at 58608 (1995).

¹⁹⁴ *Ibid.*

impacts that were unavoidable.¹⁹⁵ It gave guidance on site selection, including on public land, and the preference of positive management actions over averted losses to provide additionality,¹⁹⁶ in addition to many other ground rules for the new system.

The 1995 Banking Guidance also laid out a process for forming a bank, the legal instruments necessary for its authorization and operation, and the roles of the respective agencies and the bank sponsor.¹⁹⁷ While the Guidance insists that it is merely policy guidance for administrators and does not give rise to any rights,¹⁹⁸ its legal weight was bolstered indirectly by Congress in 1998 when the *Transportation Equity Act for the 21st Century* explicitly endorsed the 1995 Banking Guidance as a means of mitigating the impact of highways on wetlands.¹⁹⁹

The 1995 Banking Guidance has been the foundation for the banking system which has operated since its issue. It provided sufficient clarity and certainty that several hundred wetland banks have been established. A 2010 review estimated that a total of 798 wetland banks were active in 2010, with another 170 inactive or pending.²⁰⁰ The USACE recently reported that as of March 2013 1308 banks were approved while others were under development.²⁰¹

The 1995 Banking Guidance also opened the door tentatively to “in-lieu fee mitigation arrangements . . . wherein funds are paid to a natural resource management entity for implementation of either specific or general wetland or other aquatic resource development

¹⁹⁵ *Ibid* at 58607, 58611.

¹⁹⁶ *Ibid* at 56606, 56808-56809.

¹⁹⁷ *Ibid* at 56809-56812.

¹⁹⁸ *Ibid* at 58606, 58607-58608.

¹⁹⁹ Pub L No 105-275, § 103(b)(5)(M), 1108(a)(6)(B), 112 Stat § 107 at 133, 139 (1998) (codified as 23 USC § 101).

²⁰⁰ Becca Madsen et al, *2011 Update: State of Biodiversity Markets* (Washington, DC: Ecosystem Marketplace, 2011) at 5 online: Ecosystem Marketplace <http://www.forest-trends.org/documents/files/doc_2848.pdf>.

²⁰¹ Royal C Gardner & Jessica Fox, "The Legal Status of Environmental Credit Stacking" (2013) 40:4 *Ecological Law Quarterly* 101 at 108, online: Social Science Research Network <<http://ssrn.com/abstract=2375858>>, citing Bob Brumbaugh & Palmer Hough, *A Training Course for Mitigation Banking & Mitigation Policy and Regulations, Session 1* (2013).

projects.”²⁰² The document noted that in-lieu fees are not to be considered banking because they do not provide compensatory mitigation in advance of the impact of project developments, and often do not have a clear timetable for doing so.²⁰³ Notwithstanding those limitations, the Guidance stated that:

The Corps, in consultation with other agencies, may find there are circumstances where such arrangements are appropriate so long as they meet the requirements that would otherwise apply to an offsite, prospective mitigation effort and provides adequate assurances of success and timely implementation.²⁰⁴

The conditions under which in-lieu fee arrangements would be acceptable were elaborated on in further guidance in 2000 (“the 2000 In-Lieu Guidance”).²⁰⁵ That guidance document made clear that in-lieu fees were secondary in preference to on-site mitigation and the use of banks for compensatory mitigation, but that the USACE may consider them when on-site mitigation was not practicable and banks are either unavailable or do not provide appropriate opportunities for ecological restoration. The 2000 In-Lieu Guidance also laid out conditions under which an organization might be considered a valid “in-lieu sponsor.”²⁰⁶ It also set out the obligations that a sponsor should be liable for, including responsibility for the long-term ecological success of mitigation projects, and their legal protection in perpetuity.²⁰⁷

To summarize, the combination of the 1990 MOA, the 1995 Banking Guidance, and the 2000 In-Lieu Guidance provide for three possible types of compensatory mitigation: permittee-responsible, banking and in-lieu fees. All three might well be available to a potential developer, with each of the three governed by its own policy guidelines.

²⁰² 60 Fed Reg 58608 at 58613 (1995).

²⁰³ *Ibid.*

²⁰⁴ *Ibid.*

²⁰⁵ Department of the Army, et al, *Federal Guidance on the Use of In-Lieu-Fee Arrangement for Compensatory Mitigation under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act*, available online: EPA <<http://water.epa.gov/lawsregs/guidance/wetlands/upload/inlieufee.pdf>>.

²⁰⁶ *Ibid* at 5.

²⁰⁷ *Ibid* at 5-7.

4.3.2 Policy Critiques

By the turn of the millennium, a significant body of literature had been published critiquing the experience with the compensatory mitigation for wetlands. These critiques tended to focus on two areas: the ecological results of wetland creation and restoration, and the record of implementation of the new policies.

I offer the following as a very brief sampling of the extensive range of academic critiques. In 1997 King and Herbert demonstrated that difference in real estate values expressed through the wetland mitigation system was driving wetland restoration measures toward less settled areas.²⁰⁸ In 2000 Salzman and Ruhl suggested that the coinciding interests of proponents and administrators in a smoothly functioning banking system was motivating them to avoid applying the rigour to equivalency and currency issues that ecological concern would require.²⁰⁹ In 2001 Turner and co-authors concluded that the system was not living up to its no net loss goal.²¹⁰

By far the most comprehensive and politically influential of critiques at this time, though, was a study, released in 2001, from a committee of the National Research Council (NRC), carried out at the request of the EPA.²¹¹ The NRC report examined both the ecological outcomes of wetland restoration and creation (on both a local and watershed level) and the administration of the Section 404 compensation regime.

With respect to ecological outcomes, the NRC Committee found that the evidence indicated that some types of wetlands were much easier to construct or restore than others, and

²⁰⁸ *Supra* note 73.

²⁰⁹ Salzman & Ruhl, *supra* note 70 at 658-661.

²¹⁰ R Eugene Turner, Ann M Redmond & Joy B Zedler, "Count It by Acre or Function – Mitigation Adds Up to Net Loss of Wetlands" (2001) National Wetlands Newsletter 5.

²¹¹ *Supra* note 170.

its report identified factors tending to correspond with success or failure.²¹² It noted that restoration tends to be more successful than creation of new wetlands.²¹³

The NRC Committee noted as well that the functions which a wetland serves are based in part upon of its location and relationship to the larger watershed.²¹⁴ It was critical of the limited number of functions which were routinely assessed in the Section 404 program, and called for a much more thorough analysis of wetland functions, particularly at the impact site.²¹⁵ Based upon this perspective, it recommended loosening the policy preference for a “like-for-like” replication of features of the lost wetland, noting that compensation might more usefully be applied to enhancing functions which are found to be deficient in a watershed.²¹⁶ It recommended that the issues of equivalency and tradeoffs, inherent in any offsets scheme, should be reviewed by the multiple agencies which might have responsibility for the ecological health of the watershed, not just the USACE and EPA.²¹⁷ This suggested that these agencies might relieve a development proponent of this planning and prioritization function.

The NRC’s most critical comments, however, were aimed at the USACE’s implementation of the Section 404 policies. After reviewing a large number of regional and local case studies in wetland mitigation, the Committee found that in some cases even the most basic requisite functions of compensation scheme were not in fact being carried out.²¹⁸ In some cases no mitigation was required at all, while in others no mitigation plan was required or the performance standards were too vague or unrelated to the values at stake to be useful.²¹⁹ Where there was a clear mitigation prescription, in some regions the prescribed measures were never

²¹² *Ibid* at 22-27.

²¹³ *Ibid* at 123.

²¹⁴ *Ibid* at 46-59.

²¹⁵ *Ibid* at 45, 128-129.

²¹⁶ *Ibid* at 141-145.

²¹⁷ *Ibid* at 154-155.

²¹⁸ *Ibid* at 95-101.

²¹⁹ *Ibid* at 95.

taken in as much as thirty-four to fifty percent of cases reviewed.²²⁰ This happened because inspections for compliance were rarely carried out.²²¹ Given these problems, the Committee expressed skepticism as to whether the goal of “no net loss” was being met:

[T]he literature on compensatory mitigation suggests that required mitigation projects often are not undertaken or fail to meet permit conditions. Therefore, the committee is not convinced that the goal of no net loss for permitted wetlands is being met for wetland functions. The magnitude of the shortfall is not precisely known and cannot be determined from current data.²²²

Two reports from the General Accounting Office (later known as the Government Accountability Office, bearing the same acronym: GAO) at about this time found serious shortfalls with the administration of different aspects of the wetlands compensatory mitigation program. A 2001 GAO review looked at the in-lieu fee program.²²³ Like the NRC committee, the GAO found that it was impossible to assess progress to the no net loss goal because many regional USACE offices did not secure firm arrangements with in-lieu sponsors, and failed to collect reports on the ecological success of mitigation measures.²²⁴ Further, the GAO found that in 24 of the 38 USACE districts *ad hoc* arrangements were occasionally made whereby developers were allowed to make payments to organizations that were neither authorized banks nor in-lieu sponsors, and that these arrangements were not routinely tracked.²²⁵ The review took notice of the development of the 2000 In-lieu Guidance and expressed hope that close adherence to that guidance would help the situation.²²⁶

²²⁰ *Ibid* at 101.

²²¹ *Ibid* at 101, 110-112.

²²² *Ibid* at 3.

²²³ United States General Accounting Office, *Wetlands Protection: Assessments Needed to Determine Effectiveness of In-Lieu-Fee Mitigation* (GAO-01-325) (Washington, DC: United States General Accounting Office, 2001), online: GAO <<http://www.gao.gov/products/GAO-01-325>>.

²²⁴ *Ibid* at 11.

²²⁵ *Ibid* at 14.

²²⁶ *Ibid* at 12-13.

A 2005 GAO review underlined the NRC's criticism of the compliance and enforcement aspects of the wetlands compensatory mitigation programme.²²⁷ The GAO inspected 152 USACE regional office files for permittee-responsible mitigation, and found that in only eighty-nine of them was the permittee required to take any compensatory action.²²⁸ Of those only twenty-one had filed reports on progress, and only fifteen had been inspected by the USACE.²²⁹ Equivalent figures were better for mitigation banks, and better still for the few in-lieu fee arrangements inspected, but all were somewhat inadequate.²³⁰ The GAO attributed these inadequacies to vague and sometimes inconsistent guidance provided by the USACE to its own officials, and to the limited resources available for monitoring compliance.²³¹

In total the NRC and two GAO reports made thirty-two recommendations, some substantive and some procedural, as to how to improve the effectiveness of the wetlands compensation program.

At approximately the same time these reviews were taking place, the new business community of wetland bankers expressed concerns with the treatment of their sector. They saw themselves as being subject to much more stringent standards than applied to either in-lieu fee sponsors or permittees undertaking their own compensatory mitigation, and lobbied congress to "level the playing field."²³² This gave rise to a provision in the *Defence Authorization Act* of

²²⁷ United States Government Accountability Office, *Wetlands Protection: Corps of Engineers Does Not Have Effective Oversight Approach to Ensure That Compensatory Mitigation is Occurring* (GAO-05-898) (Washington, DC: United States Government Accountability Office, 2005), online: GAO <<http://www.gao.gov/cgi-bin/getrpt?GAO-05-898>>.

²²⁸ *Ibid* at 17.

²²⁹ *Ibid*.

²³⁰ *Ibid* at 19-20.

²³¹ *Ibid* at 12-16, 20.

²³² Gardner, *supra* note 165 at 129; Hough & Thomas, *supra* note 168. Reference to this concern is found in the commentary to the 2008 version of the Section 404(b)(1) Guidelines: 73 Fed Reg 19594 at 19600, 19612 (2008).

2004 (a bill otherwise focussed on provisioning the war in Iraq) directing the development of equivalent standards and criteria for all forms of compensatory mitigation.²³³

4.3.3 The Reforms of 2008

The combination of expert advice from the NRC and GOA, the political pressure from mitigation bankers, and the congressional direction led to major amendments to the Section 404(b)(1) Guidelines in 2008.²³⁴ This also served as an opportunity to consolidate the plethora of guidelines, guidance documents, memoranda, and other regulatory and policy documents which had accrued to the compensatory mitigation program.²³⁵ The most significant aspects of the 2008 amendments were:

- The establishment of equivalent standards and criteria for the mitigation activities of mitigation banks and in-lieu fee sponsors, and permittees establishing their own compensatory mitigation;²³⁶
- The clear articulation of a preference, dependent on circumstance and practicability, for compensatory mitigation by means of banking credits over in-lieu-fee payment; and in-lieu-fees over permittee-responsible compensatory mitigation;²³⁷
- The requirement of an Interagency Review Team (IRT), comprised of representatives of all federal resource conservation agencies, and, optionally, local, state, or tribal agencies of similar mandate, to oversee the establishment and operation of any banking and in-lieu fee program.²³⁸

²³³ Pub L No 108-136, § 314, 117 Stat 1392.

²³⁴ 73 Fed Reg 19594 (2008).

²³⁵ 33 CFR § 332.1(f) (2008); 40 CFR § 230.91(e).

²³⁶ 33 CFR § 332.1(a), 230.93 - 230.98 (2008); 40 CFR § 332.3 – 332.8 (2008).

²³⁷ 33 CFR § 332.3(b) (2008); 40 CFR § 230.93(b) (2008).

²³⁸ 33 CFR § 332.8(b) (2008); 40 CFR § 230.98 (2008).

- A clear requirement for mitigation plans for all mitigation projects, with specified outcomes, monitoring, reporting, and enforcement mechanisms;²³⁹
- The extension of the compensatory mitigation regime to streams, as well as wetlands;²⁴⁰
- An increased emphasis on wetland functions and services, rather than simply area, as a key metric;²⁴¹
- The creation of an on-line integrated database of mitigation projects;²⁴²
- The promotion of a “watershed approach”, described as follows:

A watershed approach to compensatory mitigation considers the importance of landscape position and resource type of compensatory mitigation projects for the sustainability of aquatic resource functions within the watershed. Such an approach considers how the types and locations of compensatory mitigation projects will provide the desired aquatic resource functions, and will continue to function over time in a changing landscape. It also considers the habitat requirements of important species, habitat loss or conversion trends, sources of watershed impairment, and current development trends, as well as the requirements of other regulatory and non-regulatory programs that affect the watershed, such as storm water management or habitat conservation programs. It includes the protection or maintenance of terrestrial resources, such as non-wetland riparian areas and uplands, when those resources contribute to or improve the overall ecological functioning of aquatic resources in the watershed. Compensatory mitigation requirements determined through the watershed approach should not focus exclusively on specific functions (e.g., water quality or habitat for certain species), but should provide, where practicable, the suite of functions typically provided by the affected resource.²⁴³

²³⁹ 33 CFR § 332.4 - 332.6 (2008); 40 CFR § 230.94 – 230.96 (2008).

²⁴⁰ 33 CFR § 332.3(e)(3) (2008); 40 CFR § 230.93(e)(3) (2008).

²⁴¹ 33 CFR § 332.3(b)(1) (2008); 40 CFR § 230.93(b)(1) (2008).

²⁴² 73 Fed Reg 19594 at 19601 (2008). The development of the Regional Internet Bank Information Tracking System (later known as the Regulatory In-lieu Fee and Bank Information tracking system, both bearing the acronym RIBITS) was not actually a feature of the regulatory change, but was announced in the preamble published therewith. The RIBITS webpage may be found at

<https://rsgisias.crrel.usace.army.mil/ribits/f?p=107:2:13895876102654::NO:RP:P27_BUTTON_KEY:91>.

²⁴³ 33 CFR § 332.3(c)(2)(i) (2008); 40 CFR § 230.93(c)(2)(i) (2008).

In keeping with this watershed approach, the amendments called for the development, where possible, of watershed plans, and reference to such plans as the basis for compensatory mitigation.²⁴⁴

These amendments to the guidelines came in for some early critiques. Ruhl, Salzman, and Goodman noted with interest the new emphasis on wetland functions and services, calling for increased research to fully understand these features at a practical level.²⁴⁵ Murphy, Goldman-Carter & Sibbing, meanwhile, derided the regime's continued vesting of a high degree of discretion in the USACE's regional offices, predicting that that would continue to promote inconsistent and often inadequate outcomes.²⁴⁶

There has been little if any empirical assessment of the performance of the compensatory mitigation program since the 2008 amendments. Interviewees at both the USACE and the EPA agreed with this observation, noting that many earlier projects were grandfathered under the earlier regulations.²⁴⁷ They noted that better records are now kept at regional offices of all compensatory mitigation projects, and that this will allow for thorough study in the future, suggesting that it may be ten to fifteen years before substantive conclusions may be drawn.²⁴⁸

4.4 Current Operation

A development proponent coming forward with a plan to dredge or fill a wetland, all as defined above, will apply to the district engineer (the senior regional official of USACE) for a Section 404 permit. The permit, if issued, may carry compensation conditions:

²⁴⁴ 33 CFR § 332.3(c)(1) (2008); 40 CFR § 230.93(c) (10) (2008).

²⁴⁵ JB Ruhl, James Salzman & Iris Goodman, "Implementing the New Ecosystem Services Mandate of the Section 404 Compensatory Mitigation Program – A Catalyst for Advancing Science and Policy" (2009) 38 Stetson L Rev 251.

²⁴⁶ James Murphy, Jan Goldman-Carter & Julie Sibbing, "New Mitigation Rule Promises More of the Same: Why the New Corps and EPA Mitigation Rule Will Fail to Protect our Aquatic Resources Adequately" (2009) 38 Stetson L Rev 311.

²⁴⁷ Hough & Thomas, *supra* note 168; Olson, *supra* note 168.

²⁴⁸ *Ibid.*

The district engineer must determine the compensatory mitigation to be required in the DA [Department of the Army] permit, based on what is practicable and capable of compensating for the wetland functions that will be lost as a result of the permitted activity.²⁴⁹

The three options for meeting these conditions are available to a permittee (though all three may not be available in all regions): purchase of credits from a mitigation bank, payment of a fee to an in-lieu program sponsor, or undertake compensatory mitigation on its own behalf (“permittee-responsible mitigation”). I will briefly review the current provisions for each of these.

4.4.1 Mitigation Banking

As described earlier, a mitigation bank is a site, or suite of sites, where a sponsor (an entity which may be public or private, for-profit or not-for-profit) undertakes the establishment, enhancement, and/or preservation of “resources (e.g., wetlands, streams, riparian areas)” and thereby earns the right to sell mitigation credits to development permittees.²⁵⁰ The number of credits a permittee must acquire from a mitigation bank or in-lieu fee program will be set out as a condition of their permit at the time it is granted.²⁵¹

The Guidelines place responsibility on a bank “sponsor” for all aspects of planning and implementation of the bank, subject to review and approval from regulators and scrutiny of the public. To establish a bank, a sponsor must file a prospectus with the district engineer, the senior regional USACE official.²⁵² The prospectus is to provide a detailed overview of the need for the bank, the plans for ecological improvements and their scientific justification, the establishment and operation of the bank, including its long-term management with reference to financing and

²⁴⁹ 33 CFR § 332.3(a) (2008); 40 CFR § 230.93(a) (2008).

²⁵⁰ 33 CFR § 332.2 (2008); 40 CFR § 230.92 (2008).

²⁵¹ 33 CFR § 332.3(k)(4) (2008); 40 CFR § 230.93(k)(4) (2008).

²⁵² 33 CFR § 332.8(d) (2008); 40 CFR § 230.98(d) (2008).

appropriate legal instruments (land tenure, for example), among other things.²⁵³ The prospectus is to be reviewed by the district engineer and by an IRT.²⁵⁴ It is also subject to public comment.²⁵⁵

After receiving such comments the sponsor may proceed to submit a “draft instrument” to the district engineer, which is to include a detailed mitigation plan²⁵⁶ with ecological performance standards sufficient to allow objective evaluation of the bank’s progress toward its stated ecological goals.²⁵⁷ This is key for both monitoring, and for the timing of release of mitigation credits.

The mitigation plan is also to include a proposed service area: “[t]he service area must be appropriately sized to ensure that the aquatic resources provided [by the bank] will effectively compensate for adverse environmental impacts across the entire service area.”²⁵⁸

Important for the operation and sustainability of the bank, the draft instrument is also to include “a credit release schedule, which is tied to achievement of specific milestones.”²⁵⁹ This opportunity for phased release of credits allows some cash flow to the bank sufficient to rationalize the sponsor’s investment, and rewards tangible progress toward the completion of the planned mitigation. This is intended to “help reduce risk and uncertainty, as well as temporal loss of resource functions and services.”²⁶⁰

²⁵³ 33 CFR § 332.8(d)(2) (2008); 40 CFR § 230.98(d)(2) (2008).

²⁵⁴ 33 CFR § 332.8(d) (1) (2008); 40 CFR § 230.98(d)(i) (2008).

²⁵⁵ 33 CFR § 332.8(d)(4) (2008); 40 CFR § 230.98(d)(4) (2008).

²⁵⁶ 33 CFR § 332.8(d) (2008); 40 CFR § 230.98(d) (2008). . The required components of a mitigation plan for banks and in-lieu fee programs are set out in 33 CFR 332.4(c)(2) through (14).

²⁵⁷ 33 CFR § 332.5 (2008); 40 CFR § 230.95 (2008).

²⁵⁸ 33 CFR § 332.8(d)(6); (2008); 40 CFR § 230.98(d)(6) (2008).

²⁵⁹ 33 CFR § 332.8(d)(6)(iii)(B) (2008); 33 CFR § 332.8(m) (2008); 40 CFR § 230.98(d)(6)(iii)(B) (2008); 40 CFR § 230.98(m) (2008).

²⁶⁰ 73 Fed Reg 19594 at 19673 (2008).

