Issues Paper

Drainage Tariff Strategy

Draft for Consultation

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A full copy of this document is available from Goulburn-Murray Rural Water Corporation website at: www.g-mwater.com.au.

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1 Executive Summary

Introduction

As Goulburn Murray Water (GMW) continues to transform its irrigation delivery system it has become critical that its tariffs align with the new business systems and objectives. Significant changes in water trading, climate change, land use, water availability, competing demands for water, and on-farm practices including greater understanding of catchment risks has highlighted the need to review our existing drainage tariffs.

The drainage tariff structure determines how GMW recovers the costs of providing drainage services and how these costs are shared between customers. GMW aims to develop a new drainage tariff strategy to set the framework for GMW's future charges.

There are a wide range of tariffs applied to drainage services that have been adopted since the early 1990's. These tariffs relate to:

- GMW Primary Surface Drainage
- Community Surface Drainage – Private and GMW operated and managed
- Drainage Diversion
- Sub-Surface Drainage – Public and Collector Service

The GMW drainage infrastructure provides 3 basic functions;

1. Receives drainage discharge from a range of sources (e.g. landholders, councils, roads, CMA/Local Government drainage schemes);
2. Lowers groundwater pressure levels; and
3. Provides access to drainage water for irrigation purposes.

Some of the main benefits provided by drainage are:

- Reduced waterlogging and salinity damage to properties (both rural and urban), infrastructure (such as roads) and environmental assets;
- Reduced inundation from flooding: and
- Nutrient management.

This review is part of GMW's overall Tariff Strategy articulated in the GMW Blueprint. The strategy proposes moving to a simpler fit-for-purpose tariff structure that meets GMW's objectives and tariff principles.

This paper is designed to highlight the full range of issues that will assist in the development of an agreed drainage strategy.

Note: It is not proposed to review the drainage tariff of Nyah, Woorinen and Tresco Irrigation Districts as part of this paper. These customer groups and irrigation districts will form part of a separate tariff review.

General Issues

A range of tariffs apply to drainage services that have been adopted since the early 1990's. The tariffs were relevant for the business environment of the time but much has changed since their establishment.

The tariff structure is applied in many different ways and customers have expressed to GMW that they find the tariffs and prices difficult to understand. There is a combination of beneficiary and polluter tariffs applied, different fixed and variable combinations and different prices are applied across GMW for the same service provided.

Some drainage services provided do not attract charges and some only have part of the tariff component applied. These exemptions were mostly applied at the time of service establishment and were designed to encourage certain behaviour or assist in catchment strategies such as salinity mitigation.

A review of the current drainage tariff is timely to meet the current business environment of GMW and there is considerable scope for simplification, aggregation, amalgamation and alignment with other GMW tariffs.

Policy Issues

There are a number of regulations that encourage users and managers of irrigation drainage systems to improve the quality and reduce the quantity of drainage waters. There are few sanctions and little formal enforcement of these regulations and a non-regulatory system of cooperation has resulted in a significant reduction in the impact of drainage waters on the environment. GMW region operates well within acceptable limits and has a buffer available due to trade of water out of the region.

In practice, legislative and regulatory environment imposes the following costs on GMW:

1. The cost of salinity credits associated with any 'accountable actions' as a result of changes to drainage waters:
2. Monitoring and assessment of the resource condition targets for drainage water quality: and
3. The staff costs associated with its participation in the non-regulatory system to improve drainage water (such as the Irrigation Drainage Memorandum of Understanding). This non-regulatory system can be seen as necessary to avoid a more prescriptive system of regulation and enforcement.

In the future, it is possible that investment will shift towards nutrient interception, which may impose costs on GMW.

There are a number of GMW policies that will need to be reviewed or revoked as a result of a new drainage tariff structure.

Service Standards

GMW Customer Service Charter sets out the standard of service and performance measures that customers can reasonably expect to receive from drainage services. The relative benefits of drainage (both surface and subsurface) have changed with improved on farm management and the removal of water in extreme wet events now seen as a major function. So much that, existing levels of service and rating divisions may no longer be meaningful.

Some surface drains have higher levels of service depending on design standards of the time of construction but customers pay the same price regardless of the design level. The differences between design levels of service between surface and community surface drainage is now minimal. While levels of service are defined at the time of construction there are many factors that can influence a drain performance due to the change in land use and on farm works.

Sub surface drainage defined level of service is based on lowering groundwater pressure levels. Determining if service levels are met and who the beneficiary is can be a lengthy and expensive process.
There is also an issue with predicting when and where future salinity will arise because of climate variability and dynamic land use.

Tariff Structure & Pricing

The existing drainage tariffs have evolved since the 1990's and the current structure may not be "fit for purpose" and cost reflective in the context of a variable and unpredictable future. The actual drainage charge levied on a property is moderated through the application of a complex assessment of the degree of benefit provided by drainage for both surface and sub-surface drainage. Customers continually tell GMW that the existing tariff structure is complex and difficult to understand.

While the same fee structure applies across the GMID for surface drainage the charges vary for each irrigation area for very similar operational attention. Sub surface drainage tariffs are applied in a similar manner with 8 different prices and 4 difference tariff structures. The recovery of maintenance costs between GMW Community Surface Drains and GMW Primary

Surface Drains are currently treated differently although operationally the two types of drains are treated the same.

Changing land use has resulted in some of the drainage infrastructure becoming obsolete. This raises the issue of how to fund decommissioning of the assets and as importantly, how to fund investment in new assets where required.

Revenue

GMW has a revenue cap price control monitored by the Essential Services Commission. The process involved for calculating revenue required is a three step process requiring GMW to;

- agree on the service outcomes to be provided
- calculate the revenue required to deliver that service and;
- ensure that the price charged will provide enough revenue to deliver the service

The main component of costs for drainage services are for maintenance, infrastructure replacement costs and operational costs. There are a wide ranging combination of fixed and variable costs in the current tariffs with differing views from customers on what is the right mix.

The broader community contributes to drainage cost (both surface and subsurface) through Local Government but this is not uniform across the GMW region.

Summary

The current drainage tariffs have been established over time and were appropriate and reflected the needs of that time. The GMW business environment has changed and it is timely to review all drainage tariffs to ensure they are fit for purpose in the new business environment.

There are significant issues with the current tariffs and this paper is designed to document the issues and encourage discussion on what can be done to improve them.

After consultation on the issues paper GMW will be in a position to develop a draft drainage tariff paper that will provide direction for the future of drainage tariffs.

2 Introduction

Goulburn-Murray Water's (GMW) current drainage tariff structure was developed in the early 1990s. With the significant changes occurring to the Goulburn Murray Irrigation District (GMID) it is timely that GMW reviews the drainage tariffs for the GMID.

The drainage tariff structure determines how GMW recovers the costs of providing drainage services and how these costs are shared between customers. GMW aims to develop a new drainage tariff strategy to set the framework for GMW's future charges.

Review of the tariff structure can also provide important information to GMW about the demand for drainage services and the value customers place on drainage. In turn, this can influence the extent and type of drainage services that GMW provides to meet customer needs.

The GMID Drainage Tariff Strategy that results from this review will be an important input into the development of GMW's Water Plan 4. Any changes to the drainage tariff, when implemented, will include adequate time for customers to adjust.

Drainage Tariff Strategy and proposed charges will be reviewed by a working group comprising Water Services Committee members and relevant stakeholders.

2.1 Terms of Reference

The terms of reference for the GMID Drainage Tariff Strategy are:

- to review the Primary Surface, Community Surface, Subsurface and Drain Diversion tariffs within the GMID;
- to build a shared understanding of the drainage services, activities and costs of providing that service;
- to identify and document issues associated with current GMID drainage tariffs
- to develop a Draft GMID Drainage Tariff Strategy
- to develop a Final GMID Drainage Tariff Strategy
- to consult with stakeholders after the release of the Issues Paper, Draft Strategy and Final Strategy.

In developing GMW's Drainage Tariff Strategy, the Working Group will identify key issues relating to:

- the appropriate basis for setting prices for GMW's drainage services having regard to;
- agreed and proposed pricing principles
- pricing practices adopted in current and prior regulatory reviews;
- alternative tariff structures including the appropriate basis for the components of the tariff structure.
- what other factors may be relevant to tariff structures; and
- how the tariff structure is to provide appropriate price signals.

In accordance with these Terms of Reference, the Working Group must give consideration to:

- GMW's Fundamental Commitments and Strategic Outcomes which help promote viable productive irrigation and vibrant communities across Northern Victoria.
- The fundamental commitments are:
    - Partnering with our customers;
    - Creating the opportunity to increase food production in Northern Victoria; and
    - A high performing organisation.

In undertaking the review, the Working Group will have regard to the following principles to help guide the development of our drainage tariff strategy:

- Encourage agricultural production: Tariffs should encourage productive agriculture as that underpins the regional economy and community;
- Simple, clear and transparent to understand and manage: Customers are able to understand what they are paying for without too much complexity;
- Tariffs are equitable: A similar service should attract a similar fee, and charges should be cost reflective;
- Send clear signals on the real costs of services: Charges should send clear signals as to the real costs of providing services;
- Provide predictability: Enable customers to better manage their business and provide predictable pathways for business investment decisions;
- Generate sufficient revenue: GMW needs to be financially sustainable over the long term and demonstrate that it is doing everything it can to keep prices down; and
- Encourage efficient water trading markets.

It is not proposed to review the drainage tariff of Nyah, Woorinen and Tresco Irrigation Districts as part of this paper. These customer groups and irrigation districts will form part of a separate tariff review.

3 Background

Poor natural drainage is an inherent feature of the irrigated parts of the GMID. Waterlogging and salinisation linked to high water tables emerged as issues in some parts of the GMID soon after irrigation commenced. The problems became more widespread during the wetter second half of the 20th century.

Drainage plays a role in managing the adverse impacts of irrigation. Drainage was installed in the worst affected areas from early in the 20th century and has continued ever since.

