MACALISTER LAND AND WATER MANAGEMENT PLAN
RENEWAL DISCUSSION PAPER

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FINAL

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Summary

The Macalister Land and Water Management Plan 2008 (MLWMP) is a sub-strategy of the West Gippsland Regional Catchment Strategy (WGRCS). Its purpose is to develop and implement targeted programs to deal with irrigation related water and land issues in the Macalister Irrigation District (MID) and surrounds. The plan was developed collaboratively with irrigators because many programs require action on privately owned land.

This Discussion Paper is the second publication in the process to renew the MLWMP. It has been prepared for initial consultation on the plan renewal, and provides detail to enable a targeted engagement materials to be prepared. It:

- summarises the review of MLWMP implementation between 2008 and 2016 (the full review is available from the WGCMA)
- proposes directions for renewing the MLWMP having regard to improvements in knowledge, the development of regional action plans and changes in government policy (as stated in Water for Victoria, including outcomes from the review of the State Environment Protection Policies).

This Discussion Paper aims to:

- document the basis for informing community and stakeholders about current thinking and proposed approaches for the renewal of the MLWMP, in order to seek their informed feedback and input into the renewal
- increase understanding of how water and natural resource management agencies work with communities in the West Gippsland Catchment Management Authority (WGCMA) region to improve irrigation management and environmental condition.

The Project Steering Committee (PSC), Technical Working Group (TWG) and Stakeholder Reference Group (SRG) will consider feedback generated by this discussion paper in developing the new LWMP. A short version of the paper will be prepared for broader public release and comment. Further public comment will be invited when a draft new plan is released in the second half of 2017. A final new LWMP for irrigation in the region will be released in late 2017 with implementation of the plan commencing in July 2018 once funding and resources are secured.

MLWMP Review findings

The review of the MLWMP found that funded management action targets (MATs) have largely been met and that delivering these has made a substantial contribution towards:

- upgrading the sustainability of irrigation practices in the MID
- implementing requirements of Schedule 5 of the State Environment Protection Policy (Waters of Victoria) (SEPP (WoV)) by reducing phosphorus loads to the Gippsland Lakes - although the Schedule F5 target is not met in all years and the cost of doing so means achievement in all years won’t be possible.

The review also looked at aspects of the West Gippsland Salinity Management Plan. An aspirational target for irrigation in the Plan was to reduce land salinity by 50% from 2003 levels in areas of irrigation induced salinity. The review concludes that it is not possible to determine if this target has been achieved, but that the management programs as a whole, and the public groundwater
pumping program in particular, continue to effectively manage watertable levels, waterlogging and land salinity across the MID.

These findings were supported by feedback from interviews with three local irrigators and a regional agronomist. Interviewees believed that investment through the MLWMP had been very effective and that implementation had made a significant contribution to improving irrigation practices above what would have occurred without the plan. They recognised that the incentives program provided financial assistance to irrigators wanting to improve farm irrigation infrastructure and practices and an avenue for CMA and Agriculture Victoria staff to discuss a range of options for doing so.

Total government funding for the MLWMP over the life of the plan (2008 to 2016) was about $8.7 million. One of the major challenges faced by program partners in implementing the MLWMP was decreasing government investment between 2008-09 and 2014-15. Combined with the varying availability of private investment from irrigators due to the vagaries of commodity prices and seasonal conditions the program has had to be very adaptable in its delivery of services. The Commonwealth government no longer invest in the program. More secure funding would no doubt improve the ability of MLWMP targets to be met.

The review also found that the MLWMP has met requirements under SEPP (WoV) and the Water Act 1989 (with respect to water use licences) and that renewal of the plan should continue to see these requirements fulfilled. Consistent with Chapter 4 of Water for Victoria – Water Plan (DELWP, 2016), renewal of the MLWMP also offers an opportunity to support continued development of irrigation in the Gippsland Lakes catchments in a way that manages risks to the environment and third parties from salinity, water logging and water quality. This is especially true in relation to continuing to manage phosphorus loads entering Lake Wellington, which is expected to deliver significant benefits to the region in the long-term.

**Proposed directions for renewing the MLWMP include:**

- continually improving the quality of communication and engagement with stakeholders
- narrowing its scope and reducing the number of implementation programs in recognition that many activities in the current plan are now undertaken through other strategies and plans
- renewing objectives so that they are outcome focused and relate closely to targeted resource condition change
- expanding its boundaries to account for priority irrigation developments and redevelopments occurring outside the existing plan area but initially within the Lake Wellington catchment
- revising irrigation development guidelines to incorporate emerging knowledge and risks, e.g. significant irrigation redevelopments (Water for Victoria Action 4.7)
- strengthening the program logic to explicitly link actions to program outcomes
- optimising the operation and maintenance of public surface water drains and groundwater pumps (Water for Victoria Action 4.6)
- improving targeting of program implementation by filling knowledge gaps around matters such as changing patterns of land used for irrigation and the efficiency of water use on farms (Water for Victoria Action 4.5)
• continuing to support grants for farm planning and improve approaches to planning (Water for Victoria Action 4.4), e.g. additional planning and extension components such as dairy effluent system design and nutrient management planning
• designing cost effective monitoring and reporting programs to demonstrate to stakeholders progress in implementing actions and, where practical, resource condition change.
1  The framework for catchment management in West Gippsland

The MLWMP is one of the sub strategies of the WG RCS. **Figure 1** shows how the MLWMP fits within the natural resource management planning arrangements in West Gippsland.

1.1 West Gippsland Regional Catchment Strategy

The WGRCS 2013-2019 provides a vision for the future of the natural environment in West Gippsland. It also provides the framework for the integrated management of catchments to maintain long term sustainable land productivity, while also protecting the environment.

The RCS uses the asset based approach to identify and value natural assets. It identifies areas of most importance based on a rigorous identification of natural assets, an assessment of risks to those assets and proposes objectives and management measures for landscape priority areas.

The RCS identified the Gippsland Lakes and Hinterland landscape as a priority area, and that action was needed within the MID to ensure sediments and nutrients remain on site to benefit both agricultural production within the district and improve river health and water quality within the Gippsland Lakes system.

The RCS was most recently updated in 2013, six years after the MLWMP was adopted. A number of other sub-strategies have also been prepared since 2008 (**Figure 1**).

1.2 The Macalister Land and Water Management Plan

The current MLWMP is an action plan that sits under the RCS. LWMPs are prepared for irrigation areas and are funded by the Victorian government’s Sustainable Irrigation Program which is administered by the Department of Environment, Land, Water and Planning (DELWP). DELWP issued
guidelines for the preparation of LWMPs for designated irrigation areas in 2008. DELWP are currently updating these guidelines.

