Shepparton Irrigation Region – Surface Water Management Strategy
Cost Share Review – Option Paper – 25th February, 2004
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Purpose: to consider options to accelerate the construction of the surface water management network servicing irrigation properties in northern Victoria.

Background: Michael Young & Associates has been engaged to review the cost sharing arrangements for the Shepparton Surface Water Management Strategy, with particular focus on determining why the level of participation and investment in Community Surface Water Management Schemes (CSWMS) by landowners has fallen off and what can be done to improve the rate of adoption of the CSWMS. Without the CSWMS there is reduced interest, principally due to biophysical constraints (lack of drainage outfall from the farm), in investment in the Farm Program which ultimately generates the primary benefit of the integrated land and water plan to landowners.

Over the last five years, the Farm Program has continued (Whole Farm Plans and new landforming works), even on farms without drainage outfall to CSWMS. This has been possible by utilising farm re-use storages to capture farm irrigation runoff. However, over the last five years. There have been few rainfall events that exceed the capacities of the re-use systems. When rainfall events lead to widespread inundation of the landscape, the re-use dam capacities will not cope with the volumes of water requiring disposal in order to minimise crop and pasture losses from inundation in the areas without effective surface water management schemes.

Discussion: The construction of CSWMS is not currently limited by inadequate outfall, ie existing Primary Drains (PD) are providing more than adequate outfall for currently planned CSWMS and for areas where CSWMS groups are not currently active. There are currently 260 outfalls available for CSWMS into completed Primary Drains. None of these outfalls are currently utilised by connections to CSWMS and only a few have CSWMS that are designed or are being designed.

Most of the objections (90%) to current CSWMS can be narrowed down to issues with financial consequences, eg. Too expensive; loss of productive land; interfering with existing farm infrastructure; minimal benefit if land is topographically high in the landscape loss of access ….. etc.

The last five years in the SIR have seen increasingly tight water allocations and increased uncertainty as to when it will improve. Dairy prices (and other commodities) have fluctuated widely over this period, making financial management very difficult and risky and greatly reducing the discretionary income that is available for investment in new infrastructure and improved management practices.

This situation has been paralleled at Murray Irrigation Ltd (MIL) in NSW where willingness to participate in their four land and water plans has fluctuated widely over the last few years. MILs surface drainage program is entirely in-house and their concrete fabrication plant activity closely reflects the fortunes of rice growers and winter irrigated croppers. Their fortunes revolve around their level of confidence in future water allocations. MIL's cost sharing is averaged across all programs within each of the four Land and Water Plans. Each Plan differs in priority on regional surface water management, there is no major distinction between the equivalent of Primary and CSWMS projects. MIL (wholly owned by the landowners) pays 100% of construction costs and the cost is recovered over 15 years at minimal interest rates (0%).

Olive Montecillo's paper *"Are Community Surface Drains more expensive than Primary Drains?"*(Aug. 02) describes her evaluation of the cost to landowners of Primary and Community Surface Drains under current cost sharing arrangements and 13 other cost sharing arrangements; the 13th being a breakeven analysis to determine what the government contribution to CSWMSs should be to make them a similar cost to Primary Drains in Net Present Value terms. The options evaluated were:

- Scenario 1 – Landholders' contribution was reduced from 50% to 25% of the total capital cost (construction and survey and design)
- Scenario 2 – Landholders' capital contribution was paid over ten years at 6.83% (G-MW rate)
- Scenario 3 – Operating and maintenance cost was reduced from $450 to $400 per km community of drain
- Scenario 4 – Discount rate of 10%
- Scenario 5 – Landh9olders on CSWMS paid fifth division rate
- Scenario 6 – Add the residual value of the community surface water management schemes at the end of 30 years[1].
- Scenario 7 – Analysis covered 50 years
- Scenario 8 – Survey and design cost not included in the analysis
- Scenario 9 – Area share is 75% and water use share is 25%
- Scenario 10 – With renewal cost
- Scenario 11 – Analysis covered ten years
- Scenario 12 – Increase the first division rate by 75% and 50%
- Scenario 13 – Break-even government contribution to CSWMS construction

The above analyses assumes that the cost per km of each of the case study drains doesn't change from CSWMS to PDs as the level of service and physical dimensions is the same for each drain category. Only the cost sharing has been changed. The comparable costs included in the analysis were:

Primary Drain – Annual 1st Div. Drainage Rate + an Annual Service Fee

CSWMS – Up front Capital cost (eg 50% in Base) + Annual 4th Div. Drainage Rates + Annual Service Fee + Annual O&M.

Almost all 13 scenarios evaluated showed that the Net Present Value of the cost of survey, design, construction and maintaining a CSWMS exceeds the cost to landowners of a similar drain being built under the PD cost sharing arrangements. The break-even government share of a CSWMS to make it equivalent in cost to a PD for a landowner ranged from 75-86%, depending on the length of the drain. This is similar to Scenario 1 (the 75% Government share).

Any of the scenarios that increased the cost of Primary Drains, eg Increasing 1st Division Drainage Rates, would most likely impact on the willingness to participate in a PD scheme and were still less costly to landowners than an equivalent CSWMS under current cost sharing arrangements, i.e. increasing the cost to landowners of the successful component (PD) of the Surface Water Management Strategy is likely to be counter productive.

The recent Review of the Surface Water Management Strategy demonstrated that, at existing costs, the economics of the Strategy is viable and meets Government requirements, provided the assumed rate of progress is achieved. The issue is therefore not the cost of the program as a whole but the failure to achieve an adequate and balanced (between PD and CSMS) rate of adoption which delays the future stream of benefits (environmental, economic and social).