From the 1980s, salinity and nutrient management became a community led initiative and significant government and landowner resources were devoted to raising awareness and understanding of the issues and developing responses. These responses ranged from accepting that living with salt and concentrating farming activity on the best soils was the most appropriate outcome in some locations through to an expansion of the drainage network (both GMW's and private landowner's) in other locations. The current GMID drainage tariffs were largely developed then. They reflect the climate, farming and community needs, and institutional settings of that period.

Since then there have been significant changes.

- Environmental awareness is much higher and irrigators are under more scrutiny than ever and take their stewardship responsibilities seriously.
- Water trade is widely used and farmers are acutely aware of the value of water.
- Large volumes of water have been permanently traded out of the GMID – to the environment and to irrigator's further down-river.
- The GMID channel system, previously a significant contributor to groundwater, is being modernised.
- Farms, also, are becoming much more water-efficient with estimates that nearly all farms are now able to contain and re-use irrigation tail-water.
- The weather has been noticeably drier in the early part of the 21st century.
- Carryover is now available. The days of irrigators using any remaining water at the end of the irrigation season are behind us.

The return of more normal seasonal allocations following the Millennium Drought has seen water tables rise, but to nowhere near the level or extent that prevailed before the drought. Waterlogging and salinity remain important risks to the GMID but we are better placed to manage them than at any time in the past.

3.1 GMW Drainage Services

GMW operates and maintains a network of surface drains of various ages, design standard and level of service across the GMID.

There is a complex rating system that reflects the diverse mix of GMW, community, private and natural drainage that occurs across the GMID.

The GMW drainage infrastructure provides 3 basic functions;

- Receives drainage discharge from a range of sources (e.g. landholders, councils, roads, CMA/Local Government drainage schemes);
- Lowers groundwater pressure levels; and
- Provides access to drainage water for irrigation purposes.

Some of the main benefits provided by drainage are:

- Reduced waterlogging and salinity damage to properties (both rural and urban), infrastructure (such as roads) and environmental assets;
- Reduced inundation from flooding: and
- Nutrient management.

Drainage is also used to provide appropriate watering regimes to wetlands. It is an effective and essential part of a sustainable irrigation area and a critical component of catchment management water quality strategies. There is also regional flow on effects of mitigating water logging and salinity impacts through increased tourism and higher land prices as the environmental values of the region are enhanced.

GMW applies rates and charges which are set on an annual basis to raise revenue for funding of the operation, maintenance and replacement of the infrastructure. The current drainage tariffs were adopted in the early 1990's after comprehensive reviews and consultation with Water Services Committees, Catchment Management Authorities and other relevant stakeholder. Tariffs were developed to support our previous business environment, promote sustainable irrigation and improve catchment health. The current fee structure is a mixture of beneficiary and polluter pays. There is a varied and complex range of rates and charges applied.

Since 2011, GMW's Board and management have focussed on the process of developing strategic, long term financial sustainability and putting in place the foundations for a new business model designed to drive greater transparency and accountability to GMW customers.

As GMW continues to transform its irrigation delivery system it has become critical that its tariffs align with the new business systems and objectives. Significant changes in water trading, climate change, land use, , water availability, competing demands for water, and on-farm practices including greater understanding of catchment risks has highlighted the need to review our existing drainage tariffs.

This review is part of GMW's overall Tariff Strategy articulated in our Blueprint. The strategy proposes moving to a simpler fit-for-purpose tariff structure that meets GMW's objectives and tariff principles.

As part of our business wide review of tariff and prices the Drainage Tariff Strategy aims to ensure that the structure of future charges support the delivery of cost effective services and aligns with GMW future business objectives.

3.2 Paper Structure

GMW has identified a range of issues that it is intending to analyse as part of this review. This paper consists of 4 parts.

Part 1 discusses issues of a general nature, providing historical information in relation to the development of drainage tariffs and prices and additional details such as:

- Overview of the current situation focusing on the range of tariffs that currently applies to drainage services;
- GMW primary surface drainage;
- Community surface drainage;
- Drainage diversion; and
- Subsurface drainage

Part 2 deals with the policy environment under which GMW operates, such as:

- Economic regulatory framework;
- Environmental regulation and obligations; and
- GMW policy and procedures

Part 3 address matters specific to the service provided and contains additional details such as:

- Customer Service Charter Approved Service Standards; and
- GMW's defined levels of service

Part 4 identifies and discusses the issues relating to the current tariff structure and pricing for drainage services, including:

- Application, administrative complexity and cost implications of current approach;
- Customer feedback and views;
- Asset management specifically decommissioning of drainage infrastructure;
- Investments in new drainage infrastructure;
- Revenue requirement and form of price control; and
- Single customer concept

3.3 Review Process

The development of the Drainage Tariff Strategy will be informed by the following public consultation process:

- This Issues Paper invites submissions from Water Service Committees, stakeholder groups, customer and the general community on the matters and issues identified by the working group.
- Following consideration of submissions received on the Issues Paper, GMW intends to publish a Draft Drainage Tariff Strategy. Public consultation and submissions on the Draft Drainage Tariff Strategy will be invited.
- GMW will consult its Water Service Committee during the course of the tariff strategy development.
- Implementation and transitioning of the new drainage tariff strategy is proposed for Water Plan 4.

GMW is intending to engage with and seek input from relevant stakeholders, regulatory agencies and community to inform its Drainage Tariff Strategy Working Group, Tariff Strategy Steering Committee and GMW Board on matters relating to drainage tariff and pricing.

3.4 Responding to this Issues Paper

All stakeholders and the public are invited to make written submissions on any issues raised in this paper or on any other issue considered to be relevant.

Interested parties can comment on the issues raised in this paper by sending written submissions or comments to Goulburn Murray Water.

We would prefer to receive them by email at feedback@gmwater.com.au

You can also send comments by mail, marked submission to GMW Drainage Review - Tariff Issues Paper, to:

Goulburn Murray Water
40 Casey Street
PO Box 165
Tatura VIC 3616
Please direct any queries about this Issues Paper to:

Telephone: 1800 013 357

Part One

4 General Issues

4.1 Introduction

This section focuses on some general issues which impact on the tariffs that apply to the drainage services provided by GMW.

These general issues are:

- While the same fee structure applies across the whole Goulburn Murray Irrigation District for surface drainage the charges vary for each irrigation area for very similar operational attention;
- The relative benefits of surface drainage has changed with improved on farm management with removal of water in extreme wet events now a major function - existing levels of service and rating divisions may no longer be meaningful
- The current surface drainage fee structure does not differentiate between the design level of service of each drain;
- An assessment of the need for the broader community to continue to contribute to drainage cost (both surface and subsurface) through Local Government;
- The recovery of maintenance costs between GMW Community Surface Drains and GMW Primary Surface Drains are currently treated differently although operationally the two types of drains are treated the same;
- GMW has various external commitments and delivers drainage in partnership with Land and Water Management Plans;
- The actual drainage charge levied on a property is moderated through the application of a complex assessment of the degree of benefit provided by drainage.

The following issues are relevant to the Shepparton Irrigation Region Sub-surface Drainage:

- Unable to predict when and where future salinity will arise because climate variability and increasingly dynamic land use;
- Current tariff system may not be “fit for purpose” and cost reflective in the context of a variable and unpredictable future;
- The area subject to direct beneficiary rates is very conservative due to technical constraints, perceived need to be able to demonstrate pumping effect and all irrigators contributed 50% costs in any case;
- Shallow private groundwater pumping in the Shepparton Irrigation region also provides vital salinity control benefits and charges for this pumping need to support drainage objectives.

The following provides a summary of all tariffs that apply to the services and sets out how these tariffs were developed.

4.2 Overview of Current Tariff Regime

There are a wide range of tariffs applied to drainage services that have been adopted since the early 1990’s.

This section focusses on the range of tariffs that currently apply to drainage services provided by GMW. These tariffs relate to:

- GMW Primary Surface Drainage
- Community Surface Drainage – Private and GMW operated and managed
- Drainage Diversion
- Sub-Surface Drainage – Public and Collector Service

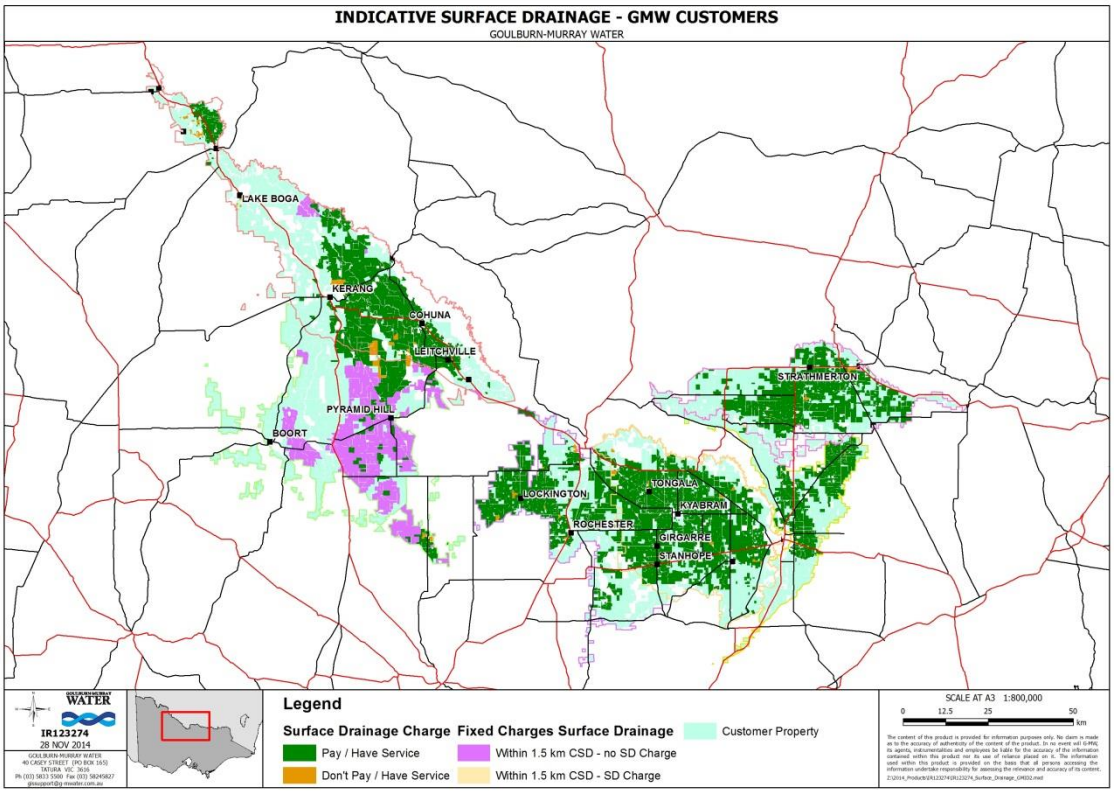
Section 4.5 discusses drainage tariffs and fee exemptions that may apply to various services.