The objectives of the MLWMP were to:

1. address gaps in existing management plans or up-date where appropriate
2. renew the MID Nutrient Reduction Plan (SRW, 1998)
3. identify and integrate common actions identified in other management plans to increase delivery efficiency
4. identify and resolve conflicting objectives associated with proposed management actions.

The MLWMP has seven management programs and one program that draws together nutrient related actions from all programs, including monitoring requirements. These are:

1. Farm planning
2. On-farm irrigation and drainage management
3. Floodplain and off-farm drainage management
4. Native vegetation management
5. Pest plant and animal management
6. Environmental flow management
7. Groundwater
8. Addressing nutrient discharges to the Gippsland Lakes

Implementation efforts over the past eight years have focused on controlling irrigation induced salinity and waterlogging and phosphorus exports to Lake Wellington to reduce the frequency of algal blooms in the Gippsland Lakes (Programs 1, 2, 3 and 8). Base investment for these programs is funded through the Victorian government’s Sustainable Irrigation Program. Other programs (4, 5, 6, 7) now fit within other sub-strategies and action plans shown in Figure 1 and receive funding through a range of other government sources.

The geographic boundaries of the MLWMP are shown in Figure 2. The area includes the MID, the surrounding dryland area that influences the MID or was affected by the MID, and Lake Wellington.
2 Process for review and renewal of the MLWMP

The review and renewal of the MLWMP will be an 18 month collaborative process involving irrigators, subject experts, water industry stakeholders, the broader regional community, government agencies and departments.

The WGCMA is leading the review and renewal process. The process for endorsement is being considered by PSC members and as part of the revision of DELWP’s LWMP Guidelines. A PSC chaired by Martin Fuller, CEO of the WGCMA, and with members from Southern Rural Water (SRW), Gippsland Water, Environment Protection Authority (EPA), Department of Economic Development, Jobs, Transport and Resources (DEDJTR), Gippsland Lakes Consultative Committee and DELWP is overseeing the review and renewal. The committee’s role is to:

- support the successful and timely delivery of the MLWMP renewal
- advocate for the appropriate resourcing and acknowledgement of the MLWMP amongst stakeholders, investors and the broader community
- provide direction, manage risk and ensure that the MLWMP renewal process is consistent with all relevant planning and management efforts
- provide feedback and guidance at critical decision points in the development process
- endorse milestones.
A TWG, chaired by Shayne Haywood from the WGCMA is providing expert input on matters considered in plan implementation programs. Other members are from SRW, DELWP, DEDJTR (Agriculture Victoria), EPA and Gippsland Water. The committee’s role is to:

- support the successful and timely delivery of the MLWMP renewal
- provide specialist input to ensure that agronomic, environmental, economic and social aspects are appropriately addressed
- provide active support throughout the MLWMP renewal process as co-authors.

It is proposed that a Stakeholder Reference Group (SRG) will be assembled to ensure that objectives and actions are developed collaboratively with the relevant land managers and community. They will provide input at key milestones in the project. Proposed members will be from the WGCMA, irrigator representatives, Northern WGCMA Community Advisory Group (CAG), dairy industry, horticultural industry and Maffra Landcare.

To recognise the need to extend work done with irrigation developments and redevelopments outside of the MID and the highly valued Ramsar listed Gippsland Lakes, it is proposed that the title of the plan be changed to the Lake Wellington Land and Water Management Plan – A plan for sustainable irrigation in the western catchments of the Gippsland Lakes.

The steps involved in reviewing and renewing the MLWMP are shown in Figure 3.

The review of the MLWMP was conducted during October to December 2016. From late December 2016 to March 2017 lessons from the review were used to guide development of proposed improvements to consider as part of renewing the plan. Options were considered by the PSC and TWG with preferred options presented to the PSC for endorsement (through this discussion paper).

Following this endorsement, a modified discussion paper for engagement will be prepared and presented to the Stakeholder Reference Group, and used in targeted discussions with other stakeholder groups in order to finalise the agreed approach for the MLWMP renewal. As part of this process the project team will present the Discussion Paper to local stakeholder groups from March 2017, which may include:

- WGMCA Northern Community Advisory Group (CAG)
- Macalister Customer Consultative Committee
- Wellington Sustainability Group
- Wellington Community Salinity Committee

For input required beyond the SRG, there will be targeted engagement with specific groups as required. Targeted engagement will consist of initial presentations to groups, and seeking input into specific areas of the plan relative to their interest / role in plan implementation, at appropriate times throughout the plan renewal process. These groups are seen as a priority because of their role as stakeholders directly involved in implementation or investment in plan actions, or who will be directly affected by the plan programs. These groups are:

- Gunaikurnai Land and Waters Aboriginal Corporation (GLaWAC)
- Industry: broader irrigator representatives (including via MCCC, WCSV, MICI), agronomists, farm planners, agricultural scientists, including irrigators outside the MID
- Wellington Shire Council (WSC) (invite to PSC and TWG for Phase 2); Latrobe Shire Council; Baw Baw Shire Council
- Gippsland Lakes Coordinating Committee (GLCC)
• EGCMA

For both the SRG and targeted engagement, identifying stakeholders that are representative across the catchment and interests will require careful thought, and will likely involve targeting individuals who represent multiple interests. Engagement through existing groups and committees will be utilised wherever possible.

Further, there are stakeholders who won’t necessarily be directly involved with the new MLWMP but who either:

• undertake a range of NRM activities in the Lake Wellington catchment
• work closely with one of the plans implementation partners
• have cross representation with landowners who will be targeted by the new MLWMP
• represent broader community interests

These stakeholders will be invited to be engaged through being made aware of the program through project promotions and a letter informing of the project, and invited to comment. These groups have been identified in the project Communications and Engagement Plan and will be confirmed in the next stage.

Because of the targeted nature of engagement and the role of the plan as an action plan under the RCS, a formal public consultation phase is not considered to be required. However, the project will be promoted publicly and groups with an interest in or who are affected by the plan will be given the opportunity to be involved.

Feedback from consultation sessions will be considered during development of the Draft New LWMP.

Plan renewal will commence in April 2017, with a Draft New LWMP presented to the Stakeholder Reference Group in August 2017 after which the draft will be finalised for consideration by the public. The WGCMA will undertake a second round of presentations to local stakeholder groups in August 2017, with submissions and comments considered as part of finalising the plan during September to November 2017. The Final New LMWP will be submitted to the WGCMA Board for endorsement in December 2017. The six months between plan finalisation and commencement of implementation (January to June 2018) will be used to prepare funding bids for the plan and prepare for implementation of changed programs and associated activities. Implementation of the plan will commence from 1 July 2018.
Proposal 1

It is proposed that the name of the renewed LWMP be the Lake Wellington Land and Water Management Plan - A plan for sustainable irrigation in the western catchments of the Gippsland Lakes and that the process set out in Figure 3 be used to renew the Plan.

