

Irrigation Drainage Memorandum of Understanding

Covering the Goulburn-Murray Water
irrigation areas

Annual Report 2010-11



NORTH CENTRAL
Catchment Management Authority
Connecting Rivers, Landscapes, People



**GOULBURN
BROKEN**
CATCHMENT
MANAGEMENT
AUTHORITY



EPA
VICTORIA



Department of
Primary Industries



Department of
**Sustainability and
Environment**

GOULBURN-MURRAY
WATER



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1. Purpose

This report presents the achievements of the Irrigation Drainage Memorandum of Understanding (IDMOU) signatory agencies in the 2010/11 financial year. Achievements relate to the IDMOU implementation schedule and to other relevant drainage activities.

2. Introduction

The IDMOU is an agreement that records the arrangements between agencies working on irrigation related, surface drainage management in the Goulburn-Murray Water (G-MW) irrigation areas.

The overarching purpose of the IDMOU is to demonstrate that management of irrigation drains is actively reducing adverse impacts on receiving waterways. This is achieved by:

- i. ensuring a consistent and transparent process is used to set water quality targets for irrigation drains in priority catchments
- ii. ensuring management actions are linked to resource condition targets
- iii. fostering and maintaining good working relationships and clear accountabilities between responsible agencies
- iv. fostering continual improvement in monitoring and reporting systems
- v. working closely with farm and environment programs.

First signed in June 2004, the IDMOU was reviewed and renewed in 2010. As part of the 2010 IDMOU renewal, the Department of Primary Industries (DPI) joined the Department of Sustainability and Environment (DSE), Environment Protection Authority (EPA), G-MW, and the North Central and the Goulburn Broken Catchment Management Authorities (CMAs) as a signatory to the IDMOU.

The IDMOU Steering Committee is made up of representatives from all signatory agencies. It continues to foster improved interagency relationships and communications for the implementation of surface drainage programs.

The drought conditions between 2004 and 2010 eased in 2010-11 with above average rainfalls, which caused significant and widespread flooding across northern Victoria. Significant increases to storage inflows resulted in all G-MW irrigation areas, for the first time since 2002/03, receiving water allocations, and water reserves being set aside for the 2011-12 season.

The importance of drainage management increases significantly during periods of average and above average rainfall. Increased drainage flows also tend to increase the discharge of common drainage pollutants, such as nutrients, suspended solids and salt, to receiving waterways. The high rainfall year reinforced the importance of irrigation drainage systems and good drainage management especially in areas of medium to high irrigation intensity. It has also reinvigorated farmer and government interest in drainage programs in the G-MW irrigation areas.

Irrigation drainage is designed to remove rainfall from a one in two year rainfall event over a period of five days; it is not designed for flood mitigation. However, during the floods of 2010-11, the time taken for flood waters to recede from drained properties was less than from undrained properties.

Modernisation of the G-MW irrigation supply system, through the Northern Victoria Irrigation Renewal Project (NVIRP) and water corporation initiatives, along with irrigator training and the transfer of water entitlements out of the Goulburn Murray Irrigation District (GMID), continue to result in flow reductions in regional drainage systems.

These reductions result from better water management and control within water supply systems and on farms, as well as a result of reduced irrigation intensity.

The 2010/11 financial year was the seventh year of implementation of the IDMOU. The overall cost of implementing the IDMOU in 2010-11 is estimated to have been \$69,352. This cost is spread across all of the implementing agencies.

3. Key achievements

In the revised IDMOU, a set of implementation targets was agreed in the renewed IDMOU. The items deliverable in the 2010/11 financial year and in the longer term are listed in Appendix 1. Progress toward achieving those targets is also included in Appendix 1.

Due to resources being applied to flood related matters, progress toward achieving the Appendix 1 goals has been less than expected when the agreement was renewed in October 2010.

The commencement of the project titled "*Planning Processes to be Established*" was a significant step forward and has a pivotal role in the progress towards the completion of Implementation Action 2 "*Specify prioritisation, monitoring and target setting processes to achieve the purposes of this Agreement.*" and Implementation Action 3 "*Creation of risk related response thresholds*". Although these Implementation Actions were not completed by the original dates proposed (June 2011) they are on track for completion in 2011/12.

Meeting Implementation Action 5 "*Clarify the purpose and content required for the overarching CAOP*" is also progressing well with the project brief having been developed and G-MW being engaged to undertake the management of the tendering and project delivery in 2011/12.