The draft instrument is submitted by the district engineer back to the IRT for another round of comments.²⁶¹ After further consideration of the IRT's views, with the possibility of some back-and-forth negotiations and dispute resolution, the district engineer may approve the final instrument, which establishes the bank and allows its operation pursuant to the instrument.²⁶²

Thereafter credits are released, subject to approval of the district engineer, with the opportunity for IRT comments, as the sponsor fulfills the milestones set out in the final instrument.²⁶³ Once released, they are available for sale at market rates to development proponents needing to fulfill compensatory mitigation requirements for a Section 404 permit within the service area.²⁶⁴

The final instrument may be modified at any time, providing the appropriate notice and comment step are taken.²⁶⁵

4.4.2 In-Lieu Fees

Many of the requirements for mitigation banks also apply to in-lieu fee programs. Again, the program sponsor bears the onus of design and implementation, and the sponsor may be any agency, public or private. Following the same regulatory provisions, sponsors of in-lieu fee programs are to apply via the submission of a prospectus and draft instrument, to be reviewed by the district engineer and IRT, and are to operate under the oversight of those bodies. (Recall that one of the purposes of the 2008 guidelines was to bring equivalency to the requirements of banks and in-lieu fee programs.)

²⁶¹ 33 CFR § 332.8(d)(7) (2008); 40 CFR § 230.98(d)(7) (2008).

²⁶² 33 CFR § 332.8(d)(8) (2008); 40 CFR § 230.98(d)(8) (2008).

²⁶³ 33 CFR § 332.8(o) (2008); 40 CFR § 230.98(o) (2008).

²⁶⁴ 33 CFR § 332.8(v) (2008); 40 CFR § 230.98(v) (2008).

²⁶⁵ 33 CFR § 332.8(g) (2008); 40 CFR § 230.98(g) (2008).

The critical difference between a mitigation bank and an in-lieu fee program is the sequencing of the release of credits and the actual performance of mitigation activities. Whereas a bank mitigation plan provides that credits shall be released upon the achievement of specific milestones, for an in-lieu fee program, credits may be released (and fees thereby collected) upon approval of a compensation planning framework, setting out *future* planned mitigation activities.²⁶⁶

The sponsor is to keep and account for fees collected in a designated account, which is dedicated to implementation of compensatory mitigation projects (less a management fee determined by the district engineer).²⁶⁷ Disbursements from the account for mitigation projects are also subject to approval by the district engineer in consultation with the IRT.²⁶⁸

The first steps of mitigation, land acquisition and initial ecological improvements, must be undertaken by the third full growing season following the first advance credit transaction.²⁶⁹

4.4.3 Permittee-Responsible Mitigation

Under permittee-responsible mitigation, the development proponent (or its agents and contractor) retains full responsibility for the execution of the compensatory mitigation measures.²⁷⁰ Like banks and in-lieu programs, a permittee must prepare a detailed mitigation plan, setting out the mitigation activities it will carry out, plans for management and monitoring, and expected environmental outcomes.²⁷¹ The permittee must explain how the compensatory mitigation project will provide the degree of compensation required for its development

²⁶⁶ 33 CFR § 332.8(d)(6)(B)(iv) (2008); 40 CFR § 230.98(d)(6) (B)(iv) (2008).

²⁶⁷ 33 CFR § 332.8(i)(1) (2008); 40 CFR § 230.98(i)(1) (2008).

²⁶⁸ 33 CFR § 332.8(i)(2) (2008); 40 CFR § 230.98(i)(2) (2008).

²⁶⁹ 33 CFR § 332.8(n)(iii)(4) (2008); 40 CFR § 230.98(n)(iii)(4) (2008).

²⁷⁰ 33 CFR § 332.2 (2008); 40 CFR § 230.92 (2008).

²⁷¹ 33 CFR § 332.4(c) (2008); 40 CFR § 230.98(c) (2008).

project.²⁷² Once accepted by the district engineer, the mitigation plan will be a condition on the permit.

Unlike a mitigation bank or in-lieu fee program, a permittee-responsible mitigation project is not subject to review or ongoing oversight by an IRT.

4.4.4 Preferences

While all three of these options may be available to a Section 404 permittee, the 2008 Guidelines set out a clear order of preference. Mitigation banks are preferred because they require rigorous planning and research before approval, and actual attainment of performance measures is required before the release of credits.²⁷³ This means that uncertainty and temporal losses to ecological equivalency are minimized. As well, banks tend to be larger, more ecologically-valuable projects.²⁷⁴

In-lieu programs are given the second order of preference, based on the degree of planning rigour and oversight, and the typically large size of the projects.²⁷⁵ Permittee-responsible mitigation is the least preferred alternative.²⁷⁶

Agency personnel have indicated other reasons for these preferences. Banks and in-lieu fee programs are carried out by professionals and experts in the field of wetland conservation, and those who have an interest in an ongoing constructive relationship with USACE and IRT officials.²⁷⁷ This lays the groundwork for a degree of co-operation and compliance which may not be present in the case of a permittee-responsible project.

²⁷² 33 CFR § 332.4(c)(6)(i) (2008); 40 CFR § 230.94(c)(6)(i) (2008).

²⁷³ 33 CFR § 332.3(b)(2) (2008); 40 CFR § 230.93(b)(2) (2008).

²⁷⁴ *Ibid.*

²⁷⁵ 33 CFR § 332.4(b)(3) (2008); 40 CFR § 230.94(b)(3) (2008).

²⁷⁶ *Ibid.*

²⁷⁷ Hough & Thomas, *supra* note 168.

These preferences, however, are not rigid, and may be overridden as the particulars of ecological circumstances or project details dictate.²⁷⁸

It is not clear that the actual production of wetland mitigation credits actually reflects this order of preference. Data from 2008 indicated that the majority of credits (59.1 percent) came from permittee-responsible projects, while 35.3 percent came from mitigation banks and 5.6 percent from in-lieu fee programs.²⁷⁹ It should be noted, however, this data would not reflect the 2008 Guidelines changes, so may not represent the current state of affairs.

4.5 Comparative Factors

4.5.1 Equivalency, Fungibility and Currency

In the U.S. wetlands regime the defining of equivalency is delegated to compensation proponents, whether permittees or bank or in-lieu fee program sponsors. Permittees are required to demonstrate in their proposed mitigation plan how their measures will provide the degree of compensation required for their particular proposed development. In keeping with the intent that their credits will be available to many development proponents, mitigation bank and in-lieu fee program sponsors must, in their application documents, describe a service area. In both cases the permittee or proponent is in the position of proposing in the first instance the appropriate scope of equivalency.

The watershed approach of the 2008 Guidelines moved the program away from a restrictive like-for-like comparison of the disturbance and offset sites. It opened the door to a broader range of considerations relevant to the sites' ecological context, saying:

In general, the compensatory mitigation should be located within the same watershed as the impact site, and should be located where it is most likely to

²⁷⁸ 33 CFR § 332.4(b)(2)-(3) (2008); 40 CFR § 230.94(b)(2)-(3) (2008).

²⁷⁹ Becca Madsen, Nathaniel Carroll & Kelly Moore Brands, *State of Biodiversity Markets Report: Offset and Compensation Programs Worldwide* (Washington, DC: Ecosystem Marketplace, 2010) at 11, online: Ecosystem Marketplace <<http://www.ecosystemmarketplace.com/documents/acrobat/sbdmr.pdf>>, citing USACE data.

successfully replace lost functions and services, taking into account such watershed scale features as aquatic habitat diversity, habitat connectivity, relationships to hydrological sources (including the availability of water rights), trends in land use, ecological benefits, and compatibility with adjacent land uses.²⁸⁰

In their 2000 study Salzman and Ruhl described a situation in the U.S. wetland regime where complex functional assessments had been prescribed for several years, but, due to the data-intensiveness and expense of those assessment, regional wetland managers tended in practice to fall back on simple currencies, especially area, as the dominant means of comparison.²⁸¹ The NRC report of 2001 was also highly critical of the simplicity of measures applied to wetland functions, and recommended a broader set of measures.²⁸²

The new currency of the compensation exchange is still under development. Since the 2008 Guidelines and their increased emphasis on wetland functions, the responsible agencies have promoted the use of a hydrogeomorphic (HGM) method, which combines hydrologic, biogeochemical, and physical habitat considerations and measures.²⁸³ The adequacy of these new measures in addressing earlier concerns has yet to be determined.

4.5.2 Additionality

The U.S. wetlands regime has always been very clear as to what types of activities are to be considered additional, and thus valid for compensation purposes. Permissible activities include restoration, enhancement, establishment, and (under certain conditions) preservation.²⁸⁴

Of these options, restoration is preferred “because the likelihood of success is greater and the impacts to potentially ecologically important uplands are reduced compared to establishment,

²⁸⁰ 33 CFR § 332.3(b)(1) (2008); 40 CFR § 230.93(b)(1) (2008).

²⁸¹ *Supra* note 69.

²⁸² *Supra* note 172 at 45.

²⁸³ Olson, *supra*, note 168. A brief description of the HGM method and a comparison of it to biological assessment may be found online at (EPA) <<http://water.epa.gov/type/wetlands/assessment/fact6.cfm>>.

²⁸⁴ 33 CFR § 332.3 (a)(2) (2008); 40 CFR § 230.93(a)(2) (2008).

and the potential gains in terms of aquatic resource functions are greater, compared to enhancement and preservation.”²⁸⁵

Preservation, on the other hand, is the least preferred option. Its use as compensation is conditional upon the preserved site providing important physical, chemical, or biological functions for the watershed and contributing to the ecological sustainability of the watershed, a determination of appropriateness and practicability by the district engineer, the existence of a threat, and the use of appropriate permanent legal instrument.²⁸⁶ As well, where preservation credits are relied upon, higher multiplier ratios are to apply.²⁸⁷ Further, preservation “to the extent appropriate and practicable” is to be conjoined with the positive management measures of restoration, establishment, or enhancement.²⁸⁸

This preference for restoration and against preservation has been long-standing in U.S. policy, a common theme through the various policy and guidance documents going back to at least the 1990 MOA. Data from 2008 for permittee-responsible projects (only) indicate that in that year 42 percent of credits were created by restoration, while 22 percent were created by preservation.²⁸⁹ This may not be representative of projects carried out by mitigation banks and in-lieu fee programs.

The requirement of additionality is spelled out with particular clarity for mitigation projects on public land, where it is provided that credits “must be based solely on aquatic resource functions provided by the compensatory mitigation project, over and above those provided by public programs already planned or in place.”²⁹⁰

²⁸⁵ 33 CFR § 332.3 (a)(2) (2008); 40 CFR § 230.93(a)(2) (2008).

²⁸⁶ 33 CFR § 332.3(h)(1) (2008); 40 CFR § 230.93(h)(1) (2008).

²⁸⁷ 33 CFR § 332.8(o)(6) (2008); 40 CFR § 230.98(o)(6) (2008).

²⁸⁸ 33 CFR § 332.2(h)(2) (2008); 40 CFR § 230.92(h)(2) (2008).

²⁸⁹ Madsen et al, *supra* note 278 at 10.

²⁹⁰ 33 CFR § 332.3(a)(3) (2008); 40 CFR § 230.93(a)(3) (2008).

The official commentary to the 2008 Guideline amendments specifies that activities such as educational programs are not a permissible expenditure from an in-lieu fee project account,²⁹¹ presumably on the grounds that such intangible efforts do not qualify as additional. (According to Gardner, such expenditures from in-lieu fee programs were not unknown prior to 2008.²⁹²)

4.5.3 Timing and Duration

The loss of biodiversity due to the time lag between development and offset projects is explicitly acknowledged within the U.S. wetland compensation regime, and is dealt with by the preference for mitigation banking. Given that there are still many offset credits earned through in-lieu fee program and permittee-responsible projects, this provides only a partial response to the issue.

There is an expectation that offset measures will be permanent where legally possible. The official commentary to the 2008 amendments to the Section 404(b)(1) Guidelines makes it clear that “[t]he goal of the rule is to ensure permanent protection of all compensatory mitigation project sites.²⁹³ It was the agencies’ view, however, that in some states perpetual restriction on the use of real estate cannot be legally provided.²⁹⁴ Therefore, the amendments most commonly refer to the provision of “long-term protection.”

This includes both legal and ecological management aspects. The mitigation plan for all three types of earning credits is to include a description of the legal arrangements for long-term protection.²⁹⁵ These are to be provided by “real estate instruments such as conservation easements held by entities such as federal, tribal, state, or local resource agencies, non-profit conservation organizations, or private land managers; the transfer of title to such entities; or by

²⁹¹ 73 Fed Reg 19594 at 19657 (2008).

²⁹² *Supra* note 167 at 134.

²⁹³ 73 Fed Reg 19594 at 19646 (2008)

²⁹⁴ *Ibid.*

²⁹⁵ 33 CFR § 332.4(c)(iii)(4) (2008); 40 CFR § 230.94(c)(iii)(4) (2008).

restrictive covenants.”²⁹⁶ Appropriate comparable arrangements for long-term security of mitigation are called for on public lands: “For government property, long-term protection may be provided through federal facility management plans or integrated natural resources management plans.”²⁹⁷

Despite the qualms expressed in the commentary respecting perpetual restrictions, where preservation is the means of earning credits, one of the criteria for approval is “permanent protection” through an appropriate legal instrument.²⁹⁸

With respect to ecological management, the mitigation plan for all projects is to include:

A description of how the compensatory mitigation project will be managed after performance standards have been achieved to ensure the long-term sustainability of the resource, including long-term financing mechanisms and the party responsible for long-term management.²⁹⁹

The plan is also to provide for adaptive management to provide for foreseen or unforeseen changes to the site conditions or terms of management.³⁰⁰

Mitigation banks and in-lieu fee projects are subject to the further provision that:

To the maximum extent practicable, mitigation banks and in-lieu fee project sites must be planned and designed to be self-sustaining over time, but some active management and maintenance may be required to ensure their long-term viability and sustainability.³⁰¹

There is no explicit requirement that the duration of the compensatory mitigation correspond with the duration of the development disturbance, though that may be inferred from the need to demonstrate the adequacy of compensation.

²⁹⁶ 33 CFR § 332.7(a)(1) (2008); 40 CFR § 230.97(a)(1) (2008).

²⁹⁷ 33 CFR § 332.7(a)(1) (2008); 40 CFR § 230.97(a)(1) (2008).

²⁹⁸ 33 CFR § 332.3(h)(1)(v) (2008); 40 CFR § 230.93(1)(v) (2008).

²⁹⁹ 33 CFR § 332.4(c)(11) (2008); 40 CFR § 230.94(c)(11) (2008).

³⁰⁰ 33 CFR § 332.4(c)(12) (2008); 40 CFR § 230.94(c)(12) (2008).

³⁰¹ 33 CFR § 332.8(a)(2) (2008); 40 CFR § 230.98(a)(2) (2008).

4.5.4 Uncertainty and Risk Management

The U.S. wetlands compensatory mitigation system relies upon the use of multipliers to manage the risk remaining after study and planning. The multiplier ratio for a development project is to be determined by the district engineer, considering the risk proposed by all the uncertainties discussed previously, but is in no circumstance to be less than one-to-one.³⁰² As just mentioned, ratios should be higher where mitigation is by way of preservation.³⁰³

4.6 Discussion

The compensatory mitigation regime for US wetlands is among the most long-standing and well-established globally. It has considered many of the fundamental issues facing the field of conservation offsets, and thus has many lessons to offer. Some of these lessons are in the manner of logistics and administration, and some are more fundamental to the concept of offsets.

4.6.1 Third Party Credit Providers

The most prominent feature of the regime is the successful use of third-party banking as a means of producing credits. While this was hindered prior to 2008 by inconsistent standards for banking in comparison with permittee-responsible mitigation and in-lieu fee programs, the 2008 amendments to the Guidelines have sought to address this. As a result hundreds of mitigation banks and in-lieu fee programs are producing thousands of acres of improved or protected wetlands.

The growth of the wetland banking sector has been enabled by the strict application of the requirement on developers to compensate for wetland losses and a stable policy environment for several years. The consistency of these factors has provided prospective bankers with the certainty that the credits they produce will find demand in the market, thus supporting the

³⁰² 33 CFR § 332.3 (f) (2008); 40 CFR § 230.93(f) (2008).

³⁰³ 33 CFR § 332.8(o)(6) (2008); 40 CFR § 230.98(o)(6) (2008).

necessary investment in land, expertise, and an ongoing relationship with the regulatory agencies.

Further, the facilitation of a market in credits (within defined service areas) has been demonstrated to be an effective way of matching credits development projects.

4.6.2 Level Playing Field

As discussed above, one of the motivations for the 2008 amendment to the Guidelines was a concern by mitigation bankers that they were being held to higher regulatory standards than were applicable to in-lieu fee programs or permittee-responsible mitigation. Assuming that to be true, it would mean that the operating costs of bankers would be higher, leading to higher cost for the credits they could produce. Since those credits may have had to compete in an open marketplace with in-lieu fee programs, it could be expected that developers would prefer to purchase the cheaper in-lieu credits. In this way the higher standard might drive a shift to lower quality credits in the marketplace.

This situation is an example for other jurisdictions of how differential regulatory standards between offset mechanisms may act to encourage the usage and growth of some mechanisms over others. This may be an intentional policy tool in some circumstances, but policy-makers ought to be careful to avoid unintentionally favouring particular mechanisms in this manner.

4.6.3 Policy or Law?

Given the importance of regulatory certainty, it is remarkable to note how far the United States went in the development of its system before the rules surrounding compensatory mitigation, banking, and in lieu fees were reduced to law. From the early experiments with banking in the 1980s through to 2008 the system was largely built on a patchwork of memoranda

and policy guidance documents, administered by the field offices of the USACE. This was apparently sufficient to allow hundreds of mitigation credit providers to be established and operate. It may be, however, that the added level of certainty brought by the incorporation of those rules into the 2008 Guidelines has brought an extra level of comfort which will see the sector expand further. One study has noted recent growth in the sector.³⁰⁴

4.6.4 Regulator/Proponent Relationships

Not all relationships between the regulators and "clients" have produced a positive effect for the environment. Salzman and Ruhl in 2000 described a close identification between development proponents and the USACE, which they ascribed to the two sectors sharing an interest in the smooth operation of the regulatory scheme.³⁰⁵ They saw this shared interest as a factor motivating the oversimplification of the compensation currency, even in the face of policy directives to the contrary.

Gardner has described the USACE as viewing development proponents as its customers, and striving to make its processes "user-friendly" in their service.³⁰⁶ He cautions that the agency should be reminded that its role is to serve the public interest as defined by the CWA, not the interests of developers alone.

This criticism is not, of course, unique to the USACE, nor to wetlands policy. Regulators are often criticized for developing too close an identification with the interests of those they regulate. It is a healthy reminder, however, that any regulatory system should build in some institutional counterweights to this tendency. Salzman and Ruhl's recommended the creation of a public and stakeholder oversight body to monitor the performance of the regulatory regime.³⁰⁷

³⁰⁴ Madsen et al, *supra* note 200 at 5.

³⁰⁵ *Supra*, note 69.

³⁰⁶ *Supra* note 167 at 192.

³⁰⁷ *Ibid* at 683-687.

In this regard, the reviews carried out by the GOA of both the in-lieu fee and banking programs were important in identifying where improvements were needed. This demonstrates the value in an arm's-length review body.

4.6.5 Dual Agency Responsibility

Another such counterweight which has proven its value in the American system, whether by design or coincidence, is the division of responsibilities between the USACE and the EPA. The USACE has been able to focus upon the administration of the compensatory mitigation system, while the EPA has been able to take a larger policy and science perspective.³⁰⁸ The value of this arrangement was demonstrated with the 2001 NRC study, which was commissioned by the EPA in its system oversight role. Several of the earlier regional studies which fed into the NRC study were likewise sponsored by the EPA. We can only speculate as to whether a single agency would submit itself to this kind of intensive scrutiny, but I suggest that it is much more likely with the dual agency arrangement.

4.6.6 Regional Flexibility

The United States has faced the challenge of applying a broad regulatory regime, with a clear set of principles, in a country which includes a broad range of ecosystems and landscape types. It has done so by allowing regional administrators wide discretion in administering national principles and guidelines. This is likely a necessary measure unless extensive guidelines are to be developed for each different region and ecosystem type. It does, however, leave the program open to criticisms of inconsistency and perhaps in some cases to a lack of commitment.

³⁰⁸ Hough & Thomas, *supra* note 168.

4.6.7 Public Land

The U.S. system contemplates that public lands will be available for compensation projects.³⁰⁹ Through cooperation with the appropriate land management authorities, credits may be earned on public lands by taking actions additional to those which the public authorities would otherwise carry out. Obviously, this requires the full cooperation of public resource management agencies. One would hope, however, that the policy goals of the offset program would be shared across government and that this would motivate such a cooperative attitude. While the use and effectiveness of this mechanism is not examined here, it may be a means by which other jurisdictions might implement offsets on public land.

4.6.8 The Mitigation Hierarchy

Throughout its history the Section 404 program has emphasized the importance of the mitigation hierarchy. Virtually every major policy document has repeated “avoidance, minimization, then compensation as a last resort.” Notwithstanding that, there is scant evidence of the effective application of the first two steps in the hierarchy. Indeed, the system has been criticized as putting too much emphasis on facilitating compensation, and not nearly enough on encouraging avoidance and minimization. Hough and Robertson have commented that:

Permit denials are vanishingly rare (only 0.25% of all permit applications were denied in 2004 and 2005), and the regulatory staff may struggle to remember the last time a permit was denied solely for lacking an implementation or enforceable compensation plan, or because remaining significant degradation was simply uncompensatable. However, the language [of the 1990 MOA] is strong and may acquire more practical meaning in the future.³¹⁰

It may well be that the very existence of the Section 404 process leads potential developers to make avoidance decisions early on in their considerations, so they are never reflected in regulatory records. Such is the nature of the deterrence provided by a price signal. If,

³⁰⁹ 33 CFR § 332.7(a)(1) (2008); 40 CFR § 230.97(a)(1) (2008).

³¹⁰ Hough & Robertson, *supra* note 42 at 30. See also Gardner, *supra* note 165 at 192.

however, an offset system is to claim principled adherence to the mitigation hierarchy better tools for both practicing and assessing the application of avoidance and minimization should be developed.

4.6.9 No Net Loss?

The NRC, GAO, and others have found the wetland system deficient in data necessary to assess whether it is meeting its stated goal of no net loss in wetlands. This certainly highlights the importance of long-term monitoring of both positive and negative impacts at offset and development sites. Ideally, such monitoring would form a core part of the management regime of every such site through its entire lifespan. Reminding ourselves once again that offsets are accomplished by “measurable outcomes” (referring back to the BBOP definition of offsets) it is not enough to simply successfully complete credit transactions, and initiate compensation projects. We must track actual outcomes, and do so over time.