3 Review of the MLWMP

3.1 Purpose

The MLWMP 2008 provides a ten-year strategy for managing the land and water resources within the MID and surrounding dryland areas. It is due for renewal in 2017. The MLWMP was reviewed to assess the successes and lessons of the past nine years of implementation of the plan together with other changes in irrigated agriculture, government policies, priorities and knowledge to provide the starting point for the renewal of the Plan in 2017.

The review also considered aspects of the West Gippsland Salinity Management Plan (WGSMP) because the new MLWMP will build on the success of the WGSMP and salinity management will be incorporated into the renewed MLWMP.

3.2 Method

The review involved both quantitative and qualitative assessment of:

- investment, actions and MATs – assessment was largely quantitative as data and information was readily available
Resource Condition Targets (RCTs) – assessment was a mix of quantitative and qualitative analysis as it was more difficult to identify statistically significant changes in environmental outcomes because of the high levels of natural variability that occurs, particularly with the natural extremes of floods and droughts.

Objectives – assessment was largely qualitative as this involved some degree of interpretation of the logic linking MATs and RCTs to achievement of objectives. Aspects such as planning, management, governance and relationships – assessment was largely qualitative.

Information and data used to inform the assessment of each of the above was obtained from:

- discussions at the Inception meeting, PSC meeting 1 and TWG meetings 2 and 3
- a range of reports on program implementation, including annual investment reports, watertable depth monitoring and flow and nutrient monitoring from all organisations
- spatial datasets provided by SRW and the WGCMA
- previous reviews conducted by SRW, WGCMA and Agriculture Victoria
- business reporting by SRW, WGCMA and Agriculture Victoria
- information from the SEPP review documents provided by the EPA
- interviews with stakeholder groups not represented on the formal committees including the Macalister Customer Consultative Committee (MCCC), Murray Goulburn, Riviera Farms (vegetable growers) and the Wellington Community Salinity Committee (WCSG).

4 Vision and objectives

4.1 Vision

The vision of the current MLWMP is to...

...empower our diverse and innovative community to undertake practical and effective actions for the future of our environment.

The vision is a very broad statement that could encompass actions from almost all elements of the WGRCS. The review of the MLWMP found that the vision provided for practical and effective action by the irrigation community in relation to the four management programs funded through the plan. This was evidenced by the number of actions implemented and the positive contribution these actions made towards the Resource Condition Targets (RCTs) related to phosphorus load reductions and land salinity.

Consistent with policy directions of Water for Victoria – Water Plan (DELWP, 2016), it is proposed that the vision statement be revisited in the new MLWMP to also recognise the importance of irrigated agriculture to the community.

The intention is to adopt a vision that is brief, succinct and helps to align the efforts of the large number of organisations that influence or have an interest in enhancing the regional environment and economy.
Proposal 2

It is proposed that, as a starting point for discussion, the following draft vision be adopted for the new MLWMP:

‘A highly productive and sustainable irrigation community that values and protects our natural assets’

4.2 Narrowing scope

The 2008 LWMP Guidelines (DSE, 2008) clearly apply to irrigation areas but also expect land and water management plans to link with other natural resource management activities.

A first glance of the MLWMP shows that it has a very broad scope. This is illustrated by its objectives (section 1.2) and programs (Table 1).

The MLWMP review found that the objective of renewing the MID Nutrient Reduction Plan was met with implemented actions building on the strong foundations set by that plan. The contribution of the MLWMP to the other objectives was less clear.

At the time the MLWMP was developed there was a desire from some funding partners to bring actions in RCS sub-plans together in a more coordinated manner to acknowledge the integrated nature of values, threats and management actions relevant to communities, as well as the trade-offs that are sometimes required. The MLWMP sought to fulfil this role. However, the broad integrating role initially envisioned for the plan was superseded by other developments in policy and planning including the:

- renewal of RCSs across Victoria, including the WGRCS, which now fulfils the integration role initially laid out in the MLWMP
- development and renewal of other statewide strategies with associated regional implementation plans.

The WGCMA worked with the Victorian government and regional stakeholders to develop the new plans and strategies. The role required by, and played by, the MLWMP was minimal.

Areas where the MLWMP could have made contributions to its objectives included integration of native vegetation, fertiliser and dairy effluent management into farm planning and extension activities. This integration was not achieved, mainly because there was no funding provided to regional agencies to pursue activities and outcomes related to these areas. Such integration opportunities could be considered as part of MLWMP renewal. Implementation was successful in aligning the delivery of the MLWMP and the WGSMP and MID2030.

Table 1 summarises directions from the MLWMP Review for each of the implementation programs. The performance of each program is discussed further in sections 6 to 9.

In practice, it is clear that the scope of MLWMP work focused on two main objectives:

- controlling salinity and waterlogging – primarily through improving water use efficiency
• reducing phosphorus loads to the Gippsland Lakes to reduce the frequency of algal blooms. This is a requirement of Schedule F5 of the SEPP (WoV).

Given developments since 2008, it is proposed that the scope of the renewed MLWMP be narrowed to the elements listed in column three of Table 1.
Table 1 – Possible changes to existing programs to streamline the MLWMP

<table>
<thead>
<tr>
<th>MLWMP 2008 Program</th>
<th>Links to other natural resource management plans</th>
<th>Proposed Scope</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farm planning (on irrigated properties)</td>
<td>Not covered in other plans</td>
<td>Same as below</td>
</tr>
</tbody>
</table>
| On-farm irrigation and drainage management | Not covered in other plans | The scope of the new MLWMP should be expanded with a focus on on-farm water and nutrient management to reduce runoff, recharge and phosphorus loads. This will include:  
• farm plans (on irrigated properties)  
• Statutory planning links  
• Best management practices (e.g. irrigation and nutrient management)  
• Incentives  
• Regulation  
  ○ Dairy effluent  
  ○ New developments and redevelopments  
  ○ Industry codes of practice linked to regulation |
| Floodplain and off-farm drainage management | The Regional flood strategy is now the primary flood management document however it doesn’t:  
• include off-farm irrigation drainage  
• consider salinity and waterlogging  
• phosphorus loads | Floodplain management actions should be included in the West Gippsland Floodplain Management Strategy. The scope of the new LWMP should be narrowed and include:  
• off-farm surface and subsurface drainage  
• a brief definition of best practice floodplain management on irrigated farms in Gippsland by referencing relevant strategies  
• a requirement for farm plans to have regard to flood overlays |
| Native vegetation management | The Native vegetation strategy is the primary strategy | Native vegetation management actions should be included in the Native Vegetation Management Strategy (the current draft strategy was completed in 2003). The scope of the new LWMP should narrowed and include:  
• a brief definition of best practice native vegetation management on irrigated farms in Gippsland by referencing relevant strategies.  
• a requirement for farm plans to have regard to the Native vegetation strategy |
| Environmental flow management | The WG waterway strategy is the primary strategy | Environmental flow actions should be included in the WG waterway strategy. The scope of the new LWMP should be narrowed and include:  
• a brief definition of best practice management of waterways and wetlands on irrigated farms in Gippsland referencing relevant strategies.  
• a requirement for farm plans to have regard to the WG waterway strategy |
<table>
<thead>
<tr>
<th>Pest plant and animal management</th>
<th>The Invasive Plants and Animals Plan is the primary plan</th>
<th>Pest plant and animal management actions should be included in the Invasive Plants and Animals Plan. The scope of the new LWMP should be narrowed by excluding invasive plant and animal actions.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Groundwater management</td>
<td>Formal groundwater management rules are in place for major aquifers. Groundwater management for salinity and water table control was included in the West Gippsland Salinity Management Plan</td>
<td>The new LWMP should include actions to manage groundwater for salinity and waterlogging control as part of the On-farm irrigation and drainage management program and new Sub-surface drainage program. It should not include actions to manage the broader groundwater resource as this is managed by SRW and DELWP.</td>
</tr>
<tr>
<td>(Nutrient monitoring)</td>
<td>The SEPP (WoV) Schedule FS sets a target to reduce phosphorus loads from the MID by 40%</td>
<td>The new LWMP should be expanded to explicitly include actions to meet phosphorus reduction targets set by EPA policy and the associated monitoring requirements.</td>
</tr>
</tbody>
</table>