4.3 Surface Drainage Tariffs

4.3.1 GMW Primary Surface Drainage

GMW's Primary Surface Drainage tariff structure was introduced in 1992. Primary surface drains are the "backbone" of the GMID surface drainage network. They provide direct access for drainage water for many farms. As well, they are the drains into which Community Surface Drains outfall.

GMW provides Primary Surface Drainage in various parts of the GMID where some pay for that service and others do not.



Primary Surface drains are designed to provide a level of service that aims to remove ponded water after a rainfall event of moderate intensity within a certain period, usually 5 days. The objective is to remove the water before it can cause significant damage to crop yield or accessions to the water table.

Primary surface drains are not designed to remove irrigation tail-water. Rather, irrigators should be aiming to limit irrigation run-off and to capture any run-off, including that from a 50 mm summer thunderstorm, in a farm re-use system. However, in the past a lot of tail water did reach the drains though now with improved farm practices this is now significantly less.

The construction of Primary Surface Drains has been 100% funded by government contributions.

The tariff structure for primary surface drainage services consists of 3 components:

- Service Fee - applied per property for administration costs;
- Area Fee - based on the total area of the property; and
- Water Use Fee - calculated by the number of Megalitres used annually on the property multiplied by the drainage division applied.

The charges are generally applied to all direct beneficiaries of the service including customers with water entitlement and Municipal Councils in the Shepparton Irrigation Region. In the calculation of the Area and Water Use Fees, a proportion of the tariff is applied based on an assigned drainage division.

Type of Service	Applies to	Cost Recovery Component	Unit	Location/Area Applied
Primary Surface Drainage	B	Service Fee Area Fee Water Use Fee	$/Service $/Ha $/ML	Murray Valley, Shepparton, Central Goulburn, Rochester, Campaspe, Loddon Valley, Torrumbarry
GMW Community Surface Drainage	B	As above plus area based drain length charge	$/KM or $/HA	Murray Valley, Shepparton, Central Goulburn, Rochester, Campaspe
Drainage Diversion (Reasonable quality water)	D	Diversion Site Agreement Water Use Fee	$/Site $/ML	Murray Valley, Shepparton, Central Goulburn, Rochester, Campaspe
Drainage Diversion (Low quality water)	D	Diversion Site	$/Site	Loddon Valley, Torrumbarry, Tyntynder

Legend: B – Beneficiary of Drainage Service; D – Diverters of Drainage Water

Table 1: Summary of Current GMW Surface Drainage Tariff Structure

The service and tariff structure provided in each irrigation area for Primary Surface Drainage is the same; however the actual price varies as a result of:

- ensuring sufficient revenue is raised to cover the budgeted expenditure for the efficient delivery of the service in that area;
- the number of customers to share the costs; and
- balancing the fixed (Service Fee and Area Fee) and variable components (Water Use Fee) to achieve between 25 to 34 percent fixed and 75 to 66 percent variable component respectively.

Figure 1 below illustrates the various charges applied across the irrigation areas.

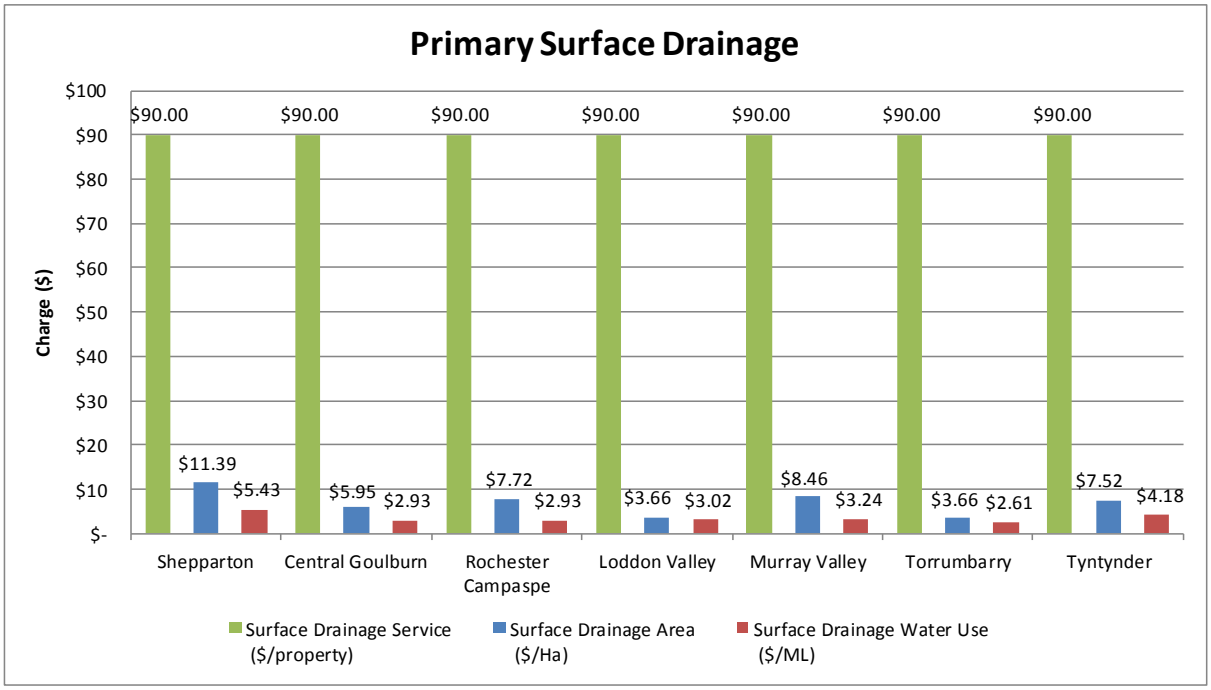


Figure 1: Primary Surface Drainage 2014/15 prices for each irrigation area

Although the number of surface drainage customers is significant, (Figure 2) the revenue collected for the provision of the service is a small portion of GMW total revenue. The revenue and expenditure for each customer group based on 2012/13 figures is shown in Figure 3. In relation to revenue, the Campaspe, Moira and Greater Shepparton councils contribute on an annual basis 17 per cent of the operations and maintenance costs of all works installed under the Shepparton Irrigation Region Land and Water Salinity Management Plan.

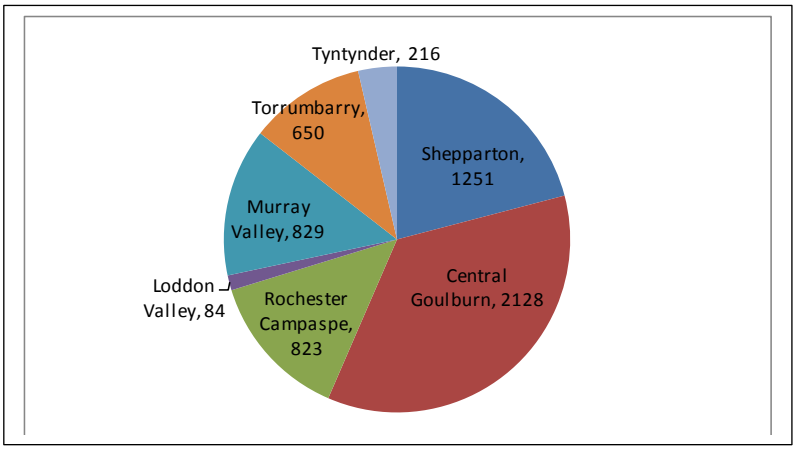


Figure 2: Distribution of Primary GMW drain customers across the irrigation area.

