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LANDSCAPE LINKAGE ACROSS THE SOUTHERN DESERT UPLANDS

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INTRODUCTION

In 2006 the Desert Uplands Committee piloted a market-based incentive project to establish wildlife habitat linkage across the southern part of the Desert Uplands biogeographic region. Landholders were asked to submit bids detailing the areas and costs involved in delivering areas to contribute to landscape linkage across the bioregion. The areas sought were to be in good land condition or to be able to attain good condition within the course of the contract. The focus of the auction was to improve the management of vegetation areas with high biodiversity values on privately owned grazing land, and where possible, to create a linkage across the region. In this way; linked areas across the southern Desert Uplands that were in good land condition could secure a wildlife refugia, landscape connectivity and climate change survival to native flora and fauna. The project was carried out in collaboration with Central Queensland University, CSIRO and the Environmental Protection Agency with National Heritage Trust funding provided by the Burdekin Dry Tropics.

REVIEW

While environmental goods are important to our well being, our demand for these goods is not reflected in the current market framework. As a result consumers of these goods are not able to signal their demand to producers and producers are not rewarded for the supply of these goods. Market-based incentives (MBIs) are one way to bring about an increased level of supply of environmental goods. MBIs encourage the provision of an environmental good through market signals rather than through explicit directives such as regulation. MBIs effectively alter the payoffs faced by land managers for various land management actions. Priced based MBIs rely primarily on price signals rather than scarcity to create incentives to potential participant. The auction mechanism is designed to overcome information asymmetries in identifying the most cost-effective options for Government investment. The bidding process is designed to reveal the costs of changing land uses to improve biodiversity outcomes. These costs are known to land holders but not to government; conversely, government knows the benefits of changing management, but not the farmer (Coggan and Whitten 2005).

While biodiversity tenders have occurred elsewhere in Australia, none have attempted to achieve connectivity across the landscape. This multiple round tender was designed by the Desert Uplands Committee with Central Queensland University, the Environmental Protection Agency and CSIRO using landholder workshops with a series of 12 interlinking dummy properties (Rolfe *et al.* 2005).

METHODOLOGY

A period of six months was allocated for the following processes –

- the promotion of the tender to landholders in the southern Desert Uplands,
- processing of Expressions of Interest (EOI),
- field assessment of potential areas,
- first assessment of bids and feedback to applicants,
- second assessment and feedback to applicants,
- final bid assessment and signature of contracts.

A range of promotional materials were prepared to explain and advertise the tender process and timelines to potential participants in the Desert Uplands. Three workshops were

conducted in the southern Desert Uplands on the properties located within the target area to explain the desired outcomes and the tender process to landholders. Regional ecosystem mapping, biodiversity significance mapping and satellite imagery was presented at the workshops. 50 landholders attended the workshops. EOIs were called for two months after the project commenced. The project officer then made maps of each property from which EOI were received. A base map of each property with the infrastructure- fencing and watering points marked on the satellite imagery, the regional ecosystem mapping and mapping of the biodiversity significant areas.

The project officer assessed the proposed bid areas on each property using a site representative of average condition for the area located at least 2km from the nearest watering point. A 100m transect was used to measure ground cover by a point intercept method and 5 0.25m by 0.25m quadrats were cut to dry weigh and establish the pasture biomass. This information was used to compile an estimated land condition for each bid area.

The auction design included the use of multiple (three) bidding rounds:

- This allowed landholders to learn about the bidding process and helped reduce some of the perceptions of the risk and uncertainty associated with this new type of incentive mechanism.
- It was likely to result in competitive efficiencies.
- It provided the opportunity to provide feedback about the location of other bid proposals. This meant that participants had the opportunity to adjust the alignment of their own bid area and improve their chances of success.

Three broad categories were used to assess the environmental benefits of the individual proposals.