### Proposal 3

The MLWMP is a sub-strategy of the WGRCS. The WGRCS provides the framework for the integrated management of catchments to maintain long term sustainable land productivity, while also protecting the environment. The proposed objectives for the new MLWMP should be read in this context.

It is proposed that the following two objectives be used to renew the MLWMP:

- supporting sustainable irrigation by controlling salinity and water logging
- reducing nutrient loads to waterways

Resource Condition Targets (RCTs) corresponding to these objectives should be developed.

The following types of actions should be evaluated when the Plan is renewed. Actions that:

- actively manage the current level of control of salinity and waterlogging in the MID
- support new developments but ensure salinity and waterlogging issues are, to the extent possible, controlled on farm and phosphorus loads to Lake Wellington are not increased
- reduce the overall nutrient and sediment impacts to waterways
- build community capacity for sustainable irrigation and contribute to practice change.

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1 Two additional objectives were also considered by the TWG and PSC, but it was decided that at the start of the renewal process it would be best to keep the structure of the plan simple and targeted. The objectives were: i) increasing the area of land with increased water efficiency and ii) increase community capacity for sustainable irrigation practices.
Proposal 4

It is proposed that the following implementation programs be considered for inclusion in the new LWMP:

- Farm Planning (on irrigated properties)
- On-farm Irrigation and Drainage
- Irrigation Development Guidelines
- Surface Drainage
- Sub-surface Drainage

4.2.1 Pathways to support productive sustainable irrigation

Figure 4 shows a simplified schematic of the pathway to achieve productive sustainable irrigation based on the proposed draft vision, objectives, five programs and the physical processes that lead to waterlogging and salinity issues and the presence of phosphorus in runoff from irrigated land.

Proposal 5

It is proposed that a project logic should be developed based on the simplified model shown in Figure 4 and that this be used to help inform the renewal of the MLWMP.

It is anticipated that narrowing the scope will enable:

- a clear and easily communicable purpose
• actions to be better targeted
• reduced complexity
• simplified and improved performance monitoring
• improved accountability
• reduced administrative burden and costs.

4.2.2 Supporting integrated catchment management

Integrated and coordinated natural resource management is an important aim of the WGRCS. But this does not mean that the new MLWMP must deal with all aspects of catchment management. Instead, it makes its important contribution to integrated management by ensuring that its various actions have regard to, and link to, the objectives of the RCS and its sub-strategies and action plans.

It is important that the new MLWMP avoids duplication and ensures roles, responsibilities and accountabilities are clear to enable efficient and cost effective delivery of the plan.

The new MLWMP must recognise and make links with other natural resource management strategies and plans. Table 1 suggests how the scope of the MLWMP could be simplified and narrowed, whilst still maintaining important links with other strategies and plans.

4.3 Expanding the boundaries

The LWMP Guidelines (DSE, 2008) indicate that the matters dealt with by LWMPs should be limited to supporting and managing the effects of irrigation in designated irrigation areas.

The term designated irrigation areas formally refers to irrigation districts such as the MID and Goulburn-Murray Irrigation District. However, in practice, LWMPs now include significant irrigation activities that occur outside irrigation districts. For example, Irrigation Development Guidelines apply statewide, not just within irrigation districts. Similarly, irrigation in the Nyah to the South Australian Border area (not a designated irrigation area) in north west Victoria is included within the Mallee LWMP because of the significance of irrigation in that area and the need to manage salinity levels in the Murray River.

Given that it is proposed that a key objective of the new LWMP will be to reduce the export of phosphorus loads from irrigation land\(^2\) to Lake Wellington it makes sense to expand the boundaries to include all irrigation in the Lake Wellington catchment that contributes to the phosphorus loads entering Lake Wellington. Under this approach investment would be targeted at cost effective opportunities to reduce phosphorus loads from irrigation farms anywhere in the Lake Wellington catchment.

Irrigation activities in the South Gippsland and Corner Inlet catchments may also have offsite impacts that need to be managed. In the first instance the Irrigation Development Guidelines will be used to ensure the off-site effects of new irrigation developments and significant redevelopments are controlled. Opportunities to reduce the off-site impacts of existing irrigation in these areas will

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\(^2\) Note that the Report on the Gippsland Lakes INFFER analysis indicated that it was more cost effective to reduce phosphorus loads from irrigation than dryland agriculture, although regulating dairy shed effluent was cost competitive.
be assessed before considering whether further expansion of the boundaries in the new LWMP is warranted.

Proposal 6

It is proposed that the geographic boundaries of the new MLWMP be expanded to include irrigation activities in the Lake Wellington catchment that generate significant phosphorus loads.

Under this approach the boundaries will be determined by identifying cost effective opportunities to reduce phosphorus loads from irrigation farms anywhere in the Lake Wellington catchment.

Proposal 7

It is also proposed that the new MLWMP include an action to consider expanding the boundaries in the future to include irrigated land in other parts of Gippsland where reducing the offsite impacts of irrigation is identified as a high priority by government, e.g. Lindenow, South Gippsland and Corner Inlet catchments.

The following sections discuss the progress made in implementing the MLWMP from 2008 to 2016 and the lessons learned. Aspects of the WGSMP are also discussed as the two plans have some common actions.

5 Funding

The primary source of funding for the MLWMP is through the Victorian Government’s Sustainable Irrigation Program. The Sustainable Irrigation Program has experienced significant declines in funding between 2011-12 and 2014-15 as salinity and waterlogging problems subsided due to both the Millennium Drought and the success of the program. Government has also shifted priorities to modernising irrigation infrastructure where it has made very substantial investments.