As observed earlier, the purpose of this Review is to provide an outcome that results in an acceleration of the construction of the drainage network that best uses the available outfall but avoids the situation where outfall capacity becomes a limiting factor. In doing so, landowners will have the ability to fully utilise the components of the SIR Farm program over the long term which will finally allow the maximum benefits of the integrated program to be captured.

A desktop SWOT analysis was undertaken of the Surface Water Management Strategy as it relates to the current Review. The following is the outcome of that analysis:.

SWOT – Surface Water Management Strategy under Current Cost Share and Management

Primary Drains	**Community Surface Water Management Schemes**
Strengths (of current situation): - not affected significantly by current farm economic fluctuations - provides major outfall capacity for surface drainage in most sub-catchments where constructed - provides direct benefits to landowners adjacent to PDs with 1:2 year level of service (mostly) - Provides outfall capacity for most completed or planned CSWMSs and many more that have not yet commenced – 260 outfalls for CSWMSs available. - The continuity achieved by having one organisation (G-MW) implementing each stage of the PDs provides efficiencies in process from initial landholder contact →Commissioning of drain and ongoing O&M - Limit to amount of negotiation – G-MW designers and engineers liaison with individual landowners is reduced due to capacity to forcibly acquire freehold land, if necessary - Funding is simple and replacement and O&M cost recovery is straight forward through 1st Div. Drainage Rate and basic Service Fee - Management of outfalls is controlled by G-MW therefore is integrated and can be planned with some certainty. Contract management is efficient – G-MW in-house design and G-MW contractors - There are relatively few cases of community dissent once drain alignment is identified, as it is usually at lowest point in landscape - G-MW owns drainage freehold and can access and protect the drains and related infrastructure as needed. - Compensation for securing the freehold is rarely needed as the net benefit is usually >> than the $ value of any production loss from the land used by the scheme. Drain alignments are usually within the natural drainage line and are subject to inundation and consequently have low agricultural production capacity. - G-MW maintains a high level of process QA and technical QA	**Strengths (of current situation):** - provides outfall for farm drainage systems with 1:2 level of service. This is the same for both programs - are cheaper /km to construct than PDs (dimensions of CSWMSs are generally smaller) and where the flow regime is similar, however, the cost of PDs and CSWMSs is similar. - there is a high level of consultation between landowners and designers and Community Catchment Facilitators (CCFs), G-MW staff and Catchment Environmental Officers (CEO's) leading to a better understanding of catchment processes all round - Current cost share gives a sense of ownership to landowners and hence, a greater capacity to negotiate their specific needs in a Scheme (which can also become a weakness if the negotiations are drawn out). - A great opportunity exists to evolve Drainage Scheme Groups into integrated catchment management (ICM) groups, with significant benefit to the Shepparton Irrigation Region Catchment Strategy (SIRCS). - CSWMS groups can bring together a local community on NRM issues, including integration of surface water management with environmental, economic and many social issues. Everyone, including agency and landowners learn more about how the catchment works. - Legal ownership of drains by the landowner group places direct responsibility on the group to maintain infrastructure – it's in their interest (this only applies to Water Act schemes) but doesn't always happen in practice. - Schemes managed and owned by local government require landowners to be responsible for maintenance, so the motivation for active landowners participation is similarly high. - G-MW CSWMS have formal and systematic O&M procedures which require no landowner input. - Opportunity exists to tender all aspects of the CSWMSs to competitive

- G-MW PDs have formal and systematic O&M procedures which require no landowner input. - Opportunity exists to tender all aspects of the PDs to competitive market resulting in *potential* cost effective outcomes for landowners.	market resulting in *potential* cost effective outcomes for landowners - CSWMSs enhances landowner attitude to investment due to reduced risk from persistent inundation of crops and pasture following major rain vents. This also applied to PDs. - Facilitates new investment in irrigation management efficiency through capacity to adopt Whole Farm Planning and improved farm irrigation and drainage layout which is effective in the long term.

Primary Drains	**Community Surface Water Management Schemes**
Weaknesses (of current situation): - Community liaison is limited – mostly designers and project engineers – less emphasis on ICM approach The level of individual consultation is thorough and is sufficient in itself is not a weakness. The extent of negotiation is mostly determined by G-MW as the trump card of compulsory acquisition is always available. - Landowners have limited opportunity for input to design and/or ability to negotiate "extra's". There are fewer opportunities for landowners to object – (Weakness for landowners, more tidy for G-MW). - The PD presents a less flexible approach in design options to landowners (eg. Alignment), and only relents when under pressure. The starting point for design options are less flexible. For some landowners they will negotiate harder to get the bet deal from G-MW, inspired perhaps by need and also the baggage associated with the historic perception of anti authoritarian (ie: hate G-MW_. Some of these people will however be susceptible to the peer pressure associated with a CSWMP cost share where the landowners pay for 50% of the costs so they don't negotiate as hard as their community spirit kicks in. Therefore there will be situations where negotiations are more generous under the PD compared to CSWMP. Generally, the negotiations don't represent a significant component of the project construction cost for their program, it's more the time imposition of these negotiations and generally they are quicker in the PD compared to the CSWMP.	**Weaknesses (of current situation):** - Process from Group inception →commissioning is very time consuming - Rate of progress is very sensitive to local economic conditions (commodity prices and/or water availability). - 50% cost share is a serous barrier to some Group members therefore some will drag out the process for a variety of reasons that inevitably relate to financial concerns and ability to pay. (The Program has established project loan schemes where landowners have up to ten years to pay for either G-MW or Local Government managed schemes). - Has a significantly greater adverse cash flow impact on landowners than PDs (50% of construction cost). - Persistent objectors can consume many hours of agency staff time - Completed plans have a shelf life of approximately 3 years so the 37 projects deferred in the SIR are quickly becoming redundant. - Because farmers have to pay, some negotiations become more time inefficient with many ambit claims for additional features. (there is a flip side to this and those community spirited landowners will ask for less because farmers are paying 50%). - There is a poor history of adequate O&M, post commissioning for schemes managed under either local government or Water Act systems, in spite of the perceived benefit of ownership being an incentive to conduct O&M. The new O&M procedures for G-MW managed CSWMS are expected to

