



Department of Primary Industries

AGENDA PAPER: Deakin 2AP Case study

Surface Water Management Working Group & Loddon Murray Community Reference Group

General Business

CSD CC Action Item 52 x 2:

Case study (Deakin 2AP) outlining issues with this CSWMS not going ahead to construction to be presented back to CSDCC by next meeting - Sandra Schroen.

Status: 1st presentation: COG , 10th February 2006, **2nd presentation:** CSD CC Sub Committee 16th February 2006, **3rd presentation:** CSD CC, 19th June 2006

4th presentation – SWMWG – 17th July 2006 & LMCRG.

Prepared by: Jennifer Pagon, 21st June, 2006.

PURPOSE

1. To present the Case Study compiled for the Deakin 2AP Community Surface Water Management System (CSWMS).

BACKGROUND

2. The Deakin 2AP is a CSWMS located south west of Tongala. The catchment covers 900 hectares, with a drain length of approximately 9.3 kilometres.
3. A design has been completed for the catchment by Schroen Irrigation Improvements.
4. This design has been approved by Goulburn – Murray Water, Department of Primary Industries and the landholder group.
5. The Landholders have indicated that they will not proceed to constructing this CSWMS mainly due to the construction costs.

COMMENT

6. The Case Study is attached to this memo and outlines the background to the Deakin 2AP CSWMS, a construction cost comparison, outlines issues relating to the CSWMS not proceeding to construction and the actions taken by the program to ensure that this scenario does not happen in the future.

RECOMMENDATION

That SWMWG note the Case Study and provide any feedback.

Author: Jennifer Pagon

Signed:

Position: Policy Development and Implementation, Department of Primary Industries

Cleared by CSWMP Co-ordinator:

Signed: CSWMP Co-ordinator, DPI -Goulburn Broken Sustainable Irrigated Landscapes

**Deakin 2AP Community Surface Water Management System
Case Study
Prepared by Jen Pagon**

Community Surface Drainage Co-ordinating Committee.

***“Action item 52x2: Case study (Deakin 2AP) outlining issues with this CSWMS not going ahead to construction to be presented back to CSDCC by next meeting.
Sandra Schroen.”***

1. Background to the Deakin 2AP Community Surface Water Management System.

1997 - 2002

The Deakin 2AP Community Surface Water Management System (CSWMS) was initiated in July 1996 as scheme 10G, Timmering.

The catchment is 906ha's and estimated to be 9.3 km of CSWMS, with outfall into the Deakin Main Drain.

Tenders for the Survey and Design were called for in April 1997. Schroen Irrigation Improvements were the successful tenderers.

Schroen Irrigation Improvements proceeded to survey the catchment and design the CSWMS.

A final detailed design was submitted to Goulburn Murray Water (G-MW) in March 1998. G-MW notified the designer that the design would be approved if nine items outlined on their letter were addressed.

Estimated construction costs for Deakin 2AP as at March 1998

Total costs including 10% construction supervision and 10% contingencies = \$150,919.68

G-MW \$ 6,000.00

Shire \$ 10,881.50

DNRE \$ 72,459.84

Landholders: \$ 61,578.34

TOTAL: \$150,919.68

This cost estimate did not include any costs associated with fees for any legal agreements as the Shire of Campaspe have verbally agreed to administer the CSWMS through the Local Government Act and it did not include fencing costs as the group also agreed that this would be done individually. (Schroen Irrigation improvements letter regarding final design, December 1997, cost share options.)

The group were informed about the up coming G-MW option for managing CSWMS's by the Shire at a group meeting.

The group adopted a 75% (average 5 year water use) and 25% (area in the catchment) breakdown for calculating their individual cost share.

12th April 1998 – group voted to go to construction: results 12 in favour (2 abstaining), therefore 86% (above the 80% trigger for support to proceed) of the landholders owning 98.9% of the catchment agreed or based on cost share (at 75% water use and 25% land), 97.4%.

Schroen Irrigation Improvements submitted final design to the group on 15th July 1998 with G-MW issues raised on 26/5/98 & 23/6/98 addressed.

Planning permit from Shire of Campaspe was granted in October 1998.

February 1999 the group decided to petition G-MW to manage and construct the CSWMS on their behalf.

Landholders sign petition in September 1999. Landholders contributing 97.9% of the costs of construction were in support of constructing the CSWMS under the G-MW management option.

Group needed to wait for Work Specification Plans criteria to be developed by the program before petitions could be sent to G-MW.

Schroen Irrigation Improvements were asked to quote on completing this. Landholders needed to contribute more funds to cover their 10 % of costs associated with these plans. Work Specification Plans were developed for each property. Through completing the work specification plans, some CSWMS alignment changes were made to the design as was the location of the outfall of the CSWMS.