Total government funding for the MLWMP over the life of the plan has been about $8.7 million (2008-09 to 2015-16). Funding to the MLWMP also reduced in line with the reduction in state allocations but recovered in 2015-16 and 2016-17 (Figure 5).
Investment in the MLWMP has been targeted to core management actions in the Farm planning (Chapter 6), On-farm irrigation and drainage management (Chapter 7), Floodplain and off-farm drainage management (Chapter 8) and Addressing nutrient discharges to the Gippsland Lakes (Chapter 9) programs. Investment in the other four management programs has been directed through other RCS sub-plans and strategies or state programs and is not considered here.

The level of funding from the Sustainable Irrigation Program has been sufficient to maintain a base level of activity to manage salinity, but any further reductions would necessitate a more fundamental review of priorities and program delivery arrangements. Additional funding would be required to further reduce phosphorus loads to Lake Wellington should that be a requirement of SEPP (WoV) which is currently under review.

Proposal 8

It is proposed that the new MLWMP clearly identify:

- the need for a base program that maintains the reduction in salinity, waterlogging and phosphorus loads that have been achieved to date
- the need to ensure that new irrigation developments and irrigation redevelopments do not contribute to salinity, waterlogging and water quality problems
- opportunities, benefits and costs of possible actions that could be leveraged off the base program if additional initiative funding were available (i.e. to meet SEPP (WoV) targets for the Lakes).

Government support for funding to reduce phosphorus loads from irrigation activities will depend on clearly identifying that:
• proposed actions are cost effective
• benefits exceed costs
• actions contribute to sustainable regional development.

6 Farm Planning Program

The Farm planning program delivers Irrigation Farm Plans (IFPs). The objective of the Farm planning program is ...to encourage and support farmers to undertake formal planning to increase the sustainability and profitability of farming practices.

This objective continues to be relevant today. Applying best practice farm management practices plays a fundamental role in minimising groundwater recharge and runoff and integrating on-farm works with catchment programs. Thus, it is a key activity for both supporting productive and sustainable agriculture and reducing the off-site effects of irrigation.

New and updated IFPs supported by incentives have been prepared for 14,489 ha during the life of the MLWMP, short of the very ambitious 21,000 ha target to reach 75% of the MID’s irrigable area. Implementation of works contained in IFPs was in arrears until mid-2015 but is now reported to be progressing well. New or updated IFPs have been prepared for 36,597 ha since 2000-01. Uptake of the program is shown in Figure 6 and Figure 7.

Program delivery has been aligned with the MID2030 project that is modernising SRW’s irrigation delivery system infrastructure. This has increased the uptake of on-farm incentives, enabling farms serviced by the modernised distribution systems to modernise their farm irrigation systems to fully realise the benefits of the modernised distribution system.
MLWMP actions supported by financial incentives and extension ensure irrigators have access to the best information and sufficient encouragement to ensure the implementation of the actions to achieve the desired public and private benefits (including economic sustainability). The private sector cannot be expected to provide public benefits. Therefore, there is an important role for the MLWMP to align and co-ordinate the elements of the on-farm program that provide public benefits.

There is an ongoing role for identifying best practice on-farm management and coordinating activities that improve farm layout, irrigation practices, re-use systems, protection of regional drainage lines, riparian vegetation and native vegetation to reduce the offsite effects of irrigation and phosphorus loads to Lake Wellington. The widespread uptake of IFPs and the implementation of works identified in these plans provides strong evidence of the benefits of the program given the significant private investment in works that is also involved.

Proposal 9 (related to Water for Victoria Action 4.4)

It is proposed that the new MLWMP should explore actions to:

- maintain and strengthen links with future stages of MID2030
- broaden the scope of IFPs to include additional elements (e.g. advice on native vegetation, nutrient management and dairy shed effluent management) and enable them to be periodically updated
- respond to initiatives arising from the GMID and MID whole farm planning review (e.g. review of incentive rates, maintenance of core farm planning extension services and assess and where required, further develop on-line tools such as Farmweb)
- build cooperative arrangements with agencies with regulatory responsibilities including the Wellington Shire Council and EPA.
Figure 7 – Implementation of works supported by MLWMP incentives
7 On-farm irrigation and drainage management program

The objectives of the On-farm irrigation and drainage management program are to:

- improve irrigation efficiency and reduce off-site drainage for the multi-benefits of:
  - nutrient reduction (public benefit)
  - salinity reduction (public benefit)
  - water saving benefit (without Government intervention: mainly private benefit)
  - economic productivity (primarily a private benefit but with broader community benefits as well)
- ensure the responsible use of fertilisers to maximise agricultural production and minimise off-farm discharge of nutrients
- ensure compliance with the regulatory requirements of dairy waste management especially the prevention of off-farm dairy waste discharge.

7.1 Incentives to improve water use efficiency

This program is closely tied to the Farm planning program. Incentives are provided for farm works to improve the efficiency of flood irrigation, convert from flood irrigation to spray irrigation on light soils and encourage the installation of reuse schemes. The offer of incentives supports extension activities to improve fertiliser practice and dairy shed effluent management. Progress in implementing conversion to spray irrigation and the installation of reuse schemes is shown in Figure 6 and Figure 7.

Between 2008 and 2016 re-use systems servicing 6,637 ha on 234 properties were installed. The target was 8,400 ha giving a 79% achievement. It is estimated these works resulted in 24,586 ML per year of water and 93 tonnes per year of phosphorus being retained on farm.

Since 2000-01, 12,293 ha has been serviced by re-use systems. Although this does not meet the 10-year target (about 26,800 ha of a total of 33,500 ha) it is a significant and important achievement.

Between 2008 and 2016 flood to spray conversion occurred over 1,970 ha on 129 properties. The target was 2,800 ha giving a 70% achievement. It is estimated these works resulted in 8,401 ML per year of water and 32 tonnes per year of phosphorus being retained on farm.

The total area of spray conversion under incentives funding since 2001 amounts to 4,201 ha.

Incentives expenditure and interest in Best Practice Surface Irrigation (high flow and automation) has increased since 2014-15 (12 projects covering 306 ha retaining 611 ML per year of water on farm) and 2015-16 (15 projects covering 372 ha retaining 744 ML per year of water on farm). No incentives are provided for laser grading as the benefits are purely private.

On the basis of the most recent figures, nearly half of the area with IFPs (36,597 ha) has had works done under the incentives program (17,380 ha re-use, spray conversion and other best practice irrigation technology).

The adoption of water use efficiency measures has contributed to retention of 34,759 ML of water in an average year, equivalent to 20% of the storage capacity of Lake Glenmaggie and a monetary value of $60.83 million. In addition, the incentives have contributed to the on-farm retention of an
estimated 132 tonnes of phosphorus each year, which is likely to have reduced the long-term likelihood of algal blooms in the Gippsland Lakes (WGCMA data, 2016).