Due to a funding shortfall during 2010-11, it was not possible for the IDMOU partners to report on the monitoring targets set for nutrients in the Broken Creek and Barr Creek Catchments.

Only one of the scheduled six-monthly IDMOU committee meetings took place in 2010/11 however, the lines of communication between the IDMOU signatory agencies were kept open in providing input to the negotiation, finalisation and signing of the renewed IDMOU.

Out of session input was also received from all agencies regarding the development of the project briefs for and the implementation of the "*Planning processes to be established*" project.

A more detailed summary of IDMOU achievements are listed below against each of the five documented IDMOU aims.

i. *Ensuring a consistent and transparent process is used to set water quality targets for irrigation drains in priority catchments*

To enable the development of the next generation target setting to be progressed, two project briefs were developed during 2010-11:

1. "*Determination of processes for setting resource condition water quality and other targets*". The project will develop/refine and document the methodology and processes that will be used to determine Resource Condition Targets (RCTs), Management Action Targets (MATs) and monitoring needs in irrigation drainage catchments covered by the IDMOU.

2. "*Defining risk response thresholds and drainage catchment prioritisation processes*". This project will define a Risk Response Threshold (RRT) to reflect the change point

between high and low drainage related risks to waterways. The RRT will be used to signal when a change in operational procedures is required. The project will also develop a risk based process for determining the order that drainage catchments are to be considered for setting targets and monitoring requirements.

These two project briefs will be undertaken as one project in 2011-12 as a combined project titled "*Planning Processes to be Established*".

ii. Ensuring management actions are linked to resource condition targets

The project "*Determination of processes for setting resource condition water quality and other targets*" will develop and document the methodology and processes that will be used to determine Resource Condition Targets (RCTs) and Management Action Targets (MATs) in irrigation drainage catchments covered by the IDMOU. The project will be undertaken in 2011-12.

Resource Condition Targets have been set for the Broken Creek and Barr Creek outfalls and are repeated under aim (iii). Related Management Action Targets have also been set for the Broken Creek Catchment.

In the Barr Creek Catchment, trial MATs have been developed in recent years but have not yet been fully implemented or signed off by signatory agencies. For this reason, no figures relating to these MATs have been reported for the Barr Creek Catchment.

Performance against Management Action Targets in 2010/11

Management Action Targets (MAT) have been set for the Broken Creek Catchment on a 5, 20 and 50 year basis. 2010 marks the first milestone year to measure progress against these targets. Although MAT have not yet been directly reported on by IDMOU agencies, estimates have been provided to determine indicatively whether or not targets have been reached. **Table 1** shows the MAT for the Broken Creek Catchment along side catchment performance to date.

Table 1: Performance against Management Action Targets in the Broken Creek Catchment

| | Irrigation reuse system (ML) | Regional Drainage Diversion (low flow) (ML) | Regional Drainage Diversion (high flow) (ML) | Offline wetland (ML) | Inline wetland (KM) |
|----------------------------|------------------------------|---|--|----------------------|---------------------|
| Status in 2005 | 4,500 | 14,000 | 4,100 | 1,000 | 0.6 |
| 5 Yr Target (2010) | 5,500 | 14,300 | 5,100 | 1,050 | 0.9 |
| 20 Yr Target (2025) | 5,500 | 14,700 | 5,500 | 1,100 | 1.7 |
| 50 Yr Target (2055) | 5,500 | 15,500 | 6,300 | 1,150 | 3.4 |
| Status in 2010 | N/A | >14,300 | <5,100 | <1,050 | >3.4 |

iii. Fostering and maintaining good working relationships and clear accountabilities between responsible agencies.

Committee meetings are an important communication and relationship building forum between senior agency staff, enabling effective and efficient discussion on irrigation drainage related issues. Relationships and understandings fostered by these meetings

also facilitate better day to day communication and management outcomes across the G-MW irrigation areas.

One IDMOU Steering Committee meeting was held during the 2010/11 financial year (February 2011). This meeting was the first under the revised IDMOU agreement. A high level of commitment was shown at that meeting, with representatives from all signatory agencies in attendance.