But the American pursuit of no net loss through the Section 404 regime highlights another critical aspect for another jurisdiction looking to establish its own conservation offset regime. The U.S. has attempted to achieve no net loss of wetland area and function with a program that only reaches some wetlands and some disturbance activities. There is both a constitutional and statutory limit to the extent of the Section 404 program. Some activities such as simple drainage are not caught by the “dredge and fill” focus of the section. Others such as agriculture are specifically exempt from its scope.

Further, as Gardner points out, there are a variety of anthropogenic forces, such as the introduction of invasive species that eat away at wetlands and are beyond the reach of any

regulatory regime.³¹¹ In light of these restrictions the pursuit of no net loss, however commendable, will almost inevitably fall short of its goal.

4.7 Conclusion

The U.S. wetlands compensation regime has operated for twenty-four years, making it one of the most long-lived offset programs globally. Because the Americans pioneered the notion of offsetting, they encountered some of its complications and issues before others did. The system evolved over time in response to perceived problems, administrative issues, and the pressures of stakeholders. As it did so, it maintained a focus on using a regulatory market as a key driver of environmental protection efforts. In particular, the recognition of the validity of wetland credit banks allowed for private entrepreneurship to play an important role.

This case study has revealed how a regulatory and policy regime laid the groundwork for a market-based instrument to maintain wetlands. I have reviewed the legal foundation of the program, its evolution, and how it has addressed those key issues with offsets that were discussed in the preceding chapter. I have also drawn a series of observations which might be instructive to other jurisdictions.

In the next chapter I will examine how an offset system was developed in the Australian State of Victoria.

³¹¹ *Ibid* at 97-100.

CHAPTER FIVE

CASE STUDY:

OFFSETTING FOR NATIVE VEGETATION IN VICTORIA, AUSTRALIA

5.1 Introduction

Australia has a long-standing concern with the preservation of native vegetation. According to a national policy document, only about twenty-five percent of the country's native vegetation remains intact, with sixty-two percent disturbed or modified to some extent, and thirteen percent wholly destroyed.³¹² The significance of this to global biodiversity is highlighted when one realizes that eighty-five percent of Australia's plant species are endemic to the continent, found nowhere else.³¹³

Native vegetation supports the larger biotic community, and the variety within it, by sustaining a wide variety of ecosystem functions.³¹⁴ In doing so, such vegetation also supports parts of the national economy such as agriculture, forestry, and fisheries.³¹⁵ The country's unique life forms and landscapes are an important component of national identity and culture, and an element of well-being for many of its citizens.³¹⁶

The clearing of native vegetation, for settlement, agriculture, transportation, and natural resource use, has not been evenly distributed. The State of Victoria, one of the first areas settled by Europeans, and abundant in opportunities for agriculture and resource development, has borne a disproportionate share of clearing. Located in the southeastern corner of the continent and anchored by the metropolis of Melbourne, it has been estimated that sixty-six percent of

³¹² COAG Standing Council on Environment and Water, *Australia's Native Vegetation Framework* (Canberra: Australian Government, Department of Sustainability, Environment, Water, Population and Communities, 2012) at 4.

³¹³ *Ibid* at 2.

³¹⁴ *Ibid*.

³¹⁵ *Ibid* at 3.

³¹⁶ *Ibid*

Victoria's native vegetation has been cleared.³¹⁷ Of the five most impacted bioregions in Australia, four are in Victoria.³¹⁸

In 2002 the Victoria government announced a goal of reversing this trend and achieving a “net gain” in “the extent and quality of native vegetation.”³¹⁹ It has pursued this goal through the use of offset mechanisms, as well as other market-based approaches. During this period it has developed some enduring principles, but has also experimented with different forms of offsets and delivery mechanisms.

This chapter examines the legal foundation for the Victorian offset regime and its fundamental tools and principles. It reviews the evolution of mechanisms for the delivery of offset credits from 2002 to 2013, and some of the challenges which were identified during that period. In 2013 the Victorian offset system underwent a major set of reforms, which are still in the process of full implementation at the time of writing. Those reforms, and rationale behind them, are examined. The final part of the chapter summarizes the approaches taken by Victoria to the issues discussed in Chapter 3, and reflects on some of the lessons which the Victorian experience offers.

5.2 Legal Framework

Victoria's native vegetation offset system is based on the State's *Planning and Environment Act 1987*³²⁰ (“PEA”). According to its purpose statement, the PEA is a high-level “framework for planning the use, development and protection of land in Victoria in the present and long-term interests of Victorians.”³²¹

³¹⁷ State of Victoria, Department of Natural Resources and Environment, *Victoria's Native Vegetation Management: A Framework for Action* (n.p.: State of Victoria, Department of Natural Resources and Environment, 2002) at 7 [NVMF].

³¹⁸ *Ibid* at 7.

³¹⁹ *Ibid* at 14.

³²⁰ (Vic)

³²¹ *Ibid*, s 1

It serves this purpose by granting authority for land use planning and permits to local authorities, and providing those authorities with a common set of objectives and principles. Among the stated objectives are “to provide for the protection of natural and man-made resources and the maintenance of ecological processes and genetic diversity”³²² and “to enable land use and development planning and policy to be easily integrated with environmental, social, economic, conservation and resource management policies at State, regional and municipal levels.”³²³

The *PEA* empowers the responsible Minister to promulgate “*Victoria Planning Provisions*”³²⁴ (“*VPPs*”) to which all planning authorities “must have regard.”³²⁵ The *VPPs* include, among many other matters, several provisions respecting the general protection of the environment and maintenance of biodiversity.³²⁶ Key to the native vegetation offset system is *VPP* Clause 52.17, which deals specifically with the protection and conservation of native vegetation.³²⁷

5.3 Structure, Operation and Evolution, 2002 – 2013

This section will review the development and evolution of the Victoria native vegetation offset system from its inception in 2002 until the major reforms of 2013. It will consider the laws and policies in place during that period, how the offset system operated and changed, and some of its challenges.

³²² *Ibid*, s 4(1)(b)

³²³ *Ibid*, s 4(2)(c)

³²⁴ *Ibid*, s 4A

³²⁵ *Ibid*, s 12(2)(aa)

³²⁶ *Victoria Planning Provisions* (Vic) cl 12 [*VPPs*], as amended by VC71, calls for planning to help protect “ecosystems and the biodiversity they support”. Clause 13, as amended by VC94, calls for planning to “adopt a best practice environmental management and risk management approach . . . to avoid or minimise environmental degradation and hazard.”

³²⁷ *VPPs*, cl 52.17

5.3.1 Legislation and Policy

During this period the *VPPs* contained a commitment to the objective “[t]o achieve a net gain in the extent and quality of native vegetation.”³²⁸ *VPP* Clause 52.17 began with a commitment to the mitigation hierarchy, stating its objective is the avoidance of native vegetation removal, then the minimization of such removal, and , finally, appropriate offsetting.³²⁹ It stipulated that, subject to a list of exemptions,³³⁰ “[a] permit is required to remove, destroy or lop native vegetation, including dead vegetation”³³¹ thereby creating the entrée for imposition of permit conditions, including offsets. Applicants for such a permit were required to provide a written explanation of the steps they had taken to comply with each step of the mitigation hierarchy, including the appropriate offsetting of the loss of native vegetation,³³² and the regulator (usually a local development authority) was required to consider these matters in deciding on an application.³³³

Importantly, Clause 52.17 directed planning authorities to consider *Victoria’s Native Vegetation Management – A Framework for Action*³³⁴ (“*NVMF*”).³³⁵ This had the apparent effect of raising that policy document to the level of regulation, and giving it a central place in

³²⁸ *VPPs*, cl 12.01-2, as amended by VC71.

³²⁹ *Ibid.*, as amended by VC81. The commitment to the mitigation hierarchy is also found in *VPPs*, cl 12.01-2, as amended by VC71.

³³⁰ The list of exemptions is quite extensive including Crown land managed by the Department of Sustainability and Environment, a buffer around new or existing fences, fire protection measures, grazing by domestic livestock, authorized timber operations, mineral exploration and extraction, stone exploration and extraction, road and rail maintenance and safety, the maintenance and construction of utility installations, native vegetation patches of less of 0.4 hectares, and weed removal: *VPPs* cl 52.17-6, as amended by VC81. A permit is also not required if native vegetation is removed, destroyed or lopped pursuant to a native vegetation precinct plan under *VPPs* cl 52-16: *VPPs* cl 52.16-3, as amended by VC49.

³³¹ *VPPs*, cl 52.17-2, as amended by VC49.

³³² *VPPs*, cl 52.17-3, as amended by VC83.

³³³ *VPPs*, cl 52.17-5 , as amended by VC83.

³³⁴ *NVMF*, *supra* note 317.

³³⁵ *VPPs*, cl 52.17-5, as amended by VC83. The direction to planners to consider the *NVMF* is also contained in *VPPs*, cl 12.01-2 , as amended by VC71.

the legal protection of native vegetation. (As discussed below, however, the ambiguous legal weight of the *NVMF* was sometimes a weakness of the system.)

The *NVMF* was a multi-faceted strategic policy document intended to advance the goal of net gain in native vegetation through a variety of management initiatives. That goal was articulated as follows: “[a] reversal, across the entire landscape of the long-term decline in the extent and quality of native vegetation, leading to a Net Gain.”³³⁶ The *NVMF* posited that the pursuit of this goal would result in a significant positive contribution to restoration of a wide range of ecological processes and ecosystem services.³³⁷ In this sense, the policy used native vegetation as a proxy for those processes and services.

The *NVMF* recognized that the net gain goal was to be pursued by different types of actions on private and public land, in agriculture, in forestry, and other types of development. Its main focus, however, was upon private land management and development. In pursuit of the net gain goal, the *NVMF* set out several significant concepts and measures, as follow:

- It introduced an accounting system for losses and gains to native vegetation based upon the currency of “habitat hectares”, which combines area and quality assessment.³³⁸
- It recognized that not all native vegetation is of equal value to the protection and biodiversity goals, and set out criteria for determining significance.³³⁹ This determination was then used to prioritize conservation actions.³⁴⁰
- It reiterated the mitigation hierarchy of “avoid-minimize-offset,” emphasizing that offsets are to be used only after the two prior measures have been fully considered.³⁴¹

³³⁶ *NVMF*, *supra* note 317 at 14.

³³⁷ *Ibid* at 14-15.

³³⁸ *Ibid* at 17-18.

³³⁹ *Ibid* at 22, 49-53.

³⁴⁰ *Ibid* at 23, 54-55.

³⁴¹ *Ibid* at 23.

- It set out a system for assessing the contribution of offsets to the net gain goal.³⁴²
- It set out the principle that offsets should operate on a like-for-like basis, but also that this standard may be departed from if that results in gains of higher conservation significance than the corresponding losses.³⁴³

These concepts and tools will be examined in greater detail below.

5.3.2. Basic Offset Framework

From 2002 to 2013, a developer applying for a permit under *VPP* Clause 52.17 to clear native vegetation was required to show as part of the application process that it had demonstrated appropriate rigour to avoid and minimize such destruction.³⁴⁴ The residual impact would then have to be assessed according to the type of native vegetation impacted and the extent and significance of the impact. Both of these analyses would then feed into the requirement for offsetting.

The classification of native vegetation was based on a coarse-level division of the State of Victoria into 27 bioregions.³⁴⁵ Across these bioregions about 300 “Ecological Variation Classes” (EVCs) were identified. An EVC was described as:

. . . represent[ing] a level of detail higher than floristic communities (i.e., plant communities defined solely on the basis of their constituent taxa). As such, EVC represent aggregations of floristic communities with structural, physiognomic and floristic affinities that exist under a common regime of ecological processes within a particular environment.³⁴⁶

³⁴² *Ibid* at 23, 54-55.

³⁴³ *Ibid* at 23-24, 54-55.

³⁴⁴ In actual practice the demonstration of avoidance was almost always a negotiation between the developer and regulators, rather than a rigid test: Skype interview with Michael Crowe, former Manager, BushBroker Program, (July 29, 2013 MDT; July 30, 2013 AEST) [Crowe interview].

³⁴⁵ A list and map of the bioregions may be found online: (Victoria Department of Primary Industries) <http://vro.dpi.vic.gov.au/dpi/vro/map_documents.nsf/pages/bioregional_strategic_overviews>.

³⁴⁶ David Parkes, Graeme Newell and David Cheal, “Assessing the Quality of Native Vegetation: The ‘Habitat Hectares’ Approach” (2003) 4 (Supp) *Ecological Management & Restoration* S29 at S30.

The EVC classification of each stand of native vegetation could be determined by either coarse scale or modelled distribution, or (preferred, at least in this time period) by direct field observations.³⁴⁷

For each EVC a benchmark was designated, “represent[ing] the average characteristics of a mature and long-undisturbed stand of the same type of vegetation.”³⁴⁸ The benchmark served as the standard against which changes to vegetation and habitat quality are assessed. Criteria to be examined in assessing habitat quality include both site conditions and landscape context. Site condition factors were retention of old trees (for woodlands and forests), retention of tree canopy cover (for woodlands and forests), retention of the cover of, and diversity within, understorey life forms, the presence of appropriate recruitment, the absence of weeds, litter, and logs. The two landscape context factors were the size of the remnant vegetation patch, and links to, and amount of, neighbouring patches.³⁴⁹ The influence of each of these factors was capped at a maximum value in the scoring process, to assure that all receive due consideration.³⁵⁰

With all of these factors observed and measured, the benchmark was assigned a vegetation/habitat quality score of 1, essentially representing the perfect condition (my term) for that EVC in a natural state. By way of contrast, a rating of 0 would represent a complete loss of native vegetation values.³⁵¹

³⁴⁷ *Ibid.*

³⁴⁸ *NVMF*, *supra* note 317 at 17.

³⁴⁹ *Ibid.* A fuller discussion of each of these factors can be found in Parkes, *supra* note 345.

³⁵⁰ *Ibid* at S31.

³⁵¹ The use of a single benchmark site as representative of an EVC has been criticized for failing to account for the degree of natural variation which might be expected in an EVC, especially that resulting from a natural disturbance regime: Michael A McCarthy et al, “The Habitat Hectares Approach to Native Vegetation Assessment: An Evaluation and Suggestions for Improvement” (2004) 5:1 Ecological Management & Restoration 24 at 25-26. In response to this and other criticism, the measure’s developers have stated that the system does not strive for the precision needed for a research tool, but rather to serve as an “information exchange” tool which may enable efficient management decisions and actions: David Parkes, Graeme Newell & David Cheal, “The Development and *Raison d’Etre* of ‘Habitat Hectares’: A Response to McCarthy *et al.* (2004)” (2004) 5:1 Ecological Management & Restoration 28.

This same measurement process was applied to the development site by comparing its site and landscape condition factors with the benchmark. It received a habitat quality score on the 0 to 1 scale. That score was then multiplied by the total area of the development disturbance to arrive at a measure of native vegetation disturbance expressed in “habitat hectares.” For example, a ten hectare site that was forty percent intact as compared with the benchmark site, will have a habitat score of 0.4, which yields a measure of native vegetation loss of four habitat hectares (0.4 x ten hectares).

The measurement of loss in habitat hectares set the target for offsetting, subject to the application of a multiplier, as discussed below. The habitat hectares methodology contains within it an implicit prescription for actions to create offsets credits, by making explicit those site and landscape features which are to be positively evaluated. Thus the method partly addresses the issue of additionality.

The *NVMF* also provided for the evaluation of each site’s qualitative significance. Each site was rated on a low-medium-high-very high scale for both “land protection hazard” and “conservation significance.” “Land protection hazard” referred to the contribution of the vegetation patch to controlling erosion, salinity and soil structure, among other things, and was not a part of the system of biodiversity management.³⁵² “Conservation significance” referred to the presence of threatened species or the presence of important habitat types, such as wetlands.³⁵³ Clearing in areas of high conservation significance was, under the *NVMF*, not permitted except under exceptional circumstances (reflecting the principle of non-offsetability).³⁵⁴

Conservation significance also circumscribed the scope of permissible offsetting and determines when an offset may depart from the like-for-like standard. An offset had to have a

³⁵² *NVMF*, supra note 317 at 49.

³⁵³ *Ibid* at 53.

³⁵⁴ *Ibid*.

conservation significance at least equivalent to the development impact.³⁵⁵ If an offset was exchanging vegetation patches of the same conservation significance, then the exchange could be carried out on the basis of a habitat hectare measurement alone. If, however, an exchange was proposed whereby the offset site was of a different conservation significance than the development site, then the former was required to be higher.³⁵⁶ If an impact was of low or medium significance, then the geographic range of permissible offsets was expanded to include high or very high significance offsets outside the development EVC, but within the same bioregion.³⁵⁷

The conservation significance of the development site also determined the multiplier ratio to be applied.³⁵⁸ Very high significance carried a multiplier of 2:1, high 1.5:1, and medium and low 1:1.³⁵⁹ Much higher ratios apply for the removal of large old trees. At the high end, the removal of a very high value large old tree was to be compensated by the protection of eight other large old trees, plus the recruitment of forty new trees.³⁶⁰ These ratios were established in the policy and no departure from them was allowed when applications were considered.³⁶¹

The types of management activities which could be counted as vegetation gains and offset credits was set out in the 2006 publication, *Native Vegetation, Vegetation Gain Approach – Technical Basis for Calculating Gains Through Improved Native Vegetation Management and Revegetation* (“NV Gain Approach”).³⁶² It listed four types of permissible gains:³⁶³

³⁵⁵ *Ibid* at 54.

³⁵⁶ *Ibid* at 54.

³⁵⁷ *Ibid* at 54.

³⁵⁸ *Ibid*.

³⁵⁹ *Ibid*.

³⁶⁰ *Ibid* at 55.

³⁶¹ Crowe interview, *supra* note 344.

³⁶² State of Victoria, Department of Sustainability and Environment, *Native Vegetation, Vegetation Gain Approach – Technical Basis for Calculating Gains Through Improved Native Vegetation Management and Revegetation* (East Melbourne: State of Victoria, Department of Sustainability and Environment, 2006) [*NV Gain Approach*].

³⁶³ *Ibid* at 5.

1. *Prior Management Gain* – an acknowledgement of management action taken on freehold sites since vegetation planning introduced in 1989; essentially a grandfathering provision, which gives credit for early action;
2. *Security Gain* – Averted losses secured by on-title agreements or the transfer of private land to a public conservation reserve;
3. *Maintenance Gain* – Another form of averted losses, by way of management actions to control threats to native vegetation such as controlling the spread of weeds or foregoing damaging activity, also to be secured in perpetuity;
4. *Improvement Gain* – Positive management actions to improve native vegetation quality, over and above general legal requirements, and subsequent to necessary maintenance measures being taken and secured. A commitment in perpetuity is required, and a ten year management plan setting out the specific management actions.

Particular types of management activities under each of these headings were set out in the *NV Gain Approach*.³⁶⁴ The particular amount of credit to be recognized for action was based upon the projected benefit over a ten-year timeframe, though the action was to be secured in perpetuity.³⁶⁵

The *NVMF* stated that avoided losses were a priority over positive management actions, on the rationale that “natural is best.”³⁶⁶

Once the appropriate offset arrangements were agreed to, they were to be secured by means of a tri-partite agreement between the developer, offset site landowner, and the State. Most commonly such agreements were under the authority of the *Conservation Forests and*

³⁶⁴ *NV Gain Approach, supra*, note 362.

³⁶⁵ *Ibid* at 4.

³⁶⁶ *Supra*, note 317 at 19.

*Lands Act 1987*³⁶⁷ (s 69), but might also be under the *PEA*³⁶⁸ (s 173), or *Victorian Conservation Trust Act 1972*.³⁶⁹ Agreements were perpetual and registered on title of the offset lands.³⁷⁰

Compliance on the part of the landowner was assured by the combination of progress payments for prescribed management plan actions, annual inspections by government officials in the first two to three years, and, in extreme cases, statutory sanctions in case of breaches, including seizure of land.³⁷¹ In practice, outright defaults were few, and leniency, education and negotiation were the usual manner of dealing with deviations from agreements.³⁷²

5.3.3 Critiques and Complications

The native vegetation offset regime during the 2002-2013 period came under criticism on two fronts: its economic impact and its legal efficacy.

The Victoria Competition and Efficiency Commission, a policy review branch of the State government, conducted an inquiry into native vegetation controls that resulted in a report in January 2005.³⁷³ The report said that the Commission had “taken as given” the policy objective of promoting an increase in the quantity and quality of native vegetation, but would focus on whether the regulatory framework would hinder economic growth, and whether the goal was being effectively served by the current policy mechanisms.³⁷⁴

³⁶⁷ (Vic)

³⁶⁸ *Supra* note 520.

³⁶⁹ (Vic). This list of statutory options from *NV Gain Approach*, *supra* note 361 at 6.

³⁷⁰ Michael Crowe, “BBOP Webinar: Biodiversity Offsets and the Credit Market, Victoria, Australia” (PowerPoint webinar), online: Vimeo <<http://vimeo.com/55961648>> 00h:53m:00s [Crowe webinar]; See also *NVMF*, *supra* note 317 at 39.

³⁷¹ Crowe interview, *supra* note 344.

³⁷² *Ibid.*

³⁷³ Victorian Competition & Efficiency Commission, *Regulation and Regional Victoria: Challenges and Opportunities, A Draft Report for further Consultation and Input* (Melbourne: State of Victoria, 2005, online: VCEC

<[http://vcec.vic.gov.au/CA256EAF001C7B21/WebObj/VCEC_DraftReportJan2005/\\$File/VCEC_Draft%20Report%20Jan%202005.pdf](http://vcec.vic.gov.au/CA256EAF001C7B21/WebObj/VCEC_DraftReportJan2005/$File/VCEC_Draft%20Report%20Jan%202005.pdf)>

³⁷⁴ *Ibid* at 87.