It is worth noting that these figures are based on assumptions about unit savings from different technologies, and do not translate directly into reduced phosphorus exports from MID which are affected by rainfall runoff and the store of phosphorus within the drain network itself.

Funding and staff for extension services reduced significantly towards the end of the life of the MLWMP. Despite this extension staff have continued to deliver a range of services.

Extension has become increasingly linked to the MID2030 program, as funds have been targeted to link farm modernisation to opportunities provided by distribution system infrastructure and service improvements in the irrigation supply network.

The principle focus of extension has been one-on-one farmer consultations concerning improved irrigation systems and practices. Topics covered include surface and pressurised irrigation developments, water suitability for irrigation (salinity/corrosion), system design, soil moisture monitoring and scheduling, automation, modernisation options, salinity and drainage, seasonal irrigation requirements, water quality, outlet rationalisation and water budgeting. There has been parallel support to service providers with similar one-on-one consultations. Farm walks, including some associated with MID2030 were also held as well as a surface irrigation automation bus tour for farmers and service providers.

Formal and informal training has been conducted through practical field days. An inaugural Gippsland Irrigation Expo in March 2015 attracted hundreds of farmers and service providers. Other important extension services included the preparation and dissemination of weekly ETo/irrigation scheduling updates that are distributed via an email discussion list with 600 members and a variety of media communications and advisory publications.

Proposal 10

It is proposed the new MLWMP should explore actions on irrigation farms to:

- increase the reuse of irrigation runoff on farm
- continue to promote on-farm irrigation modernisation on farms serviced by those parts of the SRW system that are being modernised
- promote improved dairy shed effluent management
- promote improved fertiliser management
- review the appropriateness and effectiveness of the on-farm incentive program
- improve tracking and reporting of the uptake of practice change and the benefits of extension activities.

7.2 Regional irrigation development guidelines

The implementation of Regional Irrigation Development Guidelines (IDGs) continues to play an important role in providing a clear pathway for new irrigation developments and minimising the off-site effects of these new developments. The approvals process for new developments provides a
cost-effective program to minimise future increases in the off-site effects of irrigation. However, partner agencies observe that significant irrigation redevelopments that could affect catchment condition are not being captured under current arrangements.

IDG referrals completed by the WG CMA, in consultation with SRW, DELWP and DEDJTR, have met requirements for new irrigation developments to adopt best management irrigation practices. IDG referrals increased in recent years from two in 2013-14 to 12 in 2015-16. The number of approvals in a year reflects the level of irrigation developments. Given the amount of activity there is an ongoing need to support the program.

Given the significant turnover of irrigation properties in the area one way to pick up redevelopments that are currently being missed would be to offer a farm visit by an Agriculture Victoria extension officer when a property changes hands. SRW could notify program staff when they receive an application for change of ownership of a water use licence. The extension officer could then provide advice on services, including incentives, offered by programs under the new LWMP.

A review of the procedure to announce adjustments to Annual Use Limits (AULs) in years with exceptionally high evapotranspiration in the MID was undertaken in January 2016. The review resulted in a number of changes to the procedure that will improve its effectiveness, i.e. it will more accurately predict when an announcement is required. The review was the first stage of a proposed two stage review process. The more comprehensive second stage is proposed to be undertaken in 2020.

Proposal 11 (relates to Water for Victoria Action 4.7)

It is proposed the new MLWMP should explore actions to:

- support the amendment of IDGs so that they apply to significant redevelopments of existing irrigated properties, not just new developments
- initiate discussions with local government to ensure land use approvals apply the conditions of the IDGs where appropriate (i.e. land-forming, native vegetation clearance and drainage).

8 Floodplain and off-farm drainage management program

The need for off-farm drainage is closely tied to the success of managing irrigation drainage on farm. Nevertheless, the review finds that the provision of off–farm drainage services is an ongoing requirement for sustainable irrigation in the MID.

8.1 Surface drainage

The objectives for the Floodplain and off-farm drainage program are to:

- reduce the flow of nutrient rich drainage water to Lake Wellington
- determine the correct balance between natural flooding to maintain the eco-systems of floodplains and the protection of agricultural land from flooding
- ensure that all major earthworks and developments are appropriately planned to ensure no significant adverse effects on the environment or neighbouring properties
- manage and maintain the drainage network in the region including modified natural water courses and constructed drains.

The MLWMP gave preference to reducing the flow of nutrient rich waters to Lake Wellington over maintaining flows in water courses. The benefits to Lake Wellington of reducing nutrient loads outweighed the dis-benefit associated with reducing flow in the various natural water courses in the area – although supporting evidence for this needs to be better documented.

The MLWMP didn’t implement the proposed construction of in-line wetlands and off-line storages because of cost and because of the effectiveness of farm based actions. Instead priority was given to more cost-effective actions to reduce drainage from irrigated farms.

The focus of the surface drainage program is now on providing a basic drainage service from the existing drainage network operated by SRW and funded by its customers.

This basic program should continue to be supported.

The program to transfer SRW owned drains that do not service multiple customers to the irrigator serviced by the drain has been successful. The irrigator uses the drain to harvest and re-use drainage water and the contained nutrients, reducing drain flows and nutrient loads. Since 2000 approximately 136 km of drains have been transferred in 230 transactions. This program has contributed to approximately 52 of 191 drainage diversion licenses being relinquished.

Actions to fence and revegetate waterways is now managed and reported through the West Gippsland Waterway Strategy and associated Regional Riparian Action Plan. Some waterway activities such as opportunities to fence riparian zones should still be considered in the development of farm plans.

Flood issues in the MID are now managed through the WGCMA Floodplain Management Strategy rather than the MLWMP. All IFPs are now referred to the WGCMA for comments on implications for flood and drainage issues prior to payment of incentives.

Proposal 12

The new MLWMP should explore actions to:
- optimise the operating and maintenance costs of the off-farm surface drainage system
- transfer SRW owned drains to irrigators where this increases re-use and reduces phosphorous loads to Lake Wellington
- continue to support MID2030 to minimise outfalls to drains
- respond to initiatives arising from the Victorian Irrigation Drainage Program Strategic Directions 2015-20 (Water for Victoria Action 4.6).
8.2 Public groundwater drainage

The objective of the Groundwater management program in the current MLWMP is to *ensure groundwater extraction is sustainable and does not adversely affect groundwater dependent ecosystems such as rivers, wetlands and the Gippsland Lakes.*

The WGSMP 2005 includes a sub-surface drainage program that involves the promotion of private groundwater pumping where the groundwater can be reused for irrigation and public groundwater control pumps where the groundwater is too saline for reuse.