The major outcome of this meeting was the prioritisation of implementation actions from the renewed Agreement, including outstanding items from the schedule of version 1 of the IDMOU. This prioritised list will guide IDMOU implementation activities for the 2010/11 and 2011/12 financial years. The IDMOU Implementation Schedule as at 30 June 2011 is included as **Attachment 1**.

Since signing the renewed Agreement in October 2010, the steering committee has focused on addressing section 9.2 of the renewed IDMOU, "*Planning Processes to be Established*", by developing the two project briefs indicated in aim (i).

Catchment and Asset Operating Plans

The finalisation of the Shepparton Irrigation Region (SIR) and Loddon Murray Irrigation Region (LMIR) Catchment Asset Operation Plans (CAOPs) was halted in 2009-10 to enable the content of the drafts to be morphed into an overarching, high level, document covering the whole of the area covered by the IDMOU G-MW irrigation areas. During the 2010/11 financial year, the development of a project brief to undertake the amalgamation of the two draft CAOPs was completed.

The work to prepare the overarching CAOP will be managed by G-MW, working with the IDMOU steering committee, and completed in 2011/12.

Significant work was also undertaken in understanding the models each CMA uses to engage with the community and implement drainage related programs. This work has fostered stronger links between the programs and has assisted in the sharing of information and natural resource corporate knowledge.

iv. Fostering continual improvement in monitoring and reporting systems

Barr Creek KPI monitoring

The floods in northern Victoria in September 2010 and February 2011 resulted in large volumes of water from Barr Creek passing downstream to the Loddon and Murray Rivers in 2010/11. Lake Tutchewop was filled mainly from overland flow and the Barr Creek pump station was inundated rendering it inoperable during the February floods.

Under the IDMOU, Barr Creek currently has a series of time based targets to maintain. A summary of the phosphorus loading and concentration targets is outlined in **Table 2**.

Table 2: Phosphorus loading and concentration targets

| | 5 year period (2010) | 20 year period (2020) | 50 year period (2050) | Actual in 2010-11 |
|---|-------------------------|--------------------------|--------------------------|----------------------|
| Barr Creek Total Phosphorus (TP) loading | 8.5 t/yr | 6 t/yr | 1 t/yr | N/A |

Due to budget constraints, Barr Creek is now only being monitored for flow and salinity. No nutrient sampling occurred at the Barr Creek monitoring sites during 2010/11. It is therefore not possible to report against the **Table 2** targets. Consequently it is unclear

how flood peaks have affected the phosphorus loading in Barr creek. It is however expected that nutrient concentrations would have been relatively low during the dilution caused by the flood peaks.

Broken Creek KPI monitoring

Under the IDMOU, Broken Creek currently has time based targets to maintain. These targets include Resource Condition Targets in the Broken Creek and Management Action Targets in the Broken Creek catchment. The Management Action Targets are included under aim (iii). A summary of the Broken Creek phosphorus Resource Condition loading targets is outlined in **Table 3**.

Table 3: Phosphorus loading targets for Broken Creek

| | 5 year period (2010) | 20 year period (2020) | 50 year period (2050) | Actual in 2010-11 |
|---|-------------------------|--------------------------|--------------------------|----------------------|
| Broken Creek Total Phosphorus (TP) Loading | 21.9 t/yr | 20.5 t/yr | 19.6 t/yr | N/A |
| Broken Creek Total Phosphorus (TP) Concentration | 0.39 mg/L | 0.33 mg/L | 0.21 mg/L | N/A |

Due to the delays in processing water quality data for the last quarter of 2010/11, those parameters monitored for the KPIs are not available for inclusion in this report but will be included in the 2011/12 report.

Although recommended by the Steering Committee, due to a reduction in funds for the Shepparton Irrigation Region water quality monitoring, no additional monitoring for Phosphorous or Suspended Solids/Sediment was undertaken on the Broken Creek.

IDMOU (2010) Section 9.2 – Planning processes to be established

Under section 9.2 of the renewed IDMOU the steering committee has committed to establish and clarify planning processes, including Monitoring, for a number of areas. For Monitoring this is defined as *the process for setting consistent monitoring requirements and standards for establishing or reviewing drainage catchment monitoring sites, parameters and measures*.

A project brief was developed during 2010-11 titled "*Determination of processes for setting resource condition water quality and other targets*". Part of the scope of that project will be to develop/refine and document the methodology and processes that will be used to determine monitoring needs in irrigation drainage catchments covered by the IDMOU. The project will be undertaken in 2011-12.