The Commission noted a lack of information on which to solidly ground any such assessment.³⁷⁵ Notwithstanding that, the Commission reviewed several pieces of anecdotal and speculative evidence, to conclude that on balance the policy was impeding regional economic development because the review process for native vegetation clearing permits was not “designed to achieve a well-informed balance between economic, environmental and social effects of clearing activities” and inconsistency in the application of the process by different local councils created uncertainty for businesses and investors.³⁷⁶

The Commission issued a second report in 2009, which repeated these themes, among others.³⁷⁷ The 2009 report focussed more directly on the direct and opportunity costs created by the inconsistent application of the mitigation hierarchy (avoidance and minimization obligations) without clear reference to economic and social impacts.³⁷⁸ The Commission suggested that a clearer inclusion of economic and social considerations would improve application of the hierarchy and reduce shortcutting to offsets over minimization and avoidance.³⁷⁹

On another note, the Commission suggested that the like-for-like and other rules for offsets were overly narrow and strict, which decreased the availability of required offsets and raised compliance costs.³⁸⁰ It recommended increased flexibility in the range of permissible offsets, either by relaxing the like-for-like requirements based on EVCs, by enabling offsets within the same EVC but in any part of the State, or by increasing the potential to provide offsets

³⁷⁵ *Ibid* at 103.

³⁷⁶ *Ibid* at 104. In the same section the Commission also said that the native vegetation controls impeded economic development because there was little consultation or public review in their design and implementation. While this concern may be a legitimate concern from a policy process perspective, it is difficult to see how it directly results in economic impairment.

³⁷⁷ Victorian Competition & Efficiency Commission, *A Sustainable Future for Victoria: Getting Environmental Regulation Right, A Draft Report for Further Consultation and Input* (Melbourne: State of Victoria, 2009) at 145-180, online: VCEC <<http://www.vcec.vic.gov.au/Inquiries/Completed-inquiries/Environmental-Regulation/Final-Report>>.

³⁷⁸ *Ibid* at 149-154.

³⁷⁹ *Ibid* at 154.

³⁸⁰ *Ibid* at 155-158.

on public land.³⁸¹ The Commission, however, expressed that adherence to the EVC criteria was likely the most important for guarding against the loss of a particular type of native vegetation.³⁸²

The efficacy of the native vegetation control regime's role with local councils was taken up in a 2009 article by Rachael Webb.³⁸³ Webb reviews the uncertain institutional relationship between local planning authorities and the Catchment Management Authorities (CMAs), the regional environmental planning bodies established under the *Catchment and Land Protection Act 1994*.³⁸⁴ The *NVMF* deferred to the CMAs for much of the work to develop regional vegetation plans and Native Vegetation Precinct Plans.³⁸⁵ The *VPPs* dictated that the local planning authorities must "have regard to" and "consider" these plans, but there was no firm requirement that the priorities of the CMAs actually be implemented. Webb notes that less than half of the local councils in the Melbourne area had explicitly references to the relevant CMA Vegetation Plan in their planning schemes.

Webb also notes that historically planning authorities treated the Framework and various vegetation plans as only one in a number of planning considerations, deserving no special priority, and this was particularly so with respect to the avoidance of native vegetation clearing. This weakness was exacerbated by the ambiguous legal status of the *NVMF*, such that planning authorities and tribunals were able to treat it as mere policy, not carrying regulatory weight. This

³⁸¹ *Ibid* at 158-160.

³⁸² *Ibid* at 159.

³⁸³ Rachael Webb, "Victoria's Native Vegetation Framework - Achieving 'Net Gain' at the Urban Growth Boundary?" (2009) 26 EPLJ 236.

³⁸⁴ (Vic).

³⁸⁵ Native Vegetation Precinct Plans are forward-looking documents which prescribe management measures for native vegetation conservation at an area larger than a single property or site. In taking a larger landscape approach they may take into account more location-dependant factors (such as conglomerations of vegetation or wildlife movement patterns). A Precinct Plan exempts development in compliance with the Plan from the need for individual native vegetation clearing permits as otherwise required by Clause 52.17.³⁸⁵ The Plan, however, must itself comply with the *NVMF*. A provision allowing for Native Vegetation Precinct Plans was added to *VPP* cl 52.16 in 2006.

perspective was exhibited by the Victoria Civil and Administrative Tribunal in 2005 in *Villawood Properties Pty Ltd v. Greater Bendigo CC*.³⁸⁶

The weight of the *NVMF* was reaffirmed, however, in 2009 with the decision of the VCAT in *F Reeve v Hume CC* where VCAT Member Potts suggested that recent amendments to the *VPPs*, which re-emphasized the mitigation hierarchy, meant “the ‘rules of the game’ have changed” and “the priorities have shifted in favour of native vegetation protection.”³⁸⁷ Member Potts reinforced the centrality of the mitigation hierarchy, particularly with respect to high and very high value native vegetation saying, “the starting point in contemplating a subdivision (or development) proposal should be to ask the question why such vegetation should be lost rather than how can the loss be offset.”³⁸⁸

The Environmental Defenders Office, a national environmental law non-profit group, called for a clear elevation of the legal status of the native vegetation regime, in keeping with the spirit of *F Reeve* in order to eliminate further debate on this matter.³⁸⁹

5.3.4. The Evolution of Offset Supply Mechanisms 2002 – 2013

Within the basic offsetting framework prescribed by the *NVMF* Victoria experimented with a variety of mechanisms to efficiently supply offsets, drawing on different market mechanisms. From 2002 to 2006 the system was largely dependent on project-specific offsets, with developers expected to find the offsets required by their development plans.³⁹⁰ Developers

³⁸⁶ [2005] VCAT 2703.

³⁸⁷ [2009] VCAT 64 at paras 50 & 85 respectively. The tribunal in that case upheld the local council’s rejection of a 1.85 hectare urban subdivision on a site containing native vegetation of high and very high significance (in particular Melbourne Yellow Gum Trees, a species in danger of extinction, and habitat suitable for the endangered Swift Parrot and perhaps Golden Sun Moth).

³⁸⁸ *Ibid* at para 85.

³⁸⁹ Environmental Defenders Office (Victoria) Ltd., “Submission in Response to *Future Directions for Native Vegetation in Victoria: Review of Victoria’s Native Vegetation Permitted Clearing Regulations – Consultation Paper*” (Melbourne, 2012) at 7, online: EDO <<http://www.edovic.org.au/edo-submission-victorias-native-vegetation-permitted-clearing-regulations-consultation-paper>>.

³⁹⁰ Crowe webinar, *supra* note 370 at 00h:31m:30s (slide 33).

found this to be a cumbersome process, however, as they were often unable to easily find appropriate offsets.³⁹¹

5.3.4.1. BushBroker

In 2006 the system was modified to allow the third party production and commercial trading of offset credits. Further, the State undertook to facilitate such trading through the establishment of the BushBroker program. This is a “bulletin board” type brokerage system to match offset credit suppliers and developers requiring credits.³⁹² As well, the State created a credit register, where the production, nature, and use of credits could be authoritatively tracked.³⁹³

The system does not distinguish between suppliers of credits on a one-time basis, and those who, in the manner of bankers, seek to produce them regularly as an ongoing business venture. Under BushBroker, or any private brokerage which might arise, the State plays no role in the negotiations between suppliers and developers, though the tools it provides (such as land management agreements in perpetuity) enable much of the substance of such negotiations. The regulatory environment sets the conditions for supply and demand.

Supply and demand in turn are the market forces that determine price. As might be expected in a new and thin market, prices as measured per habitat hectare unit initially fluctuated widely, but over time became more stable.³⁹⁴ Prices varied widely between different bioregions, presumably driven by local supply and demand.³⁹⁵

³⁹¹ *Ibid*; Anne Buchan, “Native Vegetation Offsetting in Victoria” (PowerPoint presentation), online YouTube <http://www.youtube.com/watch?v=gLC2qLNs4RI&list=FLilX-PjGrNZ2Tt6YqZFoF_w> at 00h:8m:00s [Buchan presentation].

³⁹² *Ibid* at 9m:00s.

³⁹³ *Ibid*.

³⁹⁴ Crowe webinar, *supra* note 370 at 00h:30m:00s.

³⁹⁵ *Ibid*; Buchan, *supra*, note 391 at 00h:12m:40s.

As of mid-September 2013, BushBroker has finalized 307 trades, plus 208 “over the counter” trades.³⁹⁶ Over one hundred land securement agreements had been made, and twenty-nine million (Australian) dollars is held in trust for payment to landowners as agreed management obligations are fulfilled.³⁹⁷

5.3.4.2 Native Vegetation Exchange

In 2012 the Victoria government initiated an experiment in a more extensive and free-flowing market in native vegetation offset credits, the Native Vegetation Exchange or NVX. The intention was to “enable trades between multiple parties”, thereby increasing the effectiveness of the offset system overall.³⁹⁸ The trial exchange began operation in February 2012, with the intention of running for six months.³⁹⁹ Before its unveiling, however, it had been six years in development.⁴⁰⁰

The goal of the NVX was to address a number of perceived hurdles to easy participation on the part of both landowners and developers (i.e., the sellers and buyers of credits). According to the designers of the NVX, a number of “complexities” hindered the economically efficient exchange of native vegetation offset credits in Victoria, including:

- Understanding of the detailed rules of the native vegetation management and trading system, including the “like-for-like” rules;
- Differences in information available to offset buyers and sellers;

³⁹⁶ E-mail from Jenni Thomas, BushBroker, Regulatory and Design, Environment and Landscape Performance, Department of Environment and Primary Industries (Sept. 12, 2013, 5:28 PM MDT) (on file with author). “Over-the-counter” trades or fees are a bulk trading arrangement in Native Vegetation Credits between a landowner and the State. These credits are then available at a set price to proponents of certain select (mainly minor or low-risk) development project: *Ibid.*

³⁹⁷ *Ibid.*

³⁹⁸ Government of Victoria, Department of Sustainability and Environment, “Native Vegetation Exchange Trial” (April 19, 2011), online: YouTube <<http://www.youtube.com/watch?v=SRNsVBvVcJE>>; Skype interview with Gary Stoneham, Assistant Director, Economic Policy Group, Department of Treasury and Finance, Government of Australia (Sept. 11, 2013 MDT; Sept 12, 2013 AEST).

³⁹⁹ Government of Victoria, *supra* note 398.

⁴⁰⁰ Stoneham, *supra* note 398.

- A “lumpy asset problem” whereby sellers have an interest in selling a large block of credits (reflecting the economy of scale of managing a large block of land in a consistent manner), which often did not correspond to a buyer’s interest in procuring a needed specific package of offset credits (reflective of variations in EVC classification and conservation significance);
- Differences in the time preferences of buyers and sellers, with the clock ticking for both as exogenous changes to vegetation might make a habitat hectare assessment obsolete before it could be the subject of a trade.⁴⁰¹

The NVX sought to address these complexities by a computerized trading system whereby the offset rules were built into the software, and buyers and sellers could bid on either individual credits or whole packages. The software would use algorithms to work out the optimal combination of credits supplied and demanded, and allow for price negotiations in a transparent environment.⁴⁰² The NVX model was tested through laboratory testing processes and simulations with actual data, and landowners were recruited for training on the new exchange.

While it was intended to run as a pilot project for six months, in fact the NVX was cancelled shortly after its announcement. The reason was a severe shortage of buyers in the new market.⁴⁰³ One interpretation of events is that the NVX was simply too complex a tool for the rudimentary state of the offset market.⁴⁰⁴

According to one of the NVX’s designers, Gary Stoneham, the failure of the NVX was not a result of any of its design features, but rather problems more fundamental to the native

⁴⁰¹ Veronica Nemes, Charles R Plott, and Gary Stoneham, “Electronic BushBroker Exchange: Designing a Combinatorial Double Auction for Native Vegetation Offsets” (2008), online: Social Science Research Network <http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1212202>.

⁴⁰² *Ibid.*

⁴⁰³ Stoneham, *supra* note 398.

⁴⁰⁴ Crowe interview, *supra* note 344.

vegetation offset system.⁴⁰⁵ Stoneham claims that it was this realization that led Victoria to undertake a broad-based review of the native vegetation management system in 2012.⁴⁰⁶

Whether one considers the NVX to be an overly complex tool, or the policy parameters of the offset market to be stifling, it is clear that there was a mismatch between the NVX tool and market conditions.

5.4 Review and Reform, 2012 - 2014

The consultation paper which framed the 2012 review of the native vegetation conservation clearing controls identified a number of challenges to the effectiveness of the controls, and suggested corresponding “directions for reform” as follows:⁴⁰⁷

- The objectives of the native vegetation clearing controls and the native vegetation management program overall were not clear or well-understood. The “net gain” objective of the overall management system was conflated with the “no net loss” objective of the clearing controls, leading some participants or prospective participants to believe that they were required to more than compensate for any vegetation cleared.⁴⁰⁸
- The emphasis in the clearing controls on native vegetation extent and quality was not clearly related to the conservation of biodiversity. The focus on maintaining existing vegetation types may distract from opportunities to prioritize measures directly beneficial for biodiversity.⁴⁰⁹ In response to this, and the previous concern, the consultation paper

⁴⁰⁵ *Ibid.*

⁴⁰⁶ *Ibid.* There had also been a change of governments following the election of November, 2010, where the Liberal/National Coalition replaced the Australia Labour Party. The difference in ideologies between the two parties may have contributed to the will to review the native vegetation management system: Crowe interview, *supra* note 344.

⁴⁰⁷ State of Victoria, Department of Sustainability and Environment, *Future Directions for Native Vegetation in Victoria: Review of Victoria's Native Vegetation Permitted Clearing Regulations, Consultation Paper* (Melbourne, State of Victoria, Department of Sustainability and Environment, 2012) [Consultation Paper 2012].

⁴⁰⁸ *Ibid* at 14-15.

⁴⁰⁹ *Ibid* at 15-17.

called for a restatement of the objective of the native vegetation clearing controls to “no net loss of the contribution made by native vegetation to Victoria’s biodiversity.”⁴¹⁰

- The uniform application of the mitigation hierarchy and the use of onsite assessment, did not adequately consider “risk and proportionality.”⁴¹¹ According to the consultation paper the “vast majority” of clearing permit applications were for small sites or sites of low significance.⁴¹² The “one size fits all” process, and the uncertainty of some information requirements, meant that developers and landowners were required to incur substantial information and transaction costs even where the subject matter was of very little conservation significance.⁴¹³ As these costs were to be incurred before a site’s conservation significance was known, they deterred full participation in the process, and may thereby have discouraged legitimate land development.⁴¹⁴ The consultation paper recommended new “risk-based” offsetting rules, which would ease the application of the mitigation hierarchy and like-for-like rules for sites deemed to be low risk.⁴¹⁵
- In order to make determinations of risk and ease the burden of collecting site-specific information, the consultation document recommended the continued development of a state-sponsored dataset and modelling tool that could be relied on for *prima facie* identification of native vegetation features and risk without the need for onsite inspections.⁴¹⁶ The particular system referred to was “NaturePrint,” a publicly-accessible online tool that is said to combine “[m]athematical models of species distributions and

⁴¹⁰ *Ibid* at 21.

⁴¹¹ *Ibid* at 17-18.

⁴¹² *Ibid*.

⁴¹³ *Ibid*.

⁴¹⁴ *Ibid*.

⁴¹⁵ *Ibid* at 26-27.

⁴¹⁶ *Ibid* at 23-24.

habitats, [t]he condition of these habitats, [p]athways for connectivity across landscapes, [c]onnectivity for potential and recoverability” and “[t]hreats to species persistence.”⁴¹⁷

In May 2013 a package of substantial changes in line with the consultation document were announced by the Victoria state government, changes which were scheduled to be implemented in stages throughout 2013 and 2014.⁴¹⁸ The key legal mechanism was a wide-ranging set of amendments to the *Victoria Planning Provisions*, passed in December 2013.⁴¹⁹ The implementation of the amended provisions is currently underway, but not yet complete.

5.4.1. A New Purpose

The amended purpose of the new native vegetation regime is found in the new version of Clause 52.17 of the *VPPs*. The general purpose statement was amended from “To protect and conserve native vegetation to reduce the impact of land and water degradation and provide habitat for plants and animals”⁴²⁰ to “To ensure permitted clearing of native vegetation results in no net loss in the contribution made by native vegetation to Victoria’s biodiversity.”⁴²¹

The new risk-based hierarchy of protection is reflected in the amendment to *VPP* Clause 12.01, dealing with biodiversity. Whereas the former provision had a “protection and conservation” objective targeting “native vegetation retention and the provision of habitat for native plants and animals”, the amended version targets “*important* habitat for Victoria’s flora and fauna and other *strategically valuable* biodiversity sites.”⁴²² Similarly, the strategies listed

⁴¹⁷ State Government of Victoria, Department of Sustainability and Environment, “NaturePrint”, online: State of Victoria, Department of Sustainability and Environment <<http://www.dse.vic.gov.au/conservation-and-environment/biodiversity/natureprint>> (accessed October 29, 2013; no longer accessible; copy on file with author).

⁴¹⁸ State of Victoria, Department of Environment and Primary Industries, *Reforms to Victoria’s Native Vegetation Permitted Clearing Regulations: Overview* (Melbourne: Victoria, DEPI, 2013), online: DEPI <http://www.depi.vic.gov.au/__data/assets/pdf_file/0007/180637/Overview_NVR.pdf> [Reforms Overview].

⁴¹⁹ VC 105.

⁴²⁰ *VPPs*, cl 52.17, as amended by VC81.

⁴²¹ *VPPs*, cl 52.17, as amended by VC105.

⁴²² *VPPs*, cl 120.01 as amended by VC105 [emphasis added].

for the pursuit of that goal make several references to the protection and management of sites of “high value biodiversity.”⁴²³

The general thrust of these amendments, and of the reforms overall, is a drawing away from the presumption that all native vegetation is inherently valuable to biodiversity. In other words, native vegetation is no longer to be seen as an appropriate proxy for the broad range of values encompassed by biodiversity. Instead, under the new risk-based approach each site of native vegetation is to be ranked for its contribution to biodiversity, and that ranking is to act as a screening for its policy and regulatory treatment.

5.4.2. New Guidelines

Critically, the amendments to VPP Clause 52.17 removed all references to the *NVMF* of 2002, replacing them with references to the new *Permitted Clearing of Native Vegetation – Biodiversity Assessment Guidelines*⁴²⁴ (“*Biodiversity Assessment Guidelines 2013*” or simply “*Guidelines*”). The *Biodiversity Assessment Guidelines 2013* are intended to wholly replace the *NVMF*.⁴²⁵

The new *Guidelines* give structure to the ranking process for native vegetation sites, defining three “risk-based pathways:” low, medium and high. The risk rating of a site is carried out by consideration of two factors: “extent risk” (area and total number of scattered trees) and “location risk.”⁴²⁶ Location risk is predetermined by the State according to its own data and modelling, and is available as part of an online “Biodiversity Interactive Map,”⁴²⁷ a product of

⁴²³ *Ibid.*[emphasis added].

⁴²⁴ State of Victoria, Department of Environment and Primary Industries, *Permitted Clearing of Native Vegetation – Biodiversity Assessment Guidelines September 2013* (Melbourne: Victoria, DEPI, 2013), online: DEPI <http://www.depi.vic.gov.au/__data/assets/pdf_file/0011/198758/Permitted-clearing-of-native-vegetation-Biodiversity-assessment-guidelines.pdf> [*Biodiversity Assessment Guidelines 2013*].

⁴²⁵ *Ibid.* at 2; Reforms Overview, *supra* note 417, at 4.

⁴²⁶ *Biodiversity Assessment Guidelines 2013*, *supra* note 424 at 12-13.

⁴²⁷ Online: State of Victoria, Department of Sustainability and Environment <<http://mapshare2.dse.vic.gov.au/MapShare2EXT/imf.jsp?site=bim>>.

NaturePrint. Figure 2, copied from the online map, shows the state colour coded for location risk, light blue depicting areas tending to low risk (depending on patch size, or “extent risk”), purple tending to moderate, and red universally high. It shows the vast majority of the state as low location risk, meaning any sites of under one hectare within those areas marked are deemed to be on the low-risk pathway.⁴²⁸

The risk-based pathway assigned to a site has significance for both the application of the mitigation hierarchy and the scope and type of offsets which are permissible in the case of clearing of native vegetation.

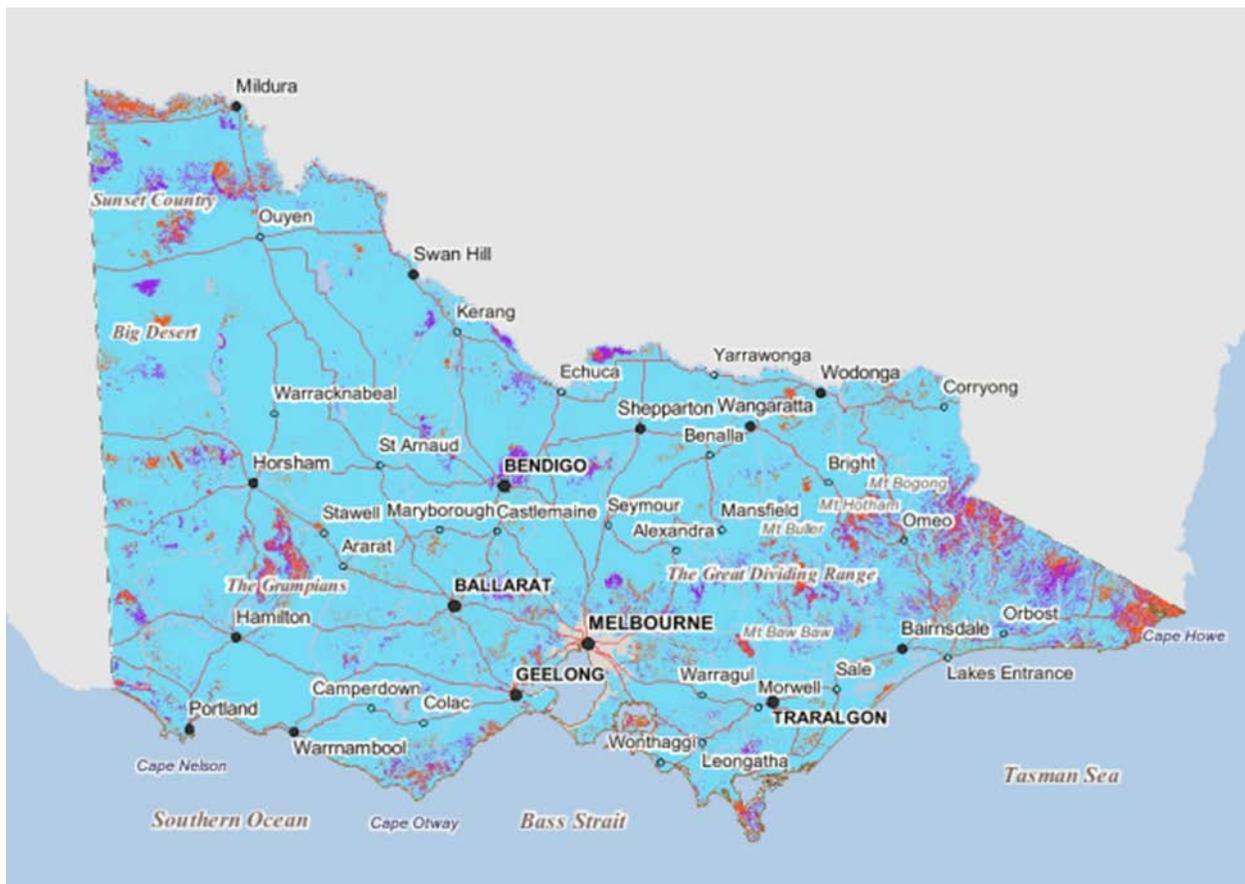


Figure 2: Victoria Location Risk Map,
 from Biodiversity Interactive Map online: State of Victoria, Department of Sustainability and Environment
 <<http://mapshare2.dse.vic.gov.au/MapShare2EXT/imf.jsp?site=bim>>.

