

STOCK EXCLUSION FROM WATERWAYS IN THE PEEL-HARVEY COASTAL PLAIN CATCHMENT

Final Progress Report

31/05/2005

Milestone covering Stages Ten (10) and Eleven (11) in Section F (Table 1) of the Schedule in the contract agreement have been completed and approved.

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Amended for inclusion in the 2007 draft Water Quality Improvement Plan for the Peel Inlet-Harvey Estuarine System. Financial Statement and Statement of Compliance removed.

PROJECT REPORT

This is the final progress report for the CCI Stock Exclusion from Peel Harvey Waterways.

Thelma Crook has continued to be employed as a Project Officer for 0.2 FTE and will continue to monitor and report until all projects have been completed as per each individual Management Agreement.

1. Progress Since Last Report.

Undertake fencing works – Describe and report on execution of works projects. Report to identify works locations, selection process and landowner/manager contribution.

Since the last Progress Report fencing works have been extended into the five top subcatchments identified as priority areas through the Bussemaker P (2004) Draft DOE internal report “Peel Harvey Status and Trends of Nutrient Concentrations”. These subcatchments include Gull Rd, Mayfield Drain, Meredith Drain, Peel Main Drain and the Caris Road Drain.

Works Location – See attached map.

All sites have GPS coordinates and site locations marked. – See Table 1

The process by which applications are assessed and agreed to involves;

- a site visit by the project officer
- set up photo monitoring points
- completion of an expression of interest form by the landowner
- an assessment process using a set of criteria as set down by the Project Steering Committee
- if successful, the landowner is sent a letter asking them to complete and return to DOE the Management Agreement and Statutory Declaration
- on completion of the Management Agreement and Statutory Declaration landowners are asked to submit a tax invoice for the agreed amount or an invoice on completion of the fence; and finally
- follow up site inspections and photo monitoring are undertaken by the project officer.

Approval for 39km of fencing covering approximately 108 hectares has been authorised through twenty one individual projects. This is 11km less than the management target. Since the inception of this project there has been an increase in the cost of fencing (materials and labour). The aim was to provide landowners with adequate funding to cover the cost of suitable fencing materials to ensure stock exclusion from the riparian zone.

With all projects the landowners contribution is substantial:

1. Minimum of three rows of vegetation either side of the waterway – this includes site preparation, purchase of seedlings and planting.
2. Erection of fence plus additional materials
3. Stock crossings and off site watering points (if required)
4. Long term maintenance

The landowner contribution greatly exceeds the dollars made available through the CCI project. (See attached Progress Report Financial Statement)

2. Identification of Stages, Activities and Outputs Met.

A list of Stages, Activities and Outputs of the project are listed below in line with the organisations ‘Proposal Submission’.

In consultation with landcare groups, landcare managers, individual farmers and the Steering Committee, a Management Agreement and Statutory Declaration were drawn up to meet the needs of this project (See attached). Each landowner was consulted and in reference to the conditions of the Management Agreement before funds were released.

All landowners have undertaken a commitment to revegetate their project in conjunction with the fencing. Where the fencing has been completed, ninety five percent of the landowners have committed to undertake revegetation works in the 2005 season.

Along with site selection using Bussemaker's Draft '*Peel Harvey Status and Trends of Nutrient Concentration Report*' to determine priority catchments, a Project Site Selection Criteria was formatted using information determined by the Steering Committee outlining critical and strategic location for works. Each project was scrutinised against this format before it was approved or rejected.

Landowners in the Nambeelup subcatchment were contacted by phone, letter (on two occasions) and through their local landcare group and LCDC. Site visits took place with many of the landowners. The project was supported and promoted through the local Natural Resource Management Officers (NRMO), Project Steering Committee members, LCDC's, Landcare groups and Rivercare officers.

Once promotion and conference for the project was exhausted within the Nambeelup catchment the project was expanded to take in other subcatchments listed as high priority.