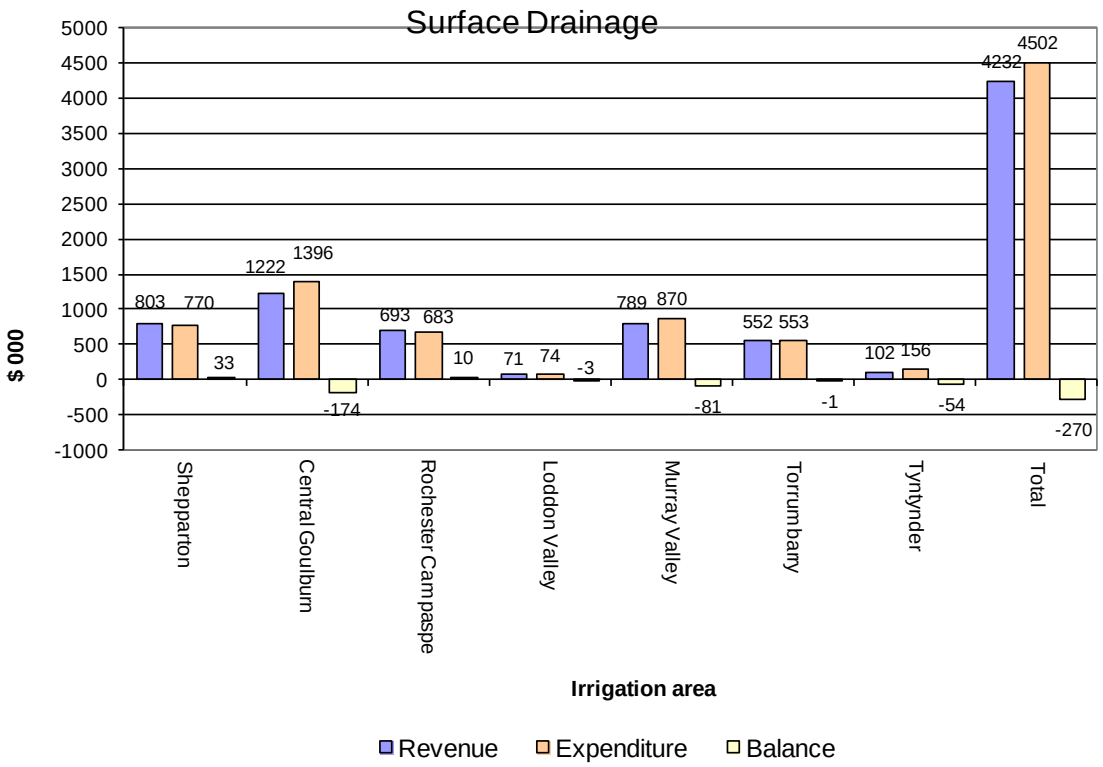


Figure 3: Primary surface drainage budgeted revenue and expenditure for each irrigation area (2012/13 figures)

Changing circumstances have raised customer concerns as to whether the charges for Primary Surface Drainage are still relevant in the current climate. Foremost in the changing circumstances are:

- The change in climatic conditions, including dry seasonal conditions over the last 10 years, leading to low water allocations, water scarcity, increased value of water and consequently substantially lower water use (which in turn leads to lower surface runoff to drains and revenue);
- Extensive use of whole farm planning techniques and investment in on-farm works including re-use systems, substantially reducing off-farm drainage requirements;
- The GMW Modernisation Connection Program which will substantially increase irrigation efficiency and reduce channel outfalls into drains;
- The shift of water entitlement from traditional customers to the environment;
- The current surface drainage tariffs were introduced during a time of high water use, water availability, and were intended to provide incentive for on farm water efficiencies;
- Changes in irrigation tariffs introduced recently;
- The introduction of temporary and permanent water trading and resulting effect on water consumption revenue; and
- Changing cost apportionment between customers.

4.3.2 Community Surface Drainage

Community Surface Drains (CSDs) were an outcome of the community led land and water management plans developed in the early 1990s. They recognised that sufficient government funds were not available to install a primary surface drainage service across the whole GMID and that such investment was not economically justifiable.

Instead, community groups would be encouraged to meet their local drainage needs by building their own community surface drains to connect their properties to the Primary Surface Drains. They would be supported by a grant of 50 percent of the cost from the Government and they would provide the balance or could borrow the balance through GMW.

The Community Surface Drains are constructed to the same service level as the recent Primary Surface Drains. There are two types of CSDs:

- Privately operated and managed; and
- GMW operated and managed.

Originally all were privately operated and maintained, but in recent times GMW has been asked to take over some of them due to scheme operators having difficulties providing the equipment for maintenance requirements. At present, the GMW management of CSD's only occur in Shepparton (13 customers) and Central Goulburn (213 customers). There are many community drains self-managed by groups of customers and it may be that the larger of these will be transferred to GMW in the future.

There are two components to the GMW managed Community Surface Drainage tariff:

- Both GMW managed CSDs and privately managed CSDs which outfall into a primary drain pay contributions to the operations and maintenance of the primary drain. Where CSD's outfall directly into a waterway no primary drainage rates are applied.
- For GMW managed CSDs an additional charge is made based on the average costs of maintaining the community drain. It is recovered based on the length of drain and the cost share arrangements when the drain was installed.

The existing tariff for GMW managed CSDs was implemented in early 2000 as an interim measure pending a full review of the Surface Drainage tariff.

The CSD revenue and expenditure is shown in Figure 4. Currently, CSDs and GMW Primary Surface Drainage are managed as two separate services due to a number of historical reasons.

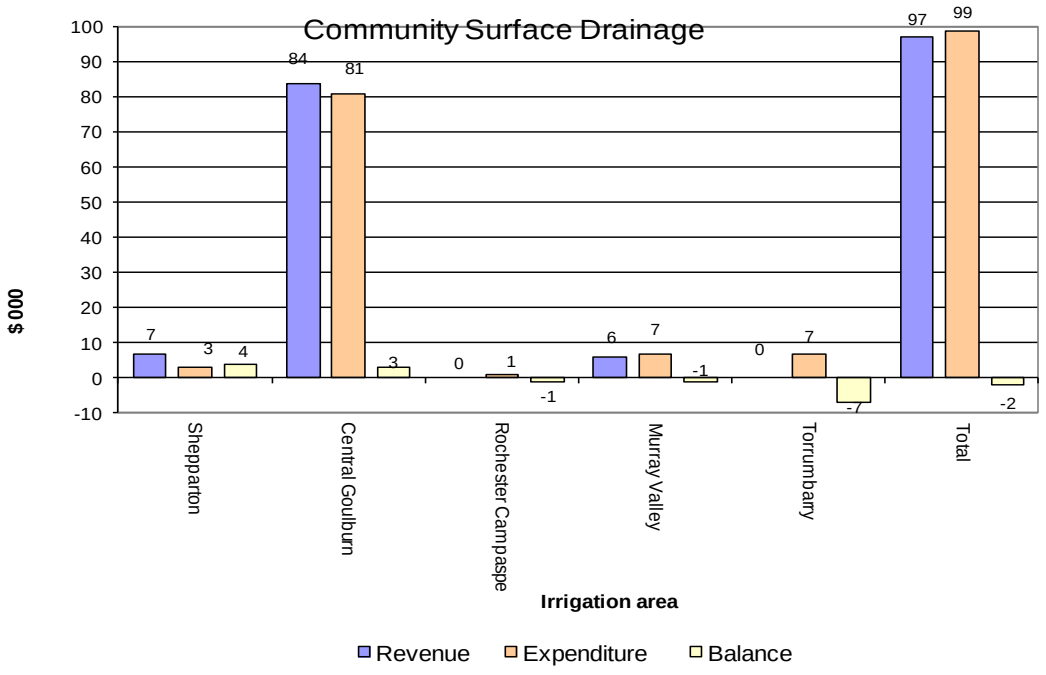


Figure 4: Community surface drainage budgeted revenue and expenditure for each irrigation area (based on 2012/13 figures)

The total revenue of the GMW managed CSD service is very small and this potentially leaves the small number of customers vulnerable to large price shifts. CSD customer groups are

separated financially from primary surface drains resulting in additional accounting practices and costs.