⁴²⁸ *Biodiversity Assessment Guidelines 2013, supra* note 424 at 13.

While the avoidance step of the mitigation hierarchy is recognized as an important part of the pursuit of the no net loss goal,⁴²⁹ it is to be applied very sparingly in the permitting process under the new *Guidelines*. Rather, it is primarily identified as an important part of the native vegetation strategic planning process, pursuant to Clause 52.16 of the *VPPs*.⁴³⁰ For individual project permit review, avoidance is to be encouraged by use of unidentified incentives⁴³¹ (presumably the cost of the permitting and offsetting process itself). It is only directly invoked as a prescribed stage in the permitting process for the removal of native vegetation “that makes a significant contribution to biodiversity.”⁴³² While that phrase is not defined in the *Guidelines*, the assessment of a site for such significance is only prescribed for sites on the high risk-based pathway.⁴³³ Presumably, therefore, it is a sub-set of the sites in the high risk-based pathway, meaning that the doctrine of avoidance has no application in the review process for native vegetation clearing in low or moderate risk-based pathways.

The second step of the mitigation hierarchy, minimization of impacts, is only to be considered for clearing on the moderate and high risk-based pathways, not to the low.⁴³⁴ Those projects proponents are to demonstrate that they have taken “reasonable steps” to minimize impacts, which is to be done by giving evidence that any further measures to minimize would

⁴²⁹ *Ibid* at 6.

⁴³⁰ *Ibid* at 2, 5.

⁴³¹ *Ibid* at 6.

⁴³² *Ibid* at 5, 8.

⁴³³ *Ibid* at 17. Factors to be considered in determining such significance include, “impacts in important habitat for rare or threatened species, particularly localised habitat”, “proportional impacts on remaining habitat for rare or threatened species”, and “the availability of, and potential for, gain from offsets”: *Ibid*. This last factor seems contrary to the spirit of the mitigation hierarchy as discussed in Chapter X, as it suggests that an offset in some circumstances is to be seen as ecologically preferable to an ecosystem left undisturbed.

⁴³⁴ *Ibid* at 16-17.

“undermine the key objectives of the proposal” or “materially increase the cost of the proposal.”⁴³⁵

To summarize, for low risk clearing projects, proponents and regulators may proceed directly to examining offsets, without considering avoidance or minimization. For moderate risk projects, and the default category within high risk, a development proponent must show it has taken reasonable steps to minimize impacts before proceeding to offsetting. Developers and regulators are only to apply avoidance for that sub-set of high risk projects that demonstrate an impact on native vegetation making “a significant contribution to Victoria’s biodiversity.”

The *Biodiversity Assessment Guidelines 2013* also substantially alter the calculation of offset obligations, and the scope and nature of permissible offsets. The general scheme (subject to two notable exceptions discussed below) prescribes that the extent of offset obligations is to be calculated by multiplying the habitat hectare score (as assessed in the existing system) by a “strategic biodiversity score,” a numerical rating assigned to an area by the State’s dataset and modelling (similar to the location risk assessment process).⁴³⁶ This multiplication yields a “general biodiversity equivalence score” for the proposed development.⁴³⁷ Applying a standard and uniform multiplier (“risk adjustment” in the words of the *Guidelines*), the developer must offset (again measured by the multiplication of habitat hectares and strategic biodiversity score) 1.5 times the development impact.⁴³⁸

The offset provided must have at least eighty percent of the strategic biodiversity score of the native vegetation cleared by the development.⁴³⁹ Further, in contrast to the existing system’s reliance on EVCs to delimit the pool of available offsets, the new system prescribes that offsets

⁴³⁵ *Ibid* at 17.

⁴³⁶ *Ibid* at 18.

⁴³⁷ *Ibid* at 18.

⁴³⁸ *Ibid* at 21-22.

⁴³⁹ *Ibid* at 22.

must only be located in the same Catchment Management Area or municipal district as the vegetation removed by the development.⁴⁴⁰ Together these directions set out a marked departure, and significant loosening of the like-for-like requirements for offsets, which brings a major expansion of the offset service area.

There are two notable exceptions to this general scheme of assessing offset obligations, one at each end of the risk-based assessment scheme. For low-risk applications the new *Guidelines* remove the obligation on a developer to prepare and submit a habitat hectare assessment report; the applicant can simply rely on the “mapped condition score” deemed by the state-provided data and modelling.⁴⁴¹ Therefore, the mapped condition score substitutes for the habitat quality score which would have previously resulted from the on-the-ground habitat hectares assessment process. The mapped condition score is treated in the same manner, however, being multiplied by area to give a habitat hectare score, and in turn a general biodiversity equivalence score. Aside from this significant feature, the general offset obligations apply to low-risk vegetation clearing for development.

The requirement of a habitat hectare assessment remains for moderate- and high-risk projects.⁴⁴² Proponents of those projects are also to assess whether the native vegetation impacted by the project is habitat for a rare or threatened species (as listed under specified legislation).⁴⁴³ If so, then a “*specific* biodiversity equivalence score” is to be assessed for each such species.⁴⁴⁴ The offset obligation for such disturbance is then calculated at twice this specific biodiversity equivalence score (i.e., a higher multiplier than the general) and must

⁴⁴⁰ *Ibid* at 22.

⁴⁴¹ *Ibid* at 15.

⁴⁴² *Ibid* at 15.

⁴⁴³ *Ibid* at 17, 19.

⁴⁴⁴ *Ibid* at 18-19 [emphasis added].

provide substitute habitat for each such species identified.⁴⁴⁵ The prescription of offsets within the same Catchment Management Area or municipal district, and the requirement that offsets have a strategic biodiversity score of at least eighty percent of that of the vegetation removed, do not apply to these specific offsets.⁴⁴⁶

The new regime also brings new rules for additionality and what constitutes a valid gain from offsets. These come in the form of a new *Native Vegetation Gain Scoring Manual*⁴⁴⁷ (“*NV Gain Scoring Manual*”), which is to replace the *NV Gain Approach*.⁴⁴⁸ The *Gain Scoring Manual* does not include any gain category comparable to the prior management gain of the existing *NV Gain Approach*,⁴⁴⁹ but includes equivalents to security gain, maintenance gain and improvement gain. Like the calculation of offset obligations, the amount of gain to be recognized is the result of calculation of gains at the offset site (measured in habitat hectares, as before) multiplied by the landscape factors represented by a strategic biodiversity score, or habitat importance score.⁴⁵⁰

In addition to the distinction between general and specific offsets set out in the *Biodiversity Assessment Guidelines 2013*, the *NV Gain Scoring Manual* distinguishes between first party and third party offsets. For first party offsets, those where the development proponent is providing the offsets, a general offset arrangement does not have to be registered on title, but

⁴⁴⁵ *Ibid* at 19, 21-22.

⁴⁴⁶ *Ibid* at 22.

⁴⁴⁷ State of Victoria, Department of Environment and Primary Industries, *Native Vegetation Gain Scoring Manual, Version 1* (Melbourne: DEPI, 2013) online: DEPI <http://www.depi.vic.gov.au/__data/assets/pdf_file/0005/198968/Gain_manual_NVR.pdf> [*NV Gain Scoring Manual*].

⁴⁴⁸ Reforms Overview, *supra* note 418 at 4;

⁴⁴⁹ However, credits previously recognized for prior management gain will continue to be recognized: *NV Gain Scoring Manual*, *supra* note 447 at 9.

⁴⁵⁰ *Ibid* at 3, 15.

must be enforceable, perpetual, and implemented by an authorized “statutory body.”⁴⁵¹

Registration on title is still to be required for specific offsets and for third party offsets.⁴⁵²

5.4.3 Summary of Reforms

The current reforms bring a significant loosening of the obligation to apply the mitigation hierarchy to those projects deemed to be low risk. This is matched by a removal of the obligation to get a habitat hectare assessment on low-risk projects. As the low-risk category constitutes the great majority of land, and therefore presumably projects, this means that the accuracy and integrity of the new system is largely dependent on the adequacy and credibility of the State’s modelling program, NaturePrint.

The NaturePrint system is a means whereby landscape factors may be taken into account in assessing both project impacts and offset value, more than is the case under the current system. Further, the State’s development and maintenance of NaturePrint relieves landowners and developers of substantial information and transaction costs, reducing risk and easing the trade in offset credits.

On the other hand, the lack of groundtruthing, as a habitat hectare assessment would provide, precludes the possibility that unexpected species or ecosystem components may be found. There is a risk, therefore, that those projects on the low risk-based pathway, may be misclassified, and not accorded the safeguards which their actual ecological composition might merit.

The regulatory and policy documents for the new regime use several different phrases to refer to land and native vegetation of high conservation value. Clause 12 of the *VPPs*, as

⁴⁵¹ *Ibid* at 6-7. Statutory bodies are said to be those which have entered in to the *Agreement with the Secretary to the Department of Environment and Primary Industries (DEPI) for implementing offsets on private land: ibid* at 6. A list of these bodies is said to be available on the DEPI website, but I have been unable to locate it. Presumably these are agencies in the nature of land trusts or land management specialists.

⁴⁵² *Ibid* at 7.

amended, makes reference to “*important* habitat for Victoria’s flora and fauna and other *strategically valuable* biodiversity sites”⁴⁵³ and to sites of “*high value* biodiversity.”⁴⁵⁴ The *Biodiversity Assessment Guidelines 2013* refer in different places to native vegetation “that makes a significant contribution to biodiversity”⁴⁵⁵ (a sub-set of high risk) and native vegetation that is “habitat for rare or threatened species”⁴⁵⁶ (also a sub-set of high risk, but also of medium risk). As none of these terms are specifically defined, it is challenging to determine the relationship between them, though their meanings seem to overlap. In particular, these concepts, when seen in the light of the management measures prescribed, suggest an overall framework that sees the preservation of biodiversity as a matter of protective measures for rare and threatened species that are dependent upon habitat found on exceptional sites of native vegetation.

In general, therefore, the current reforms exempt a greater range of activities from the strict like-for-like application of rigorous offsets. Low risk projects may be offset with minimal research and within the loose confines of the same catchment area.

5.5 Comparative Factors

5.5.1 Equivalency, Fungibility and Currency

As we have seen, the *2002 NV Management Framework* implicitly adopted the view that native vegetation was a proxy for biodiversity and other ecosystem services. It emphasized the wide variety of vegetation communities through the EVC classification system, which gave rise to several hundred classes of vegetation community. This gave rise to limited service areas and thin markets, a situation that was compounded by the requirement for an offset to be of equal or

⁴⁵³ *VPPs* cl 12,01 as amended by VC105 [emphasis added].

⁴⁵⁴ *Ibid* [emphasis added].

⁴⁵⁵ *Biodiversity Assessment Guidelines 2013*, *supra* note 424 at 5, 8.

⁴⁵⁶ *Ibid* at 18-19.

greater conservation significance than that of the project impact. The result was the limited fungibility of offset credits. This aspect of the native vegetation management program could be amply justified as reflective of the actual complexity and importance of native vegetation, and biodiversity more generally, to the Victoria landscape. However, each component is also a hurdle to easy, low-cost offset transactions, and collectively they detracted substantially from market function.

The Victoria Native Vegetation Exchange was a short-lived attempt to remedy this problematic situation by drawing on the power of economic theory and technology to compile bundles of credits differently to facilitate smoother trading. That tool, however, was mismatched with the market conditions, and Victoria's new government felt that deeper reforms were needed.

The recent reforms ease offset transactions by loosening many of the existing safeguards. Through heavy reliance on the State's NaturePrint program, the information cost of most transactions have been lowered and substantially shifted from program participants to the State. The expansion of the service area for credits from the EVC to the much larger catchment basin, brings much fatter markets, presumably facilitating better market operation and efficiency. This impact is primarily on those offsets required by low-risk projects, but those are the vast majority of transactions under the new system. This shift to increased fungibility, however, has come at the cost of detailed knowledge of the ecological importance of most transactions, and the careful matching of the features of the negative and positive impacts of development and offsets.

Regarding currency, Victoria's development of the "habitat-hectare" metric has been noted worldwide.⁴⁵⁷ The use of a habitat quality rating as a qualifier of area is a convenient, if

⁴⁵⁷ See, for example, Quétier & Lavorel, *supra* note 84; Joseph W Bull, et al, "Biodiversity Offsets in Theory and Practice" (2013) Fauna and Flora International, Oryx, 1; eftec & IEEP, *supra* note 25.

imperfect, means of deriving a metric capable of serving to compare impacts and offsets. While Victoria considers a particular list of ecosystem attributes that are reflective of the State's natural features, the system is capable of being tailored to other ecosystems by selecting other relevant features.

5.5.2. Additionality

Under both the former and new regimes, in order to qualify as permissible offsets, management measures must go further than existing requirements, whether such requirements be based on regulation or agreements. This baseline is based on what a landowner is required to do, rather than attempting to ascertain the subjective element of what he or she might actually do. The 2002 *NVMF* made clear that averting the loss of native vegetation was preferable to positive management actions to restore it. This was based on the theory that “natural is best.” This was reflected in those types of gains which were recognized as legitimate for offset credits. “Security gain” and “maintenance gain” are both forms of assuring that existing native vegetation continues to exist; the first by improved legal security, the second by preventing damaging activities. Even the category of “improvement gain” seems to focus on battling threats, as seen, for example, in its reference to the combatting of weeds. In both the existing and new systems of scoring, the use of revegetation is limited to sites of low significance.

5.5.3 Timing and Duration

The Victorian regime has consistently required that in order for offset measures to be recognized they must be secured in perpetuity. This takes the form of a requirement that a management agreement, authorized by statute, be registered on title of the offset property. The only exception to this, prescribed by the new *NV Gain Scoring Manual* is for first party general

offsets, in which case a statutory body is responsible for implementation. The policy commitment to perpetual arrangements is thus quite unambiguous.

The issue of the time lag between development impacts and the effectiveness of offsets has not been explicitly dealt with in the Victoria policy documents, but may be implicit in the use of multipliers.

5.5.4 Uncertainty and Risk Management

Both the old and new regimes in Victoria rely heavily on prescribed multipliers. In the existing regime these ranged from one to two. Under the current reforms the range will be from 1.5 to two, though the range is based on different factors than those applied previously.

Other risk management measures take the form of restrictions on activities seen as higher risk. For example, both existing and new regimes restrict the amount to which offset credit may be generated by revegetation, presumably due to its perceived unreliability.

5.6 Discussion

5.6.1 Values and Objectives

In one respect the Victorian case study provides an example of a jurisdiction wrestling with finding the “sweet spot” on the safeguard-fungibility continuum where the stewardship of natural values and ease of transactions and market operation might co-exist. Certainly the concerns described in the 2012 consultation document focussed on making the offset market work more smoothly, with less burden on users.

To characterize the 2013 reforms solely in that manner, however, overlooks their deeper significance. Rather, the reforms can be seen as a change in the fundamental perception of the value of biodiversity and its relationship to native vegetation. The assumption that all native vegetation contributes to (and therefore is a proxy for) biodiversity has largely been abandoned.

In the new regime the significance of native vegetation has to be established in each particular context. So too, it appears, has the notion that a concern for biodiversity encompasses the whole range of species and the ecosystems on which they are dependent. In the place of concern for all species we see a very targeted effort to protect rare or threatened plants and animals.

In Chapter Three I described how clarity of values and objectives is foundational for an offset system. I suggest that in Victoria the change in policy reflects a rethinking of just such values and objectives. In this, it is interesting to observe how an offset system can be adapted to serve quite different ends.

5.6.2 The Mitigation Hierarchy

The new loosening of the mitigation hierarchy for projects of low and medium risk is an unconventional move, contrary to offset theory as articulated by BBOP and earlier in this thesis. The conceptual reliance on the hierarchy is largely based on recognition of the risks and inadequacies of offsetting, at least as currently done. It is not clear whether Victoria's experiment with its alternative approach reflects a higher confidence in the ability to offset, or a lower priority accorded the conservation mission. There is little evidence of the former.

5.6.3 Public Land

Like the United States, Victoria's offset system contemplates the use of public land in offsetting. The 2012 public consultation document called for more work to be done to develop an "integrity framework" which would allow offsetting on public land "particularly where actions undertaken on public land may deliver high strategic benefits for rare or threatened species."⁴⁵⁸ Likewise, the *NV Gain Scoring Manual* of 2013 allows for offsetting on public land

⁴⁵⁸ Consultation Paper 2012, *supra* note 407 at 29.

to be done under an integrity framework, which does not currently seem to be available.⁴⁵⁹ This issue of how to use public land for offsetting thus seems to be an active one in Victoria.

5.6.4 Information Cost

Reliable offsetting requires a good deal of information, both about site conditions and general ecological knowledge. The cost of collecting and analyzing that information can be substantial. With the recent reforms Victoria decided to lift the burden of information cost from individual landowners, creating NaturePrint, a publically-provided information bank. This is supposed to ease both individual transactions and general entry in the offset market. It is an interesting contrast to the U.S. wetlands system, where bankers and in-lieu fee sponsors bear the cost of all studies on their proposed sites.

5.6.5 Dual Agency Responsibility

Like the United States, Victoria has relied on different agencies of government to handle conservation (including offset) policy formation and implementation. More specifically, the state Department of Environment and Primary Industries is responsible for the native vegetation policy. Through the *VPPs*, however, it is local and regional authorities that are responsible for considering development permit applications, including applications to clear native vegetation. As was noted by Webb, this division has not always led to the diligent application of the native vegetation policy. It may be that the more rigid assignment of roles and responsibilities found in the U.S. legislation is more effective in handling this situation.

5.7 Conclusion

In this chapter I have described how the basic planning provisions of Victoria's *Planning and Environment Act 1987* have been used in two quite different ways to advance particular notions of biodiversity conservation. While the merits of each perspective might be debated, the

⁴⁵⁹ *NV Gain Scoring Manual*, *supra* note 447 at 7.

case study illustrates how the tool of conservation offsets can be flexible to suit different types of objectives. Through the changes in the Victorian regime, however, certain strengths have been consistently exhibited. For example, the merit of the currency of habitat hectares has already been noted.

The next chapter deals with Alberta, where a regime of conservation offsets is still under development. In it I will address the research question in this thesis: what is required to give life to the conservation offset provisions of the *Alberta Land Stewardship Act*⁴⁶⁰ to enable an effective and efficient offset system to develop.

⁴⁶⁰ *Supra* note 8.

CHAPTER SIX

TOWARD A CONSERVATION OFFSET SYSTEM FOR ALBERTA

6.1. Introduction

In the four preceding chapters I have examined the concept of conservation offsets and the key issues to which the concept inevitably gives rise. The case studies of the use of offsets to manage and maintain wetlands in the United States and native vegetation in Victoria, Australia, have illustrated how the concept can be given life and administered. The case studies also exhibited a range of policy options, and some of the virtues and challenges of each.

In this final chapter I return to the central question of this work: what must the Province of Alberta do to develop a conservation offsets system which is both ecologically justifiable and economically and administratively efficient? I review the development to date of Alberta's policy toward conservation offsets. I then briefly review independent studies and recommendations aimed at the question. Next, I shall review the current state of Alberta law, and how it facilitates and hinders different aspects of the development of an offset system. Finally, I shall enumerate some options and recommendations for the province.

6.2 Policy Context

Over the last few years the Government of Alberta has made several policy statements indicating tentative interest in pursuing conservation offsets. Seminal to these was the 2008 *Land-Use Framework*.⁴⁶¹ After a general expression of interest in new land stewardship tools, including market-based instruments, the *Framework* states:

The following incentives will be further evaluated to identify their potential to be applied on both public and private lands:

⁴⁶¹ *Supra* note 1.

Land conservation offsets

Land conservation offsets are compensatory actions that address biodiversity or natural value loss arising from development on both public and private lands. Compensation mechanisms include restitution for any damage to the environment through replacement, restoration, or compensation for impacted landscapes.⁴⁶²

The *Framework* was given legal significance with the passage of the *Alberta Land Stewardship Act*⁴⁶³ in 2009, which included specific provisions enabling conservation offsets.⁴⁶⁴

Those provisions will be examined in detail momentarily.

