

# Lessons learned from the Queensland Vegetation Incentives Program - applying auction theory to vegetation protection.

Emma Comerford<sup>1</sup> and Jim Binney<sup>2</sup>

The Queensland Department of Natural Resources and Mines (NR&M) is currently running the Vegetation Incentives Program (VIP), which pays landholders to protect and manage non-remnant vegetation on their properties. The program is using an auction mechanism to allocate the funding. Observing the VIP gives insight into participant behaviour and the impact of the policy formation process on auctions for conservation contracts. The program is particularly interesting as this is the first time this mechanism is being used in Australia to distribute funds on a state-wide level. A preliminary analysis has been undertaken and key lessons have been identified.

Keywords: auctions; market-based instruments; vegetation management; policy design; policy evaluation

## Introduction

There is increasing interest in Australia in the use of auctions for conservation contracts, but there is still much to be learnt about this economic instrument. Auction theory and pilots have demonstrated that there are potentially large cost savings to be gained from allocating natural resource funding through competitive tender mechanisms. The Queensland government accordingly decided to use an auction mechanism to distribute a \$12 million incentives package that accompanied changes in vegetation legislation in 2004. The resulting Vegetation Incentives Program (VIP) is aimed at encouraging protection and management of high value non-remnant vegetation. This vegetation is not currently protected under the new vegetation legislation. The program has been run in three phases, with the first round covering the Southern Grazing Lands region, the second round covering the rest of the state excluding South East Queensland, and the third round currently running in South East Queensland (see figure one). Some lessons about the use of auctions for conservation contracts have been learnt after the conclusion of the first two phases of the VIP in 2005.

## Methodology

The initial analysis presented in this paper is the result of observations of the VIP's design and implementation. Additionally, a survey of participants was undertaken as part of the presenting author's PhD research. At this time only participants in the first two rounds have been surveyed. Written questionnaires were sent to all participants who were invited to submit a full tender asking about personal and farm characteristics. Out of the 45 participants, 24 returned the questionnaire, which gave a response rate of 53.3%. Other information has been gathered through semi-structured interviews with Greening Australia

---

<sup>1</sup> University of Queensland and Queensland Department of Natural Resources and Mines; [emmaco@tpg.com.au](mailto:emmaco@tpg.com.au)

<sup>2</sup> Queensland Department of Natural Resources and Mines; [jim.binney@nrm.qld.gov.au](mailto:jim.binney@nrm.qld.gov.au)

field staff. Econometric analysis will be possible once more data has been gathered from the last phase of the VIP. Questionnaires were coded so as to allow for linking of bid levels and questionnaire results, which will allow for a study on the influences on bids. A survey of those who withdrew after the expression of interest (EOI) stage is also being conducted.

## **Background theory**

Auction theory can be applied to the problem of funding natural resource management (NRM) on private properties. An adequate market for providing public goods from private land does not exist, resulting in an under-provision of environmental goods and services. Auctions can help form a quasi-market for environmental public goods (Latacz-Lohmann and Van der Hamsvoort 1998:335). This market has several distinguishing characteristics; such as only having one buyer (usually the government) and many sellers with a wide range of opportunity costs (Latacz-Lohmann and Van der Hamsvoort 1998:335-337). There is also information asymmetry present between the sellers and purchaser of the environmental services. As in standard procurement auctions, in a conservation auction the bidders with the best tenders win the contracts. Winning bids are chosen on a best ecological value for money basis. This means that price, the ecological significance of the property and sometimes the management actions offered (or the ecological change expected) are used to choose the winning bids. An environmental benefits index is usually established that allows the different bids to be compared. For example, BushTender used a biodiversity benefits index that considered the biodiversity significance of the property, the habitat services being offered and the price (Stoneham *et al.* 2003). An index may require a significant amount of ecological knowledge to make it relevant.<sup>3</sup> It is also important that the index be simple enough to be used by field staff in a short amount of time.

The most significant benefit to using an auction mechanism to distribute funds is the potential cost saving from using competition to encourage truthful cost revelation. A first best outcome for an auction is for bids to be based solely on opportunity costs (Stoneham *et al.* 2003:490). This means that the maximum amount of environmental improvement is achieved for the money spent. However, as there is information asymmetry present, landholders can still place a bid higher than their opportunity cost. This extra cost is known as the information rent, and is based on the perceived probability of the bid being accepted. As a result, competition should decrease information rent, and thus lower the cost of funding environmental services. An auction is likely to be more cost-effective than a flat-price scheme when opportunity costs are heterogenous. This is because each participant can be paid close to their individual opportunity cost rather than a potentially higher flat fee. The groundbreaking Victorian BushTender trials led to an increased interest in the mechanism (see Stoneham *et al.* 2003 for information on BushTender) and on-ground pilots across the country are reporting interesting results (see e.g. Bryan *et al.* 2005 and Gole *et al.* 2005).