Current licensed dischargers within the Goulburn-Murray Water Irrigation Areas

Due to the above average rainfall experienced in summer and subsequent reduced requirement for irrigation, a number of urban and industrial waste water treatment plants sought EPA and G-MW approval to discharge treated effluent directly to G-MW drains. The EPA issued Section 30A emergency discharge licences to: -

- Fonterra – Stanhope (Deakin Main Drain)
- Heinz – Girgarre (Deakin 4/3)
- Goulburn Valley Water – Tatura (Mosquito Main Drain)
- North East Water – Yarrawonga (Brownings Road Diversion Drain).

Many of these discharges have occurred for more than six months with G-MW consenting to the discharge after requiring the submission of all water quality monitoring to appropriately account for the resulting nutrient and salt loads. G-MW expects that, with a return to warmer, drier weather, disposal to land will occur and discharges to its drains will cease. The impact of these discharges is deemed to be a low risk to the receiving waterways.

Other off site discharges to surface waters within the catchment include: -

1. Goulburn Valley Water

- Nagambie WWTP - into Wormangal Creek
- Kilmore WWTP - into Kilmore and Ryans Creek
- Rushworth WWTP into Waranga Basin
- Seymour WWTP- into Goulburn River via Back and Whitehead Creek
- Bonnie Doon - into Lake Eildon
- Numurkah WWTP- into Broken Creek
- Euroa WWTP - into Castles Creek.

2. Murray Goulburn Co-op

- Cobram into River Murray
- Rochester into Campaspe River.

Water emanating from the discharges listed above is usually of good quality and is usually held in the respective farm reuse systems, however due to above average rainfall during 2010/11, reuse was restricted and offsite discharge was necessary.

v. Working closely with farm and environment programs.

Whole Farm Plan Assessments

During 2010/11 a number of Whole Farm Plans (WFP), from across the G-MW irrigation areas, were assessed by IDMOU signatory agencies to determine the type and extent of the impacts on assets and natural drainage functions. The aim of this process, through a technical planning approach, is to guide effective drainage management and its ongoing development, to guide the allocation of funding and incentives for suitable fit for purpose drainage management systems and to reduce the threat of land salinisation. Through this process, efficient water use is supported; thus minimising wastage, reducing the chance of waterlogging and reducing off site impact (including impacts on receiving waterways).

Table 3 and **Table 4** provide a summary of the Whole Farm Plans completed in 2010/11 by IDMOU agencies. These tables show that a total of 278 WFP covering 28,600 ha were completed.

Table 3: Whole Farm Plans completed by North Central CMA in 2010-11

| Type of WFP | No. of WFP designs completed | Area covered by WFPs (ha) |
|-----------------|------------------------------|---------------------------|
| New WFPs | 9 | 3,342 |
| Modernised WFPs | 13 | 3,870 |

Table 4: Whole Farm Plans completed in the Shepparton Irrigation Region in 2010-11

| Type of WFP | No. of WFP designs completed | Area covered by WFPs (ha) |
|-----------------|------------------------------|---------------------------|
| New WFPs | 187 | 14,583 |
| Modernised WFPs | 69 | 6,805 |

G-MW assessed 117 whole farm plans referred to it through the Campaspe Shire, Moira Shire and City of Greater Shepparton municipal planning permit processes.

4. New drainage works

Although not an aim or responsibility under the IDMOU, the construction of new drains may impact the level of activity under the IDMOU.

G-MW continued to implement works in support of the LMIR and SIR regional surface water management strategies. Due to sustained high River Murray water levels, a temporary pumped outfall was installed for the Benwell Primary Surface Water Management System (PSWMS) to provide drainage outfall over winter and until water levels in the River Murray permit the permanent arrangement to be installed.

Within the SIR work continued on the Mosquito Drain 40 and commenced on the Deakin Drain 16 Extension.

The only community drain to be constructed was the Mosquito Drain 8/25P which was constructed under a contract managed by G-MW.

5. IDMOU Direction for 2011/12

The key goals under the IDMOU over the next 12 months will be:

- To undertake and complete the "*Planning Processes to be Established*" project (*Defining Catchment Prioritisation and Monitoring Risk Threshold Responses project and Determining Resource Condition Water Quality and other Targets*)
- To undertake and complete the "*Development of the Catchment and Asset Operation Plan for the Goulburn-Murray Irrigation Area*" project
- To finalise the setting of standards for reporting and monitoring for inclusion in existing management processes.