- Full benefits of the PD Program are not captured until landholders invest in improved land and water management practices as described in the Farm Program (see also CSWMP). - PDs are currently being delayed by EPA imposing conditions through the Planning Amendment process which G-MW cannot implement	remove this problem - Open tendering process leads to significant inefficiencies when there is a change of service provider between project stages, making contract management very difficult. - Design consultants have deficient QA systems and rely on G-MW audits. Plans are often resubmitted up to 3 times before they meet CSWMS Guidelines Standards (audited by G-MW). - Administrative management is very cumbersome, including contract management, accounts, dealing with multiple designers – forcing CCFs to become process managers and therefore have less time for desirable ICM INPUT. Whilst these processes are equally complex for the PD program, the CCF role encompasses all thee duties whilst in the PD there are specialists doing each task. - Currently, 50% of CSD time input by agency staff is administration - Slow down in CSWMS program means that necessary farm works can't be done effectively to generate the SWMP and SIRCS benefits. - Full benefits of the CSWMS Program are not captured until landholders invest in improved land and water management practices as described in the Farm Program (see also PDs) - Dependence on farms re-use systems to provide farm drainage outfall capacity, so farm program works can proceed (without CSWMSs), will prove ineffective when average rainfall events re-occur. Landowners on main drainage lines (ie PDs) receive too much surface flow from upstream properties for them to ever consider their reuse systems to be a substitute for drainage.

Primary Drains	**Community Surface Water Management Schemes**
Opportunities (for the future) **-** Extend consultation to cover broader range of ICM issue is have a discussion re how to best utilise the less risky drainage environment - a more holistic ICM approach – ie How do we (the landowners) operate the	**Opportunities (for the future)** - Reduce farm gate costs of CSWMSs by a change to the cost sharing arrangements and/or design cheaper schemes which will result in higher maintenance over the long term. Hand over some/all administration (?) of

drains vs How the drains operate. - Increase Community focus around PDs. - Review PD status to identify PDs where there is low adoption of CSWMSs ie where are the drains where the 260 un-used CSWMS outfalls exist. The 3 year rating rule will encourage adoption. - Review PD status to determine strategic approach to ensuring PDs are sufficiently ahead of CSWMSs while ensuring the outfall capacity of existing PDs are being fully utilised by CSWMSs with available funds - Overcome planning amendment delays by negotiations with EPA (This must continue to be a high priority for the program). - Overcome planning amendment delays by investigating alternate ownership option – specifically easement instead of freehold title to avoid planning amendment – with negotiations with landowners to secure access and fencing rights. An easement does not require a planning amendment. This easement option requires 100% agreement from landowners so is very time consuming. - A key advantage the PD has over the CSWMP is the land acquisition process (freehold), which either happens by agreement or is forcibly used when negotiations fail to reach an amicable agreement.	CSWMS to G-MW processes. - Consider redesigning all agency roles so DPI is lead agency for survey and design stage and G-MW is lead agency for construction stage - Reintroduce the role of the designer to undertake project management for construction stage. - Engage a more focused approach to service ICM/holistic approach to surface water management by all agency staff - Hand over entire survey, design, construction and maintenance responsibility to G-MW (under revised PD Guidelines) - Re-allocate PD Program budget to an all-encompassing Integrated SWM Program and concentrate funding on completing schemes identified as CSWMSs where PD outfall already exists, including use of PD cost-share (100% Government) and ownership by G-MW. - Recovery of CSWMS costs through 1st Div. Drainage Rates (as for PDs) - Consider alternative of higher government share - > 75% min and payback options for 15, 20 and 30 years.
Primary Drains **Threats (into the future)** - PDs get too far ahead of CSWMSs, therefore expected benefits don't accrue - Surface drainage only provided along major trunk drainage lines - Lack of integrated input into PDs from CCFs and CEOs results in reduced potential triple bottom line outcomes and desired resource condition change. - Inability to overcome current planning amendment delays on PD progress - Loss of technical expertise if funding is reduced – unable to replace staff	**Community Surface Water Management Schemes** **Threats (into the future)** - CSWMSs get too far behind PD outfall capability – therefore expected benefits don't occur at an acceptable rate - Low rate of completion of CSWMS frustrates landowners leading to loss of interest in whole of SIR Catchment Strategy - Low rate of completion of CSWMSs frustrates Government resulting in loss of funding support. Also frustrates agency staff which contributes to high staff turnover. - Loss of technical expertise if funding is reduced – unable to replace staff - Landowners who are unable to achieve effective drainage will be less inclined to take advantage of SIRCS Farm Program initiatives resulting in a

	fall in investment in land and water best management practices - Drainage based on farm reuse systems fails under return to average rainfall conditions - Farm works based on using reuse outfall may require redoing to meet future CSWMS outfall levels - CSWMS Plans that sit on the shelf for more than 3 years will become redundant. - Compensation payments will increase the total project cost. One response will be to keep more alignments within the Natural Drainage Lines and thereby reduce the flexibility of preferred landowner choice of alignment.