This project has worked in partnership with the local community, local Natural Resource Management Officers and Rivercare Officers to maximise the opportunities to fence critical and strategic riparian zones. Fencing and revegetation works and, where appropriate, stock crossings and offsite watering points were undertaken to reduce diffuse source of nutrients and sediments entering drains, artificial and natural waterways. Through the committee it was decided to provide incentives for landowners who were willing to maximise the benefits of this project through fencing and revegetation. Landowner incentives were;

1. Fence off a minimum 10 meter buffer and revegetate or fence and revegetate with a minimum of three rows of vegetation - \$2,400km.
2. Fence and provide a minimum 10 meter buffer with no revegetation - \$2,000.
3. Fence with less than a minimum 10 meter buffer - \$1200.

The partnership between local NRMO's and Rivercare officers has resulted in revegetation or restoration of native vegetation within the riparian zone in an effort to increase biodiversity, habitat and extend the process of nutrient and sediment reduction beyond the scope this project was funded for.

Monitoring of the project is being undertaken through the Department of Environments Annual Nutrient Snapshot, monthly Catchment Monitoring Project and the LMU monitoring program. The Annual Nutrient Snapshot report provides this project with five years of data. This information is currently in draft format.

Photo points have been set up on almost all properties to monitor the visual progress of each project (see file).

4. A Description of Progress to Date and of Project Outcomes Achieved.

PROJECT	PROGRESS TO DATE	OUTCOMES ACHIEVED
Consultation Process	Completed	All landowners in the Nambeelup catchment were contacted and made aware of the project by letter and phone. This consultation process was extended to other subcatchments. Landowners now have a greater awareness of issues relating to stock access on nutrient and sediment export from their properties and the benefits of fencing and revegetation. The Department has a greater understanding of landowner issues and concerns over fencing of riparian zones in this catchment.
Landowner Agreements drawn up	Completed (see attached)	All landowners have agreed to the conditions and have signed the Management Agreement and Statutory Declaration.
Site Selection Process	(See body text and attached documentation)	Site selection process was undertaken once an expression of interest was received from the landowner and after the project officer undertook a site visit. The form was then signed by the project officer and manager and a letter of acceptance or rejection was sent to the landowner.
Development and implementation of Generic Management Agreements.	Completed (see attached)	Once a project was accepted the landowner was asked to return the signed Management Agreement and Statutory Declaration to the DOE to be signed by the project manager. Funding was then approved for the project.
Fencing	<ul style="list-style-type: none"> ▪ Approvals have been completed for all fencing projects. Standard of fencing has been high. 	<p>39km of fencing projects signed by landowners and the DOE. Total expenditure for fencing for this project is currently \$103,741 with the approval of the final project costing \$6963 Total = \$110704.</p> <p>Area fenced falls 11km short of the project objective. This fencing is protecting approx 108hectares of riparian land. All landowners took up the maximum incentive for fencing which involved a commitment to revegetate the protected</p>

		<p>riparian zone. Cronin 1998 states that “The export of phosphorous is reduced by a factor of 5 when a waterway is fenced and revegetated. 40% of total P was particle bound. Fenced off and grassed buffers can reduce sediment loss by 66% to 99% at all flow rates”. This Thesis was undertaken in the Coolup subcatchment – an area that was covered by this project.</p>
<p>Revegetation works</p>	<p>All landowners have made a commitment to revegetate the fenced areas. Some projects have been completed while others will be finalised in the 2005 or 2006 planting season. Revegetation projects have been undertaken with the support of local NRMO’s and Rivercare Officers.</p>	<p>All landowners who have signed up for the project have agreed to revegetate the riparian zone. Vegetation stabilises banks, fulfils an ecological role and reduces inorganic phosphorus by slowing the flow of water. Cronin (1998) showed that the establishment of riparian vegetation along drainage channels was very effective in reducing the nutrient EXPORT from small headwaters on the Swan Coastal Plain. The fencing and revegetation of riparian zones intercepts agricultural runoff and is particularly effective at reducing particulates and attached nutrients (Heady and Guise 1994).</p>
<p>Monitoring and Evaluation of the Project</p>	<ul style="list-style-type: none"> ▪ A Sampling and Analysis Plan was drawn up the various monitoring projects undertaken in relationship to this project.(See attached) ▪ Photo points have been set up on almost all projects to monitor the visual progress of the project. (See attached) 	<ul style="list-style-type: none"> ▪ Monitoring for TP, TN and FRP were undertaken as part of the annual catchment Nutrient Snapshot. The results of this run are being analysed and reported on by Murdoch University. Analysis of the past five years monitoring runs will be summarised in this report. This report will be available in July of 2005. Catchment and LMU monitoring is continuing on the Nambeelup Brook and Gull Road sites (see CCI Water Quality Monitoring Program and Infrastructure for the Peel Harvey Catchment report). These sites will be monitored long term through the DOE’s monitoring projects ▪ Photo point monitoring has been undertaken with approval of all landowners to record the