## **Background to the Vegetation Incentives Program**

In April 2004, the Queensland government passed the *Vegetation Management and Other Legislation Amendment Act 2004* to end broadscale landclearing of remnant vegetation in Queensland by 31 December 2006. This legislation was introduced in response to growing

---

<sup>3</sup> An example of the ecological information used in an index can be found in Oliver and Parkes 2003.

concern over the high rates of landclearing occurring in Queensland. From 1996-1999, an annual average of 382 500 hectares of native vegetation was cleared in Queensland, out of a national total of 424 444 hectares (ABS 2003:37).

A \$150 million financial assistance package accompanied the legislation. This money was divided into three parts. \$130 million was directed to providing adjustment for landholders whose businesses were adversely affected by the new legislation, \$12 million for incentives for improved management of native vegetation and \$8 million to encourage best management practice. It was decided to use a tender mechanism to distribute the \$12 million set aside for incentives.

Design of the program was conducted within the Department of Natural Resources and Mines (NR&M). Some elements of the design, such as the use of a covenant to secure perpetual protection of areas of under the VIP, had been pre-determined largely through a political decision making process. Advice was sought from the Queensland Herbarium, the Queensland Environmental Protection Agency and the staff from the Department of Primary Industries in Victoria who were responsible for designing BushTender. Design time was limited to approximately one month, with no opportunities to consult with likely participants or develop a complex mechanism. For example, there was insufficient time to prepare an ecological benefits index.

Landholders in six regions across the state were able to participate in a tendering process to protect (via a covenant) and manage non-remnant vegetation on their properties. These areas were made up of amalgamated bioregions, which allowed for easier comparison of tenders between properties (see figure one). Cape York was excluded from the program before design even commenced.