The CSWMS design was submitted to G-MW for technical assessment in June 2001.

In July 2001 G-MW conducted a technical assessment of the final design for the Deakin 2AP CSWMS. There were over 16 issues to be addressed before approval would be given. One of these included costs of fencing – quote of between \$5 - \$6 / m was given and also included access tracks.

2002 - 2004

March 2002 – EMP team request that the CSWMS be re aligned around a stand of grey box trees. Schroen Irrigation quote \$4,000 to do this. Group agrees to this and the designs are again submitted to G-MW for Technical assessment on 19th June 2002. There were more than 14 issues to address out of this submission.

Estimated construction costs for Deakin 2AP as at June 2002:

Total costs including 10% construction supervision and 10% contingencies = \$262,017.03

G-MW	\$ 3,751
Shire	\$ 21,005.33
DNRE	\$ 131,008.52
Landholders:	\$ 106,251.78
TOTAL:	\$262,017. 03

“Changes made to the design from 1998 are from the works specification plans and changes in land ownership and according to new requirements from G-MW.” Final Design, Schroen Irrigation Improvements, June 2002.

Total construction costs increased by \$110,098 since the design in 1998.

In early 2004 the road entrance design for the Kyabram – Rochester Rd (see attached map) was finalised and approval given by the Campaspe Shire.

The alignment was walked by G-MW and DPI in August 2004. From this inspection a number of queries were raised regarding structures along the CSWMS alignment. It was noted here that fencing both sides needed to be allowed for along the CSWMS and that \$7 / m should be used in the cost estimate.

2005 - current

January 2005 the community meeting discussed the increases in costs. “Concerns were expressed that the CSWMS was now unlikely to go to construction due to the increased cost of the Scheme”, Deakin 2AP minutes, 25th January 2005.

Final designs were again sent to G-MW for approval in August 2005. G-MW approved the plans with 4 points to note on the designs. Schroen Irrigation Improvements makes the changes and final designs are submitted to DPI, the CSWMS group and G-MW for final approval.

Estimated construction costs for Deakin 2AP as at September 2005

Total costs include 15% construction supervision and 15% contingencies = \$585,026

G-MW	\$ 18,393
Shire	\$ 52,436

DNRE	\$ 283,316
Landholders:	\$ 230,881
TOTAL:	\$585,026

“Project costs have been reviewed using G-MW figures and costs have risen dramatically. This has applied to most of the structures. G-MW charges to take over the CSWMS have been included” Final Design Landholders report, Schroen Irrigation Improvements, September 2005.

Total costs increased by \$434,407 since the design in 1998 and \$323,009 since the design in June 2002.

October 2005 – the Deakin 2AP group were presented with the final designs for the CSWMS. The group are to vote on proceeding with construction.

January 2006 – the group were sent out petitions for G-MW to manage the CSWMS on their behalf.

March 2006 – the results of the petition show that landholders contributing 92.8% of the costs of construction are not supportive of the drain going to construction.

Below are some of the responses to the petition sent out in January 2006 asking for landholder support for construction of the CSWMS.

- No - Far too expensive for the limited flows that would occur down this scheme.
- No - Being located at the top of the proposed drain the estimated cost for us is prohibitive for the value of the drain. I will not take any further part in any process regarding this drain. Having taken 9 years to get to this stage heaven knows how many years it would take to get to our property.
- No - We do not support this drain because of the high cost involved.
- No - The escalation of the costs proposed of the drain since the design was first completed. My understanding from the last meeting of the group was that all the members were of the same opinion.
- No - our input of x % far exceeds any benefit that we will get from the drain as we already have access to the Deakin main drain. However, it is not our intention to deny access for the construction of the drain.
- No - Costs have blown out of all reason from the time when the first meetings started 10 years ago

2. Cost Comparisons: 1998, 2002, 2005

Table 1. is a summary of the breakdown of major costs of constructing the system as a percentage of the total costs.

Total costs	March 1998		June 2002		September 2005	
	\$	%	\$	%	\$	%
Structures	\$85,714	56.8	\$109,004	41.6	\$223,069	38.1
Earthworks	\$37,863	25.1	\$36,912	14.1	\$65,927	11.3
Fencing			\$70,477	26.9	\$125,951	21.5
Contingencies	\$13,720	9.1	\$23,820	9.1	\$62,242	10.6
Project management	\$12,472	8.3	\$21,654	8.3	\$71,578	12.2
G-MW Admin costs				0	\$36,259	6.2
Other agencies (Telstra etc)	\$1,150	0.8	\$150	0.1	0	0
	\$150,919	100.0	\$262,016	100.0	\$588,026	100.0

Table 1: summary of major costs compared to total costs.

