

The Shepparton Irrigation Region Surface Water Management Strategy Review 2000, outlined a number of recommendations to be addressed. With the next review to be compiled and completed by the end of 2006, it was important to identify the recommendations outlined in the current strategy and identify what responses and action have been undertaken to address these recommendations. The document below contains the recommendations as listed in the Projects 1 – 3 of the review and the evidence of their completion.

Any documents that have been identified to show evidence have been attached at the end of the document for reference or a link to their location has been identified.

These responses should be read in consultation with the “Goulburn Broken Catchment Management Authorities response to the “Independent Review of the Environmental Aspects of northern Victoria’s Surface Drainage Programs in Irrigation Areas’ (Nolan)”.

1. Increased environmental monitoring to quantify the benefits and dis-benefits of drainage works.

G-MW have a regular monitoring system in place and report their findings on a quarterly and annual basis. EMP have ongoing monitoring at sites affected by surface water management systems, with examples of these being Brays Swamp, Kinnairds Wetland, Reedy Swamp and Mansfield Swamp.

Environmental monitoring of drainage works is also covered in the Irrigation and Drainage Memorandum Of Understanding (IDMOU) that was signed off in June 2004.

2. Enforcement of planning controls over earthworks in and adjacent to natural drainage courses

Local government agencies are responsible for enforcement of planning controls over earthworks in natural drainage areas. G-MW will provide direction on these issues and have systems in place where they ensure that works identified in the whole farm planning process are not to occur in the natural drainage course. G-MW has a Whole Farm Plan referral checklist which ensures that these works are identified and prevented from occurring.

3. Application of new techniques and design features to old drains.

Each financial year the G-MW budget contains funds to undertake retrofitting of existing drains. Currently this amount is set at approximately \$500,000 a year. Some works that have been identified to occur has been hydro-mulching of drain batters, with 7 sites having been identified to have works undertaken in the next 2 years.

Works are also being undertaken to assess the value of changing the batter slopes to assist in the aid batter stabilisation and control of nutrients.

G-MW also has operational plans for each CSWMS and a priority list for maintaining each CSWMS.

4. A greater emphasis on timely education of individual landowners and drainage issues and design standards before community meetings are held to initiate community drainage schemes.

Recent years, due to environmental conditions, have seen little initiation of new projects.

However work has been undertaken to look at having processes in place to ensure that any new enquiries are dealt with in a timely and effective manner. A step by step process of how landowners can take the first steps towards formation of a CSWMS group have been outlined in a “Microsoft Visio” flowchart, which includes documentation that informs landowners of their

responsibility in establishing a CSWMS group and receiving government support. Recently, communication strategies have been written outlining the steps involved in canvassing a new catchment and the steps required, as well as a strategy for targeting established catchments which have been inactive for sometime. These strategies will be used as a blueprint for initiating new or older projects.

5. A better transfer of knowledge on proposed works between vendors and purchasers of land.

Surface Water Management staff are regularly contacted about drainage proposals occurring on properties of land that are in the process of being sold. A system has been developed by the partnership portfolio officer to look at ensuring that all conveyancing officers with the region seek advice from the SWMP prior to properties being sold. This ensures that SWMO are able to keep up to date with landowner changes, which helps the SWMO be pro-active in contacting the new landowners and providing them with knowledge of the surface water management system. This helps to keep the momentum of the CSWMS progressing. (Process attached)

6. Improved construction management skills for those charged with supervising the construction of CSD's

Staff within the Surface Water Management Program have undertaken contract management training, through the Environmental Engineers Australia, to enhance their knowledge of contract management. As part of the induction process new staff are encouraged to look at undertaking similar training throughout their time with the program. The development of checklist (for designer works and due diligence) to ensure all tasks are completed has ensured that staff have a process to follow before works are completed.

7. The community will be involved, organised, well informed and motivated to enhance productivity by actively managing surface water flows while preserving and enhancing environmental values and catchment health.

Extension packages developed by the Surface Water Management Officers, ensure that existing and new landowners to the area are well informed of the benefits that drainage can provide to their individual property and the catchment they live in.

Environmental Management Program staff undertake an environmental assessment of the catchment prior to construction and through extension at group meetings inform landowners of the benefits of vegetation in the catchment. EMP staff play an important role developing management plans for the wetlands and high value environmental areas within the Shepparton region. Examples of this are Biodiversity Action Plans.