Building on the *Framework* and *ALSA*, a series of important policy documents have expressed interest in offsets. The 2009 oil sands strategy, *Responsible Actions: A Plan for Alberta's Oil Sands*,⁴⁶⁵ contains, as part of its strategy to develop the oil sands in an environmentally responsible way, an objective of increasing conservation and protected areas as a vehicle for protecting biodiversity. It lists as one means to do that:

1.3.1. Establish a conservation offset program to secure high-value conservation lands in the oil sands regions and throughout Alberta to support provincial biodiversity, wetland and environmental management objectives.⁴⁶⁶

The *Lower Athabasca Regional Plan* (LARP) commits to the development of an “integrated, watershed-based landscape management plan for public land in the Green Area in the region by the end of 2013.”⁴⁶⁷ This landscape management plan is proposed to include:

Landscape planning to achieve the most desirable scenario and required biodiversity targets. Plan implementation will guide future decision-making based on application of the most effective policy instruments, including zoning, standards and *consideration of the potential role of conservation offsets*.⁴⁶⁸

⁴⁶² *Ibid* at 34 [emphasis in original].

⁴⁶³ *Supra* note 8.

⁴⁶⁴ *Ibid*, s 45-47.

⁴⁶⁵ Government of Alberta, *Responsible Actions: A Plan for Alberta's Oil Sands* (np: Government of Alberta, 2009) online: Alberta Energy <<http://www.energy.alberta.ca/Initiatives/3223.asp>>.

⁴⁶⁶ *Supra* note 17 at 19 [footnote defining conservation offset omitted].

⁴⁶⁷ *Ibid* at 45. At the time of writing (July 2014) the plan has not yet been released.

⁴⁶⁸ *Ibid* at 45 [emphasis added]. It is interesting to note that this reference applies specifically to public land in the region, given that the application of offsets to public land is one of the most vexing issues with which Alberta must contend, as discussed further below.

The LARP also makes reference to the development of a new provincial wetland policy, which is to explore, among other tools, “an off-set [*sic*] program delivered through wetland mitigation banking.”⁴⁶⁹ That policy was released in September of 2013.⁴⁷⁰ While the wetland policy is largely based on the idea of offsetting disturbances to wetlands and wetland functions, it has no clear measurable goal. It prescribes the mitigation hierarchy, and gives developers the option of paying an in-lieu fee to a “wetland agency” to undertake project-specific offsets. Notably, it does not specifically provide for wetland banking, though that may be still under development.⁴⁷¹

The South Saskatchewan Regional Plan commits to an evaluation of an offset pilot program in Southeast Alberta that has been underway for the past couple of years (see below) and to consideration of the use of voluntary conservation offsets as a means to manage linear disturbance.⁴⁷²

In addition to these official expressions of interest in policy documents, the Alberta government has commissioned a series of studies by arms-length advisory groups on conservation offsets and other market-based instruments. Shortly after the release of the *Framework* the government formed the Institute for Agriculture, Forestry and the Environment (IAFE), and commissioned it to provide recommendations on advancing MBIs in Alberta. After extensive study, including an international workshop, IAFE produced a series of reports,

⁴⁶⁹ *Ibid* at 28. Alberta’s wetland policy, including many aspects of conservation offsets, has developed separately from the Province’s main conservation offset system. Because it has had its own timeline and dynamics, I have chosen not to deal with it in this thesis. The new wetland policy was released in September 2013

⁴⁷⁰ Alberta Government, *Alberta Wetland Policy* (np: Alberta Government, 2013) online: Water for Life <http://www.waterforlife.alberta.ca/documents/Alberta_Wetland_Policy.pdf>.

⁴⁷¹ My blogged commentary on the conservation offset aspects of the policy may be found at Dave Poulton, “Alberta’s New Wetland Policy as a Conservation offset System” (25 September 2014): ABlawg.ca (blog) online: <<http://ablawg.ca/2013/09/25/albertas-new-wetland-policy-as-a-conservation-offset-system/>>.

⁴⁷² *Supra* note 18 at 74-75, 135,137.

including an Ecosystem Services Market Policy Framework, which recommended the exploration of an offset instrument, among other MBIs.⁴⁷³

In 2011 the agency responsible for the implementation of the *Framework* commissioned Alberta Innovates Technology Futures (AITF) to carry out modelling of the ecological and economic impacts of various offset scenarios in the boreal forest. While several scenarios were examined, the modelling indicated that an offset system based primarily on positive management actions (what the authors called “reclamation offsets”) would have the largest negative impact on economic activity, but one based upon averted losses would cause minimal economic disruption but produce substantial ecological benefits.⁴⁷⁴ While the study used a coarse filter approach to offset service area, it did recognize that a finer grain approach may be needed for some species.⁴⁷⁵

The IAFE work was also followed by the development, by Alberta Innovates Bio Solutions, of an *Ecosystem Services Roadmap*, which recommended two “proofs of concept” (i.e., pilot projects) to test the operation of conservation offset systems, and to build stakeholder and community understanding of the concept and its operation.⁴⁷⁶ It recommended such proofs of concept in the Lower Athabasca and South Saskatchewan regions in the timeframe 2012-2017.⁴⁷⁷

⁴⁷³ Institute for Agriculture, Forestry and the Environment, *Ecosystem Services Market Policy Framework: Integrated Solutions for Greening Alberta’s Growth* (Edmonton: Institute for Agriculture, Forestry and the Environment, 2010) (copy on file with author).

⁴⁷⁴ Marian Weber et al, *Experimental Economic Evaluation of Offset Design Options – Research Report* (np: Alberta Innovates Technology Futures, 2011); Weber, *supra* note 127.

⁴⁷⁵ Weber et al, *supra* note 474 at iii.

⁴⁷⁶ Alberta Innovates Bio Solutions, *Ecosystem Services Roadmap “A Pathway to Innovation and Competitiveness”* Version 11 (Edmonton: Alberta Innovates Bio Solution, 2012), online: Alberta Innovates Bio Solutions <http://bio.albertainnovates.ca/media/45788/es_roadmap_v11_may_30_12.pdf>. Alberta Innovates Bio Solutions is an arm’s length research agency funded by the Alberta government: <<http://bio.albertainnovates.ca>>.

⁴⁷⁷ *Ibid* at 26-27.

Such a pilot project has been developed in the South Saskatchewan region, focussing on grasslands in southeast Alberta. In an area near Manyberries, Alberta Agriculture and Rural Development is testing the use of habitat offsetting to encourage landowners to convert marginal cropland to native perennials. Landowners would be paid to undertake such a conversion from a fund financed by contributions from those industrial operators responsible for impacts to native grassland. The offset obligations of each operator are determined by an assessment of their direct impact (actual physical footprint) plus indirect impacts such as roads, noise, and height of structures.⁴⁷⁸

This pilot has confronted many of the issues common to conservation offset systems, as discussed throughout this thesis. These include:

- The conceptualization of a target state of the ecosystem, in the absence of the natural disturbance of wildfire;
- The development of an appropriate currency, sufficiently detailed to capture particular native plant communities;
- The need to render the different impacts of different industries comparable for purposes of assessing offset obligations;
- The advisability of a like-for-like approach;
- The duration of offsets (as many landowners have proven reluctant to accept perpetual management prescriptions, and some of the industrial disturbances are seen by participants as temporary);

⁴⁷⁸ Interview with Tom Goddard, Senior Policy Advisor, and Karen Raven, Agricultural Land Use Specialist, Alberta Agriculture and Rural Development, Environmental Stewardship Division (Edmonton, April 5, 2013). The height of structures is significant because they serve as perches for raptors, allowing for increased predation on ground-dwelling species, including the sage grouse which is a major concern in the area and of the project. This is a good illustration of the general point that the target value of an offset program will play an important part in defining the specific factors to consider in designing its currency and other measures.

- The use of multiplier ratios;
- The potential conflict with sub-surface mineral leasing on lands used for offsets;
- The comparison of offset value between positive management actions (conversion of cropland to native perennials) and averted losses (protection of native grasslands).⁴⁷⁹

At least one industry participant in the pilot has expressed the view that progress on these issues has been hindered by the lack of a larger provincial policy context.⁴⁸⁰

6.3 Independent Studies and Recommendations

Stimulated by the prospect of a conservation offset tool for Alberta, scholars and stakeholders concerned with land stewardship have produced a series of studies and recommendations respecting how an offset system may work in the province.

Among the most widely noted of these was a 2008 report by Simon Dyer *et al*, entitled *Catching Up: Conservation and Biodiversity Offsets in Alberta's Boreal Forest*.⁴⁸¹ The focus of the Dyer report was the conservation of natural values in the boreal forest, particularly in the Regional Municipality of Wood Buffalo. Commenting that the notion of biodiversity offsets was not widely known or supported in Alberta, the report reviewed the concept and the various mechanisms which might be used to drive offset supply (voluntary offsets, regulatory offsets with and without banking, and a cap and trade system of land disturbance rights⁴⁸²). Dyer and co-authors interviewed a series of stakeholders and found that they favoured a system of regulatory offsets with banking instituted in advance of development, for reasons of efficiency of operation and the ecological benefits of large offset banks. The report also recommended the articulation of a set of principles that largely correspond to those discussed in this thesis.

⁴⁷⁹ *Ibid.*

⁴⁸⁰ Interview with Andy Edeburn, Director, Environment, AltaLink (Calgary, April 30, 2013).

⁴⁸¹ Dyer, *supra* note 64.

⁴⁸² The cap and trade system described by Dyer *et al* is largely based on Marian Weber & Wiktor Adamowicz, "Tradable Land-Use Rights for Cumulative Effects Management" (2002) 28:4 Canadian Public Policy 581.

Catching Up was referred to in the letter of the Oil Sand Leadership Initiative, sent to the Alberta government in 2009, which also recommended a regulated system of conservation offset banking.⁴⁸³ The OSLI letter listed a set of “key attributes” of such a system including that it complements other measures (such as conservation areas) to contribute to land-use objectives, that it respect aboriginal rights and existing property rights, that it be cost-effective, and that it be flexible, though transparent and accountable.⁴⁸⁴ The letter also cautioned against a system which had rigorous like-for-like requirements (including a rigorous process for determining equivalency) or fixed rules requiring offsets to be adjacent to the location of the disturbance.⁴⁸⁵

Catching Up was also the stimulus for the formation of the Alberta Boreal Conservation Offsets Advisory Group (ABCOAG) in 2009. This was an *ad hoc* working group of industry, conservation organizations and First Nations, formed to advise the Alberta government on the development of a regulated conservation offset system based upon banking.⁴⁸⁶ The ABCOAG followed the general direction of *Catching Up* and the OSLI letter, but went into greater detail on the details of the policy framework, and made more detailed recommendations, such as constraints on the range of multiplier ratios that might be applied⁴⁸⁷ and statutory amendments which would give priority to surface conservation measures at offset sites over sub-surface

⁴⁸³ Letter from the Oil Sands Leadership Initiative (August 25, 2009) to Mr. Eric McGhan, Deputy Minister, Alberta Sustainable Resource Development [unpublished, on file with author]. According to its website, OSLI “was a collaborative network of six like-minded oil sands developers who aspired to pilot and pioneer collaborative methods focussed on accelerating environmental, social and economic performance” in the development of Alberta’s oil sands: online: Oil Sands Leadership Initiative <<http://www.osli.ca>>. It has been succeeded by Canada’s Oil Sands Innovation Alliance: online: Canada’s Oil Sands Innovation Alliance <<http://www.cosia.ca>>.

⁴⁸⁴ *Ibid* at 3.

⁴⁸⁵ *Ibid*.

⁴⁸⁶ Alberta Boreal Conservation Offsets Advisory Group, *Regulated Conservation Offsets with Banking: A Conceptual Business Model and Policy Framework* (2009) [unpublished, on file with author].

⁴⁸⁷ *Ibid* at 23.

mineral development.⁴⁸⁸ The ABCOAG's report went on to explore and recommend a model for an exchange in offset credits.⁴⁸⁹

A similar set of recommendations was put forward in 2011 by the Alberta Conservation Association. Subtitled *A Working Framework for Albertans* the ACA paper recommended a conservation offset banking system based upon the equivalency within "ecosites." "Ecosite" is a forestry term meaning "functional ecological units which developed under similar environmental influences and are based on the interaction of biophysical factors which indicate the availability of moisture for plant growth."⁴⁹⁰ Like Dyer *et al.*, OSLI, and the ABCOAG, the ACA recommends a banking system based on a coarse-filter approach to equivalency, with a preference for like-for-like, and constrained multiplier ratios (though the extent of those ratios varies among these sources). It also recommends that offset measures be permanent.⁴⁹¹

Finally, Thomas J. Habib and co-authors focus on the advantages to Alberta in a system which is flexible in the application of like-for-like, preferring the use of strategic ecological targets to set offset priorities.⁴⁹² They assess the costs of an offset program in the oil sands region of Alberta, measured in terms of likely compensation to resource tenure holders (based on resource value) and the estimated cost of restoration. They compare these costs as applied to a like-for-like compensation program based on vegetation types, with a strategically targeted compensation program focussing either on the dry mixedwood ecological sub-region or on the woodland caribou, both elements under threat from regional developments, including the development of the oil sands. They carry this comparison further to consider the costs of each

⁴⁸⁸ *Ibid* at 24.

⁴⁸⁹ *Ibid* at 27.

⁴⁹⁰ Alberta Conservation Association, *Conservation Offsets: A Working Framework for Alberta* (Sherwood Park: Alberta Conservation Association, 2011) online: Alberta Conservation Association <<http://www.ab-conservation.com/go/default/assets/File/Publications/ACA%20Conservation%20Offsets%20Framework%20Aug%202011.pdf>>.

⁴⁹¹ *Ibid*.

⁴⁹² Habib, *supra* note 109.

scenario under both a requirement of offsetting within the same vegetation type, or a more permissive approach which would allow offsetting in dis-similar vegetation types. The currency used for this comparison is “impact-adjusted area”, a metric designed by the Alberta Biodiversity Monitoring Institute, similar to the habitat-hectares developed in Victoria.⁴⁹³ They found that the requirement of offsetting in the same vegetation community would dramatically increase the costs of the posited offset programs (though the greatest component of this was driven by a few very expensive regional vegetation types).⁴⁹⁴

In reviewing this series of independent studies and recommendations, one is struck by the degree of consensus as to the essential elements of a conservation offset program for Alberta. In particular, these works are near universal in their preference for a coarse filter approach to equivalency and the definition of trading areas.

Dyer *et al* note that for their purposes, the objective of using biodiversity offsets in the Regional Municipality of Wood Buffalo is to conserve or enhance the ecological functions of the boreal forest as a whole, and that this allows for some flexibility in application of the offset concept at a regional scale.⁴⁹⁵ They further note that their interviewees generally favoured a coarse filter approach to offsetting.⁴⁹⁶ Likewise, OSLI recommends that offsets be restricted to the same natural sub-region, but that finer equivalency rules be avoided as a complicating the offset process and adding to transaction cost.⁴⁹⁷ This recommendation was echoed by ABCOAG, at least for the beginning of an offsets system.⁴⁹⁸ Likewise, the AITF ecological and

⁴⁹³ For more on this metric see Alberta Biodiversity Monitoring Institute, *supra* note 100.

⁴⁹⁴ Habib, *supra* note 109 at 1319.

⁴⁹⁵ Dyer, *supra* note 64 at 16.

⁴⁹⁶ *Ibid* at 15.

⁴⁹⁷ OSLI, *supra* note 483 at 3.

⁴⁹⁸ ABCOAG, *supra* note 486 at 10. In a slightly different approach to this question, Richard R. Schneider has argued, in an unpublished paper for selecting conservation areas in Alberta’s boreal region, and then using a fund established on offset principles to fill the gaps in representation resulting from the coarse filter approach: Richard R.

economic monitoring found the coarse filter approach satisfactory, though with the reservation that a finer grain approach may be needed for certain species.⁴⁹⁹

Such an approach makes sense if one accepts Dyer's premise that the purpose of an offset system is to maintain broad boreal ecosystem functions and values. After all, many of the attributes of the boreal forest are abundant over a very large landscape and it would be unwise from an economic perspective to expend effort and resources meticulously replicating very common features on a local or regional scale. Indeed, this is the point of Habib's analysis. Conversely, Habib's recommendation against a like-for-like standard in the oil sands region, is supported more passively by Dyer and OSLI. ABCOAG also argues that in the boreal forest Alberta should depart from like-for-like in pursuit of land-use goals established by policy.

Because so many of the prior studies have focussed on the boreal forest and the oil sands region, it would be easy to assume that these recommendations might apply to the whole of Alberta. That would be a mistake, as many of Alberta's natural regions and subregions are smaller, more imperiled, and are more localized in Alberta than is the boreal forest. It may well be, for example, that in the headwaters and foothills of the eastern slopes of the Rockies or in the native grasslands in the southeast of the province that a like-for-like approach may be more highly commended. This is one example of the caution that must be exercised in designing a general offset system based on the characteristics of only one part of the province. One form of flexibility which must be built into a general system is the flexibility to be strict under appropriate circumstances.

Schneider, "An Integrated Planning approach for Selecting Conservation Offsets in Northern Alberta" (2011) [unpublished, copy on file with author].

⁴⁹⁹ Weber et al, *supra* note 474.

6.4 Legal Framework

In a well-developed legal system, with established notions of land use planning, permitting, property and contract, very little extra legal architecture is needed to facilitate basic first party conservation offsets. Voluntary environmentally-beneficial measures may proceed on the same basis as any other land alteration or acquisition, which may or may not be subject to regulatory oversight depending on its nature. Assuming that the development project is regulated in some manner, one hopes that the responsible regulator recognizes the link between the development and the offset activity, and gives credit for the latter, but neither recognition nor credit are necessary. This is particularly so if the main motivation is to protect a reputation or enhance social license, neither of which are usually based in regulation.

For regulators to require offsets from development proponents on individual applications, they need only have the authority to impose conditions on the permits they may issue. There is little doubt that the major resource regulators in Alberta hold such authority. The Alberta Energy Regulator, in exercising its duty to consider and decide applications respecting energy developments and their environmental implications, may “take any action and may make any orders necessary to carry out the mandate of the AER and the purposes of [the *Responsible Energy Development Act*].⁵⁰⁰ The mandate of the AER is “to provide for the efficient, safe, orderly and *environmentally responsible* development of energy resources”⁵⁰¹ and to regulate the *protection of the environment*.⁵⁰² Further, with respect to *ALSA* the AER is not only directed to act in accordance with a regional plan, but has the authority to order or direct an applicant to

⁵⁰⁰ *Responsible Energy Development Act*, SA 2012, c R-17, s 14(2).

⁵⁰¹ *Ibid*, s 2(1)(a) [emphasis added].

⁵⁰² *Ibid*, s 2(1)(b) [emphasis added].

comply with a regional plan.⁵⁰³ This authority could be key if regional plans begin to include directions respecting the use of conservation offsets or other MBIs.

The general authority of the AER is reinforced with respect to oil sands development by the *Oil Sands Conservation Act*.⁵⁰⁴ Among the purposes of the statute is “to ensure orderly, efficient and economical development in the public interest of the oil sands resource of Alberta”⁵⁰⁵ and the AER is authorized to “make any just and reasonable orders or directions that it considers to be necessary to effect the purposes of this Act.”⁵⁰⁶ I suggest that these powers are more than sufficient to allow the AER to require a conservation offset as a condition of an energy development before it.

One of the other major resource regulators in the Province is equally empowered. The Natural Resources Conservation Board in considering development applications within its ambit may “grant an approval on any terms and conditions that the Board considers appropriate.”⁵⁰⁷ This authority is to be used for the purpose of determining whether “projects are in the public interest, having regard to the social and economic effects of the projects and the effect of the projects on the environment”⁵⁰⁸ and in accordance with a regional plan under *ALSA*.⁵⁰⁹ Again, this authority appears to be sufficient to allow an approval conditioned upon a conservation offset.

We have seen several examples of the exercise of jurisdiction in this way in recent decisions from a variety of Canadian and Alberta regulators, some of which were reviewed in Chapter 2.

⁵⁰³ *Ibid*, s 20.

⁵⁰⁴ RSA 2000, c 0-7.

⁵⁰⁵ *Ibid*, s 3(b).

⁵⁰⁶ *Ibid*, s 6.

⁵⁰⁷ *Natural Resources Conservation Board Act*, RSA 2000, c N-3, s 9(1)(a)

⁵⁰⁸ *Ibid*, s 2.

⁵⁰⁹ *Ibid*, s 2.1.

Predictability, efficiency, and environmental outcomes will all, however, likely be better served if a clear policy framework guides such regulatory decisions. We have seen that in the U.S. with the large number of policy and guiding documents on wetland offsets, starting with the 1990 MOA and operational until the regulatory changes brought into force in 2008. In Victoria, such guidance was provided by the *NVMF* and its accompanying documents from 2002 to 2013, and will now be provided by the *Biodiversity Assessment Guidelines*. One might also consider how the Canadian federal fish habitat compensation program relied upon policy documents until the statutory amendments that came into force last year.

These examples all illustrate how a workable offset system may operate upon a quite simple legal foundation, providing sufficient guidance is found in policy. In Alberta that legal foundation, the ability to impose conditions on development permits, already exists with respect to the regulators of virtually every development activity. Little if any modification of Alberta law is therefore required to build a functioning system reliant upon project-specific permittee responsible offsets.

The picture becomes somewhat more complex if one seeks to establish a system of third party banking and trading of offsets. Confidence in the durability and stability of the system is a requirement if potential bankers are to be induced to invest in the conservation work to produce offset credits. If such actors perceive a significant risk that the credits they produce will not be recognized, or will find no market demand because of an unreliable regulatory regime, then they will be discouraged from participating in the new market. Further, if offset credits are to be the object of trading, then they must have some status as property, and must be an appropriate object for contractual relations. Both factors suggest that a fairly high level of legal rigour must

precede the development of a third party offset market, perhaps requiring the certainty of legislation.

An interesting lesson from the American and Victorian case studies, however, is how little legislation was required to provide reasonably vibrant markets. The U.S. wetlands system developed banking and in-lieu fees, in addition to permittee-responsible offsets, on the strength of the minimal provisions of Section 404 of the *Clean Water Act* and policy guidance. No formal regulation was adopted until the reforms of 2008. Yet in the meantime, hundreds of wetlands banks were established, and their credits traded in the marketplace.