Table 1 indicates that in 2002 & 2005 the fencing and structures costs account for 60 - 70% of the total costs, while in 1998 the majority (82%) of the costs were attributed to structures and earthworks.

There were to be some existing structures used in the original construction and fencing was not included in the final costs in the original estimate, which made the initial cost of construction cheaper.

Construction costs on a per kilometre basis in 1998 were \$16,228 / km, 2002 = \$28,174 / km and 2005 = \$63,228.60 / km.

As a percentage of the costs, the main increases have been with contingencies and construction supervision, while the % costs of the structures and earthworks have fallen.

To compare costs for each year better, Table 2 includes costs for legal fees, other agencies (eg Telstra and Gas and Fuel) and fencing. Legal fees were not included in the 1998 and the 2002 cost estimates. Fencing costs were not included in the 1998 costs, while in 2002 the fencing costs were estimated on 12,814m. The fencing required in 2005 was for 17,993m, therefore 1998 and 2002 in the table below have been adjusted to 17,993m of fencing.

The highest increase in costs are with the structures, the contingencies and the construction supervision.

Total costs	March \$	1998 %	June 2002 \$	%	September 2005 \$	%	March 1998 plus CPI \$	%	% change from 1998 + CPI to 2005
Structures	\$85,714	35.3	\$109,004	34.8	\$223,069	37.8	\$102,857	35.3	117
Earthworks	\$37,863	15.6	\$36,912	11.8	\$65,927	11.3	\$45,435	15.6	45
Fencing	^A \$71,972	29.6	^B \$98,962	31.6	\$125,951	21.4	\$86,366	29.6	46
Contingencies	\$13,720	5.6	\$23,820	7.6	\$62,242	10.6	\$16,464	5.6	278
Project Management	\$12,472	5.1	\$21,654	6.9	\$71,578	12.2	\$14,966	5.2	378
G-MW Admin costs	^C \$20,000	8.2	^D \$22,280	7.1	\$36,259	6.3	\$24,000	8.2	51
Other agencies	\$1,150	0.5	\$150	0.1	^E \$1,380	0.2	\$1,380	0.5	20
	\$242,891	100.0	\$312,782	100.0	\$589,406	100.0	\$291,468	100	

Table 2. Cost comparison using additional information

A – fencing cost assumed to be \$4 per metre for 17,993m Length quoted for 2005 design

B - fencing cost assumed to be \$5.5 per metre for 17,993m Length quoted for 2005 design (original estimate was for 12,814m of fencing)

C – assumed \$2,000 / km for legal fees

D – assumed \$2,228 / km for legal fees (\$2,000/ km + 11.4% cpi from 1998)

E – assumed 1998 cost + CPI

With all the costs included in the March 1998 estimates, the use of this figure may have allowed the landholders to make a more informed decision about the future of their CSWMS.

Some recently constructed CSWMS indicate that actual project management costs may be even higher than allowed for in all these cost estimates;

Mosquito 14/25 (GMW option)

Total cost of construction **\$355,572** **Project management: \$77,300** **21.74%**

Mosquito 6/25 (GMW option)

Total cost of construction **\$ 63,858** **Project Management \$17,380** **27.22%**

Shepparton 3B/11P (currently under construction – figures are tender price) (GMW Option)

Total cost **\$307,700** **Project Management \$27,640** **8.98%**

Table 3 shows the breakdown of expected contributions made by all parties over the three costings, including March 1998 costs adjusted with CPI to 2005 costs, to give a comparison on cost increases over the years.

Stakeholder	Contribution				
	1998	2002	2005	**March 1998	% change March 98 ** to 2005
G-MW	\$6,000.00	\$3,751.00	\$18,393.00	\$7,200.00	207%
Shire	\$10,881.50	\$21,005.33	\$52,436.00	\$13,057.80	382%
DPI	\$72,459.84	\$131,008.52	\$283,316.00	\$86,951.81	291%
Landholders	\$61,578.34	\$106,251.78	\$230,881.00	\$73,894.00	275%
	\$150,919.68	\$262,016.63	\$585,026.00	\$181,103.61	

Table 3: summary of stakeholder contributions

** March 1998 figures adjusted to 2005 figures using 20% CPI

The consumer price index (CPI) increase from 1998 to 2005 is 20% (pers comm O.Montecillo, 2006).

Table 4 gives a summary of a few examples of structures and their cost per metre. All these structures have risen in price between 25 and 50% over and above CPI.

Type of structure	diameter		Mar-98	Jun-02	Sep-05	Mar 98**	% change from 98** to 2005
Outfall structure	600mm	\$/m	\$232.24	\$204.95	\$350.00	\$278.69	25.6
channel siphon	600mm	\$/m	\$266.39	\$239.07	\$475.00	\$319.67	48.6
access culvert	375mm	\$/m	\$153.27	\$222.95	\$240.00	\$183.92	30.5
access culvert	525mm	\$/m	\$227.46	\$286.88	\$405.98	\$272.95	48.7
access culvert	600mm	\$/m	\$312.30	\$303.28	\$475.00	\$374.76	26.8

Table 4: cost comparison of 1998 2002 & 2005 structure cost estimates.