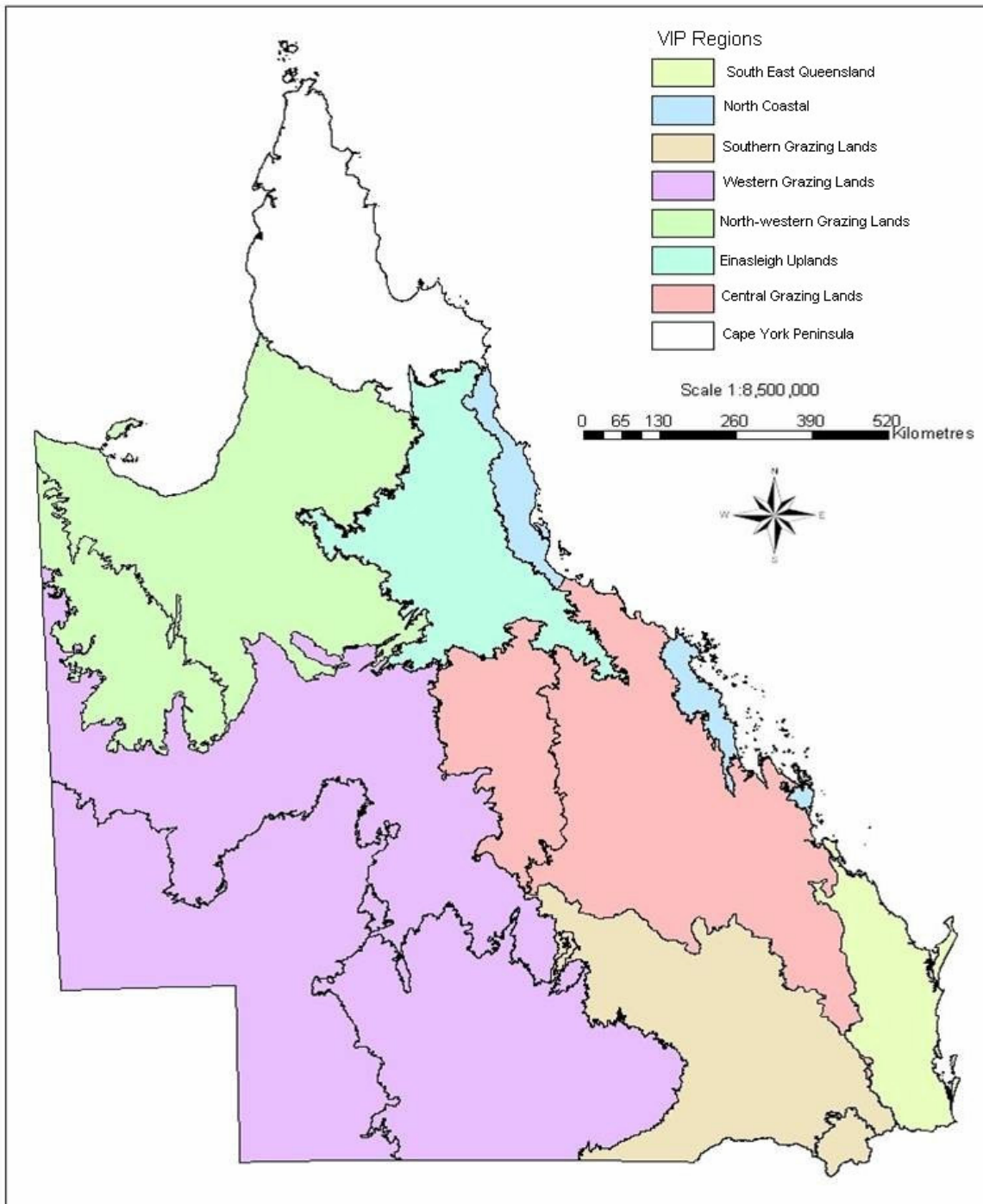


FIGURE ONE: MAP OF VIP REGIONS

### Round one design

The covenant used in the first phase was to have been permanently attached to the land title and registered with NR&M. It severely restricted the use of the land covered by the covenant

– for example, there could be no grazing in the covenant area or application of fertilisers, herbicides or pesticides. The management actions the landholder committed to undertake were outlined in a management agreement that was then attached to the covenant. This was essentially a commercial contract that lasted for five years, with periodic payments specified in the bids. This management agreement allowed for easing of some of the restrictions in the covenant, but these restrictions would be reinstated at the end of the term of the management agreement. The covenant would then be binding in perpetuity.

Greening Australia (GA) was chosen through a tender process to deliver the VIP across Queensland. After EOIs were submitted, a series of filters were used to ensure that only ecologically viable and valuable patches of bush were considered. This was arranged as a triage process, where a basic assessment of the viability, potential response to management and potential external threats to the vegetation determined if the application would proceed to full bid stage. The shortlisted properties received a site visit to help them prepare a management plan and to better explain the bidding process.

The ecological criteria for selection were based on the Environmental Protection Agency's Biodiversity Assessment and Mapping Methodology (EPA 2002). The five criteria were habitat value; regional ecosystem value; condition, ecosystem diversity and context and connection. Each patch of vegetation submitted was assessed against these criteria by a panel of experts using information from maps, the site visits and local knowledge. However, no environmental benefits index was established due to staff concerns with the concept and lack of adequate design time. Instead, a series of decision rules were used to select properties. There was a scale constructed in each criterion that placed a value of 1-4 on each property, with 4 being the highest score. Proposed management actions were taken into account in the condition criterion, with condition defined as the potential condition after the actions were taken. The decision rules were meant to lead to the formation of an "A list" of properties. For example, if a property received a score of 3 or 4 in the first two criteria then it was placed in the A-list. The original intention was to then sort these A-list properties into percentile groups where it could be assumed that each property was equally ecologically desirable. Then a simple \$ per hectare calculation could be undertaken to assure value for money, with the lowest cost/high value properties being funded first, until the budget was exhausted. However, as described in the next section, the low number of bids from round one meant that this procedure was not viable.

## **Round one results**

Due to delays in the roll-out of the program, round one of the VIP ran from late 2004 to mid 2005. After an extensive communications and media campaign, 76 enquiries were made but only 21 expressions of interest were received. Of the 16 landholders invited to continue, only 8 bids were submitted.

In addition to the expert panel and VIP and GA project staff, a probity auditor attended to observe the proceedings and give advice on probity issues. The expert panel meeting took place in June 2005. After each property was evaluated against the criteria, five properties were accepted and three rejected due to low ecological value. The expert panel then ranked the properties on ecological grounds.

As no explicit reserve price was set before the selection process began and most participants submitted very high bids, the assessment of “value for money” undertaken by NR&M was important. The original concept of splitting the properties into groups where properties within the group are equally desirable could not be applied in this situation. Not only were there only five properties in the “A-list”, the expert panel had given each property a different ranking and had indicated that each one had a different ecological value. These rankings were not relative so it was not possible to say how much more desirable one was than another. This complicated the assessment of value for money, as a cost-benefit ratio could not be assessed.