The Groundwater management program is designed to control groundwater levels and therefore salinity and waterlogging. Actions to improve irrigation efficiency play an important role in reducing groundwater recharge, but significant recharge still occurs, particularly in wet years.

The program contributes to the target of a:

*50% reduction in the area of land salinity from 2003 levels in areas of irrigation induced salinity.*

The groundwater drainage program aims to control groundwater levels where they cannot be fully controlled by on-farm irrigation efficiency measures.

The depth of shallow watertables (less than 2 metres deep) in the MID is shown from 1996 to 2013 in Figure 8. The area of shallow watertables decreased during the Millennium drought.

The area of watertables within 2 metres of the surface increased again with the floods of 2011.

![Figure 8 – Extent of shallow watertables in the MID and surrounds](image)

The network of 19 public groundwater control pumps is complete although there is an ongoing need to maintain and refurbish priority bores. The network was developed to protect specific salinity hot spots to protect high value agriculture or high value environmental assets. It was not designed to provide watertable control across the whole region.
The network covers four zones (Nambrok, Heyfield, Maffra/Boisdale and Clydebank) and has the potential to lower water tables over a gross area of 14,500 ha (Figure 9).

Groundwater levels fell in areas protected by the public groundwater control pumps during the Millennium Drought enabling their operation to be reduced to reduce costs. Since 2006 the pumps have operated at 26% of full time capacity extracting an average 2,400 ML of water and 9 tonnes of salt per year at a current operating cost of around $90,000 per year. The increase in groundwater levels after the Millennium drought triggered the need to increase pumping rates.

Except for the past two years monitoring of groundwater levels was funded by the Sustainable Irrigation Program through the WGCMA. Funding was reinstated in 2016-17 and the review supports continuation of this funding.

The provision of off–farm groundwater drainage services is an ongoing requirement for sustainable irrigation in parts of the MID.

Proposal 13

It is proposed the new MLWMP should explore actions to:

- implement a program to refurbish priority groundwater control pumps
- consider the costs and benefits of encouraging private groundwater pumping to minimise the need to operate the public pumps
- continue to use and refine the adaptive management approach to manage the public groundwater control pumps
- respond to initiatives arising from the Victorian Irrigation Drainage Program Strategic Directions 2015-20 (Water for Victoria Action 4.6).
9 Addressing nutrient discharges to the Gippsland Lakes

Phosphorus levels in Lake Wellington are a key cause of blue-green algae blooms in the Lake. There are large stores of phosphorus in the sediments of the Lake, but reducing the flow of phosphorus into the Lake must also occur to reduce the frequency of blooms.

The MLWMP adopts a target of:

*By 2015, the maximum phosphorus load discharge from the drained area of the Macalister Irrigation Area is to be no greater than 25 tonnes per year*

This interim target was adopted to be consistent with statements in the “MID2030” strategy document compiled by SRW and the expected outcomes of the management actions detailed in the Plan. Schedule F5 of the State Environment Protection Policy (Waters of Victoria) 2002 included a target to reduce Phosphorus loads from the MID by 40% by 2005 (from 70 to 42 tonnes per year).

Irrigated agriculture has a much higher discharge of nutrients per unit area than dryland agriculture\(^3\) so there are greater gains to be made from focusing efforts on reducing nutrients from irrigated agriculture. Actions to achieve this target are included in the Farm planning, On-farm irrigation and drainage management and Floodplain and off-farm drainage management programs.

The 42 tonnes per year target was met for 10 of the 16 years since 2001 (Figure 10). On average phosphorus discharges have been 50 tonnes per year.

\(^3\) Nutrient loads from irrigated land can be four times that from non-irrigated grazing/pasture (Ladson (2012)).
The target has been met in dry years and exceeded in wet years, however there are years when this link between phosphorus loads and climate does not hold. The reason for this is not known.

Phosphorus loads decreased through the Millennium Drought and the target export level of 42 tonnes per year was achieved. It is not clear whether this will be sustained.

It is clear that MLWMP actions that improve irrigation efficiency, increase the re-use of irrigation drainage water and reduce runoff from irrigated land must decrease phosphorous loads to waterways and ultimately to Lake Wellington. However, given current knowledge and natural variability it is not possible to quantify the reduction in phosphorous loads achieved by plan implementation or attribute the reduction to particular actions.

Nevertheless, the review finds the MLWMP has been successful in reducing phosphorus loads to Lake Wellington and made an important contribution towards achievement of the SEPP (WoV) Schedule F5 phosphorus export target.

The review recognised that LWMP actions have the potential to improve water quality upstream of urban water supply offtakes. There may also be opportunities to give a higher priority to encourage the adoption of on-farm practices to protect water quality upstream of Gippsland Water’s water supply offtakes.

Proposal 14

It is proposed the new MLWMP should explore actions to:

- incorporate findings of the SEPP (WoV) review into the MLWMP renewal process
- build on successes with phosphorus reduction inside the MID in other areas
- develop the project logic to prioritise actions to reduce phosphorus loads
- identify and implement targeted least cost actions to achieve policy targets to reduce phosphorus loads
- refine estimates of the cost effectiveness of options to reduce phosphorus loads (i.e. costs in terms of $ per kg of phosphorus)
- evaluate opportunities to prioritise on-farm actions to improve water quality upstream of Gippsland Water’s water supply offtakes
- review the water use licence standard conditions to include conditions to control off-site phosphorus discharges
- refine the phosphorus budget for the MID
- investigate opportunities to collect data to enable modelling of MID phosphorus exports as part of the monitoring program.
The objectives for the new MLWMP need to be drafted in a way that fits with the draft vision and proposed themes of the new plan and:

- have a farmer focus and be meaningful to farmers who are land and water managers and recognise the importance of both farm productivity and sustainability
- help local agencies make decisions that support the vision
- help program delivery, accountability and streamlined reporting
- align with government funding program expectations and future opportunities.

The draft structure below is proposed as a starting point for developing the structure of the renewed plan. The proposed structure for the new MLWMP should be viewed within the context of the WGRCS which provides the framework for the integrated management of catchments in the region.

It is proposed that the draft structure shown in Figure 11 be used as a starting point for developing the structure of the new MLWMP.
11 Knowledge gaps

The MLWMP is a mature program, as such there is a significant body of practical experience, professional insights and knowledge supporting the development and implementation of Plan actions. This knowledge provides a sound basis for renewing the LWMP and care will be required to balance future investment between implementation actions and research.