8. The mix of Primary and Community Drains will be optimised to minimise costs while streamlining the implementation and operation of a system that covers a very large area.

Work is underway to further align the progress of CSWMS with that of the Primary System, by the undertaking of a joined budget approach for the 2005-2006 financial year. This ensured that works were aligned with one process coming to completion as the other was initiated. A case study is currently in progress to look at the use of a new concept of "Primary extension", which looks at extending the primary drainage network further into the catchments of community drains which exceed the recommended length and number of landowners, bringing them back to a more manageable size of 15 landowners or 10 kilometres long.

New policy was also introduced to look at reducing the costs of CSWMS, by creation of a new concept deemed as "design flexibility on spur ends". This looks at reducing the design level on

the last 2 properties of a spur drain, without reducing the level of service provided to the landowners. (see attached brochure).

9. The system will have the capacity to provide the agreed level of protection of irrigated land against inundation.

As part of the design of the CSWMS, the designer is aware that the CSWMS must be capable of removing the design level of service of 50mm of rainfall in a 24 hour period removed over 5 days. On completion of the construction of the CSWMS, through agreement with G-MW as the manager of the CSWMS, the landowner enters into an agreement that G-MW will ensure that the level of service provided when the CSWMS is first constructed is maintained at the appropriate level. G-MW have a customer service agreement, which ensures that they will maintain a guaranteed level of service to the landowner. (Contact G-MW for a copy of the customer service agreement)

10. The momentum of community groups formed to implement community surface drains will be maintained despite the fact that the individuals and the authorities involved may change in the course of the implementation process.

Continuity of momentum amongst landowners is an important step in ensuring the completion of a CSWMS. Steps have been undertaken in the Surface Water Management Program to ensure that the transfer of information and the steps involved in implementing a CSWMS are updated. Standardisation of the filing system, both hard copy and electronic, has ensured a smooth transfer of knowledge of current working on each CSWMS. On top of this all the information is now centrally stored on the "j" drive allowing access for all surface water management officers. The CSWMP, with the introduction of new staff has ensured it has an induction program in place for orientating new staff to where information is stored and how it can be easily retrieved. The induction process also involves ensuring staff are aware of their role, and the development of an operational manual and transfer operation manual has ensured that each SWMO has a step by step procedure to follow. When inheriting an existing CSWMS, a new officer can continue where an existing officer has left the CSWMS, without a loss of momentum.

11. Drainage flows and the nutrients they contain will be recognised as valuable resources that should be held and reused within the Irrigation Region wherever possible. The system will include features that facilitate the reuse of drainage flows within the Region.

The Drainage Nutrient Removal Incentive Scheme (DNRIS) ensures that nutrients are seen as a valuable resource and can be reused as part of a landowners irrigation system. Throughout the time the incentive has been running 32 storages have been built throughout the Shepparton Irrigation Region. The number of storage's built has the capacity to store 5,728 ML of water for reuse (as of March 31st 2006). (see attached data).

12. The community will value the environmental, flow retardation and nutrient and silt stripping qualities of wetlands, drainage depressions and other low lying areas above their agricultural potential. Whole farm plans will reflect these values and relevant aspects of the Regional Catchment Strategy.

The community is well aware of the effects that wetlands can play in nutrient and silt stripping. Articles have appeared in the "Bush and Land" column in the County News (weekly insert of several country papers). Articles have also appeared in the Shepparton Irrigation Region Implementation Committee column, a paid section within newspapers in the region, promoting

the benefits that wetlands and depressions play in nutrient stripping and silt trapping. Monitoring takes place of the water entering the wetlands (Kinnairds) and the water leaving the wetland, so comparisons can be made on the effect that the wetlands are having on water quality. ACTION: Further work needs to be undertaken to promote the use of drainage depressions and low lying areas as valuable sources of nutrient stripping and silt entrapment, when they are encountered along the alignment of a community surface water management system.

13. The environmental assessment procedure will efficiently identify and facilitate the protection and enhancement of high value environmental features.

The environmental assessment procedure is 80% complete and will be available in the near future. The Environmental Management Program have undertaken a similar approach with identifying environmental features protected by the sub surface water management program, with this report having just been completed.