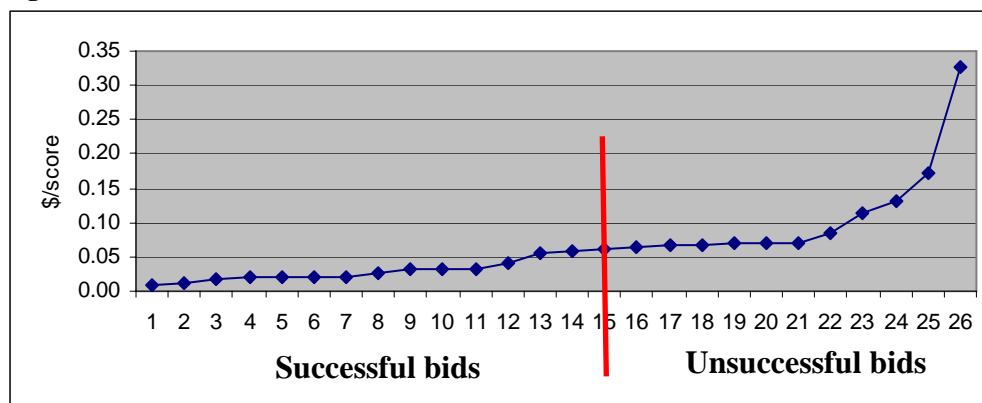
- A biodiversity score accounted for 33% of the total score;
- a land condition score (22%) and
- the linkage component comprised 44% of the total score.

RESULTS

A total of 24 landholders (14% of all landholders in the region), covering 27 properties, had shown some interest in the auction and all were contacted and interviewed. This included:

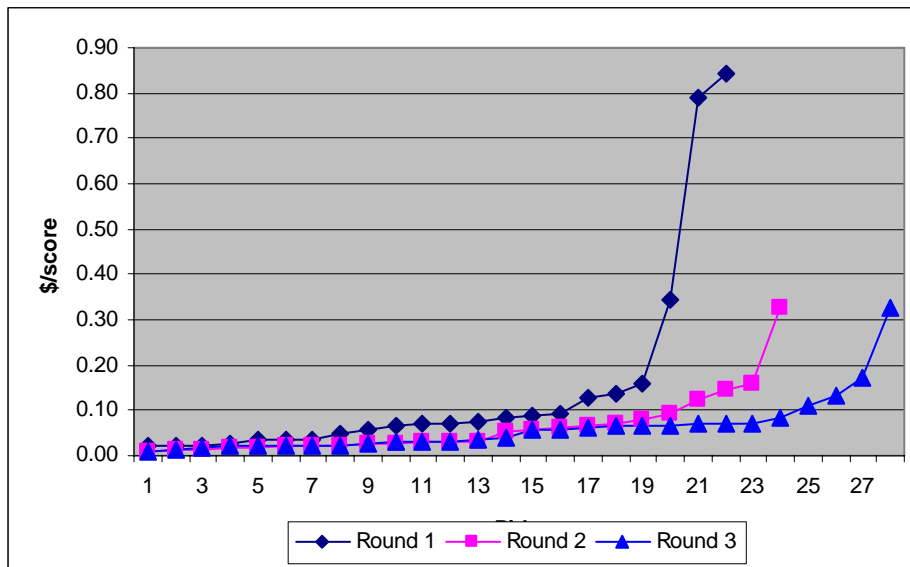
- 5 people who received information, but did not enter a bid; and
- 19 people who entered a bid; of whom
 - 14 had successful bids; and
 - 5 had unsuccessful bids.

Figure 1. Relative bid values



Overall, 58% of all landholders who showed some interest in the scheme and 74% of those who submitted a bid were successful in receiving funding. One measure of the scheme's success from the landholder perspective is the fact that 75% of respondents indicated that they would consider submitting a bid in any future auctions.