		<p>progress of fencing and revegetation. Points have GPS coordinates. The before and after photos will provide a visual indication of water quality and riparian improvement.</p> <ul style="list-style-type: none">▪ At this point in time it is too early to gauge the projects impact on phytoplankton blooms in the lower river or estuarine waterways. Monitoring will be undertaken long term as part of the Department of Environments sampling projects.▪ Monitoring and evaluation of this project will be an ongoing process undertaken by an officer and outside the scope of this current project.
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5. An Indication of Time Frame in Table 1 Being Met

An extension for the final report was requested and granted. All other reporting requirements have been met on time. The project has now been completed.

6. An Analysis of the Effectiveness of the Completed Stages, Activities, and Outputs Outlined in This Schedule.

- Establishment of the Steering Committee involving community, other agencies and the Department of Environment provided a network to maximise the outputs of this project and resulted in a broader network promoting the project to landowners in the Peel Harvey catchment. These links assisted in increased awareness of the project and its benefits and a greater uptake of the project than would have been possible if the project officer was working in isolation.
- Verbal communication, letters and site visits with individual landowners and community groups provided an opportunity to explain the CCI project and its links with land and water issues and management practices. The verbal communication, meetings and site visits provided an opportunity to break down barriers and misconceptions and provide landowners with factual information. In return it offered landowners the opportunity to express their concerns to the Department.
- Before drawing up the Management Agreement and Statutory Declaration document a number of consultation meetings were held with individual local landowners, NRMO's and landcare groups. The consultation process looked at the content of the Agreement and Declaration as well as the ability of landowners and the Department to monitor and evaluate the project for the term of the Agreements. Management Agreements provide a streamlined and efficient method of formalising the process between the managing agency, the funding body and the landowner while standardising the process for all proponents. They also establish known and agreed outputs and timeframes for the agency and landowner.
- The result has been a Management Agreement and Statutory Declaration that has met all participants needs and has had a 100% uptake by the community.
- Site specific/selection mapping was undertaken in consultation with the local Landcare Coordinators to capture previous and current fencing projects. This mapping in conjunction with previous water quality monitoring data provided the basis for site selection. When assessing applications it has provided the opportunity to identify areas that link new projects to existing works as well as priority areas for future works.
- The contribution of funds through the CCI project has enabled landowners to establish good quality fences that increased landowners ability to remove stock from local waterways. Incentives for funding were based on maximising the benefits of stock exclusion as well as protection and enhancement of the riparian zone through revegetation with indigenous plants to reduce nutrient and sediment export from abutting paddocks.
- Despite the incentives, the landowner contribution for large property owners is prohibitive. As an example, one of the larger landowners within the Nambeelup catchment had approximately 25km of waterways running through their property. A minimum estimate of their contribution toward fence erection alone would have been \$42,500.

The project has resulted in:

- Increased contact with local NRMO's, landowners, local council staff and local landcare groups
- Increased awareness of land and water degradation issues relating to stock accessing natural and artificial waterways. These issues include nutrient export, bank destabilisation,

sedimentation and water quality issues such as eutrophication, algae blooms and the resulting fish deaths.

- Uptake of the project was enhanced through working in partnership with local NRMO's and rivercare officers resulting in a 100% uptake of the fencing in conjunction with revegetation of the riparian zones. The combination of these two management practices should maximise P and sediment reduction.

7. A financial Statement of Receipt and Spending of Funds, The Organisation's Contribution and the other Contributions Signed by an Employee with Financial Delegation.

See attached Progress Report Financial Statement

SUMMARY

Nutrient assimilation through fencing and riparian vegetation is an effective way of reducing nutrient export into larger drainage systems (Cronin 1998). The use of fencing and riparian vegetation in conjunction with appropriate landuses, fertiliser practices and management of point source pollution will further reduce the nutrient export into receiving waters.