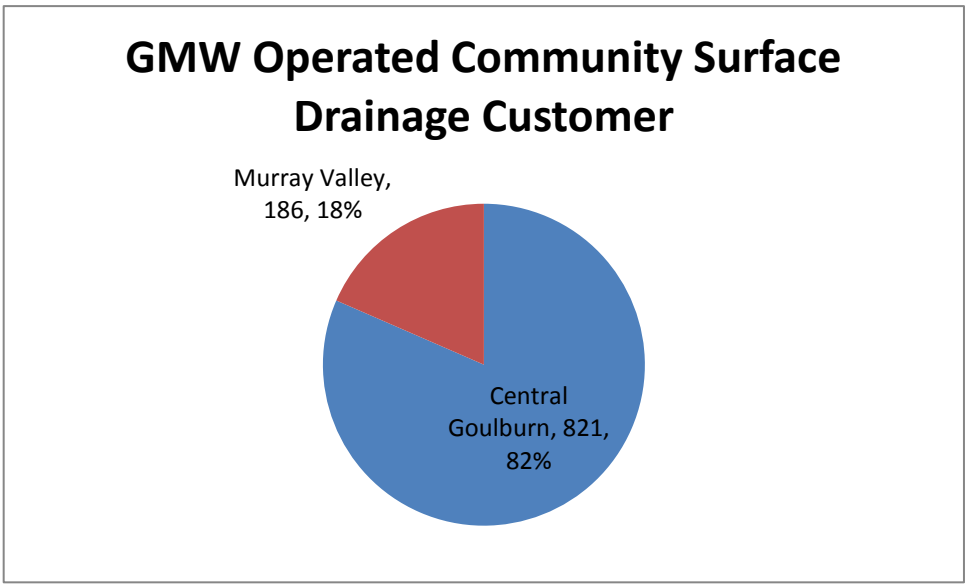


Figure 5: GMW operated community surface drainage customer numbers

4.3.3 Drainage Diversion

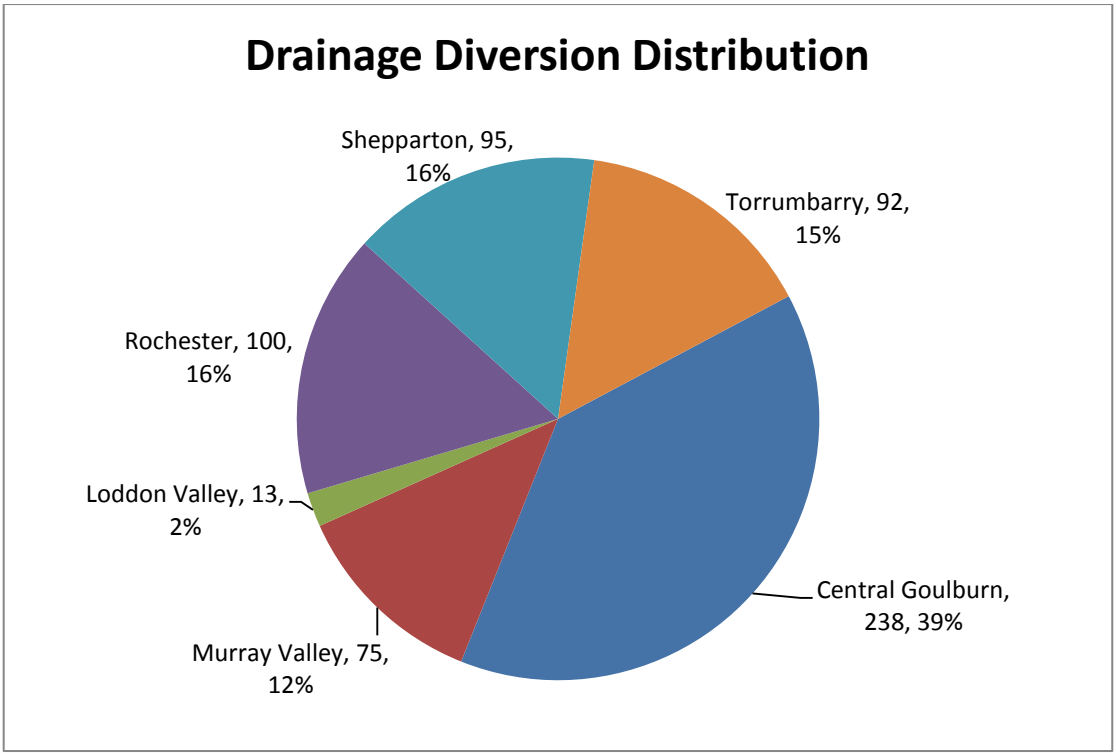
Pumping of water from surface drains for irrigation has been in place for decades and has been a valuable water resource for customers. Pumping from the drain is via customer funded works under certain conditions and the two main types are pumping during low flow conditions and pumping during high flow conditions following rain induced flows.

Drainage Diversion was an important part of the Nutrient and Salinity Catchment Strategies of the 1990's and has been a successful strategy in preventing irrigation runoff induced nutrients discharged downstream to rivers and streams.

The original tariff was set as a per-megalitres fee calculated at 25 percent of the gravity irrigation charge and did not reflect actual cost of providing the service. The tariff was reviewed in 2010 and changed to a 2 part tariff, specifically:

- Site fee applied to each site;
- Water entitlement fee based on the agreement licensed volume.

The customer numbers in each group is shown in Figure . The total number of diversion customer has reduced over time as water availability in the drain is diminishing.



Total number of Drainage Diversion Customers = 613

Figure 6: Distribution of Drainage Diversion customers (number and percentage of total) across irrigation areas.

The same tariff applies to all customers regardless of location. However some customers, whose properties are on drains that are utilised for salinity mitigation purposes do not pay the full site fee or the water entitlement fee as illustrated in Figure 7 below.

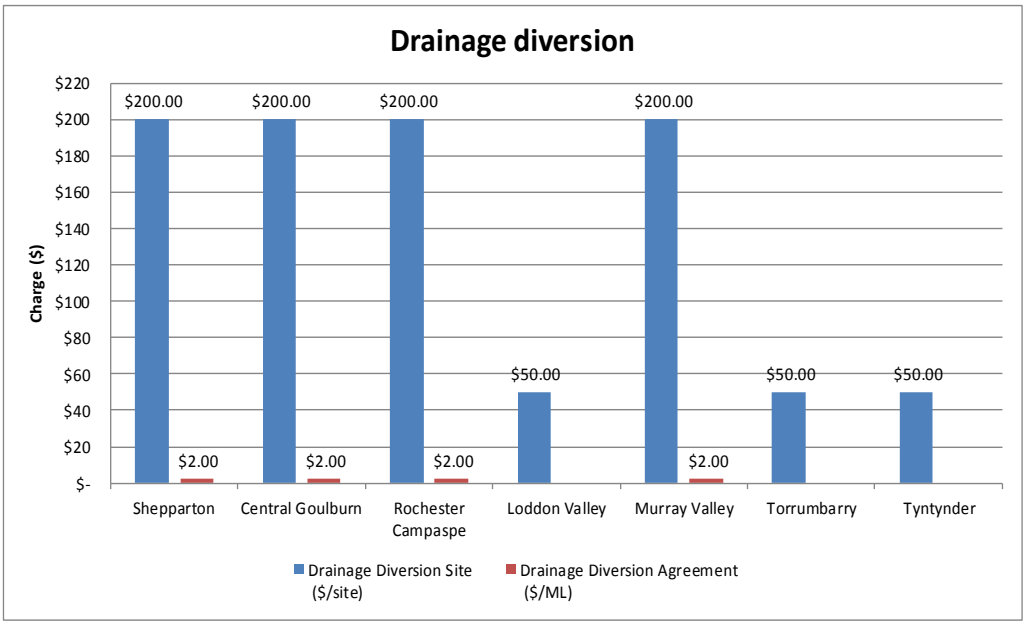


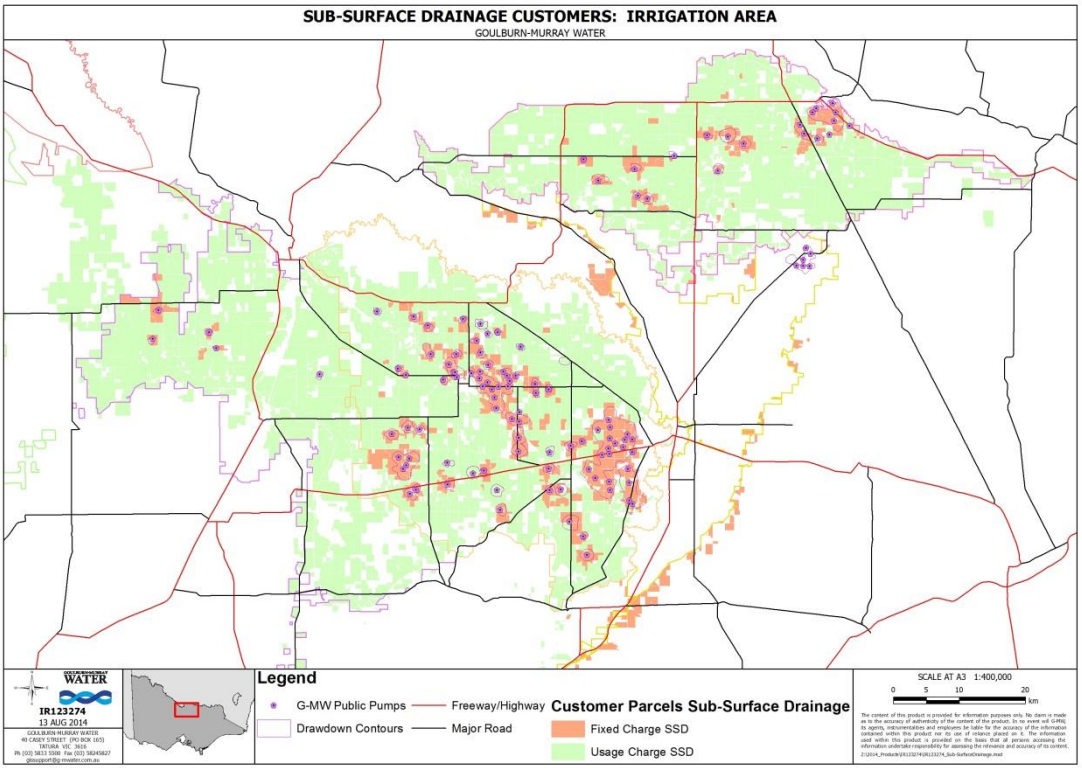
Figure 7: Drainage diversions 2014/15 prices for each irrigation area

Water availability to be pumped from the drain is directly related to the seasonal conditions but has decreased recently due to on farm water efficiency programs and the GMW modernisation connections program.

4.4 Subsurface Drainage Tariff

There are two types of subsurface drainage services provided by GMW. These are:

1. Public pumps – used to lower the groundwater pressures to mitigate salinity and waterlogging risks. These discharge either into surface drains, irrigation supply channels or evaporation basins; and
2. Collector Services – GMW works which receive private tile drainage and private pump discharge.



Tariffs currently apply to:

1. Public pumps in the Murray Valley, Central Goulburn and Rochester Irrigation Areas;
2. Public Pumps and a "Collector Service"" in the Shepparton Irrigation Area; and
3. Collector service in the Campaspe Irrigation Areas[1]. (Disposal is initially to a pipeline which then disposes into a drain).

[1] There are also Subsurface drainage charges for disposal to drains from private infrastructure in the Woorinen Irrigation Area and the Nyah and Tresco Irrigation Districts but they are not in the scope of this review

Figure 8: Example of a public groundwater pump

The current subsurface drainage tariffs were developed in the 1990s as part of a comprehensive community based strategy to protect agricultural land from salinity impacts. The strategy encouraged both private and public groundwater pumping.

In relation to public pumps, the Murray Valley, Central Goulburn and Rochester Irrigation Areas implemented a "beneficiary/polluter" tariff model based on a cost share between all irrigators (who were considered to be "polluters") and landholders in the immediate vicinity of the pumps (who were considered to be "beneficiaries"). It is comprised of 3 charges

a) Service Charge based on ML of water delivered to a property
b) Local Benefit Area Charge which is based on amount of land
c) Local Benefit Water Use Charge which is based on ML of water delivered to properties

Charge a) is paid by all irrigators in the Irrigation area while b) and c) is paid by those landholders within the area of influence of a pump which are deemed to be "beneficiaries".

Direct beneficiaries were determined by conducting "pumping tests" – these tests aimed to quantify groundwater pressure reductions from the operation of Public Pumps down to 0.1 m. General groundwater level short term fluctuations are in the order of 0.2m, consequently to be really sure of the pumping effect the area identified as directly benefiting was very conservative (probably underestimated by 30-50%). This was done in the context all irrigators paid 50% of costs.