An approximate reserve price was calculated using valuations on the unimproved capital value of the land, and advice on the commercial value of the land gained from a professional land valuer. Australian Bureau of Agricultural and Resource Economics data was also used to estimate the potential market values by capitalising profits per hectare to provide additional information to create the reserve price. This was a very rough estimate of opportunity cost as the regions were not precisely aligned and the average for all broadacre industries (which includes cattle, sheep and crop production) was used regardless of the industry of the participant. These figures were compared to the amount the participant was requesting per hectare for the covenant.<sup>4</sup> None of the five shortlisted properties were considered good value for money. They had covenant costs ranging from 7.7 to 65.8 times the unimproved land value, 3.2 to 6.7 times the commercial land value and 1.8 to 6.9 times the estimates of capitalised maximum profits that could be gained per hectare. Paying such high values would have been neither fiscally nor politically prudent.

## **Changes in round two**

Given the failure of the first round of the VIP to elicit good quality bids, some changes were introduced during the implementation of the next round. The most fundamental change was that landholders had the choice of the original permanent covenant, a Nature Refuge (a more flexible covenant administered by the EPA), a limited term covenant (where the covenant applies until regrowth reaches remnant status and is then protected as such by the Vegetation Management Act) or making a declaration over the area (where the area is mapped as remnant vegetation on a property management plan and protected accordingly). The final option precluded clearing but allowed ongoing productive use of the land. Unfortunately, due to staffing changes and government processes, these changes were unable to be implemented until after EOIs had already been received. A management agreement that specified management actions and payments for five years was still required in conjunction with each option.

There were some other changes made to the selection process. The assessment criteria were changed slightly to better match the stated objectives of the vegetation legislation, to habitat potential, ecosystem value, landscape value, context and connection and vegetation condition. Preferred minimum standards for eligibility were outlined. These included minimum size requirements and age of regrowth for different regions, minimum connectivity standards, minimum vegetation robustness standards and an absence of known overwhelming threats. A score of 0-4 (with increments of 0.5 permitted) was given for each criterion, a weighting

---

<sup>4</sup> Participants split their bids into the money for the management actions and the covenant as this simplified tax issues.

applied, and then an aggregate score created. This scoring system was much closer to an environmental benefits index than had previously been employed. However, this was still an ordinal scale that did not reflect the panel’s relative preference for each property. For example, a property that received a score of 40 was not considered the same value as two properties that received 20.

## Round two results

	<b>Southern</b>	<b>North Coastal/ Einasleigh</b>	<b>Central/Southern/Western</b>
<b>Queries</b>	76	160	90
<b>EOIs</b>	21	61	26
<b>Applications</b>	8	31	7
<b>Average size of applications (ha)</b>	130	11.55	2441

The second round of the VIP covered the rest of Queensland excluding the South East Queensland region. Across this area 87 expressions of interest were received from all regions except for the Northern Grazing Lands. The majority of the expressions of interest came from the North Coastal region. A panel met to apply the eligibility criteria, and 12 were eliminated, primarily because they were either remnant vegetation, too isolated or too small. Out of the remaining 46 invited to submit a tender, 38 chose to do so. Thirty-one applications were from the North Coastal region, with only one coming from the Western Grazing lands and none from the Einasleigh Uplands.

Two assessment panels were held in late November, one to grade the North Coastal applications and another to review the other regions. The two panels were formed to reflect the different ecological expertise required in each area, and included representatives of the regional NRM bodies involved, state departments and some community members. The five new criteria were supplemented by the expert panel’s additional criterion of “feasibility”. Feasibility reflected the technical merit of the management plan, likelihood that the plan would lead to the vegetation improving in condition, access to technical support, and any evidence of landholder commitment. The new scoring process was implemented, with a mutually agreed upon weighting system applied to the scores. The North Coastal panel separated the bids ranked by score into four groups, with the top two groups being declared applications of state or national significance. Only two properties were determined to be acceptable without material changes to their management plans in the other regions.

The applications were then assessed as value for money by NR&M staff. This process involved two steps. Following the precedent from the first Southern region, the first step used a reserve price based on land values to assess the covenant \$/ha tendered. Some properties were deemed poor value for money on these grounds. Given reservations about the design of the VIP and the large budget for the region, it was decided to introduce a second reserve price for the management actions bid. This was intended to allow for good quality applications to be selected in this iteration of the program and yet allow funding for a future program. This reserve price was set at a natural break in the applications where prices began to rise sharply. The budget for the region still allowed for all of the shortlisted properties to be financed without having to fund in order of \$/ha as was originally planned.