14. Drain design and vegetation will incorporate features that are analogues of natural wetland features that trap silt and nutrients.

Reedy and Brays Swamp and Kinnairds Wetland are examples where drain design has been incorporated to ensure that the wetland and swamps play an important role in trapping sediment and nutrients. The Guidelines for design also promote the use of on-line and off-line wetlands when drainage design is being undertaken. Monitoring of these wetlands and swamps is also currently underway which will be able to provide data on the effect that the drain is having on the management of the wetland and depressions.

15. Drain design incorporates features that protect and enhance existing wetlands. Support is cultivated amongst the owners of land containing the wetlands.

Management plans are developed for the wetlands in the Shepparton Irrigation Region, looking to ensure ongoing management of these wetlands into the future. Examples of some of these wetlands management plans are Kinnairds Wetland, Reedy Swamp, Brays Wetland. Landowners are consulted on the management of these areas and other low lying depression through the environmental assessment process undertaken by the EMP as part of the survey and design of the CSWMS.

Further work is required however on promoting the benefits that low lying areas and wetlands can play in the role of community surface water management systems.

16. The implementation program has the flexibility to respond to changes in demand resulting from shifts in irrigation intensity and enterprise profitability.

Reconfiguration work that is currently underway is giving an indication to the Surface Water Management Program of areas that are having shifts (or are estimated to) in their water use and farming enterprise. Surface Water Management program staff are involved in discussions around this topic and thus can alter works accordingly. Staff have also been involved in a GIS Atlas collation of farms are investigating further use of this technology and information. The SWMP has also been proactive in ensuring that works proceed with creation of new policies intended to accelerate the uptake of drainage. These policies (flexible spurs, deferring payment into construction) have been approved by SWMWG and CSDCC, showing the flexibility of the program to respond to a decrease in works, due to seasonal conditions.

17. Community drains are implemented within a reasonable time so that enthusiasm is sustained, while the interest of individual landowners and environment issues are given reasonable consideration.

With the current conditions facing the Community Surface Water Management Program, maintaining individual enthusiasm is out of the control of the Surface water Management Officers.

18. Agency staff have well developed facilitation and project management skills which result in community drains being built quickly and efficiently and in accordance with the needs of the community.

One of the key selection criteria for the employment of Surface Water Management Officers (SWMO) within the program, is that they meet the following key selection criteria:

1. "Knowledge of extension principles, practices and adult learning needs, including facilitation of groups to make appropriate shared decisions, conciliation and negotiation techniques" and
 2. "Demonstrated ability to develop and implement community activities involving sound project management skills, including development and management of a budget".
- With all staff ensuring they meet these criteria prior to employment ensures that all staff have the skills to progress a CSWMS. Any skills gaps that are identified through a staff's employment are addressed through the regular supervisors meetings and staff are encouraged to attend training to develop these skills.

Staff within the program all attended a contract management training course in 2003, to ensure all staff were provided with information on best how to manage contracts.

Having all the appropriate skills can ensure that staff progress the CSWMS efficiently and quickly, but the main driver of progress will be community involvement which can be outside the control of the SWMO. The program has ensured however that all SWMO are adequately trained to provide the appropriate level of support to the community.

19. Agreements between individual landowners and the drainage Authority are well documented and passed on, so that there is a continuity of knowledge through a turnover of agency staff and landowners. This includes landowner agreement plans and letters, which document the layout of drainage works, areas subject to flooding and responsibilities of the various parties.

The introduction of Work Specification Plans, or landowner agreements, has ensured that landowners are aware of the works that will take place on their property and changes that will occur to their outlay as a result. (Example attached).

A new central store of final reports will allow for new staff to easily access information on completed drains, without having to search through a multiple of files to extract the information. Work is also currently underway to finalise the contract documents for survey and design to ensure that the roles and expectations are clear between the Technical Liaison Group and the designer.

Investigation is also underway to look at the copyright of plans and the ownership of them between designers and the group, should further work need to be undertaken on them and at a date beyond the completion of the final survey and design.

20. Effective surveillance and sanctions ensure drains and farm development works are carried out in accordance with approved plans.