A summary of the facts – November 2003

CSWMS – Total km required in Strategy = <u>2,260km and ~226,000 ha protected</u>

	Number of Schemes	km	Ha protected
Survey & Design Work in progress	**33**	**~200**	**21,611**
Completed Survey & Design	**151**	**623.5**	**57,768**
Sitting on shelf = survey & design completed but construction delayed	**37**	**148.5**	**10.268 (actual)**
Constructed and commissioned	**110**	**475**	**~47,500 = 21% of targeted area in 13 years**
Construction work in progress	**4**	**24**	**~2,460**
Balance to be constructed		**1761km**	
Area yet to be protected (ha)			**~176,040 ha**

At current rate of completion, 48+ years will be required to provide drainage services to the remaining 176,040 ha that the Strategy identifies as requiring drainage. Alternatively, to meet the target area by 2020 would require an acceleration of the program to a rate of 104km constructed per year compared to a current average rate of 36.5km per annum (1990-2003). If the average rate for the last 5 years was applied, the program would never be complet3ed. It is in this last five years that the requirements/guidelines were changed to such an extent that it has placed more demands on designing a scheme to ensure quality assurance and risk management are adequately dealt with.

The category of schemes above described as sitting on the shelf refers to schemes that have completed the survey and design phase and have not yet progressed to construction, for a variety of reasons. The major issue with this category is that many of the Plans have or are becoming redundant, i.e. they no longer meet current guidelines in terms of design standards and environmental standards and would require considerable reworking to bring them up to standard. Plans quickly (3 years) become redundant because landowners change their mind as their own circumstances change, or they sell their property so new negotiations are required with the new landowner (10% turnover per annum of property ownership in SIR). Amending designs to comply with updated design guideline represents a small imposition on redesign costs.

The level of service for both PDs and CSWMSs is now the same, ie 1:2 year rainfall event – 50mm rainfall in a 24 hour period during Summer – can be drained away from the landscape within 5 days.

Primary Drains – Total km required in Strategy = 315

	Number	km	Ha protected
Constructed and commissioned	**38**	**164**	**17285 (direct) 68026 (indirect)**
Work in progress	**15 (design) 1 (construction)**	**113 (design) 13 (construction)**	

The "direct" area drained relates to the approximately 500 metres either side of the PD that directly receives the benefit of the new PD. The "indirect" area protected is the area serviced by actual or potential spurs (CSWMSs) that outfall into the PD. The water will eventually outfall to the PD but not necessarily by following the most efficient way (natural and man-made) obstructions will hinder the flow if the CSWMS is not in place.

All but 25km of the PD program has yet to be commenced at any level. The balance has either completed construction, is under construction or currently being designed. The PD program is currently being delayed by the planning processes. No PD scheme has been delayed because of cost.

The **Primary Drainage** program has progressed to the extent that 260 CSWMS outfalls are currently available but not formally connected to CSWMS. Until properties are linked to a CSWMS and this scheme is linked to a PD, there are few drainage benefits realised from the construction of the PD except for properties immediately adjacent to the PD. It however needs to be recognised that the 260 CSWMS outfalls into PDs do provide some outfall, indirectly, to the catchments above the outfalls and, to some extent, this is part of the reason why landowners are reluctant to implement a CSWMS, ie they are receiving some benefit from the outfalls into PDs, although not to the extent to full implementation of a CSWMS.

Since the timing to build a CSWMS is mostly determined by the landowners within each CSWMS catchment, there has been a penalty mechanism imposed on landowners if they don't build a CSWMS within three years from the time outfall is provided. The provision of these outfalls means that all landholders within the sub-catchments above the outfalls are affected by the **Three Year Rating Rule.** Since the introduction of this policy in 2000, all landowners within a catchment that has access to a PD have three years to connect their CSWMS to the Primary Drain. After which time, landowners in those sub-catchments will be liable for 4th Division Drainage Rates whether or not they have constructed and connected a CSWMS to the outfall. The rating will vary, depending on the area of the property serviced by the CSWMS, although generally it will be 4th division (ie: 25% of 1st division).

The Three Year Rating Rule has been extended by 1 year for existing CSWMS outfalls as a consequence of drought and difficult financial conditions on SIR farms.

New outfalls provided by newly completed Primary drains in the future will still attract the Three Year Rating Rule.

For the 250 outfalls provided, some have CSWMSs on the drawing board but most (188) do not.

Other facts of relevance relating to agency (principally DPI staff) time inputs:

50% of agency staff time is tied up in CSWMS program administration (group organisation and contract management). Dealing with the small number of objectors in any one of the CSWMS groups can be very time consuming.

It has been estimated that the dairy industry will take from five to seven years to financially recover from the current drought and low water allocation situation. Consequently, it is also anticipated that landowner uptake of CSWMS will remain slow whilst under the existing cost share arrangements.

Why have CSWMS costs risen?