## Discussion

The VIP is an excellent opportunity to assess the factors that impact participation and bid levels in an auction for conservation contracts. There is a large literature looking at the influences on participation in incentive programs and the behaviour of bidders in auctions. It will be useful to compare these theoretical frameworks and the observations from other programs with the VIP. However, this discussion will focus on initial observations from the VIP.

The first problem with the first two rounds of the VIP was a generally low participation rate. One of the key causes of the low participation in round one was probably the requirement for the strict covenant. Greening Australia reported widespread antagonism to the covenant. One landholder commented on the participant survey “We feel that the covenant as it stands is draconian and needs to be flexible to suit each applicant’s needs.” The covenant was probably too restrictive. The level of requirement under the covenant was more akin to what would normally be used to protect very high value ecological sites, not the sites eligible for the VIP. There was no guarantee that the state government would be willing to renegotiate a management plan after the first five years. This meant that the landholder faced the risk of carrying out management actions associated with the covenant without financial assistance. A related risk was that any productive activity that had been permitted under the original management plan might not have been permitted without a new management plan.

The participation rate for the second round of the VIP was far higher than for the first round within the Southern region. However, this higher participation was dominated by the large number of applications from the North Coastal region and in particular the Atherton Tablelands. Other regions had fairly low levels of interest. Although the community of the Atherton Tablelands contains many people who own conservation properties and are part of conservation networks, there are presumably other communities with similar characteristics in Queensland. One possible factor could be the presence of the GA project officer in Atherton. This staff member is well known in the relatively small community of the Tablelands, and so may have had an advantage in encouraging participation in the VIP. As noted later, contact with the Atherton based GA officer and EPA’s Nature Refuge officer were the most common forms of knowledge about the program amongst participants in the North Coastal. This may emphasise the role of trust and ongoing relationships with landholders to overcome constraints of untested policy instruments.

The changes to the covenant options for the second round to make them more flexible and appealing only occurred after EOIs had already been received. Most potential participants would have been informed of the strict requirements of the original covenant. As such, it is possible that the participation rate would have been higher had these changes occurred earlier. Although the expanded options probably assisted with keeping participants in the program, and reducing bid levels, the mid-program introduction was not optimal. Some participants reported feeling confused by the changes. For example, one survey respondent noted, “this has been a DNR&M ‘make the rules up as you go’. At my submission of tender there was two options for covenants, within days there were 5 options!”

Widespread distrust and uncertainty may have lowered the participation rate. The timing of the program was inopportune, as it immediately followed the introduction of very unpopular changes to vegetation legislation in Queensland. There is widespread distrust of NR&M and the state government in general. VIP field staff reported receiving negative feedback about

NR&M when presenting information on the VIP to landholders. Low participation could perhaps also be attributed to caution over participating in a new program using a non-traditional mechanism.

However, participation rates for the VIP were not much lower than a comparable program that has just concluded in Queensland. The EPA's Biodiversity Incentives Tender (BIT) was run across four hotspot regions across Queensland (Brigalow Belt, Desert Uplands, Einasleigh Uplands and Border Ranges). As with the VIP, an auction mechanism was employed, and participants were required to place a covenant (a Nature Refuge) over their property. 43 EOIs were received and 33 of these were invited to submit a full bid. A subsequent 18 bids were received. Many seemed to be from landholders who previously expressed an interest in conservation and Nature Refuges.

The highest bid levels were recorded in round one. Once again, the key cause was probably the strict covenant. Eighty-two percent of the total cost of the five successful bidders was associated with the covenant. It is likely that the high opportunity cost imposed by the strict requirements were translated into the high bid levels. The aforementioned risks probably further inflated bids.

The bids for the covenant were far lower for the second round. In the North Coastal region, a third of applicants requested no payment for entering into a covenant. Only 15% of the total cost was made up of the covenant bids as compared to 72% for the first round. The lower bids could reflect the wider range of less restrictive options open to applicants. Additionally, the nature of the applicants may have been different. Thirteen of the 31 applicants owned properties solely for conservation purposes, and an even greater proportion had considerable levels of off-farm income. Seventy percent of respondents in the North Coastal had an off-farm income of greater than 60%, and only one respondent had no source of off-farm income. This reduced opportunity cost of participation may help explain the willingness to enter into a covenant and the lower bid levels. Indeed, Greening Australia staff reported that the covenant was seen as an incentive to participate for some landholders who were seeking permanent protection for their vegetation. Interestingly, the altruistic applicants who did not require any money for entering into a covenant all fell within the top two groups as ranked by ecological significance. The better condition of the properties could be a result of the prior conservation work of the landholders, especially given their choice not to farm their land. Even for the rest of the state, bid levels were far more reasonable than in the first phase. Fifty-seven percent of the total cost for the rest of the state was made up of covenant costs.