Local government is responsible for ensuring that works are being carried out in accordance with the approved plans. Goulburn Murray Water are a referral agency of the council and ensure that the works that are proposed are acceptable to their drainage plans and have no impact on their assets. G-MW have a process whereby they ensure that whole farm plans meet the criteria outlined in their checklist when plans are checked. (checklist attached)

21. Monitoring programs quantify the effect of drain design and operation on wetlands within the region and the rivers downstream.

Brays and Reedy Swamp and Kinnairds Wetland all have monitoring programs undertaken on them, which have the impact of assessing whether the drain design and its operations have an impact on the operation of the wetland.

The GBCMA have developed a “Lower Broken Creek Waterway Management Strategy”, which is looking at maintaining diversity with summer flows, drainage flows and winter drawdown. The Irrigation and Drainage Memorandum of Understanding (IDMOU) has developed a decision support system that is a framework to identify drainage issues and develop monitoring to assess them. (Lower Broken Creek Waterway Management Strategy included)

22. Mechanism exist for applying significant advances in drain design or operation to older drains, where those advances result in improvements to water quality outfalling from the system.

Each financial year the G-MW budget contains funds to undertake retrofitting of existing drains. Currently this amount is set at approximately \$500,000 a year. Some works that have been identified to occur has been hydro-mulching of drain batters, with 7 sites having been identified to have works undertaken in the next 2 years.

Works are also being undertaken to assess the value of changing the batter slopes to assist in the aid batter stabilisation and control of nutrients.

G-MW also has operational plans for each CSWMS and a priority list for maintaining each CSWMS.

23. Reduction of irrigation induced nutrient loads in drains

The Irrigation and Drainage Memorandum of Understanding (IDMOU) will cover and focus on a reduction on nutrient loads in drains. It will pull together all the current work that is occurring on ensuring that targets are met.

24. Development of non – structural nutrient control instruments including Whole Farm Planning to ensure that impacts on nutrients and water quality are considered in the planning use developments.

Over the past five years there has been a greater emphasis on water quality in the whole farm planning process. Some of the procedures in place to address water quality and nutrients include:

- the requirement that properties over 10 hectares must have a re-use system designed for it,
- training and workshops with staff and designers incorporating information on effluent management, and
- the introduction of re-use and automatic irrigation incentives to reduce run –off from properties.

25. Development of Whole Farm Plans with a targeted 25% increase in annual preparation rate until all irrigation farms have approved Whole Farm Plans.

The rate of whole farm plans completed with the assistance of an incentive is currently 3.7% of the irrigated area of the SIR per year. While this is below the recommendation of 25%, it is above the original target set out in the Regional Catchment Strategy of 3.5% per year. The level of uptake of whole farm plans is based on the landholders ability to pay for a whole farm plan.

Resources have been provided to service the level of demand from landholders.

26. Increase installation of farm re-use systems by 20% per year until 80% of farms have functioning systems.

Incentives for the construction of re-use systems were developed in July 2000. Since then, 309 re-use systems have been constructed under the incentive program, providing re-use facilities for 21,074 hectares of irrigated land

There are also many re-use systems constructed without the assistance of the incentive.

The level of demand for re-use systems is driven by the landholders ability to fund the works.

Resources are provided to service the demand from landholders.

27. Increase in diversions from drains achieved by a mixture of reuse systems, drainage diversions and other BMP's.

Incentives are available for the construction of reuse systems on landholders properties as well as Drainage Nutrient Removal Incentive Scheme for diversion from Primary Surface Water Management Systems. These incentives have led to an increase in the numbers of reuse systems installed in catchments that are serviced by drainage.

Whilst online reuse systems are permitted within CSWMS design, off line systems are encouraged as an alternative to keeping nutrients on farm and thus recycled.

28. Development of off stream storage's for diverted drainage water and installation of appropriate pumping and switching gear.

The Department of Primary Industries, in collaboration with the Goulburn Broken Catchment Management Authority have developed a Drainage Nutrient Removal Incentive Scheme. The guidelines to be eligible for this incentive state that the pump and motor must be permanently fixed to receive the grant money. It also states that is essential that the property receiving the grant has an approved whole farm plan, which outlines the design for the pump and motor to ensure sufficient volumes of water can be pumped. There are also other criteria that the property must comply with before the incentive is paid.

29. Embargo on direct dairy shed effluent discharge to drains and development of BMP's for discharges from feed pads, calf sheds and other intensive dairy operations.