CSWMS construction costs have risen from approximately $5000 per km in 1990 to $45-50,000 per km in 2003. In addition, the survey and design costs are in the range of $7-$10,000 per km (similar to PD survey and design - $8-$10,000 per km). T he cost of CSWMSs to landowners includes 10% of the survey and design, and 50% of the construction, project management and legal expenses. The agency support costs add a further $20,000/km (not included in the landholders' cost-share but part of the Government cost). The cost rise has occurred for the following reasons:

- Lack of experience in the early days made estimating costs unrealistic;
- There has been a significant improvement in the design standards and quality of construction works including more effective quality assurance systems;
- Prior to 1990, installation of the fence was undertaken as in-kind support from the landowner group. This contribution was not reflected in the $5,000/km costing.
- There has been an increased cost of environmental works due to changing legislation and standards;
- There has been a change in the attitude regarding user pays, with the direct project management costs added to construction costs. Prior to the introduction of G-MW managed CSWMS, local government managed CSWMS construction with a project management fee of approximately 5%, although the amount and quality of this management was to a much lower standard compared to current project management which costs approximately 15% of total CSWMS construction costs compared to 5.6% for PDs;
- Larger catchments cost more in total but the cost per ha served doesn't vary a lot for all types and sizes of schemes. The shape of the catchment will influence the cost, where elongated catchments are more expensive on a km basis compared to round shaped catchments. Also, economies of scale com in to bigger projects. However, smaller projects can be more expensive per area serviced as they attract the same level of due diligence, compared to bigger schemes, ie the overheads are similar.

What are the Facts and the above SWOT telling us?

1. The projected time of at least 48 years required to complete the SIR CSWMS program is unacceptable and significantly beyond the Government endorsed time estimates for completion of this program.

2. The 37 designs which are sitting on the shelf represent a significant cost and a potential waste of government and community investment since they have to be re-done once there is sufficient community support. The delay and having to renegotiate design issues with the community groups will create significant cost and frustration and will add more barriers to implementation, particularly where properties have changed ownership during the period of delay.

3. The cash-flow impact of CSWMSs under current cost sharing arrangements is significantly greater than for PDs and the capital contribution for CSWMSs is a barrier to their implementation. Cost share has never delayed a PD project to any extent.

4. The 260 outfalls into PDs that are available but not currently connected to CSWMSs are a wasted resource and indicate there are significant barriers to implementation of the CSWMS program. Of the 260 outfalls, 37 designs are completed (but are largely redundant) and of the 33 schemes currently being designed, 31 have outfalls, There are 188 9outfalls where there is no action of any kind.

5. It makes sense to utilise underutilised drainage outfall with CSWMSs before getting further ahead in the provision of new outfall (PD) capacity.

6. Whilst the 3 Year Rating Rule may be seen as an incentive to ensure that all the people for whom the PD schemes were built, paid their share, it may also be seen as trying to enforce something which is beyond the financial feasibility of the individual group members (even with the 1 year extension of existing outfalls). It is foreseeable that, for many groups and individuals, it may be less costly to pay the drainage rates after three years and not build the drains (a decision that would create social disharmony and program frustration if it was widespread).

7. There is clearly market failure occurring in the delivery of the CSWMS program at the individual landowner level. They clearly have adequate information and examples around them of successful CSWMS projects but a combination of issues such as current financial priorities, drought and more than 5 years since at least average rainfall, has reduced regional drainage to being a low priority issue. The market failure is more to do with farmers not fully recognising the need for effective regional drainage and its capacity to reduce accessions and protect productive land from water logging and salinity in the future rather than their individual investment priorities. Individuals may be quite rational in determining their own investment priorities where financial survival is paramount, especially during times of low water allocation and fluctuating commodity prices. T he obvious priorities have been to keep dairy herds intact through the purchase of expensive feed and water. The landowners also see more rapid returns from investment in farm works (eg lasering and reuse) because of its significant impact on labour saving and the capacity to reuse irrigation tailwater. Investment in new irrigation layouts is, at present, absorbing a significant proportion of discretionary investment income, leaving very little for CSWMSs. These investment decisions may also be seen as quite rational at a regional level in the short term.

9. The cost share arrangements for the PD allow for relatively efficient and effective implementation. There are, however, significant issues with alignment, reinstatement (access, fencing and irrigation infrastructure) and loss of land and diversion of water which require often protracted negotiation.

10. The management and administrative processes supporting CSWMSs are more complex and therefore cumbersome, principally because of the high level of landholder consultation and negotiation required. The increased consultation is due to:

- Cost share arrangements where landowners pay 50% so they feel they deserve to have a big say;
- The scheme only uses an easement over the land used for the scheme which means negotiations cannot end with compulsory acquisition and can only rely on amicable negotiations or a VCAT determination. Consequently there is far more scope for objectors to delay construction activity compared to the PD. It therefore puts under scrutiny, the value of open-ended negotiations.

11. The more holistic objectives of CSWMS community consultation are highly desirable in the context of the whole SIR Catchment Strategy but are not broadly being achieved under current conditions

12. Under the current guidelines, it is possible to maintain the total annual government contribution, whilst increasing the government cost share for CSWMSs in an attempt to accelerate the program. Acceleration of the program will mean less agency time to service each project. It will mean more government $ per km and less km for the same total $ which is counter to the Review objective.

13. It does however have to be recognised that landowners preparedness to invest in a scheme is the limiting factor and not the government contribution to the CSWMS program, except when funding-induced support staff shortages occur. The rate of implementation of CSWMSs will accelerate if the capital contribution requirement for landowners is removed.