A perceived drop in land value was probably a strong influence on bid levels. Thirty percent of survey participants felt that participating in the VIP and putting a covenant on their land would decrease their land value significantly, while another 20% felt it would decrease the value slightly. Twenty percent believed it would have no impact on land value. Only 8% believed it would raise the value slightly. This general belief in a negative impact on land values was borne out anecdotally by GA staff reports. One respondent believes there will be an immediate significant devaluation, but in the long term a significant increase in value for his/her property, presumably as land condition improves. Some participants in the VIP explicitly estimated their land value and used this as a basis for their covenant claim. Over three quarters of survey respondents said that the requirement for a covenant was important or very important when forming their bid.

Auction theory predicts that participants will try to include “information rent” in their bids, which is an amount above their opportunity cost. Information rent is based on the likelihood of the bid succeeding - as the probability of being accepted increases, landholders increase the information rent in their bid, which leads to higher bids (Stoneham et al 2003:490). Many factors contribute to the landholder’s perceived probability of being accepted, including the amount of information they hold about the relative importance of their property, the presumed range of bids submitted by other participants and the perceived level of competition in the process.

In the VIP participant questionnaire, the results to the questions about these influences were mixed. Half of the survey respondents felt that bidding in their region would be competitive or very competitive. Only 21% felt bidding would not be very competitive, while 29% professed to have no knowledge of the likely competition level. No participants felt their environmental importance of their vegetation was less than other patches in their region. 54% felt their vegetation was more important and 46% felt it was about the same level of importance. Two-thirds of respondents thought they were likely or very likely to be accepted into the VIP. A high level of disappointment is thus likely as only 28% of applicants were accepted. Only 16% thought it was unlikely or very unlikely they would be accepted, with the rest of the respondents professing to not have any idea of their chances.

The general perception of competition should have lead to lower bids. Conversely, the majority of survey participants who felt that their vegetation was more important than other patches in their region may have increased their bids. However, almost as many participants felt their vegetation was of the same quality. It would have been unlikely for people who believed their vegetation of relatively poor quality to have participated. A more significant proportion of people felt they were likely to be successful, and this should have increased their bids. It will be informative to look at the connection between these factors and bid levels when the econometric analysis is carried out.

The emphasis on the potential financial returns to landholders in the literature was designed to appeal to landholders who may not have chosen to otherwise participate in an NRM program. However, it may have resulted in the perception that higher bids were acceptable, particularly when taken in conjunction with the widely advertised \$12 million budget. The widespread resentment about lack of adequate compensation for not be able to clear remnant vegetation may have worked in conjunction with the awareness of the large budget to further increase bids.

A possible theoretical benefit of using an auction mechanism is that more people will be attracted into the program than with another fixed price (or cost-share ratio) program. However, in this instance only 23% of survey participants had not previously participated in a government NRM program. The two most common programs for survey participants to have been involved in were Natural Heritage Trust funded activities and FarmBis training (both 35%). Twenty-seven percent had participated in Land for Wildlife, while two participants had already been involved in a Nature Refuge covenanting program.

Additionally, preliminary analysis seems to show that the VIP has attracted mainly conservation-minded people into the program. The reason for participation that elicited the most support from survey participants was the statement “it’s important to Australia to conserve the bush”; 95% of respondents stated that it was very important or extremely important to their decision to participate. Amongst the “other” reasons given for participation

were statements such as “the land should not have been cleared anyway” (and should thus return to remnant), “someone needs to take responsibility and start giving back some of what has been taken out” and “addresses the inadequacy of vegetation legislation on previously cleared areas”. Similarly, over 90% of respondents said that the public benefits from participation was a very important or extremely important influence on their bid level. An abridged version of the widely used New Environmental Paradigm (NEP) scale was used to measure the environmental attitude of respondents (Dunlap *et al.* 2000). The NEP involves participant responses to a variety of statements being aggregated to form an environmental attitude orientation for each respondent. A series of attitudinal questions that form a scale is one method that is held to be a more valid and reliable method of measuring a central concept than separate items alone (De Vaus 2002:180). In this instance, there was a spread of responses, with the average participant being pro-environment. Finally, 70% of respondents identified themselves as being active members of Landcare during the last three years. Further analysis on the links between the individual scores and other variables (such as bid levels) will be interesting.

It was hoped that participants would enjoy the opportunity to develop their own bid without restrictive cost-sharing rules. However, 85% of survey respondents stated that being able to set their own price on their contribution was neither important nor unimportant, not very important or not at all important to their decision to participate. Greening Australia field staff reported that landholders had great difficulty in coming up with a bid for the covenant. Many were used to costing management actions such as fencing, but the concept of pricing opportunity cost was new and confusing.