Knowledge gaps that could be considered in the LMWP renewal include:

- tracking water use and water use efficiency improvements to better understand plan achievements and inform adaptive management
- mapping of land use and irrigation system change
- improving knowledge about the nutrient budgets of irrigated properties generally
- update the INFFER Phosphorus tool:
  - to reflect current estimates of the costs of actions
  - include actions to reduce phosphorus loads from horticulture (particularly in the Thorpdale area)
  - to enable improved targeting of cost effective actions to reduce phosphorus loads from irrigation in the Lake Wellington catchment
- update data about irrigated land use change in the Lake Wellington catchment and investigate possible future trends
- periodically report on the efficiency of farm water use (Water for Victoria Action 4.5)
- assess any impact of program implementation on streamflows, especially for individual streams and the watering regime of wetlands
- consider the latest information on climate change and variability when designing new management actions
- better understand the baseline level and changes in community attitudes and capacity (community skills, knowledge and education (CSKE)).

Providing advice on farm planning and irrigation infrastructure and management is fundamental to implementation of the MLWMP. Knowledge of other topics such as nutrient management, land clearing and drainage regulations and opportunities to make native vegetation gains is also important. Given the breadth of topics involved it would be worth consolidating and describing best practices on farm for a range of topics. For example:

- farm planning – what additional elements should a farm plan contain compared to the existing IFPs?
- irrigation best management practices (timing and application methods), recycling and drainage methods
- agronomic and farming practices, nutrient audits, whole farm nutrient planning, nutrient auctions (lessons from Core 4 and Fert$mart for irrigated land)
- other practices related to native vegetation and soil management
- what practices deliver environmental benefits and are also attractive to farmers because they result in a better bottom line, less effort and better lifestyle?
Proposal 16

It is proposed that the knowledge gaps above be prioritised as part of the process of renewing the MLWMP. The general approach for the renewal of the MLWMP should be to use the existing comprehensive knowledge base for plan development and that knowledge gaps will be addressed as part of plan implementation.

12 The case for investment

The current Guidelines for the preparation of Land and Water Management Plans that apply to designated irrigation areas in Victoria (DSE, 2008) provide extensive prescription about undertaking ‘Triple bottom line assessment’. However, these Guidelines are currently being reviewed by DELWP.

Given the high level of uncertainty about future requirements it is suggested that the Plan renewal focus on the cost sharing principles in the current guidelines rather than the detailed prescription for undertaking a triple bottom line assessment. The cost sharing guideline is repeated below:

“The following principles should be noted:

- **Government contributions for public benefit** – Government contributes primarily for activities that produce public benefits. Governments may contribute to land and water management activities that have private benefit, where the cumulative uptake of these activities provide significant public benefit and government support is required to facilitate uptake
- **Positive benefit cost** – before government will contribute to any land and water management activity, the activity must be technically sound, the benefits must justify the costs and it must be considered a priority activity
- **Statewide policy and monitoring** – Government will contribute to the cost of statewide planning, statewide resource monitoring and assessment and research and investigations where they are crucial to sustainable land and water management.”

A simple analysis of benefits and costs of investing in a program to maintain the current level of control of salinity and waterlogging is probably required. It is most unlikely that it would be acceptable for salinity and waterlogging problems to become worse. However, it is less clear whether there is a case for investing in a further reduction in salinity and waterlogging problems.

The implementation of the Irrigation Development Guidelines is a statutory requirement. This means that the renewed MLWMP should propose a cost effective approach for implementing and ensuring compliance with the Guidelines.

The current review of the SEPP (WoV) may set a new phosphorus export target. The proposed revised target is subject to consultation and consideration by Parliament before it is adopted. Further analysis will be required to determine a cost effective program to meet the phosphorus load target to be set by the EPA. Substantial analysis has already been completed on the costs of reducing phosphorus loads to the Lakes (Roberts et al, 2009). The Phosphorus tool used in the INFFER analysis could be updated and used to identify least cost options to reduce phosphorus loads subject to
funding and priorities. It would not be necessary to update the whole analysis. This work could be done as part of the process to renew the MLWMP or be a project to be completed as part of the new LWMP.

Proposal 17

It is proposed that the new MLWMP:

- apply the cost sharing principle that Government contributes primarily for activities that produce public benefits
- determine the costs of a base program to control salinity and water logging that also:
  - ensures new irrigation developments and redevelopments comply with regulatory requirements
  - leverages the on-farm opportunities of MID2030
- in addition determine a least cost program to meet any revised SEPP requirements for Lake Wellington phosphorus load reductions
- prepare a benefit cost analysis if a significant new suite of actions is proposed to be implemented in new areas.

13 Monitoring progress and evaluation

The logic underpinning the MLWMP is that if sufficient investment is attracted to implement actions and achieve MATs then, over the life of the plan, progress will be made towards achieving change as measured by RCTs.

Demonstrating improvement in resource condition at a catchment scale is an extremely difficult task, to a large extent because of the natural variability in system condition and improvements in condition only being observable over the long-term. It is even more difficult to attribute that improvement to one’s actions when your actions are only part of a much broader integrated program, as is the case with the MLWMP.

The MLWMP has seven RCTs. The review finds that it has not been possible to cost effectively monitor such a large number of RCTs. It is proposed that just two RCTs be monitored in the future:

- the area of high water tables, which is closely linked to salinity and waterlogging control
- the phosphorus load to Lake Wellington (based on the EPA target⁴) which is closely linked to reducing algal blooms in Lake Wellington.

In addition to measuring changes in the RCTs, the project logic that links RCTs to management actions and the assumptions sitting behind the actions needs to be set out more clearly. This will enable progress to be monitored based on the implementation of management actions and the associated assumed benefits (e.g. each ML of reuse storage results in an explicitly assumed volume

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⁴ Other water quality indicators could be considered depending on the outcome of the review of the SEPP (WoV) and funding priorities
of water and load of phosphorus and any other high priority water quality indicators being retained on farm).

Annual reports should present data for RCTs such as phosphorus loads to Lake Wellington and watertable depth as well as assumed changes based on actions contributing to MATs.

The ability to implement actions is dependent on many factors including investment in the program, the operating environment, program management and how well partners work with each other and stakeholders. Annual reporting of program implementation should be undertaken to allow comments on these factors over the life of the plan.

Monitoring and reporting in the future should be proportionate to the level of investment and be designed to support adaptive management. Annual, five yearly and end of life (10 year) reporting and review of plan implementation should be undertaken and shared with stakeholders. The resources committed to the end of life reporting and review will be significantly greater than five yearly reporting and review which will again be greater than annual reporting. As part of an adaptive management approach it is expected that minor changes to how the plan is implemented will be made at the end of each year, with the possibility of more significant changes following the five year review. If continuation of the program is required, the 10 year review could result in more significant changes again as part of plan renewal.

The proposed monitoring, reporting, evaluation and learning process is illustrated in Figure 12.

Proposal 18

It is proposed that a cost effective monitoring, reporting, evaluation and learning process proposed in Figure 12 be used as a starting point for developing the MER structure of the new LWMP. Monitoring should have regard to any specific requirements of the updated SEPP (WoV).
Figure 12 – Proposed monitoring, evaluation, reporting and learning process for the new MLWMP
References