G-MW have in place a policy (attached) outlining an embargo on dairy effluent entering directly into G-MW channels or drains, including Community surface drains. Direct discharge is defined as discharge directly or via farm drainage lines, from a dairy, feedpad, feedlot or dairy effluent pond.

An industry agreed target of 100% compliance for dairy effluent management in accordance to SEPP waters of Victoria 1988-2003. Embargo of all point source dairy effluent discharges to waterways, drainage networks and groundwater. This includes dairy sheds, feed pads, effluent ponds, bridge crossings and other intensified activities causing concentration of effluent. The development and implementation of Effluent Management and Nutrient Management Plans (EFMP and NMP). The referral of all non compliant dairy effluent discharges to appropriate agencies (EPA, G-MW, Municipal councils) to ensure rectification of issues and progression towards industry targets.

30. Drain management institutional responsibilities resolved (Drain Management Option).

The Irrigation and Drainage Memorandum of Understanding (IDMOU) will cover and focus on a drain management and responsibilities associated with it. It will pull together all the current work that is occurring to ensure drains are managed appropriately.

31. Further development of monitoring of wetlands and remnant vegetation is required such that areas affected by the construction of surface drains can be assessed to measure change, in particular, the degree of enhancement being achieved through its implementation.

ACTION: This recommendation is yet to be completed, with a similar action item outstanding from the SIRTEC Forum (Action Item 03 - 1x3).

A Monitoring, Evaluation and Reporting Strategy has been completed by the Goulburn Broken Catchment Management Authority which outlines a strategy to ensure that monitoring of environmental features is undertaken.

This recommendation is seen as a joint process / project that will need to be undertaken by the EMP, CSWMP and TLG of the group.

32. Development of Management Plans for all drains. Drain Management Plans are being developed by G-MW to define BMP's for maintenance and operation of drains. The management plans will also be used as a basis for allocation of drainage diversion permits. Plans are currently being prepared for the Muckatah, Murray Valley Drain 6 and Deakin catchments, and will be developed for all G-MW Primary Drains. These plans will be used as a basis for management plans for all Primary Drain catchments within the SIR.

Goulburn Murray Water have developed Management Plans, naming them Asset Operational Plans. They develop these plans for long term monitoring and maintenance of drainage systems they are involved with. These asset operational plans are currently being implemented, and further support will be provided through outcomes of the Irrigation and Drainage Memorandum of Understanding.

33. Development of plans and cost sharing arrangements for retrofitting, biodiversity, wetlands and other environmental features into existing drains. Further investigation will be required to identify existing drains that would benefit from retrofitting. Prioritisation of works is expected to reflect the benefits achieved.

Each financial year the G-MW budget contains funds to undertake retrofitting of existing drains. Currently this amount is set at approximately \$500,000 a year. Some works that have been identified to occur has been hydro-mulching of drain batters, with 7 sites having been identified to have works undertaken in the next 2 years.

Works are also being undertaken to assess the value of changing the batter slopes to assist in the aid batter stabilisation and control of nutrients.

G-MW also has operational plans for each CSWMS as a priority list for maintaining each CSWMS.

New policy has been passed enabling the retrofitting of CSWMS that are in the process of transferring the management of their CSWMS from local government to Goulburn Murray Water. This policy allows for upgrade works in these systems to be financed as per the cost share arrangement for construction. (50%). (see attached paper)

34. Development of wetland and remnant vegetation monitoring strategy and plan, including flora and fauna, to provide protection and preservation of wetlands and remnant vegetation after drains are built. A wetland and remnant vegetation management plan is being developed by NRE for Bray's Swamp. These plans will form the basis for the development of plans for all significant wetlands and remnant vegetation sites within the SIR.

Wetland Plans have been developed for Brays and Reedy Swamp as well as Kinnairds Wetland. Further wetland plans are currently being undertaken. Draft Plans have been developed for Mansfield Swamp and Kanyapella Basin. Processes have also been developed to incorporate wetlands into the design of surface water management systems. The implementation of these plans is currently underway through staff from the EMP.

Biodiversity Action Plans (BAP) will be prepared for 5 areas within the Shepparton Irrigation Region, with a draft plan for the Yarrawonga region currently having been completed. These BAP's identify and record areas of remnant vegetation with each area evaluated and scored for its condition and diversity. Each BAP identifies a strategy for ongoing maintenance.