Costs estimates for the 2005 design for landholders contribution show that individual landholders contribution to the construction cost ranges from \$700 through to \$59,000, with the average cost per landholder being \$20,989, based on 11 contributing landholders.

3. Issues

There are a number of issues that impacted on the Deakin 2AP CSWMS not being constructed such as:

- length of time taken from initiation through to completed and approved final design (July 1996 - January 2006).
- huge increase in estimations of construction costs from the initial 1998 data to the 2005 data – 288% increase in construction costs (note addition of fencing, project management and GMW costs also).
- landholder and staff turn over throughout the design (15 DPI [and its predecessors] have been involved in managing this CSWMS over the ten years).
- impact of necessary changes to the design to comply with the current design guidelines – such as road crossing policy, G-MW option for management and Work Specification Plans.
- Designer not providing prompt service added to the time delays.
- The initial cost estimates completed in 1998 were well under the actual cost of construction of CSWMS at the time.
- The past dry seasons may have also impacted on the landholders decision. If there had been above average rainfall, the drain may well be under construction at the moment.

This is not an isolated case, there a number of other CSWMS that have a completed Survey and Design and have not proceeded to construction.

4. Solutions

There have been a number of processes initiated and adopted by the program to address these issues outlines in section 3, which are outlined below.

1. Gantt Charts have been developed by the program to establish clearer timeframes for Survey and Design of CSWMS,
2. All DPI SWM staff are trained in project management and contract management, giving them the skills to manage the projects effectively and efficiently,
3. The payment of invoices have been streamlined to ensure that there are no delays in paying accounts on time, (28 day timeframe identified in updated contract will be met),
4. Alignment of the primary program and the CSWM program has been developed,
5. A spreadsheet has been developed by G-MW to assist consultants in estimating costs of construction of CSWMS, allowing landholders to have a realistic expectation and understanding of the costs. This spreadsheet is regularly provided to ISDG,
6. The General Conditions of Contract for CSWMP requires the survey and design to be completed within twelve months,
7. New ideas, such as flexible spurs (a new policy) and primary drain extensions (currently being trialled) may help other CSWMS in the future though providing a more flexible approach to spur drains and larger catchments.

8. A new proposal that the program is currently working on is having 2 DPI staff working on a CSWMS together to alleviate DPI staff turnover issues and ensure that the program can meet the 12 month contract timeframe,
9. A sunset clause for meeting new additions / updates to the Guidelines for Design. If the CSWMS is designed within 12 months, as per the contract, and the CSWMS constructed within 2 years of signing of the General Contract, there will no requirement to meet / update the design to meet the most current Guidelines for Design. This allows the group two years from signing the contract for Survey and Design to start building their CSWMS without having to update the design to meet any changes imposed by the program. If two years expires the group will be required to update their plans in accordance with G-MW Due Diligence process. If the group is constructing under the Water Act, they will need to ensure that they meet requirements of the planning permit, of which will be G-MW requirement to update the design to meet current guidelines.

External factors still play a huge role in the progress of the program. A huge amount of time and resources have been put into these CSWMS and it is disappointing that they do not proceed to construction.

5. Summary

There has been increases in the total cost of constructing the CSWMS from 1998 - 2005, with the original estimates being \$150,919 and the final estimate being \$585,026, an increase of 288%. CPI over this time is 20%, therefore the 1998 costs in 2005 should have been \$181,103.60

From discussions with program staff the first cost estimates were quite underestimated, which may have impacted on the landholders keenness to proceed with finalising the design in 1998.

Landholders have indicated that the due to the large increase in costs since the first estimate in 1998 that the CSWMS was unlikely to proceed to construction. A recent petition has been distributed and collected, indicating that landholders with 7.2% of the construction cost share have committed to construction. This has put the group well below 80% support level, the trigger level for G-MW to consider managing the CSWMS on behalf of the CSWMS group.

The design of the CSWMS has been drawn out over a long time period of time, which has inevitably led to changes in landholders therefore changes to the CSWMS design and changes in the design guidelines that the group has had to address.

As the design has been updated to meet current guidelines, the costs of construction have also increased to meet the programs requirements. This has had ramifications on the landholders support of the CSWMS and the financial implications to all stakeholders involved.

This is not an isolated case, there a number of other CSWMS that have a completed Survey and Design and have not proceeded to construction. A number of issues have been addressed by the program to reduce the risk of this scenario happening in the future.

6. Map of Deakin 2AP Catchment