Large portions of the drainage and natural waterways in the Swan Coastal Plain of the Peel Harvey lie in private ownership. It is critical that landowners from both the private and public sector understand the downstream impacts of their landuse practices and take some ownership of the environmental consequences.

It is acknowledged that participation rates in projects similar to this are relatively low initially and increase as the awareness and acceptance of the project develops. The uptake by landowners had started to increase substantially in the last four months of this project.

The Peel Harvey catchment is recognised as a very pro-active landcare region with on-ground and technical support provided for landcare groups and local landowners through Natural Resource Managers and Rivercare Officers as well as agency and local government staff. There are currently thirty three landcare groups four Landcare Conservational District Committees (LCDCs) actively involved in landcare work in the rural and peri urban sector of the Coastal Plain from Mundijong to Harvey. Some landowners have been undertaking fencing and revegetation of paddock boundaries and waterways since 1990 (see attached map).

Despite this support there is a substantial section of the community who do not acknowledge their direct or indirect contribution to downstream nutrient and sediment input into receiving waterways. Because of the increased and prospective development of the region there are also landowners who have purchased properties for its speculative value and are not interested in capital works or environmental issues related to current landuse.

Presently, other than through education, awareness raising and financial incentives, there is limited capacity to persuade landowners or vesting agencies to fence and revegetate the riparian zone of waterways within their property. Data demonstrating the economic benefits of fencing and revegetation to landowners is scarce while many landowners perceive that these landcare activities increase landowner management responsibilities and costs.

Support provided by agencies and landcare groups/LCDCs' through subsidies and technical support does provide a motive for landowners to undertake protection of the riparian zone but this funding is often only a small percentage of the true cost. For large landowners their contribution is prohibitive eg 20km of fencing subsidised at \$2400/km requires a minimum contribution of \$34,000 by the landowner.

In many areas, fencing off waterways that dissect existing paddocks and are currently used as a drinking source for stock is deemed a low priority by some landowners. Other projects have proven that providing incentive funding for stock crossings and off site watering points increases the uptake of riparian fencing activities.

RECOMMENDATIONS

One of one extension is critical in gaining works and in the trust and ongoing support of landowners.

Officer time is required past the completion date for the signing of projects and expenditure of money to ensure the monitoring and evaluation of each project as per the Management Agreement is completed.

Funding should reflect the true cost of fencing and removing stock from the riparian zone.

Initial uptake up by landowners for projects such as this is often slow but momentum increases as networking unfolds and the project is recognised and understood by landowners. It is important to continue the momentum and sustain community participation once the project is up and running.

In recognition of the importance of community participation in projects that will reduce nutrient export into receiving waterways consideration should be given to the true cost and time currently provided by landowners. Funding for both material and contractors, to be paid on completion of work, is more likely to ensure that the work is undertaken in the agreed timeframe and to an acceptable standard (Paul Bateson 2001). Other projects have shown that the added incentives increase the uptake of projects by landholders

The ongoing monitoring of the project to evaluate and monitor its success as well as ensure obligations under the Management Agreement are met by landowners has not been accounted for and should be taken into consideration when drawing up any future project proposals. The Management Agreement signed by landowners and the Department have a 10 year obligation with no funding provided to ensure they are abided by or monitored. Follow up inspections should be a part of the monitoring and evaluation process to:

- ensure the project has been completed within the agreed timeframe
- ensure the project has been completed to agreed specifications
- ensure the project has met its objectives
- measure the landowners satisfaction and long term response to the project
- monitor whether the objectives and outcomes of the project have been achieved long term.

Consideration should be given to intensively monitor selected properties for the export reduction of P into receiving waters through fencing and stream bank revegetation. Monitoring should be undertaken over a period of years.

Further research to determine the economic benefits through farm production could assist in promoting and the uptake by landowners of projects such as fencing and stock exclusion.

Appendix 1

Costs for fence erection, site preparation and revegetation.

Activity	Cost
Fence erection	\$1700/km
Ripping	\$90/hour - minimum of 3 hours per site
Mounding	\$50/hour – minimum of 3 hours per site
Spraying Hire of contractor	\$90 per day
Chemical for spraying	\$70 per hectare
Seedlings and planting	\$0.80 per seedling
Grass hopper control	\$90 per day