14. Government is unlikely to be supportive of a cost-sharing arrangement that increases the cost of the program to them, particularly in the short-term. Government needs to be convinced that acceleration of the total program from the current situation will result in a better return on the Government's investment through less wastage and a bringing forward of the total program benefits. Any additional costs towards the end of the 30 year program represent a small component to the overall cost of implementing a 30 year program, especially in Net Present Value terms.

15. Ownership of CSWMSs is an issue. In the case where G-MW takes over ownership of the CSWMSs under a PD cost sharing arrangement, the question of title, maintenance, protection (fencing) and access to the drain easement requires clarification. Freehold requires a planning amendment (rezoning as Public Acquisition Overlay). Leased lands are not mentioned in the LACA 1986, as being exempt from requiring re-zoning as "public acquisition overlays" and easements do not require re-zoning. Freehold and easements are permanent arrangements whereas leasehold has a defined time limit and can be terminated. Easements can't legally be fenced longitudinally and cross fences at boundaries could obstruct drain maintenance and flow and they don't provide for exclusive use by, for example, G-MW. Some of these issues could be negotiated as part of a scheme contract but could be time consuming. G-MW can compulsorily acquire land under all three title categories.

Freehold title is by far the most costly, with significant survey and subdivision work required (See G-MW. Securing the Use of Land for Community Surface Drains. Discussion Paper, 21/1/99). The cost savings from reducing negotiations as a result of removing the landowner capital contribution must be off set against the cost to remove all or some of the landowner capital contribution. There will be reduced agency and consultation time components and reduced opportunity costs from not having the scheme when it is needed.

16. The ability to compulsory acquire land under freehold purchase needs to be costed against the costs to negotiate an outcome through the voluntary easement and VCAT enforcement mechanism.

17. In order to achieve the desired natural resource condition change in the long-term, completing the surface water management network is a key shorter-term objective and will provide the leverage to persuade landowners to invest more in efficient and effective land and water management initiatives within an acceptable risk framework.

Assumptions in Net Government Savings

CSWMS Current cost share/km

- $22,500 landowner design & construction plus in-kind co-ordination
- $22,500 Government design & construction
- $20,000 Government support with Agency staff (includes environmental assessments)
- $65,000 Total Project cost
- $42,500 Total Government contribution

Proposed cost share – using PD cost share (100% Government)

- $0 landowner design & construction
- $45,000 Government design & construction
- $4,000 Government support with Agency staff (assume 5 fold increase in agency efficiency – this assumption is very subjective)
- $49,000 Total Project cost (Net project saving of $16,000/km)
- $49,000 Total Government contribution (an increase of $7,500/km)
- Saving to landowner and Government for acceleration. This may well overshadow any shift in cost share.

If the land tenure system adopted was freehold, then the cost is at least $5,000/km more than the current easement system. This cost needs to be incorporated into the construction cost. The cost reduction from agency negotiation needs to be identified and included although it is hard to identify a saving beyond those already identified.

What are the Feasible Options for Accelerating Adoption of CSWMSs

There are three realistic options:

1. **Lift the Government contribution** regarding cost shares for CSWMS construction to a level greater than the break-even between the current CSWMS and PD

arrangements, ie at least 85% government. In this option, the landowners retain ownership of the land occupied by the scheme. T he problem with this option is still the issue of ownership and community expectations regarding their right to object where they continue to have a tenure of the land. Where individual landowners are impacted differently by the drought and commodity prices, it is impossible to predict the level of landowner cost share that determines the number of objectors and, hence, the potential delays to the program, ie profitable farm businesses may have no problem with financing their share of a scheme whereas marginal or non-profitable farm businesses may not have any discretionary income for investing in the schemes (regardless of the size of an operation – large debts and interest may consume any discretionary income).

2. **Manage all CSWMSs as Primary Drains** (they could still be called CSWMSs because of their smaller dimensions or more sensibly Primary vs Secondary schemes to reflect their role in the catchment) and focus most existing PD funding on accelerating the current CSWMS (or Secondary SWM) program with the objective of utilising the 260 outfalls provided by the existing Primary drains. With this option, delineation of responsibilities between agencies needs resolving and could be given all to G-MW to control all aspects of survey, design, construction and management of the schemes as per the existing PD model for cost sharing, cost recovery, ownership and/or control of the drainage easement or…DPI become the lead agency for the design which incorporates the community consultation and negotiation components and G-MW becomes the lead agency for construction.

3. Review the definition as to what is a PD vs CSWMS – this is in recognition of the fact that very large (length and numbers of participating landowners) CSWMSs are unwieldy to manage because of the number of landowners who have to be brought to consensus and the probability that the physical dimensions of the lower reaches of the scheme are big and significantly increase the average cost of the scheme, relative to a smaller scheme. This particularly applies to long, narrow catchments with relatively fewer CSWMS spurs. There are examples where this has resulted in an average cost of up to $90,000 per km for a CSWMS, with subsequent reluctance of the 70 landowners to implement the scheme.

   By pushing the existing PD beyond outfall, further up the catchment to a point, beyond where the average cost of construction of the proposed CSWMS is within acceptable bounds (~$45,000 per km) and the number of landowners involved is manageable (20-25 max), the subsequent CSWMSs have a greater prospect of being implemented. This approach has been tried in a number of catchments as a means of overcoming some delays.