Figure 2. Relative bid values (\$/score) in the three bidding rounds

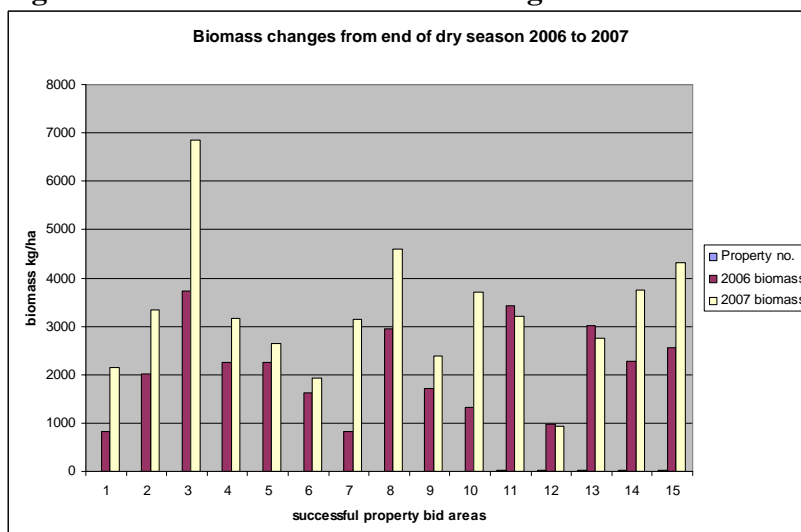


AUCTION OUTCOMES

- The 15 successful bids accounted for \$343,076 in funding for two year contracts and included **84,992 hectares of remnant vegetation**. This meant that the average cost of protecting biodiversity in areas of remnant vegetation was **\$4.04/ha or \$2.00/ha per year**.
- The linkage assessment score appeared to have been successful in achieving a linkage outcome. Eleven of the 15 successful bids were part of a group that formed a distinct corridor or landscape linkage with only single or part property gaps. The total bid area of this group was over 62,000ha (77% of the total bid area).
- Included in the successful bid areas were:
 - 1,286ha with “**high**” value **EVR (Endangered, Vulnerable, or Rare) taxa**;
 - 2,916ha with “**high**” value **Ecosystem value**;
 - 8,484ha with “**very high**” value and 68,983ha with “**high**” value **Ecosystem Diversity**; and
 - All 84,992ha had **Special Biodiversity Value** (only assessed as presence or absence).

At the end of one year the biomass measurements showed significant increases in most bid areas.

Figure 3. Biomass measurements changes from 2006 to 2007 at all bid areas



DISCUSSION

Outcome based payments ensure that the funding body does actually receive a quantifiable biodiversity gain and additionally allows for flexibility in how the outcomes are achieved and encourages innovation in how the desired outcomes are achieved, which may be achieved more efficiently (Gorddard *et al* 2007).

Additionally, landholders feel empowered by the process in that they determined what outcome was delivered and at what cost. In the participation evaluation report, a number of inter-relationships of conservation management with production benefits were highlighted by participating landholders namely a) be financially better off from the scheme, b) by achieving the desired environmental outcomes they would be better off in terms of economic performance and c) ensure future profitability (Windle *et al* 2007).

The contractual period should long enough to ensure that ecological improvements are secured, that is for a minimum period of 15 years and which would likely cover severe drought periods when adverse grazing impacts would occur.

REFERENCES

- Coggan, A. & Whitten, S. (2005). Market Based Instruments (MBIs) in Australia: what are they, important issues to consider and some applications to date. Background paper presented at Desert Knowledge CRC workshop Alice Springs
- Gorddard, R., Whitten, S. & Reeson, A. (2008). When should biodiversity tenders contract on outcomes? Paper presented at 52nd Annual Conference of Australian Agricultural and Resource Economics Society, Canberra.
- National Market Based Instrument Working Group (NMBIWG)(2005). *National Market-Based Instrument Pilot Program, Round 1 Interim Report*. National Market Based Instrument Working Group, Canberra.
- Rolfe, J., McCosker, J. and Windle, J. (2005). *Final report for MBI Project 18 Establishing East-West Corridors in the Southern Desert Uplands Research Report No.6.*, Environmental Protection Agency and Central Queensland University
<http://resourceeconomics.cqu.edu.au/>
- Rolfe, J. and Windle, J. (2006). *Using field experiments to explore the use of multiple bidding rounds in conservation auctions*, International Association of Agricultural Economics, IAAE Discussion Paper No 1. http://agecon.lib.umn.edu/cgi-bin/pdf_view.pl?paperid=21120&ftype=.pdf
- Whitten, S., Reeson, A., Windle, J. and Rolfe, J. (2007). *Barriers to and opportunities for increasing participation in competitive tenders*, Draft report for Land and Water Australia, May 2007, CSIRO Sustainable Ecosystems, Canberra and Central Queensland University, Rockhampton.
- Windle, J and Rolfe, J. (2006). *Fitzroy Basin Association's Biodiversity Tender: An outline and evaluation*, Main Report for the Fitzroy Basin Association, August 2006. Central Queensland University, Rockhampton. <http://resourceeconomics.cqu.edu.au/>
- Windle, J., Rolfe, J., McCosker, J., & Lingard, A. (2007). DUC Landscape Linkage Main Report. DUC publication