The communication plan for the VIP appears to have been successful, with participants reporting a wide range of sources of information.<sup>5</sup> The most popular source of information appears to have been contact with GA (29%). The next most popular was contact with government departments or agencies (24% - particularly EPA’s Nature Refuge officer) and then the public meetings (21%) and then local newspapers (12%).<sup>6</sup> Twenty-six percent of participants nominated another source of information. These were varied, including a local magazine, the television advertisement, ABC radio, the leaflet, the local ranger, neighbours, friends and local community groups. It appears that personal forms of contact are more successful than more formal marketing methods such as the brochures and advertisements.

Participants appeared satisfied with their experiences with the VIP. Eighty-three percent said they would participate again in a similar program if they were not successful in obtaining funding from the VIP. Of the four respondents who would not participate again, the reasons given were that the process was too time consuming; the financial incentive for doing so would have passed i.e. weed control in tree plantings; bidding process requires some parameters to ensure bids are not a waste of time. i.e. there would be massive differences in bid amounts; and it will clearly have been flawed if we are unsuccessful.

Generally survey participants felt confident in their understanding of the tender selection process. Half the participants felt they understood the selection process well, while another 17% said they understood it extremely well. A quarter felt they did not understand it very well, and 8% did not understand it at all.

---

<sup>5</sup> Participants were asked on one of their forms to nominate where they heard about the program. Missing information was supplemented from the participant surveys.

<sup>6</sup> Figures may not add up to 100% as participants could cite more than one source.

The management plans of some participants were of a lower quality than others, which lead to lower scores. Equity demanded that if one person could redo his or her plan, everyone should have a chance to, so no renegotiation was allowed. These participants are being encouraged to resubmit plans in any future iteration of the VIP. It is interesting to note that nearly all survey participants developed their management plans almost independently of GA. Forty-two percent of respondents said they developed their VIP management plan alone, and an equal number said most of the plan was their idea. Only four respondents said that they and the GA project officer developed the plan together. This lack of expert input may have resulted in some properties having sub-optimal plans. This risk would have been exacerbated by the lack of clear guidelines as to eligible activities.

## **Lessons**

The first lesson from the first round of the VIP is to carefully select the instruments to be used. As discussed above, the requirement for a strict covenant probably contributed to the low participation rate and almost certainly inflated the bids. Recent research in Tasmania concluded that land use restrictions were the most important aspect of incentive programs to landholders (I. Van Putten personal communication, 2005). Nearly everyone involved in the VIP's design and implementation were supportive of the need for permanent protection but were uncertain as to how this should be achieved. Similarly, an auction mechanism open to any landholder with non-remnant vegetation in Queensland (outside of Cape York) may not have been the best option for conserving high quality regrowth. A more targeted approach may have been appropriate.

Another key lesson from the VIP has been the importance of sufficient time for designing the auction. Auction design needs to be adapted to the situation in order to avoid sub-optimal outcomes. As Klemperer (2004:122) concludes, "local circumstances matter and the devil is in the details". Design time was particularly important given that a conservation auction had not been run on such a large geographical scale before and the limited amount of readily accessible ecological information in Queensland. These circumstances meant that an ecological benefits index could not be easily constructed. Similarly, it would have been useful to run a small pilot to test the mechanism prior to implementation across the large Southern region.

A related problem was the lack of stakeholder consultation in the design process. Greater community consultation while designing the VIP might have highlighted some of the problems that caused low participation and high bid levels. For example, the most popular form of protection for the vegetation (such as the type of covenant) could have been chosen had more consultation occurred. Although it might have been difficult to conduct workshops across the whole state, greater familiarity with the tender mechanism may have increased participation (such as those described by Windle et al 2004).

There are potential advantages and disadvantages in using a third party to deliver a program. Greening Australia probably acted as a buffer between potential participants and NR&M in the aftermath of the unpopular changes to the vegetation legislation. Although GA staff reported some hostility towards the VIP as a result of the new legislation, it is possible that landholders may not have been able to move past their resentment had the department been presenting information on the scheme. Another benefit is that an organisation's present network can be used to publicise and support a program. However, if a third party is going to be used, it is important that respective roles and responsibilities are clearly outlined before the

program starts to avoid confusion. Clear guidelines on the preferred management actions and the selection process need to be provided to the contracted group so that they can help landholders create good applications.