Victoria's native vegetation system has relied upon the very high level provisions of the *Planning and Environment Act* and its referral to the *Victoria Planning Provisions*. While the *VPPs* refer to offsets, the actual substance of the terms has come from the *NMVF* and the new *Biodiversity Assessment Guideline*, both policy documents of relatively weak legal status. While not at the same scale as in the U.S., this has incited the production of native vegetation credits and their exchange in the marketplace. In both cases, then, mere policy created enough confidence to allow people to create and enter a market.

Notwithstanding that experience, stability and confidence can likely be developed more quickly and directly through the use of regulation to clarify and secure certain key aspects of a desired offset regime in Alberta. Those aspects would include the legitimacy of applying conservation measures to compensate for the adverse impacts of development and the legitimacy of applying credits produced by, and acquired from, third parties. The latter implicitly recognizes rights of property and contract with respect to the credits.

In Alberta these aspects of an offset regime are amply provided for, or enabled, by Part 3, Division 4 (s. 45- 47) of *ALSA*.⁵¹⁰ (The relevant provisions of *ALSA* are excerpted in Appendix V.) This Part enables regulation dealing with many aspects of land stewardship, including many aspects that go beyond the concept of offsetting as I have described it in this work.

One key concept set out in Part 3 is the “stewardship unit.” Though not meaningfully defined,⁵¹¹ many of the optional characteristics of a stewardship unit are set out. The list is broad and suggests that such units are likely to be heterogeneous. Stewardship units may come in different classes or types, apparently without limitation.⁵¹² Among the attributes that may be described by regulation for each class or type is “whether the type or class of stewardship unit is one of benefit or obligation, or both.”⁵¹³ Therefore, any given type or class of stewardship unit may function as a credit or a debit, in offset and currency terms. One of the functions which may be assigned to stewardship units by regulation is to act as a currency for purposes of compensation, which may be carried out by “replacing, providing, acquiring, using or extinguishing stewardship units as described in regulations. . . .”⁵¹⁴

Such compensation is only one allowable form of “counterbalance.” This broader term is somewhat confusing in that it includes such diverse matters as “avoiding, limiting or mitigating” an adverse effect,⁵¹⁵ “minimizing the impact of an activity,”⁵¹⁶ rectifying or reducing an adverse effect,⁵¹⁷ reducing or eliminating an adverse effect over time,⁵¹⁸ the application of a multiplier

⁵¹⁰ *Supra* note 8, s 45 – 47.

⁵¹¹ The definition of “stewardship unit” contained in section 2 of *ALSA* states merely that it “means a unit created or authorized under section 46.” *Ibid* s 2(dd).

⁵¹² *Ibid* s 46(c).

⁵¹³ *Ibid* s 46(d)(ii).

⁵¹⁴ *Ibid* s 47(2)(e).

⁵¹⁵ *Ibid* s 47(2)(a).

⁵¹⁶ *Ibid* s 47(2)(b).

⁵¹⁷ *Ibid* s 47 (2)(c).

⁵¹⁸ *Ibid* s 47(2)(d).

ratio to a counterbalancing requirement,⁵¹⁹ the encouraging of voluntary offset measures,⁵²⁰ or a requirement respecting the timing of an action.⁵²¹

It is clear from this list that the concepts of “counterbalance,” “compensation” and “offset” are quite distinct in *ALSA*. From the above list, we can surmise that “compensation” is a sub-set of “counterbalance,” one which relies on the application of stewardship units. “Offset” is a more obscure term in the *Act*, being only used once in the text,⁵²² to refer to voluntary measures. That provision says:

47(2) In this section, “counterbalance” includes

...

(g) encouraging voluntary measures to *offset* an activity by committing, without limitation, to additional restoration, reclamation or mitigation, the acquisition of land, the establishment of a conservation easement or the donation of an actual or in-kind, financial or other resources;⁵²³

This appears to refer to an array of measures which may go well beyond offsets as I have considered them in this work.

It is not necessary for my purposes here to explore all the possible complexities of Part 3 of *ALSA*, nor to resolve any of the tensions or inconsistencies which may be hidden within them. Rather, it should simply be noted that Part 3 amply allows for whatever regulation may be necessary to give effect to a conservation offset scheme. It is to be hoped that any such regulations that are developed will be more clearly focussed than the *Act*. I therefore turn now to the central question of this thesis: what ought Alberta policy or regulations contain in order to provide for an optimally effective and workable conservation offset regime? I will consider this

⁵¹⁹ *Ibid* s 47(2)(f).

⁵²⁰ *Ibid* s 47(2)(g).

⁵²¹ *Ibid* s 47(2)(h).

⁵²² The hyphenated “Conservation Off-set Programs” is used as the title for s 47, and in the title for Part 3, but this is not considered to be a legally significant part of the statute.

⁵²³ *Ibid* s 47(2)(g) [emphasis added].

question by addressing the same issues which I have examined on a recurring basis throughout this work.

The provisions of *ALSA* discussed above are oriented to the development of a conservation offset regime. There are other aspects of law, however, which have more general application, which will tend to facilitate conservation offsets, or hinder them, and it is to these which I now turn.

One legal tool which is extremely helpful in establishing durable and credible conservation offsets, regardless of the driver of the offset, is conservation easement legislation. Easements for conservation purposes are not recognized in common law, but legislation providing for them is common, particularly in North America. Alberta is well-served in this regard by the conservation easement provisions of *ALSA*, which allow a qualified organization (essentially a government agency or not-for-profit organization with the appropriate objects) to hold an interest in land for the “protection, conservation, and enhancement” of the environment, scenic or esthetic values, or agricultural purposes.⁵²⁴ These provisions allow offset actions to be secured on the title of private lands (though, as discussed in Chapter 3, not without some vulnerability).

The availability of this tool on private lands draws attention to the lack of any such tool on public lands. In Alberta approximately sixty percent of land is public, and many of the most intrusive and most controversial resource developments take place on public lands. This includes the development of the oil sands and the majority of the province’s forestry industry. On these lands there is no tool whereby a private party can restrict future development options so as to secure the benefits of an offset measure. This is a serious obstacle to the implementation of

⁵²⁴ *Ibid* s 29.

offsets on the majority of Alberta's land. This is an issue to which future research and policy reform might be directed.

Another aspect of public resource management which might undermine an offset policy is the treatment of sub-surface resources. With mineral rights allocated without regard to the intended management objectives of the surface, the security of surface offset measures will often be subject to an incompatible minerals disposition.

These aspects of public resource law and policy are long-standing and contribute to the foundation of the modern Alberta economy. Reforming them no doubts carries many implications beyond their impact on conservation offsets. Nevertheless, the corrosive effects of these doctrines should be squarely faced and addressed by future policy-makers.

6.5 Key and Recommended Components for an Alberta Offset System

6.5.1 Ecosystem Objectives

The establishment of a quantifiable and verifiable ecosystem objective is essential to the establishment of a workable offset system. This may be a simple "no net loss" goal, a positive statement of a desired future state or a threshold below which environmental degradation will not be allowed. The important aspect is that the amount a given activity contributes to or detracts from the objective is determinable with some certainty. It is the objective which gives a rationale to the requirement of offsetting, as well as a means of determining the nature and extent of offset obligations.

The need for ecosystem objectives has been pointed to many times, including in recommendations to the Government of Alberta.⁵²⁵ It is reflected, somewhat weakly, in *ALSA* in the requirement that every regional plan must contain a vision and one or more objectives.⁵²⁶

⁵²⁵ IAFE, *supra* note 473 at 3; Alberta Innovates Bio Solutions, *supra* note 476 at 8; Dyer, *supra* note 64 at 14.

⁵²⁶ *Supra* note 8 s 8(1).

The setting of thresholds or indicators is optional, however.⁵²⁷ In one completed regional plan, the Lower Athabasca Regional Plan, approved and released in August 2012, the development of a biodiversity management framework containing targets and thresholds was deferred to be released by the end of 2013,⁵²⁸ as was the related landscape management plan intended to spur landscape-scale management of cumulative effects.⁵²⁹ As of the time of this writing in May 2014, these documents have not been released and are not expected for several months. Similarly, the recently released South Saskatchewan Regional Plan commits only to the development of a biodiversity management framework and a related linear footprint management plan by the end of 2015.⁵³⁰

As noted above, the new *Alberta Wetland Policy* offers little positive in terms of a specific objective.⁵³¹ Rather, its stated objective is to “minimize the loss and degradation of wetlands, while allowing for continued growth and economic development in the province,”⁵³² hardly something capable of precise measurement.

This absence, or perhaps avoidance, of measurable landscape objectives is a serious obstacle to any offset system development in Alberta.

6.5.2 Equivalency, Fungibility and Currency

The prescription of an ecosystem objective should provide a statement of ecosystem values which can act as a framework for the development of concepts of equivalency. As discussed in Chapter Three, the concept of equivalency has two related aspects: similarity and currency.

⁵²⁷ *Ibid* s 8(2)(b)-(c).

⁵²⁸ *Supra* note 17 at 45.

⁵²⁹ *Ibid*.

⁵³⁰ *Supra* note 18 at 116.

⁵³¹ *Supra*, note 470.

⁵³² *Ibid*, at 2.

The degree of similarity required between the impact and the offset will define the scope of the service area. Several scales of land classification have been used for natural resource management in the past in Alberta. At the coarsest scale, the province has long been divided into six natural regions (example: boreal forest) and twenty-one sub-regions (example: dry mixedwood).⁵³³ This classification has been used to set representivity targets for Alberta parks and protected areas system.⁵³⁴ This system is part of a hierarchy of classification which breaks down to quite a high level of detail at “level 1 themes.” At this level the dry mixedwood natural subregion is broken down into components such as “non-sandy upland - hummocky moraine.”⁵³⁵ A wide range of classifications are thus well-established and, when combined with proximity, may serve to define service areas. As discussed in Chapter Three, the greater the level of detail required, the fewer candidate offset sites will be available, and the more restricted the fungibility of the currency.⁵³⁶

As Salzman and Ruhl noted, the currency should be carefully designed to reflect the underlying values of the system. The form of the currency will likely be the “stewardship unit” that is prescribed in section 46 of *ALSA* and discussed above. The substance which is to be breathed in the concept, however, will be key. To be functional it must reflect the ecosystem objectives and the values they represent, be practically measurable, and be specific enough to capture particular ecosystem assets or functions, but general enough to be easily fungible.

⁵³³ Alberta, Natural Regions Committee, *Regions and Subregions of Alberta* (Edmonton: Government of Alberta, 2006), online: Alberta Parks <http://albertaparks.ca/media/2942026/nrsrcomplete_may_06.pdf>.

⁵³⁴ Peter L Achuff, *Natural Regions, Subregions and Natural History Themes of Alberta: A Classification for Protected Areas Management*, updated and revised (np: Alberta Environmental Protection, 1994); Peter Achuff & Cliff Wallis, *Report 3 Natural Regions and Natural History Themes: Targets for Alberta* (Edmonton: Alberta Parks Service and Alberta Forestry, Lands and Wildlife, 1992).

⁵³⁵ *Ibid* at 47.

⁵³⁶ Interestingly, Weber et al found in their experimental modelling of offset options for Alberta that “[t]he costs of imposing additional geographic constraints on offset trades in order to better address the equivalence between gains and losses are low”: *supra* note 474 at iii.

In considering the issues of equivalency, it should be remembered that it has been suggested, most notably by Habib *et al*, that Alberta should not pursue a like-for-like goal for offsets. If, as these authors suggest, Alberta would be better counseled to pursue strategic ecosystem objectives, then those objectives will point to answers to the issues of equivalency.

6.5.3 Additionality

A proponent or regulator must determine which interventions in the ecosystem are ecologically meaningful and additional, so as to contribute to the offset objectives. In the case of a bespoke project, whether voluntary or regulator-ordered, this work may have to be done on a customized basis, reflecting the particular ecological circumstances and goals. This is unwieldy, however, if offsetting is to be expected as a regular part of development permitting.

In that case, it will be highly advantageous to have a clear framework of recognized actions, which proponents can undertake and regulators can monitor. Such protocols should include a clear prescription for action, expected ecological outcomes and the rationale therefore, and a formula for the calculation of offset credits. A clear set of such protocols will give proponents some certainty that the prescribed actions will in fact be recognized and credited. It will also give regulators a clear set of variables to monitor against expectations.

The actions prescribed by protocols will necessarily be more generic than those that might be designed for a bespoke system. The loss of ecological value which might be caused by this departure from the consideration of the ecological particularity of each situation will, it is hoped, be compensated for by the extra activity encouraged by an efficient offset system. Alberta has developed a set of protocols for its Specified Gas Emitters Regulation respecting carbon

management.⁵³⁷ Several of these relate to land use, particularly agricultural methods. These might be used as a starting point, at least in form, for the development of conservation offset protocols.

The development of protocols is one means of shifting the burden (and risk) of knowledge collection from individual proponents to the offset system itself. We have seen that in Victoria, concern with the proponent's burden of collecting data through site inspections, was one factor addressed in policy reforms of 2013. The State's development and operation of NaturePrint relieved proponents of that burden. The development of NaturePrint also served to provide an easy reference for land use planning, and for the placement of offset projects.

Alberta is well-situated to provide a similar service for planning of development and conservation in its landscape. For several years the Alberta Biodiversity Monitoring Institute⁵³⁸ has been systematically collecting data on the status and distribution of the province's species. As well, the new Alberta Environmental Monitoring Evaluation and Reporting Agency, established by the *Protecting Alberta's Environment Act*⁵³⁹ will supplement this underlying capacity. In considering these sources, however, it is important to note that they must be functional in an offset system or be adapted to be so, rather than the offset system being adapted and compromised to fit information and templates developed for other purposes.

If these information sources provide a foundation of knowledge for offset planning, it is at least as important to have a clear record of the outcomes from offset activities. This includes a process for the verification that necessary actions are in fact properly taken, and the expected results yielded. Expert third parties should play that role. Training and accreditation of such

⁵³⁷ The protocols, as well as protocol templates and guidance documents, may be found online: Carbon Offset Solutions, "Alberta Offset System – Approved Quantification Protocols and Guidance" online: Carbon Offset Solutions <<http://carbonoffsetsolutions.climatechangecentral.com/offset-protocols/approved-alberta-protocols>>.

⁵³⁸ Online: Alberta Biodiversity Monitoring Institute <<http://www.abmi.ca/abmi/home/home.jsp>>.

⁵³⁹ SA 2013, c P26.8.

experts should be established, perhaps taking advantage of existing institutions such as the Alberta Society of Professional Biologists, the College of Alberta Professional Foresters, or the Alberta Institute of Agrologists, and linking to the designations that they already offer.

The tracking of outcomes must also go beyond the project level to monitor and measure progress toward landscape objectives. It is at this level that the true value of an offsets system will be determined. Because of the interest of system administrators in demonstrating success, this monitoring function should be carried out by an independent third party. Candidates might include the Alberta Biodiversity Monitoring Institute or the Alberta Environmental Monitoring Evaluation and Reporting Agency. If either of these agencies were providing background landscape data, there would be an advantage in them collecting and assessing data on the changing conditions. The responsible agency should publish regular public reports on the effectiveness of the offsets system

6.5.4 Timing and Duration

As with any offset system, a certain time lag can be expected for offsets to be established and effective on the Alberta landscape. This is particularly so if one is speaking of mature and complex ecosystems, such as boreal caribou habitat. This is a major factor which will have to be considered in any risk management measures, especially the use of multipliers.

The duration of offsets is of particular interest in Alberta. As we have seen, perpetual offsets are the norm in the U.S. and Victorian systems, and are generally preferred in offset theory. One of the learnings from the southeast Alberta pilot is that Alberta landowners are often resistant to encumbering their land with conservation easements in perpetuity. One answer to this is to rely on price incentives; a large enough cheque can overcome many forms of reluctance.

Another is to consider offsets of limited duration based upon temporary conservation easements. There is nothing in Alberta's conservation easement legislation which requires a perpetual term, though that is certainly the norm. Some offset proponents may want to consider temporary easements, assuming that their development project has only a temporary impact. In any such case, the offset should be of at least the same duration as the development impact. Where, as in most cases, the duration of the disturbance cannot be ascertained in advance, a healthy degree of leeway should be factored into the planned duration of the offset.

6.5.5 Uncertainty and Risk Management

As discussed in Chapter Three, any offset system must be cognizant of the risk that offset actions will not yield the intended ecological results. Part of the site-level verification and monitoring process should be to record deviations from expected results, and to contribute those reports to a database which can be used to constantly improve practices and performance.

The responsible agency should also use this data, and the best conservation estimates of experts to set multiplier standards for offsets. These should be customized to fit particular landscape conditions, and the particular offset activities and objectives, but any multiplier should at least cover the assessed risk of failure, combined with a factor for the time lag until the target state is expected to be reached.

Multipliers are a useful tool, but do not, as previously discussed, address all aspects of risk in an offset system. As Moilanen *et al*⁵⁴⁰ have recommended, risk should be spread by encouraging proponents to undertake a variety of offset techniques.

The question remains, however, of who bears the residual risk after all these measures have been taken? If a proponent is released from liability to offset by taking sound measures at the beginning, or in the early stages, of offset implementation, then the state, or the ecosystem,

⁵⁴⁰ *Supra* note 119.

implicitly accept the risk of failure or deviation from expectations thereafter. This situation is likely to arise when proponents are expected to undertake offsets at the same time or following their development activities. Proponents are unlikely to accept any system which holds them liable for offset success after the completion of their primary development.

This is one of the major advantages of a banking system, as demonstrated by the U.S. wetlands system. As we have seen in Chapter Four, a wetlands bank sponsor must demonstrate attainment of certain performance measures before credits are authorized for release. This means that by the time the credits are applied to a development project, a certain degree of success has been proven. This is one of several reasons – including incenting offsets in advance of development and presumed economic efficiencies – why a banking system ought to be considered by Alberta. This recommendation echoes those made by Dyer *et al.*,⁵⁴¹ OSLI⁵⁴² and the Alberta Conservation Association.⁵⁴³

6.5.6 Banking, Registry and Exchange

If conservation offsets are only mandated on a project-specific basis, then it is only necessary that a regulator be satisfied that the particulars of the offsets match those dictated by the nature and extent of the development project. A generalizable accounting system is not necessary, as each case may be treated as unique.

If, however, a banking system is to be developed it is critical that it include clear procedures and responsibilities for verifying, classifying and recording the creation, ownership, use and extinguishment of credits. As discussed above, verification (and presumably characterization) can be done by a variety of qualified third party experts, but the recording of ownership, use and extinguishment requires a central information registry. This may be an

⁵⁴¹ *Supra* note 64.

⁵⁴² *Supra* note 483.

⁵⁴³ *Supra* note 491.

agency of the provincial government, or a third party authorized by the government to play the role. In either case, it is critical to the integrity of the offset banking system that this institution be consistent and transparent in its operation.

Beyond such a registry, establishing a banking system does not have to be an elaborate exercise. For example, if one did nothing more than allow a development proponent to take offset measures, and create offset credits, in excess of their own particular needs, and to transfer them to other parties, then a modest offsets credit market would likely arise. Depending on the economic attractiveness of the enterprise, other parties might well be drawn to the supply side of the market in time. So long as the verification process is clear, the particular identity of the offsets developers is largely irrelevant.

It will probably be some time before there is such a developed market in offset credits that a sophisticated exchange is required. Initially, market contacts may be achieved through brokers or through a simple “bulletin board” online system. Elements can be added as the nature of the market, and the need for oversight, require.

6.5.7 Responsibility and Oversight

All of the above raises the question of whether it is necessary to have a single agency responsible for the operation of a conservation offset system in Alberta. If regulatory and permitting agencies can impose offset conditions, the validity of offsets actions can be verified by third party experts, and the registry function played by any number of agencies either within government or at arm’s length, is there a need for an agency with a specific mandate to design, operate or oversee the system as whole?

The answer depends on one’s confidence in the unified will of the Government of Alberta to achieve conservation goals. One of the very reasons for the Land-Use Framework and the

Alberta Land Stewardship Act was an identified concern with fragmentation between arms of the provincial government and a resulting inconsistency of application of policy. While the development of regional plans may go some way to addressing this situation, it would be naïve to suggest that all decision-makers, provincial and municipal, who might affect changes on the landscape will come to operate in alignment. Therefore, it would be preferable to have one central agency responsible for the development of offset policy, and overseeing its application. Its activities, however, need not extend to day-to-day implementation, as that may be left to the current decision-makers, providing they have adequate direction and oversight.

Such a structure would reflect many aspects of the structures that have been described for both the U.S. and Victorian regimes. In the U.S., the wetlands compensation system is guided by policy set by the EPA, which periodically reviews the nature and adequacy of implementation. The implementation itself, however, lies with the USACE. This division of duties has proven to be highly functional as the policy developer is not invested in the day-to-day operation and is able to review it dispassionately. Likewise, in Victoria the policy framework and, with the recent reforms, the information infrastructure for the native vegetation regime are provided by the Department of Environment and Primary Industries, while permitting decisions including offset requirements are made by local authorities.

Finally, we might recall the recommendation of Salzman and Ruhl that an independent oversight committee of interested stakeholders may play a valuable role in an offset system. Salzman and Ruhl's particular concern was the coinciding interest of system administrators and development proponents in having a smoothly operating offset system, an interest which might mitigate against scientific rigour and ultimately ecological credibility. While neither of the regimes that I have examined includes such independent oversight, the rationale for it is

compelling. Not only would it be an extra check on the system's effectiveness, it would provide a group of knowledgeable stakeholders to whom members of the broader the community could turn for trusted knowledge and advice on the system. In other words, it could play an independent public education function. Alberta would do well to consider such a committee.

6.6 Conclusion

Conservation offsets are an important tool for bringing market forces to the task of building a more sustainable pattern of resource development. Under the general rubric of conservation offsets are a wide range of possible systems. There is ample opportunity to design a system which can suit Alberta's circumstances, and the more particular circumstances of the different regions within the province.