Option 1 – Change the CSWMS Cost Sharing to a greater Contribution by Government

The option aims to change the cost share for CSWMSs to a level where the NPV of the landholder capital share + renewals + O&M (Capital + 4th Div. Rates + Annual Service Fees) is equivalent to the NPV of the charges (1st Div. Rates + Annual Service Fees) for an equivalent sized PD. From Olive Montecillo's paper this equates to a Government share for the CSWMS in a range from 75-86% of the total capital cost, depending on the location of the CSWMS and its characteristics.

This approach would provide some equity between landowners on PD and CSWMSs but would involve significant negotiation with Government in order to get Government to accept a change to the cost sharing arrangements that have been used for the last 14 years. Even

within the above range, if a fixed percentage share was agreed to, there will still be winners and losers amongst the landholders. As with any change to the cost sharing arrangements, if the Government share increases, there will be less km constructed per annum, assuming there will be no additional funds. Therefore to complete the overall program, as planned in the Strategy, the program will need to be extended for some additional years. In every other respect, the CSWMS would be managed as it is currently, building on experience as the program proceeds.

Option 2 – The PD Cost-Share for CSWMSs Option – in more detail

In order to distinguish the difference between the current system and the proposed system it will be useful to change the terminology that describes the main (primary drains or PDs) drains and the spur (CSWMS) drains. The remaining discussion will describe the main drains as Primary Drains (PDs), as before and the spur drains as Secondary Drains (SDs). Together they form the SIR integrated Surface Water Management Program.

The first assumption that needs to be made with this option is that, whoever takes over management and implementation of the Secondary Drain program, the cost per km of survey and design, construction and management should not increase from the current figure (construction) of $45-50,000 per km plus $20,000 per km for agency support. In fact it could be expected that the program costs could marginally fall due to efficiencies in new processes and the assumption that a program that is progressing faster will be more efficient, eg Fewer delays and no redundant plans that require reworking to bring up to standard.

G-MWs internal monitoring systems are rigorous and their ability to select and manage contractors makes their construction teams competitive with the open market.

The cost estimates for Project Management (PM) are likely to increase if the existing G-MW practice of full time Project Managers (PMs) for Primary schemes is adopted for CSWMS. A preferable option would see some rationalisation of PM across the larger number of smaller Secondary schemes.

A cost-sharing model that will achieve the desired resource condition change at no additional annual cost to government and at a reduced cost to landowners is to:

1. Cease construction of new G-MW PDs beyond July 2004, as currently defined in the Strategy and continue catchments which have CSWMS being designed in anticipation of a continuing Primary works program (eg: Mosquito, Deakin 16, and parts of the Muckatah). Continue with PD design work to ensure enough future schemes are ready to proceed, as required (if that is deemed necessary).

2. Reallocate the majority of PD funds to the existing CSWMS program but: Introduce PD cost sharing – Government 100% of survey, design, construction and project management, legals.

- All rules/Guidelines/processes will need to be reviewed, including the level of Drainage Rates to be applied in the new schemes.

- G-MW will own and manage the new Secondary Drains, choosing the most cost and administratively effective tenure arrangements that ensures management control, access, protection of assets and meets all planning requirements. An easement on the land title provides the simplest solution from a planning and cost perspective, provided access and security rights can be negotiated effectively.

- Contract management will make use of existing expertise from G-MW and DPI staff to best utilise the PD survey, design and construction teams, directly or by using sub-contractors, as if the project was a PD.

- All new CSWMSs effectively become PDs (by definition, PD = 100% govt. cost) but because of their smaller scale, compared to PDs, the CSWMSs should be distinguished by referring to them as Secondary Drains (SDs).

- Cost share ceases to be a major issue as the significant landowner capital contribution is removed and planning delays are reduced

- Significant reduction in over servicing – reduced opportunities to object, ie there will be fewer iterations in the planning/design phase so agency staff will no longer be required to repeat negotiations with landowners and designers.

- G-MW can oversee the guarantee QA of construction processes.

- DPI and G-MW staff will continue to integrate the catchment management input and how landowners can best utilise the new surface water management capabilities to the advantage of their farm operations and more fully participate in implementation of the SIRCS. The details of agency roles will need to be reviewed.

- The roles of the existing G-MW and DPI CCFs and Catchment Environmental Officers (CEOs) will need to be reviewed and the greatest advantage taken of the competencies available to achieve the preferred workplace and program outcome. With an increased rate of implementation, it would be expected that the extension role will increase significantly.

- The objective would be to achieve an increase in the rate of implementation of the "new" CSWMS program up to the desired 100km per annum or more to meet the long-term strategy targets of an additional 1,760 km of CSWMS works. It should be noted that the current rate is about 20-30 km per annum.

- The essential issue is the need to achieve a significant catch-up during the five to seven year period while the dairy industry, in particular, is recovering from the current drought. The alternative is that a very slow rate of progress is achieved, with significant long-term costs to all stakeholders, including Government.

- The proposed cost-sharing arrangements would be reviewed at the 2010 SIRCS Plan Review.

- From a Surface Water Management Strategy economics perspective, under the current arrangements, the anticipated economic performance of the Strategy is reduced significantly because the rate of adoption of the CSWMS program in particular is not being achieved, thus putting off, further into the future, the anticipated capturing of the SWMP stream of benefits and reducing the capacity of the region to manage accessions to the watertable. It can even have an impact on the ability to implement the sub-surface drainage program where CSSMS outfall is required to dispose of groundwater.