35. Resolution of water quality monitoring and reporting responsibilities and third party auditing and reporting. There is currently no single organisation that has responsibility for meeting water quality objectives of drain outfalls, which would simplify the potentially complex problem of interfacing and management of outfalls with separate organisations or individuals. Investigate alternative forms of monitoring such as biological monitoring.

The signing of the Irrigation and Drainage Memorandum of Understanding ensures that there is a long term investment for the resolution of water quality monitoring. The IDMOU is a joint agreement between the Department of Sustainability and Environment, Goulburn Broken Catchment Management Authority, North Central Catchment Management Authority, Environment Protection Authority Victoria and Goulburn Murray Rural Water Authority. (IDMOU is attached)

36. Regional Drainage Research and Development. Research and development need to continue to develop best management practices, both on-farm and off-farm. Controlling pollution at its source is a high priority, and has been targeted by the strategy through inclusion of the Goulburn – Broken Water Quality Strategy objectives and its focus on BMP's on farm to better manage water quality and contaminants.

The Irrigation Drainage Memorandum of Understanding will cover this aspect of the program. The development of Catchment Operational Plans, will help to define what is happening in the broader catchments, separately to that of occurrences in sub catchments.

37. Design Manual for G-MW Primary Drains, DCD's and water harvesting systems. Design Guidelines for CSD's have been developed to provide minimum standards and design philosophies, while still providing flexibility for designers. Design manuals incorporating Primary Drains, DCD's and water harvesting systems are required to document current best practice in surface water management system construction and design.

Goulburn Murray Water is currently in the progress of completing guidelines for design for Primary Drainage Systems. A final draft of this document has been completed and will be available for use from the next financial year (2006 / 07). The guidelines for design for the Community Surface Water Management Systems has been recently updated, with the new version to be placed on the Internet for easy access by all users throughout the state. (Currently

there are 200 people who receive a copy of the guidelines). The guidelines were updated in November 2005.

38. Development of a process control system for the strategy requires further work to detail the procedures established over the last decade, define a process for review and improvement and provide traceability within the strategy.

Processes are in place to ensure that the SWMP reviews the recommendations identified in the strategy on a regular basis. The CSWMP has initiated a yearly planning day, which will focus on ensuring that the works program are in line with the strategy goals. Discussions are taking place between both community and primary staff on ensuring that the budgets of the two programs are in alignment to ensure that works are progressing together. A document is now in circulation outlining the steps undertaken to review the strategy each time it is undertaken and will form the blueprint for further reviews. The employment of both an executive support officer and policy development and implementation officer has ensured that all new processes developed within the program are now recorded and appropriately rolled out. All policies have an implementation and communication strategy attached to them and will not be approved prior to these documents being completed.

ACTION: To ensure that future recommendations are traceable through the life of the review, all recommendations will be identified in a separate chapter of the review so easy retrieval, to allow for measurement of the performance to complete these to be undertaken on an annual basis.

39. Strategy recording and reporting system, including improvement to linkages between GIS and tabular reporting systems.

Developing strong linkages with the GIS department are starting to develop but further work is required to develop all the sub sets of information that is required.

40. Process control for the design, construction and transfer of management responsibilities for the Surface Water Management Systems.

Throughout the past 5 years, the program has ensured that many of its processes and guidelines have been documented to ensure that ongoing transfer of knowledge occurs throughout the change of staff in the program. The production of an operational and transfer of management manual, has been undertaken in the community program, providing a step by step process towards achieving the completion of these tasks. These documents have a quality control system in place to ensure that the most recent information is documented in them and available to staff, in regular updates.

The production of other documentation, such as maintenance manuals, checklists (for design plans, environmental etc) and administration guidelines ensures the control of the procedures in place for the program. G-MW is currently in the process and have completed a copy of draft guidelines for the processes behind the construction of primary Surface Water Management Systems.

Attachments:

1. New Landholder process
2. Flexible Spur flier

3. DNRIS information
4. Work Specification Plan example
5. Whole farm plan checklist
6. Lower Goulburn Creek Waterway Management Plan
7. GMW Policy – embargo on dairy effluent
8. Transfer of drain management - retrofitting
9. IDMOU