The Government of Alberta, through the Land-Use Framework, *ALSA* and a series of other policy documents and reports has shown an interest in developing such a tool. It has not, however, taken concrete steps to that end. This thesis has examined what measures it might take in order to create an offset system which is both ecologically justifiable and economically and administratively efficient. It has done so by examining some of the theory of conservation offsets, and also by looking at the development and operation of established offset systems in the United States and in Victoria, Australia. I have concluded that a workable system can be designed for Alberta, and recommended a series of considerations and measures to that end.

Alberta already has most of the components necessary for a functional offset system. It has well-established regulatory and permitting structures for land-use decisions. It has a strong community of professional scientists who may be recruited to provide validation of an offset system and verification of particular offset measures. It has, through *ALSA*, statutory provisions

which enable the development of regulations which can define offset standards and currencies, and the development of an official offset credit market if desired.

There are, however, some critical gaps in Alberta policy and law which hinder the use of offsets. The most critical of these is the absence of any commitment as yet to measurable environmental landscape objectives. Despite repeated indications that measurable thresholds and objectives will be incorporated into regional plans, none have yet been announced. In the United States, a declared policy objective of no net loss of wetlands enabled an organic growth of offset initiatives, which over time were formalized and consciously reformed. In Victoria, a more fully developed system was brought into existence with the commitment to a net gain in native vegetation. In both cases, however, the commitment to the specific objective was the foundation for all the operational measures. Alberta must take a similar step, if not with a commitment to no net loss, then to some other measurable objective.

The second gap is not so fundamental to the development of a conservation offset system, but can greatly hinder its breadth of application and effectiveness. This is the current system and culture respecting the disposition of public resources. The lack of a legal mechanism to secure private conservation action on public land precludes the consistent use of offsets on sixty percent of Alberta's landscapes. The issue of subsurface resource rights under both private and public land, without regard to the dedicated use of the surface, holds the constant threat that offsets undertaken diligently and in good faith may be undermined. These policies are long-standing and woven through the fabric of Alberta's legal and economic systems. For that reason, reform in this area will not be easy, but should be seriously pursued.

With respect to getting started on conservation offsets, it is a concept which is easily scalable to a particular region or environmental challenge. In other words, a system does not

need to be developed for the whole province. Just as we have seen a pilot developed for native grasslands in southeast Alberta, we could easily imagine an offset system to stabilize or reverse the amount of linear disturbance in many of Alberta's forested landscapes. Likewise, if one only wanted to focus on sustaining the province's caribou herds, an offset system could be designed based on a caribou-specific currency. Many other examples may come to mind. By taking on the challenge of developing some of these more specific or regional offset systems, we may learn the lessons and build the knowledge necessary to develop a more comprehensive system, if so desired. To do any of these things, however, the Province must commit to a goal and then take the first step.

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APPENDIX I

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University of Calgary Conjoint Faculties Research Ethics Board
Certificate of Institutional Ethics Review

APPENDIX II

INTERVIEW CONSENT FORM

Name of Researcher, Faculty, Department, Telephone & Email:

David W. Poulton, Graduate Student, Faculty of Law, University of Calgary Phone (cell): XXX-XXXX

E-mail: XXXX@XXX.XX

Supervisor: *Nigel Bankes, Faculty of Law, University of Calgary*

Title of Project:

Toward a Conservation Offset Regime for Alberta

This consent form, a copy of which has been given to you, is only part of the process of informed consent. If you want more details about something mentioned here, or information not included here, you should feel free to ask. Please take the time to read this carefully and to understand any accompanying information.

The University of Calgary Conjoint Faculties Research Ethics Board has approved this research study.

Purpose of the Study:

This is research for my thesis in the graduate program in the Faculty of Law at the University of Calgary. The goal of the research is to arrive at recommendations respecting the legal aspects of the development and implementation of a program of conservation offsets (sometimes known as biodiversity offsets) as a functional supplement to conservation policy tools in the Province of Alberta. I am doing this, by examining Alberta's past and current policy frameworks, by a review of the academic literature on conservation offsets and other market-based instruments for conservation, and by examining the development and operation of conservation offsets in other jurisdictions, especially the United States and Australia.

What Will I Be Asked To Do?

I have asked you to participate in an interview concerning the issues outlined above. The interview will be semi-structured, meaning we will start with some basic questions to guide our conversation, but will be free to follow our discussion wherever it may productively lead. I am attaching a list of the basic questions I will start with and use as a guide. The interview will take between 30 minutes and one hour of your time. A follow-up interview may be requested to

clarify or elaborate on points made in the first interview, or arising subsequent to the first interview.

Your participation in the interview is entirely voluntary. You may withdraw at any time, including during the course of the interview, and may decline to answer any questions posed. My intention is to use your responses, attributed to you by name and position, in my thesis. You may, however, request that certain responses you give be used only in ways which do not identify you, or request that interview data not be used or retained. If you withdraw part way through the interview, you may request that only some or none of your responses be used. All such requests will be respected. Note, however, that if I obtain the same or similar information from another participant I may use that information without any attribution to you.

During the interview I will take handwritten notes. I will later transcribe those into MSWord format. The notes in MSWord will be provided to you, with an indication of how particular responses may be used. You will have five days to correct any of the notes or raise any objection to their intended use. If you do not respond within five business days, your agreement as to their accuracy and consent to the intended use will be assumed. Should you withdraw partway through the interview, and request that any or all of your responses not be used, those notes relating to the responses not to be used will be destroyed forthwith.

After my handwritten notes are transcribed into MSWord format, my handwritten notes shall be shredded. The MSWord document will be stored on my personal laptop computer, which is protected by both password (known only to me) and fingerprint protection. In general, this document will be stored indefinitely. Upon your request, however, it will be destroyed in no more than two years following completion of this research paper, or any subsequent publication arising out of it or dealing with the same subject matter.

What Type of Personal Information Will Be Collected?

- *Name*
- *Position*
- *Employer*
- *Experience, data and opinions relevant to the subject matter of the study.*

Are there Risks or Benefits if I Participate?

There is a small risk that you may suffer some personal or professional embarrassment if you provide me with information that you have no right to provide me. The management of that risk, however, is within your hands, as:

- *Your overall involvement is entirely voluntary;*
- *You may withdraw from the interview at any time;*
- *You may decline to answer any question;*
- *You alone will decide what information to provide in response to any question;*
- *You will have the opportunity to correct my notes and object to any intended use of the information you provide.*

What Happens to the Information I Provide?

After my handwritten notes are transcribed into MSWord format, my handwritten notes shall be shredded. The MSWord document will be stored on my personal laptop computer, which is protected by both password (known only to me) and fingerprint protection. In general, this document will be stored indefinitely. Upon your request, however, it will be destroyed in no more than two years following completion of this research project, or any subsequent publication arising out of it or dealing with the same subject matter.

Signatures (written consent)

Your signature on this form indicates that you 1) understand to your satisfaction the information provided to you about your participation in this research project, and 2) agree to participate as a research subject.

In no way does this waive your legal rights nor release the investigators, sponsors, or involved institutions from their legal and professional responsibilities. You are free to withdraw from this research project at any time. You should feel free to ask for clarification or new information throughout your participation.

Participant's Name: (please print) _____

Participant's Signature _____ Date:

Researcher's Name: (please print) _____

Researcher's Signature: _____ Date:

Questions/Concerns

If you have any further questions or want clarification regarding this research and/or your participation, please contact:

David W. Poulton
Faculty of Law, University of Calgary
Phone: (403) XXX-XXXX E-mail: XXXX@XXXX.XXX

and Prof. Nigel Bankes, Faculty of Law, University of Calgary
Phone: (403) XXX.XXXX E-mail: XXXXX@ucalgary.ca

If you have any concerns about the way you've been treated as a participant, please contact the Senior Ethics Resource Officer, Research Services Office, University of Calgary at (403) XXX-XXXXX; email XXXXX@ucalgary.ca.

A copy of this consent form has been given to you to keep for your records and reference. The investigator has kept a copy of the consent form.

APPENDIX III
GUIDANCE QUESTIONS FOR INTERVIEWS

For Government Officials and Regulators

- Discuss concept and definition of conservation offset/biodiversity offset.
- If familiar, what is source of their familiarity?
 - If direct experience, please describe.
- What are features essential to functional offset regime?
- What are features most likely to block or interfere with operation of system?
- How do they foresee operational aspects of:
 - Scope of market
 - Currency
 - Ex post review
- How to draw balance between rigour of environmental protection and fungibility of market?
- Which industries or other land users do they see an offset regime applying to?
 - If diffuse users, how to apply?
- What are best and worst cases of conservation offset regimes?

For Stakeholders

- Discuss concept and definition of conservation offset/biodiversity offset.
- If familiar, what is source of their familiarity?
 - If direct experience, please describe.
- Is their sector likely to use conservation offsets? If so, under what conditions?
- What are features essential to functional offset regime?
- What are features most likely to block or interfere with operation of system?

- How do they foresee operational aspects of:
 - Scope of market
 - Currency
 - Ex post review
- How would they determine whether or not to participate in an offset system?
 - Which factors would they consider?
 - How would they weight them?
- Have they provided any advice to the Alberta government of the development of it conservation offset regime?
 - What was advice?
 - How was it received?
- Do they expect Alberta to implement a conservation offset regime? If so, in what timeframe?

APPENDIX IV

LIST OF INTERVIEWEES

Wiktor Adamowicz, Professor, Department of Resource Economics and Environmental Sociology, University of Alberta. Interviewed in person, Edmonton, April 4, 2013.

Dave Borutski, Senior Policy Manager, Land Use Secretariat, Alberta Environment and Sustainable Resource Development. Interviewed in person, Edmonton, April 5, 2013.

Michael Crowe, consultant, NatureTask, former Manager, BushBroker Program. Interview via Skype July 29, 2013 (MDT), July 30, 2013 (AEST).

Simon Dyer, Policy Director, Pembina Institute for Sustainable Development. Interviewed in person, Edmonton, April 3, 2013.

Andy Edeburn, Director, Environment, AltaLink. Interviewed in person, Calgary, April 30, 2013.

Daniel Farr, Application Manager, Alberta Biodiversity Monitoring Institute. Interviewed via phone May 16, 2013.

Tom Goddard, Senior Policy Advisor, and Karen Raven, Agricultural Land Use Specialist, both of Alberta Agriculture and Rural Development, Environmental Stewardship Division. Interviewed together in person, Edmonton, April 5, 2013.

Palmer F. Hough, Environmental Scientist, Wetlands Division, and Jenny Thomas, Environmental Protection Specialist, Office of Wetland, Oceans, and Watersheds, Wetlands Division, United States Environmental Protection Agency (Interviewed together in person, Washington, DC, April 26, 2013.

Gord Lehn, Director, Communications/Ecological Good and Services, Spray Lake Sawmills. Interviewed in person, Cochrane, April 1, 2013.

Bruce Lindsay, Law Reform Officer, Environmental Defenders Office (Victoria) Ltd.

Interviewed via Skype October 10, 2013 (MDT), October 11, 2013 (AEST).

Peter T.F. MacConnachie, Senior Sustainability Issues Management Specialist, Suncor Energy Inc. Interviewed in person, Calgary, March 22, 2013.

Anish Neuprane, Economist, Socio-Economics and Governance Section, Alberta Environment and Sustainable Resource Development. Interviewed in person, Edmonton, April 5, 2013.

David B. Olson, Regulatory Program Manager, United States Army Corps of Engineers.

Interviewed in person, Washington, DC, April 25, 2013.

Morris Sieferling, consultant, former Stewardship Commissioner, Alberta Environment and Sustainable Resource Development. Interviewed in person, Edmonton, April 4, 2013.

Jennifer Steber, Chief Assistant Deputy Minister, Oil Sands, Alberta Energy. Interviewed via phone April 8, 2013.

Gary Stoneham, Assistant Director, Economic Policy Group, Department of Treasury and Finance, Government of Australia. Interviewed via Skype September 11, 2013 (MDT), September 12, 2013 (AEST).

Weber, Marian, Environmental Economist, Alberta Innovates Technology Futures. Interviewed in person, Edmonton, April 4, 2014.

Bev Yee, Assistant Deputy Minister, Integrated Resource Management Planning; Stewardship Commissioner, Alberta Environment and Sustainable Resource Development. Interviewed by telephone May 8, 2013.

Todd Zimmerling, President and Chief Executive Officer, Alberta Conservation Association.

Interviewed in person, Edmonton, April 4, 2013.

APPENDIX V

EXCERPTS FROM *ALBERTA LAND STEWARDSHIP ACT*, SA 2009, c A-26.8.

Purposes of Act

1 The purposes of this Act are

- (a) to provide a means by which the Government can give direction and provide leadership in identifying the objectives of the Province of Alberta, including economic, environmental and social objectives;
- (b) to provide a means to plan for the future, recognizing the need to manage activity to meet the reasonably foreseeable needs of current and future generations of Albertans, including aboriginal peoples;
- (c) to create legislation and policy that enable sustainable development by taking account of and responding to the cumulative effect of human endeavour and other events.

...

4(1) The Lieutenant Governor in Council may make or amend regional plans for planning regions.

...

State of the planning region statements

7 A regional plan may contain

- (a) information relevant to the history of the planning region, its geography, its demographics and its economic, environmental and social characteristics;
- (b) a description of the state of the planning region describing matters of particular importance in or to the planning region, and the trends and the opportunities and challenges for the planning region, including the economic, environmental and

social opportunities and challenges.

...

Elements of a regional plan

8(1) A regional plan must

- (a) describe a vision for the planning region, and
- (b) state one or more objectives for the planning region.

(2) A regional plan may

- (a) include policies designed to achieve or maintain the objectives for the planning region;
- (b) set or provide for one or more thresholds for the purpose of achieving or maintaining an objective for the planning region;
- (c) name, describe or specify indicators to determine or to assist in determining whether an objective or policy in the regional plan has been, is being or will be achieved or maintained and whether policies in the regional plan are working;
- (d) describe or specify the monitoring required of thresholds, indicators and policies, who will do the monitoring and when, and to whom the monitoring will be reported;
- (e) describe or specify the times and means by which, and by whom, an assessment or analysis will be conducted to determine if the objectives or policies for the planning region have been, are being or will be achieved or maintained;
- (f) describe or specify the actions or measures or the nature of the actions or measures to be taken to achieve or maintain the objectives and policies in the regional plan, and by whom they are to be taken or co-ordinated, if
 - (i) an adverse trend or an adverse effect occurs;

- (ii) an objective or policy is or might be in jeopardy or a threshold is or might be exceeded or jeopardized;
- (iii) an objective or policy has not been achieved or maintained, is not being achieved or maintained, or might not be achieved or maintained;
- (g) describe and convey to a person named in the regional plan authority to achieve or maintain an objective or policy, which may include delegating authority under any enactment or regulatory instrument to the person named.

...

Legal nature of regional plans

13(1) A regional plan is an expression of the public policy of the Government and therefore the Lieutenant Governor in Council has exclusive and final jurisdiction over its contents.

(2) Regional plans are legislative instruments and, for the purposes of any other enactment, are considered to be regulations.

...

Market-based instruments

23 The Lieutenant Governor in Council may

- (a) support or advance research and development into the creation, application and implementation of instruments, including market-based instruments, to support, enhance and implement the purposes of this Act and objectives and policies in or proposed for a regional plan;
- (b) establish, support or encourage pilot projects to investigate or test instruments, including market-based instruments, to advance or implement the purposes of this Act and objectives and policies in or proposed for a regional plan.

...

Purpose of conservation easements

29(1) A registered owner of land may, by agreement, grant to a qualified organization a conservation easement in respect of all or part of the land for one or more of the following purposes:

- (a) the protection, conservation and enhancement of the environment;
- (b) the protection, conservation and enhancement of natural scenic or esthetic values;
- (c) the protection, conservation and enhancement of agricultural land or land for agricultural purposes;
- (d) providing for any or all of the following uses of the land that are consistent with the purposes set out in clause (a), (b) or (c):
 - (i) recreational use;
 - (ii) open space use;
 - (iii) environmental education use;
 - (iv) use for research and scientific studies of natural ecosystems.

...

Modification or termination of conservation easement

31 A conservation easement may be modified or terminated

- (a) by agreement between the grantor and the grantee, or
- (b) by order of a Designated Minister, whether or not the Designated Minister is a grantor or grantee, if the Designated Minister considers that it is in the public interest to modify or terminate the conservation easement.

...

Division 4

The Exchange, Stewardship Units and

Conservation Off-set Programs

The exchange

45 The Lieutenant Governor in Council may make regulations

- (a) establishing or designating a person or government department as the exchange and naming the exchange;
- (b) conferring on the exchange, by agreement or by regulation, or both, all or any of the following:
 - (i) the authority, subject to the regulations under this Part, to create, hold, issue, approve, verify, authenticate, distribute, modify, suspend or extinguish all or part of a stewardship unit;
 - (ii) the authority to establish, administer or manage one or more programs, schemes or systems to register, record and administer stewardship units;
- (c) providing for the manner and method of reporting by the exchange on matters required by the regulations under this Part;
- (d) delegating to the exchange the authority described by the regulations under this Part or under a regional plan;
- (e) requiring the exchange to provide education and information about the services it provides.

Stewardship units

46(1) The Lieutenant Governor in Council may make regulations

- (a) respecting the creation, holding, issuance, approval, verification, authentication, distribution, modification, suspension or extinguishment of stewardship units;
- (b) respecting how a stewardship unit is created and by whom;
- (c) establishing or authorizing different types or classes of stewardship unit and the name or names of the types or classes and the terms, conditions and restrictions with respect to each type or class of stewardship unit, including development credits that are the subject of a TDC scheme;
- (d) respecting the attributes of each type or class of stewardship unit, including, without limitation, regulations
 - (i) describing what the type or class of stewardship unit represents;
 - (ii) describing the nature of the type or class of stewardship unit, in particular, whether the type or class of stewardship unit is one of benefit or obligation, or both;
 - (iii) whether the stewardship unit is irrevocable, and if not, its term or any other conditions applying to it;
- (e) for managing the holding, use, sale, trading, exchange, lease, assignment and disposition, including disposition by will or on death without a will, of stewardship units, and if regulation or control is required, including, without limitation, regulations
 - (i) respecting the establishment of a registry and a system for the recording of stewardship units;
 - (ii) respecting the powers, duties and functions of the exchange, including as a registry operator;

- (iii) respecting the establishment, operation and closing of trading accounts for stewardship units;
- (iv) respecting the recording of transactions or use of stewardship units;
- (v) respecting the collection of information and the use of information and records kept by the exchange and records in respect of trading in stewardship units;
- (vi) respecting, authorizing and prohibiting the disclosure of information and records kept by the exchange with respect to the registry and otherwise;
- (vii) respecting the records to be kept by persons holding stewardship units or participating in the trading of stewardship units;
- (viii) authorizing a person to prescribe forms for the purposes of the regulations;
- (f) delegating to a Designated Minister, a local government body or a decision-maker any authority, function or requirement under the regulations made under this Part with respect to the use, imposition or extinguishment of a stewardship unit;
- (g) applying or exempting all or any provisions of the Securities Act or any regulations or rules under the Securities Act with respect to any provision of this Act or the regulations concerning a stewardship unit or a type or class of stewardship unit;
- (h) respecting the compatibility of regulations under this section with similar regulatory schemes in other jurisdictions, inside and outside Canada.

(2) A stewardship unit is not and may not be created as an interest in land.

Conservation off-set programs

47(1) The Lieutenant Governor in Council may make regulations to counterbalance the effect of an activity.

(2) In this section, “counterbalance” includes

- (a) avoiding, limiting or mitigating the adverse effect of an activity;
- (b) minimizing the impact of an activity by limiting the magnitude or degree of the activity;
- (c) rectifying or reducing an adverse effect by repairing, rehabilitating, restoring or reclaiming;
- (d) reducing or eliminating an adverse effect over time by conservation and maintenance operations;
- (e) compensating for an activity by replacing, providing, acquiring, using or extinguishing stewardship units as described in regulations made under this Part;
- (f) requiring any or all of the counterbalancing requirements described in this subsection to be increased by a ratio or factor prescribed by regulations under this section as a result of the effect of the activity;
- (g) encouraging voluntary measures to offset an activity by committing, without limitation, to additional restoration, reclamation or mitigation, the acquisition of land, the establishment of a conservation easement or the donation of actual or in-kind, financial or other resources;
- (h) requiring any action described in this subsection to be taken before or after an activity starts or before or after an activity ends.

(3) Regulations under this section may

- (a) require a decision-maker, in the circumstances described in the regulations, to impose terms and conditions on an existing or proposed statutory consent to counterbalance the effect of an activity or proposed activity;

- (b) set a limit or restriction on the maximum effect of an activity in respect of human health or safety, a species or the environment within a period of time specified in the regulations, and for that purpose may
 - (i) describe or specify a stewardship unit that is to counterbalance the effect of an activity;
 - (ii) specify the period of time within which the stewardship unit must be used or extinguished;
 - (iii) prohibit an activity without the extinguishment of all or part of a stewardship unit;
- (c) establish, certify, credit or accredit anything that is suitable as a stewardship unit to counterbalance an activity;
- (d) provide a means of assigning to a stewardship unit an attribute with respect to an investment or project indicating its benefit or obligation measured against the effect of an activity;
- (e) establish a program to certify an activity as a stewardship unit, including providing for
 - (i) who is to issue the certification;
 - (ii) how and when and under what terms and conditions a person may be certified and how and by whom a certification may be terminated;
 - (iii) what a certification entitles the holder of the certification to do;
- (f) adopt or prescribe one or more guidelines or best practices with respect to counterbalancing the effect of an activity;

- (g) provide for the management, monitoring and enforcement of a stewardship unit, including how monitoring is to be conducted and by whom;
- (ii) requiring periodic or special reports, specifying with whom a report must be filed and requiring its availability for public inspection;
 - (iii) the inspection of an activity and the monitoring and reports on the effect of the activity to determine compliance with a stewardship unit;
 - (iv) testing anything related to an activity at a time or times and at a frequency specified by the regulations;
 - (v) an audit of compliance with a stewardship unit and the regulations;
 - (vi) security for performance of an obligation under a stewardship unit and compliance with its terms and conditions, including, without limitation, insurance, a bond, certification or audit by a third party agency or other person specified by the regulations.