Disadvantages

1. Existing completed CSWMS schemes may claim inequity – this will depend on issues such as current ownership status (G-MW, Local Gov. or Water Act). They may seek compensation. It may be possible to vary the Drainage Rate for existing completed schemes

to less than 4th Division. It must be remembered that the current rates include O&M and renewals. In response, it should be highlighted that a significant part of the benefit of the CSWMP was that it provided a service to the SIR within 30 years instead of 200 years. Those who have received a service already have received a benefit before others and this could offset the inequity. Applying retrospective assistance is complicated and, in itself, could create inequities.

2. Project at advanced stages of planning and approaching implementation may stop, due to speculation on a better Government cost share. This is potentially a critical issue and consideration for introducing a starting date for eligibility of a new cost share is needed if it eventually is approved so those currently designing can continue without possible penalty. At embargo on this paper cannot be indefinite.

3. G-MW would need to reassess their plant and equipment inventory and team make-up to better match the requirements of the reduced size of the Secondary Drain excavations and structures.

4. Landowners have significantly less say in design/construction (the strong program supporters will be more supportive as they will see the removal of obstructions to progress). The extent that they have a lesser say will depend on the outcome of agency processes yet to be evaluated but a clear objective of the new processes will be to reduce the opportunities to object.

5. Local surveyors and designers won't be happy (some may be relieved??) and some may still b able to participate.

6. Local construction contractors may be adversely affected if there is a reduction in works selected through a public tendering system. Further work is required to determine what component is undertaken by G-MW construction crews and what is done by private contractors. For the latter, the difference between the current situation and the proposed situation is that the contractor's client will be G-MW now compared to the individual CSWMS groups in the past.

7. Government may argue that the public benefit doesn't justify a 100% incentive.

However the market has shown that, under current economic conditions, farmers don't have the capacity or willingness to pay at current cost share. The reality is that the current CSWMS incentive level and adverse climatic and market conditions has put the CSWM program well behind its targets and the desirable resource condition change won't happen because there is limited capacity (biophysically) to adopt the Farm Program initiatives that deliver the integrated catchment management benefits for the long term, ie without improved drainage conditions and a reduced risk of long-term inundation, landowners are less likely to adopt best practices in land and water management to the extent anticipated by the SIRCS.

8. If Government is paying 100% of the cost, there is the risk that drains will be built where there is no demand. The "demand" under a 100% Government cost-share is likely to rise and careful use of the priority – setting criteria will avoid this issue.

Option 3 – In more detail

Option 3 could be called the "Pragmatic Approach" which has be trialled in a number of catchments and is effectively sensible adaptive management of the current arrangements. It deals with the specific issues of:

- Size of the CSWMS Group is too large and unwieldy for efficient consultation, management and decision making

- The physical dimensions of the lower reaches of the system being constructed is large, making the average cost/km and total cost of the scheme well above community expectations;

- How far up the catchment do you need to construct formal systems to provide effective surface water management services to the landholders on the periphery of the catchment.

The proposal is a practical solution to overcome the above issues. It requires:

- Redefinition of what constitutes a PD vs a CSWMS in terms of physical scale of construction requirements and numbers of landholders in a CSWMS;

- Pushing PDs further up large catchments into what would have been the lower reaches of CSWMSs. This will reduce the average cost/km of the remaining CSWMSs and connecting spur drains. Those landowners who now outfall directly to the extended PD will be liable for PD 1ST Division Rates and Annual Service Fees but will not contribute any up-front construction costs;

- CSWMS community groups should not exceed 20-25 landholders;

- Careful consideration should be made of the need for providing formal drainage services (CSWMSs) to properties on the outer boundaries of the catchment. In many cases, all that is required is a drainage easement that enables drainage water to pass through a neighbour's property to connect to a CSWMS further down the catchment. Gravity will do the rest;

- The landowners on the periphery of the catchment will still be liable for their share of the scheme cost but the total cost to be shared by all the group members will be less because of the need for less capital works.

This proposal adds some cost to the PD program but takes it away from the CSWM program. In reality, the proposed additional PD components probably always should have been in the PD program. The CSWMS was, with hindsight, too ambitious in attempting to implement some of the larger schemes.

Whilst it could be argued that this option is effectively a change in cost sharing arrangements, it more realistically represents effective adaptive management and requires minimal changes to existing management processes.

However, existing management processes should continue to be improved (Pads and Scams) aiming to take advantage of any opportunity to strengthen the program through legislation, improved guidelines and effective community consultation, with the objective of minimising objector delays to ensure the anticipated benefits of the Surface Water Management Strategy can be captured in full. On-going training of DPI and G-MW staff in project management and effective consultative process will deliver significant benefits to the program.

Conclusions

Option 3 provides the pragmatic solution to the question as to how best to accelerate the overall Surface Water Management Strategy. It formally acknowledges processes that were beginning to be implemented as part of effective adaptive management.

It is the option most likely to be supported by Government and the community because it can have a significant beneficial impact on reducing the construction cost per km (or keeping it at around $45,000 per km) and total cost of individual CSWM schemes and hence the cost having to be shared by individual landowners. It is adding cost to the PD program but at the low end of the average cost/km scale so the average cost/km of Pads may fall slightly.

This option does not require additional annual Government funds in the short term but the total program may be extended slightly compared to the original Strategy.

Of greatest significance is that this option provides some prospect of accelerating the total Surface Water Management Program and particularly, the acceleration of construction of Scams to take advantage of the outfalls currently available.

Recommendation

That Option 3 be formally developed as the most practical and cost effective means of accelerating the implementation of the SIR Surface Water Management Strategy and, particularly, the Community Surface Water Management component of the Strategy.

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