The Shepparton Irrigation Area instead did not adopt this model for public pumps but instead implemented a single charge ("Subsurface drainage charge) which is based on the number of megalitres of high reliability water shares associated with a property and is paid by all water share holders in the irrigation area. This tariff covers the cost of both the public pumps and disposal to drains from tile drains in the Invergordon and Shepparton East area.

For the Campaspe Irrigation Area there is a single charge "Subsurface Drainage charge" which is paid by beneficiaries as defined under the "Campaspe West Salinity Management plan". This has resulted in the existing sub surface tariffs being complex and diverse across the region as illustrated in Figure 9 below.

Figure 9 shows that in the Murray Valley, Central Goulburn and Rochester Irrigation Areas the same tariff is applied across all customer groups, but the actual annual charge varies. This is because the setting of annual charges for each customer group is influenced by:

- The need for sufficient revenue being raised to cover the budgeted expenditure for the efficient delivery of the service in that area,
- The number of customers (both irrigators and beneficiaries) to share the costs; and
- The application of cost sharing principles on amount of contribution to be made by irrigators, beneficiaries and councils.

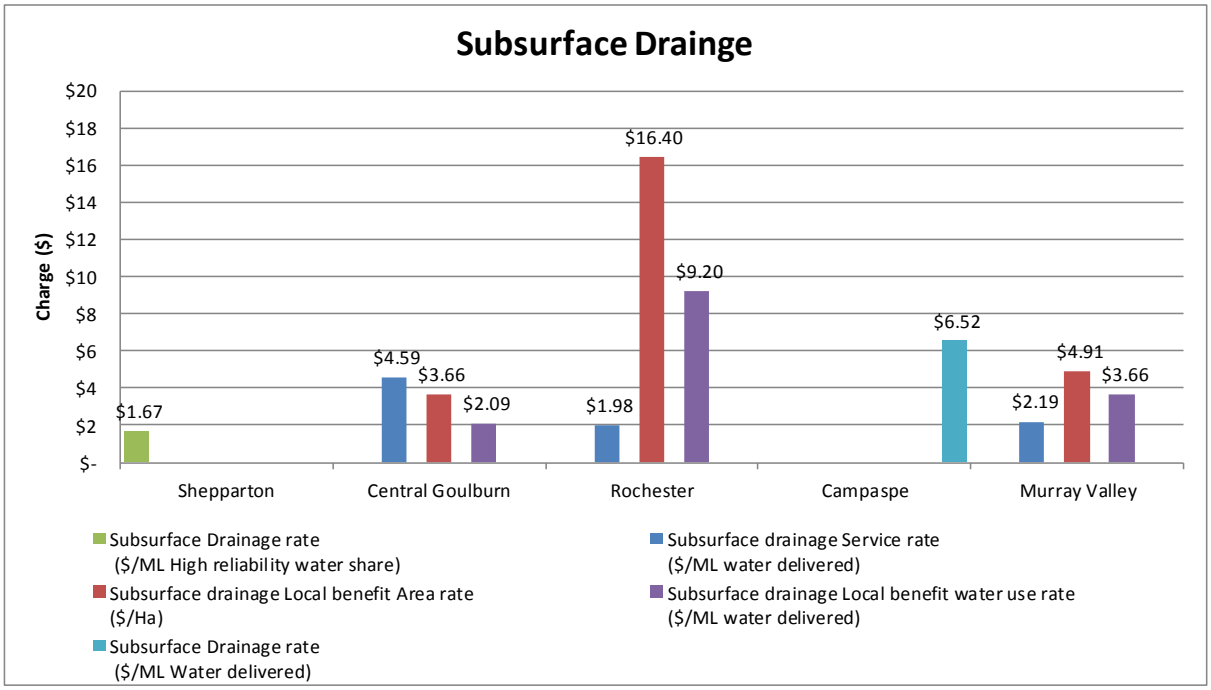


Figure 9: Subsurface Drainage 2014/15 prices for each irrigation area

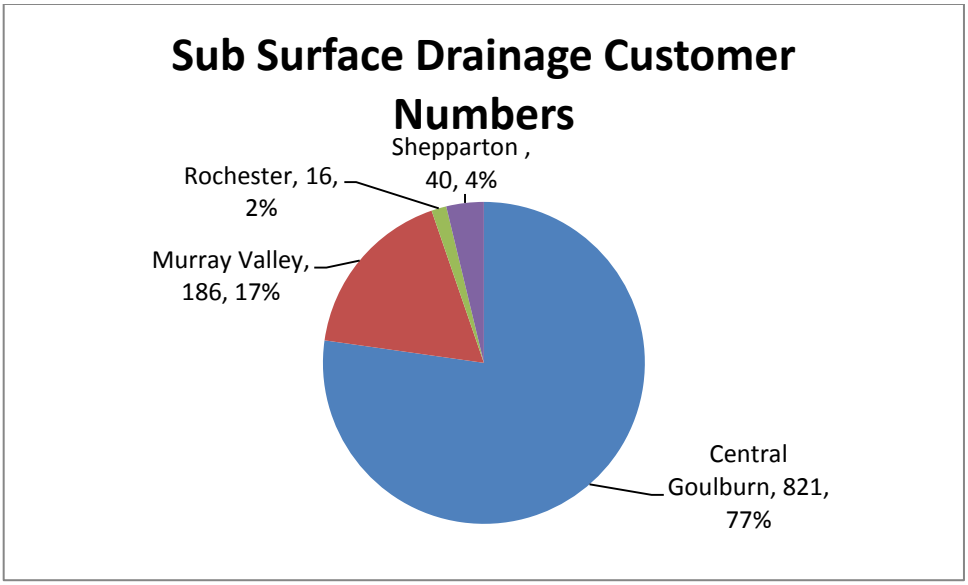


Figure10: Distribution of subsurface drainage customers across irrigation areas. Note that Shepparton are estimated numbers

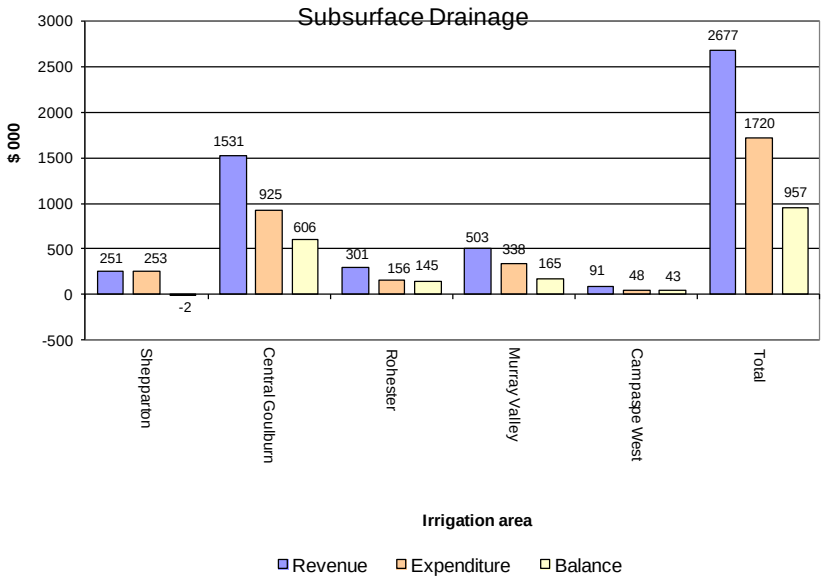


Figure11: Subsurface drainage budgeted revenue and expenditure for each irrigation area (2012/13 figures)

4.5 Tariff and Fee Exemptions

In some circumstances certain customers and/or customer groups receive exemptions from payment of the annual fees or from some component of the tariff.

Generally, exemptions were applied at the time the service was established.

Some exemptions were applied to encourage certain behaviour or installation of works to achieve catchment strategies such as salinity mitigation or nutrient management strategies. In other cases, exemptions applied as a result of legal rulings made at the time.

The exemptions have been considered as part of this tariff development to ensure consistency of the tariff application and its suitability to meet all drainage services supplied.

4.5.1 Surface Drainage Exemption

Surface drains are typically constructed along a natural drainage line or water course. Many of the drains traverse through dry land areas where properties located outside the irrigation area receive a drainage benefit but do not pay drainage fees.

4.5.2 Community Surface Drainage Exemption

The North Central Catchment Management Authority (NCCMA) manages much of the drainage system on the Tragowal Plains including many CSDs. The NCCMA does not levy a service charge on landholders and GMW does not levy a charge on the NCCMA for transferring these flows within the GMW drainage systems, including the Barr Creek Drainage system.

As part of a Community Surface Drains transfer to GMW, agreement was reached that landowners were permitted to harvest water from the drain at no charge without any formal licensing and metering requirements. Commitment was given that this will not change as part of the transfer however this decision was subject to review to ensure compliance with any updated requirements. Prior to any change in policy, extensive consultation and agreement with WSC, CMA's and the Community Surface Drainage Coordination Committee is required. The policy was supported by Shepparton Irrigation (SIRIC) as there were sufficient distinguishing features to indicate a different approach between Primary and Community Surface Drains.

4.5.3 Subsurface Drainage Exemption

Customers within the area that receive groundwater control from GMW operated public pumps contribute toward the cost of the pump operation depending on the level of service

received. If the customer has their own groundwater pump they can have a lower level of service applied that result in a lower fee. Customers that are receiving service level D[2] do not have a charge applied even though they were identified in pump tests as direct beneficiaries. Due to the very conservative approach to rating many customers in the vicinity of public pumps receive benefits but are not charged.

4.5.4 Drainage Diversion Exemption

Drainage Diversion customers must have an agreement with GMW to extract water from the drain. The agreement is made under the *Water Act* 1989 as the formal legal instrument and conditions are applied that include pump installation, volume of water available annually, GMW operational requirements if water sharing is required and the need to pay annual fees.