Problems with the management plans in both rounds reflect the importance of clear guidelines for staff and participants. In order to save time and avoid needlessly rejecting good applicants, eligible actions should be clearly outlined in staff training and participant information sheets. Participants should be encouraged to have whole property plans so as to avoid piecemeal management plans that do not allow for best management practice and satisfy the expert panel. These guidelines should not change throughout the process so as to minimise confusion for participants.

The importance of a method of explicitly comparing ecological value was reinforced by the difficulties experienced when deciding if properties represented good value for money. As indicated earlier, the ranking of properties did not reflect their relative value and so it was difficult to establish which offered the best ecological value for money. The \$/ha measure was not a sound substitute for an environmental benefits score. Although Queensland's limited ecological information and large size make the development of a practical metric more difficult than in some other states, it is worth investing in the development of one for future programs.

A reserve price can be very important. The exceedingly generous budgets for each region would have allowed for all applicants to be funded if a reserve price had not been set. In the absence of environmental market data, it is difficult to know where to set a reserve price. It is possible to try to estimate the opportunity cost of participation through estimating lost income gained, or through valuing the public benefits generated by the project. Additionally some form of land value can be the basis for the price, as is common when values are set on permanent conservation easements in the United States (Lassner 1998). As more conservation tenders are carried out, the data generated will be useful for setting reserve prices for future programs.

## **Conclusion**

There are many lessons to be learned from the initial stages of the VIP. It is important that the apparent failure of the program to produce on-ground outcomes in the first round does not reflect solely upon the auction mechanism itself. Rather, it is a reminder that careful design is crucial when using market based instruments. The second round of the VIP was more successful in achieving the aims of the program than the first round. At least thirteen applications are being funded. Participants appear to be satisfied with their experiences of the program, and bid levels were more reasonable. Many sources of information about the program were accessed. The expert panels were able to quickly process the applications.

However, this success was driven by the high level of participation, and altruistic behaviour, of the North Coastal region. There appears to have been limited success in attracting mainstream landholders into the program. Many of the applicants in the North Coastal region were not landholders whose livelihoods depended on the commercial use of their land or were threatened by the changes to the vegetation legislation. Participants appear to have been motivated by altruism rather than being converts to improved NRM. Similarly, the participants in the EPA's BIT seem to be landholders with a strong stewardship ethic. If the under-representation of purely production-focused landholders continues, the potential impact

of these incentive programs may be limited. It will be interesting to see if the last VIP region of South East Queensland, with its high level of lifestyle properties, will produce comparable results. The results from a range of regional NRM body tender pilots across Queensland will also provide useful comparisons.

## References

Australian Bureau of Statistics, 2003. *Australia's environment: issues and trends*: Australian Bureau of Statistics: Canberra.

Bryan, B. A., Gatti, S., Connor, J., and King, D. 2005. *Catchment Care – developing an auction process for biodiversity and water quality gains*: CSIRO Land and Water and the Onkaparinga Catchment Water Management Board.

De Vaus, D. A. 2002. *Surveys in social research*. Allen and Unwin: Crows Nest.

Dunlap, R. E., Van Liere, K.D., Mertig, A.G. and Jones, R.E. 2000. "Measuring endorsement of the New Ecological Paradigm: A revised NEP scale." *Journal of Social Issues*, 56:3, 425-42.

Gole, C., Burton, M., Williams, H., Clayton, H., Faith, D., White, B., Huggett, A. and Margules, C. 2005. *Auction for landscape recovery: final report*: WWF-Australia: Wembley, Western Australia.

Klemperer, P., 2004. *Auctions: theory and practice*. Princeton University Press: Princeton and Oxford.

Lassner, J. A. 1998. "Valuing agricultural conservation easements." *The Appraisal Journal*, 66:2.

Latacz-Lohmann, U., Van de. Hamsvoort, C. P. C. M., 1998. Auctions as a means of creating a market for public goods from agriculture, *Journal of Agricultural Economics* 49:3, 334-45.

Oliver, I., Parkes, D., 2003. *A prototype toolkit for scoring the biodiversity benefits of land use change. Version 5.1*: NSW Department of Infrastructure, Planning and Natural Resources

Queensland Environmental Protection Agency, 2002. *Biodiversity Assessment and Mapping Methodology: Version 2.1*: Queensland Environmental Protection Agency: Brisbane.

Stoneham, G., Chaudhri, V., Ha, A., Strappazon, L., 2003. Auctions for conservation contracts: an empirical examination of Victoria's BushTender trial, *The Australian Journal of Agricultural and Resource Economics* 47:4, 477-500.

Windle, J., Rolfe, J., McCosker, J. and Whitten, S. 2004. *Designing auctions with landholder cooperation: results from experimental workshops*: Environmental Protection Agency and Central Queensland University: Emerald.