6. Conclusion

The IDMOU continues to provide a mechanism and discussion forum to enable senior agency representatives to monitor drainage related assets, pre-empt any potential short comings or conflict and to effectively and more quickly reach agreement.

The above average rainfall and runoff, high water allocations and widespread flooding that occurred in 2010/11 have led to community and agency focus returning to drainage activities to ensure irrigation in the region is cost effective and sustainable. This includes the need to complete surface drainage plan implementation across the GMID.

Unfortunately, these same flood conditions have, in combination with reduced monitoring budgets, prevented IDMOU agencies from reporting on the resource condition targets set for nutrients in the Barr Creek and Broken Creek catchments.

This change in annual rainfall and the greater tendency toward late spring and summer rainfall will also impact on the IDMOU agency water quality related reporting needs.

7. Recommendations

It is recommended that;

- it be noted that IDMOU is delivering positive outcomes as well as being successful in achieving many of its aims through fostering improved communication and cooperation between the signatory agencies.
- the IDMOU signatories focus more closely on delivering the agreed outputs each year including IDMOU related monitoring and ensuring that KPI reporting requirements for both resource condition and management action targets are met.
- the IDMOU signatories pursue additional funding to ensure all IDMOU water quality and management action achievements are able to reported against targets for inclusion in subsequent IDMOU Annual Reports.
- ensure that monitoring data is collected and processed in time to allow its inclusion in the next IDMOU Annual Report.

Attachment 1

Attachment 1: IDMOU Implementation Program – as at 30 June 2011

| IDMOU Implementation Action | Timing | | Progress (%) | Prime Responsibility | Other Parties Involved |
|---|---------------------------------|---------------------------------|-----------------|--|---------------------------|
| | Original | Current | | | |
| 1 Management, review and ensuring delivery of actions required under this Agreement | Ongoing | Ongoing | NR | DSE | All |
| 2 Specify prioritisation, monitoring and target setting processes to achieve the purposes of this Agreement. | June 2011 | June 2012 | 5 % | DSE | G-MW & CMA |
| 3 Creation of risk related response thresholds. | June 2011 | March 2012 | 5 % | DSE | All |
| 4 Set standards for reporting and monitoring for inclusion in existing processes. | June 2011 | June 2012 | 5 % | DSE | G-MW, CMA & DPI |
| 5 Clarify the purpose and content required for the overarching CAOP. <i>Document the agreed O&M processes for the drainage system and its assets in the CAOP.</i> | June 2011 | July 2012 | 5 % | GMW GBCMA NCCMA | |
| 6 Review RCTs and MATs whenever conditions change as per IDMOU section 9.4. | As needed | As needed | NR | GBCMA NCCMA | GMW DSE DPI |
| 7 Committee meetings – six monthly. | Ongoing ▪ April ▪ October | Ongoing ▪ April ▪ October | 50% | DSE (may be initiated by any signatory) | All |
| 8 Annual review including: ▪ Annual reporting ▪ Review of SWMS response thresholds. ▪ Making any necessary revisions and recommendations to change existing processes. ▪ Reminder to update key documents with revised targets (eg. LWMPs, CAOP etc). | September of each year | September of each year | NR | All Committee Committee Committee | All |
| IDMOU Implementation | Timing | | Progress | Prime | Other Parties |

| | Action | Original | Current | (%) | Responsibility | Involved |
|----|--|----------------|----------------|-----|----------------|-----------------|
| 9 | LWMP review and renewal processes – undertake SWMS monitoring, prioritisation and target setting in accordance with IDMOU agreed processes. | Every 5 years | Every 5 years | NR | GBCMA NCCMA | G-MW, DSE & DPI |
| 10 | <p>Independent review of IDMOU implementation, including:</p> <ul style="list-style-type: none"> ▪ Changes in the operating environment ▪ Impact on the relevance and implementation of the Agreement. ▪ Appropriateness of Agreement signatories. ▪ Appropriateness of Agreement terms, guiding principles, roles and responsibilities. ▪ Other aspects of the Agreement as agreed by the Committee. | September 2015 | September 2015 | NR | DSE | All |
| 11 | Other actions as agreed at Committee meeting. | As agreed | - | NR | As agreed | As agreed |