When GMW drains were recently installed in natural water courses, many private diversion pumps were recognised as drainage diversion sites. Agreement was reached not to formalise these arrangements and to date many of the diverters do not have a formal agreement and do not pay annual fees.

The Barr Creek was originally a natural water course and converted to a drain in around 1914 and this resulted in highly saline groundwater inflows into the drain. It was recognised as one of the largest point source of salt inflow into the Murray River from Victoria. To encourage water extraction drainage diversion fees were not applied at first and more recently a small site fee is the only tariff component applied.

High Flow Drainage Diversion Agreements are applied as a means of incentive to extract high nutrient laden flows during rain events and there are no charges applied for the volume of water extracted. This was proposed to compensate for the need to install storage facility.

The following table lists examples of current exemptions being applied by GMW

Service	Issues/Difference	Example
Surface Drainage	Some customers receiving exemption from annual rates due to difficulties in defining the level of service received	Catlow Decision[3]
	Some customers don't pay rates but receive drainage service	Dryland Customers
	Do not pay annual charges	Barr Creek
	Some water used for irrigation purposes (e.g. groundwater, drainage diversions etc.) is not included in the water use component of the tariff	All surface drainage and subsurface drainage customers
Drainage Diversion	Pay reduced site fee component only	Torrumbarry customers
	Many sites are not licenced and don't pay annual charges	Natural waterways treatment
	Access to discharge from other drainage infrastructure not considered as drainage diversion	Discharge from public pumps supplied for irrigation without charge
	Exempted due to catchment benefits	High Flow diverters
Community Surface Drainage	Many sites are not licenced and don't pay annual charges	Treatment of Drainage Diversion
	Not rated but receive drainage service	Tragowal Plains
Sub Surface Drainage	Receive benefit but no application of rate	Customers deemed service level D & other customers in the vicinity of public pumps

[2] Areas where groundwater pressure levels are drawn down less than 10 after a two month pump test

[3] 1963 Court decision (G Catlow, SM, ref 62/60144) where a group of irrigators in the Murray Valley challenged the payment of fees and where exempted from future payment because it could not be proved that they received a benefit of the service under the wording of the Water Act 1958. The Water Act 1989 effectively took away the basis of the decision by stating the drainage tariff can be charged on "any criteria specified by resolution". (Development of a New surface Drainage Tariff, RWC, April 1992)

	Receive collector service but no charge	Tile drainage in Shepparton East and Invergordon Disposal to drains via agreement for private pumps
	Some water use for irrigation purposes (e.g. groundwater, diversions etc.) is not included in the water use component of the tariff	Beneficiary charges for public pumps in Central Goulburn, Murray Valley and Rochester Irrigation areas

Table 2: Current exemptions in the application of tariffs and charges

4.6 Approach in Other Jurisdictions

Other Victorian Rural Water Corporations

Southern RWC and Lower Murray RWC have an all irrigators' pay approach to drainage cost with no direct beneficiaries. Southern RWC has drainage diversion fees.

Queensland

In 2012 the Queensland Competition Authority undertook a review of SunWater Irrigation Prices. The recommendations of this review have been accepted by the Queensland Government. In relation to drainage charges the review recommended that drainage charges should recover actual drainage costs. In the absence of available data to determine the actual costs an interim pricing arrangement was that current drainage charges should be maintained in real terms and the revenue be treated as an offset. Subsequently the Authority recommended drainage charges based on nominal $/ha and applied the CPI in order to recommend drainage charges for 2012-17. It is proposed that a further investigation be undertaken to allow cost-reflective costs in the next regulatory period (post 2017).

New South Wales

Murray Irrigation Limited has rolled its drainage tariffs into the fixed and variable supply charges. The fixed component is based on delivery entitlement and the variable component based on water use. Murray Irrigation Limited charges include a component for Land and Water Management Plans. The fixed and variable charges vary considerable both within and across irrigation systems.

Western Australia

The Western Australian Water Corporation provides drainage services in a number of rural irrigation areas. The cost of these services is currently met through a 'Community Services Obligation' so rural customers do not pay for drainage.

South Australia

SA Water provides some surface drainage in its South West Irrigation area. It appears that charges for this service are incorporated in water use charges. The Central Irrigation Trust also provides drainage services. Again the charges appear to be rolled into water use charges. However CIT also charge customers that have access to drainage but do not have an irrigation service a fixed fee per hectare.

It can be seen that other jurisdictions generally do not rate separately for their surface drainage service and mostly charges are incorporated in water entitlement and water use charges. This is, in part, due to the impracticality of defining level of service and in some cases all customer have an irrigation and drainage service.

4.7 Summary

A range of tariffs apply to drainage services that have been adopted since the early 1990's. The tariffs were relevant for the business environment of the time but much has changed since their establishment.

The tariff structure is applied in many different ways and customers have expressed to GMW that they find our tariffs and prices difficult to understand. There is a combination of

beneficiary and polluter tariffs applied, different fixed and variable combinations and different prices are applied across GMW for the same service provided.

Many drainage services provided do not attract charges and some only have part of the tariff component applied.

A review of the current drainage tariff is timely to meet the current business environment of GMW.

1. Do the proposed principles adequately address customer expectations and preferences and other relevant requirements in relation to pricing matters? What amendments – changes or additions – are needed to ensure the principles are clear, useful and applicable to this Drainage Tariff Strategy Review?
2. Are there any other matters that we will need to consider in applying these proposed principles?
3. Should the tariff concept be if you receive a service you pay and if you don't receive a service you don't pay? And if so how do we deal with ambiguity around defining service?
4. Since the implementation of the tariff there has been significant land use change, increased dry land farming and reduced need for pumping for the purpose of protecting horticulture. Do customers consider subsurface drainage services to be still relevant to their needs?

PART 2

5 Policy Environment

GMW operates as a statutory Corporation constituted by a State Ministerial order under the provisions of the *Water Act* 1989. GMW has functions and powers under the Act to provide, manage and operate an irrigation district, a water district and a water way management district.

5.1 Price Regulation

Goulburn Murray Water's prices are regulated by the Essential Services Commission (ESC) on behalf of the Australian Competition and Consumer Commission (ACCC) under the *Water Act 2007*.

GMW is required to consider ACCC pricing principles that require tariffs to be set to;

- Promote economically efficient use of water infrastructure assets
- Ensure sufficient revenue for the efficient delivery of the required services
- Give effect to the principles of user pays for water storage and delivery in irrigation systems
- Achieve pricing transparency
- Facilitate efficient water use and trade in water entitlements

Prices are set using a building block methodology, which is a commonly used methodology for regulated price determination in Australia and overseas. The building block methodology determines prices based on the total of:

- Operating costs
- Return *on* capital, using a rate for the weighted average cost of capital determined by the ESC. The capital base is known as the regulatory asset base (RAB).
- Return *of* capital (regulatory depreciation)

The building block methodology provides the total revenue that needs to be recovered through charges. Broadly, there are two types of charges: fixed charges, which do not vary with usage, and variable, which do vary with usage and fluctuate from year to year. Variable charges are aligned with costs that vary with usage, while fixed charges make up the remainder of charges.

Through the water plan process, GMW is required to periodically forecast future costs and prices, which are then scrutinised by customers and the ESC. Regulations restrict GMW's ability to make major changes to prices during a water plan period. The current water plan, Water Plan 3, expires on 30 June 2016. Therefore, if major changes are needed to drainage tariffs, it would be more likely for these changes to commence with Water Plan 4 on 1 July 2016.

5.2 Environmental Regulation and Obligations

GMW's drainage function operates within an established regulatory framework. The obligations placed on GMW through that framework incur costs that need to be recovered through charges.

Irrigation drainage has an impact on the ecology of receiving rivers and wetlands and on human health through heightened levels of sediments, nutrients, salts and water flow. As a result there are expectations and obligations placed on users and managers of the drainage system to minimise the environmental and health impacts of drainage water on receiving waters.

The principle pieces of regulation and policy in this area are the:

- *Water Act* 1989*:* The Act stipulates that in relation to drainage, a water authority "must perform its functions in an environmentally sound way" (s.199).
- State Environment Protection Policy - Waters of Victoria (SEPPWoV): Under the heading *Catchment Management*, the SEPPWoV stipulates that irrigation drains must be designed and managed to minimise impact on human and environmental health. Water authorities have an obligation to minimise the impact of discharges from irrigation channels and drains on surface waters (s.51). GMW has an explicit role in influencing agricultural activities to minimise sediment and pollutant runoff into irrigation drains and in controlling stock access to drains (s.50).
- Basin Salinity Management Strategy. Any actions that change the level of salinity at Morgan, SA (known as '*accountable actions'*) by more than 0.1 Electrical Conductivity (EC) may require the State to purchase/allocate an offsetting salinity credit[4]. Works that change the landscape and water flow can be '*accountable actions'*[5]. GMW levies the beneficiaries of the works (on behalf of the State), through the "salt disposal entitlement" in accordance with the size of the offsetting salinity credit, currently valued at $25,000 per EC. While the impact of 'accountable actions' is transferred through drainage water, the works that create the salinity impact are not necessarily related to drainage. It is the States and Catchment Management Authorities responsibility to ensure that the actions have enough credits to offset the impact.

  Overall, GMW and its customers are managing salinity within accepted limits and there is significant buffer against future change.
- *Safe Drinking Water Act* (2003). The Act requires water suppliers to "ensure the drinking water they supply meets quality standards specified by the regulations". There are no direct obligations on drainage users or managers, however, drainage systems upstream of drinking water offtakes may have an impact on drinking water supplies and therefore be indirectly affected by the Act.

The overall intent of these regulations is to encourage users and managers of irrigation drainage systems to improve the quality and reduce the quantity of drainage waters.

In practice there is little formal enforcement associated with these regulations. It is arguable that formal enforcement in this area has been obviated by a range of non-regulatory activities that have resulted in significant reductions in the environmental impact of drainage water. The principal activities have been the Irrigation Drainage Memorandum of Understanding (IDMoU)[6] and activities initiated through catchment management authorities under the regional catchment strategies. GMW participates in these activities as an asset & water resource manager, incurring a cost associated with staff time and drainage & water quality monitoring.

Most of the improvement has come from on-farm changes, rather than to the drainage system itself. Broadly, there are four actions that have contributed to reduced environmental impact from the drainage system:

1. On-farm irrigation efficiency, decreasing the amount of water applied and therefore the amount of run-off;
2. On-farm re-use schemes, capturing and re-using the water that does run off;
3. Diversion of drainage water for consumptive use; and

[4] Changes are proposed to raise the '*accountable action*' threshold.
[5] For instance, drainage water from the eastern part of the GMID is of lower EC than the target EC at Morgan in South Australia. Reducing these drain outflows results in an increase in EC at Morgan.
[6] The IDMoU is an agreement between Catchment Management Authorities, DEPI, GMW and the EPA, that outlines roles and accountabilities in the management of the drainage network to ensure that the network meets its environmental, economic and social objectives. The IDMoU came about in early 2000s as a result of dissatisfaction regarding the amount and quality of water discharging from surface drains into creeks and rivers.

4. Nutrient interception built into the drainage system.

Under the IDMoU, GMW is obligated to monitor and assess resource condition targets for drainage water quality, the cost of which in the Shepparton Irrigation Region (SIR)[7] is shared 50/50 with the Goulburn Broken Catchment Management Authority.

5.3 Future Environmental Obligations

As mentioned above, the environmental impact of drainage water has significantly decreased over the last decade. While the Millennium drought played a role in this improvement, changed management practices have also played a large role in improving the quality of drainage water, as well as reducing the quantity of drainage water to receiving waterways.

Societal expectations of environmental health continue to increase. As the return on investment for on-farm management of drainage water diminishes, investment may shift towards upgrading the drainage infrastructure itself for nutrient interception; this may impose costs on GMW.

5.4 Internal GMW Policies

GMW has a number of internal policies that relate to drainage. Some of these policies will need to be revoked or revised as a result of this review. These policies set out:

1. How charges are calculated for community surface drainage (interest on outstanding landowner capital contributions, ownership of CSDs, 3 year rating rule); and
2. GMW's Drainage Diversion Strategy which aimed to encourage and optimize reuse of water from surface drains to reduce nutrient export to rivers. The strategy contributes toward the IDMoU, Regional Catchment Strategies and SEPPWoV requirements.

5.5 Summary

There are a number of regulations that encourage users and managers of irrigation drainage systems to improve the quality and reduce the quantity of drainage waters. There are few sanctions and little formal enforcement of these regulations and a non-regulatory system of cooperation has resulted in a significant reduction in the impact of drainage waters on the environment. GMW region operates well within acceptable limits and has a buffer available due to trade of water out of the region.

In practice, legislative and regulatory environment imposes the following costs on GMW:

4. The cost of salinity credits associated with any 'accountable actions' as a result of changes to drainage waters:
5. Monitoring and assessment of the resource condition targets for drainage water quality: and
6. The staff costs associated with its participation in the non-regulatory system to improve drainage water (such as the Irrigation Drainage Memorandum of Understanding). This non-regulatory system can be seen as necessary to avoid a more prescriptive system of regulation and enforcement.

In the future, it is possible that investment will shift towards nutrient interception, which may impose costs on GMW.

There are a number of GMW policies that will need to be reviewed or revoked as a result of a new drainage tariff structure.

[7] SIR covers GMW's Murray Valley, Shepparton, Central Goulburn and Rochester Irrigation Areas.

PART 3

6 Drainage Service Standards

6.1 Introduction

GMW's Customer Service Charter sets out the standard of service and performance measures that customers can reasonably expect to receive from drainage services.

Drainage service standards are also detailed in GMW's Defined Level of Service which is based on design characteristics such as the:

- minimum standard design for removal of runoff from an irrigated catchment; or
- changes in groundwater pressure levels in the vicinity of pumps, or cluster of pumps.

6.2 Customer Service Charter Approved Service Standards

The Essential Services Commission's Customer Service Code requires GMW to develop and issue a customer charter to inform customers about the supply services and licensing activities it performs.

GMW's Customer Charter prescribes the standard of service and performance measures that apply to surface and subsurface drainage.
A summary of the standards of service and performance measures is set out in Table 3 below.

Classification	ESC Approved Service Standards	Irrigation areas where annual fees and charges apply[8]
Surface Drainage	Availability of surface drainage is 98% for each of 2013-14, 2014-15 and 2015-16.	Shepparton Central Goulburn Rochester-Campaspe Loddon Valley Murray Valley Torrumbarry Tyntynder
Subsurface Drainage	Availability of sub-surface drainage" is set at 98% for each of 2013-14, 2014-15 and 2015-16.	Shepparton Central Goulburn Rochester Campaspe Murray Valley

Table 3: Essential Service Commission approved service standards

6.3 GMW's Defined Levels of Service

6.3.1 Surface Drainage

The calculation of tariffs for GMW Surface Drainage and Community Surface Drainage involves an assessment of the portion of the property serviced. However, the GMW Customer Charter defines the level of service as:

> "by the period of time over which the drain is designed to remove a specific rainfall event from properties. The majority of GMW drains are designed to remove from a property the excess runoff produced by a summer storm over an irrigated catchment within five days.
>
> GMW drains will provide a reduced level of service for events bigger than the design event with water taking longer to be drained. GMW is progressively declaring the level of service of its drains to provide greater clarity on their intended performance during large rainfall/flood events".

[8] As per GMW Pricelist 2014/15, note that the Woorinen Irrigation Area and Nyah and Tresco Irrigation Districts are not part of the scope of this review

The minimum standard design is for removal of runoff from an irrigated catchment within a 5 day period of a 24 hour summer storm with an Average Recurrence Interval (ARI) of 1 in 2 years (this is approximately 50 mm). This rainfall event was selected because in a non-irrigated catchment it would take 50 mm to wet up the ground and minimal runoff would be produced. Consequently, 1 in 2 year drains are designed to deal with irrigation induced rainfall runoff. Where the catchment is irrigated runoff may be produced with very little rain, which may adversely affect the water balance and lead to rising groundwater and unnatural inundation of low lying areas.

Some drains have higher level of service depending on design standards in place at the time of construction (i.e.1 in 10 drains cater for removal of a nominal 75 mm rainfall event falling in a 24 hour period within 5 days).

Community Surface Drains are typically smaller than Primary Drains as they serve smaller catchments. Levels of service provided have varied but since 1990 they have been designed at a nominal 1 in 2 year level of service. In recent times the operation of some CSD's have been transferred to GMW and have been subject to GMW standards and ratings.

The risk (and the need for drainage) is driven by the interaction of rainfall and irrigation. Climate variability, changes to the irrigation footprint and on-farm changes mean when and where drainage is needed is highly variable.

Levels of service and rating divisions are no longer meaningful (because they were based on "snapshot" in time and catchment conditions are greatly changed)

There are three levels of drain diversion standard agreements available which are based on when and how customers divert water:

- Tier 1 Low Flow;
- Tier 2 Low Flow (restricted); and
- Tier 3 High Flow (a) Gravity, (b) Pumped.

However, there is no specific level of service for landholders extracting water from GMW drains. Landholders are able to do so under agreement with GMW, if capacity is available and conditions in the agreement are met. Landholders acknowledge that access, reliability of supply and water quality is not assured as water availability is dependent on unreliable water sources. Customers have raised an issue of equity access to water between high and low flow agreement holders. The issue relates to water access where high flow agreement holders are able to access water during low flow water levels in the drains.

6.3.2 Sub Surface Drainage

The level of service for Public Pumps is based on analysis of changes in groundwater pressure levels in the vicinity of pumps, or cluster of pumps while operating for an extended period. Table 4 below describes the service level for each designated area.

The inferred benefits of this service are to:

i. Provide water table control for horticultural crops to prevent waterlogging
ii. Provide salinity control for other crops by lowering the groundwater pressure level in the area of influence of a pump or cluster of pumps to allow salt to be flushed from the root zone.

Service Level	Service Level Description
A	For perennial fruit tree orchards or vineyards where groundwater levels are held greater than 2 m below the surface at all times.
B	Areas where the groundwater pressure levels are drawn down below its original level by greater than 30 cm after a two month pump test
C	Areas where groundwater pressure levels are drawn down below its original level by greater between 10 and 30 cm after a two month pump test
D	Areas where groundwater pressure levels are drawn down less than 10 cm

	after a two month pump test

Table 4: Service levels for agricultural properties

The figure below provides a diagrammatical representation of service levels relating to groundwater pressure level drawdown for B, C and D.

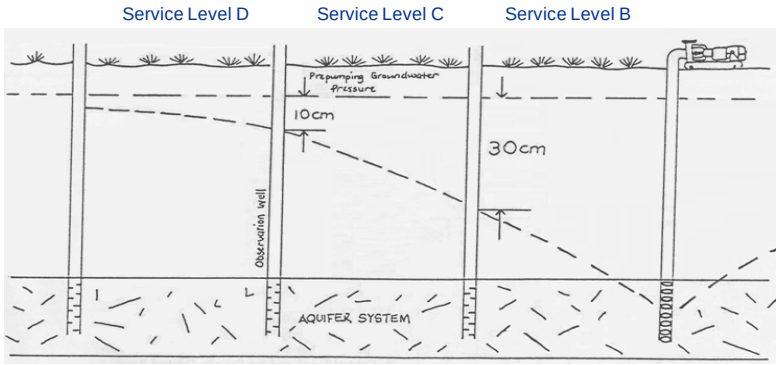


Figure 12: Service levels relating to groundwater pressure level drawdown (B, C and D) for agricultural properties

The analysis aimed to quantify groundwater pressure reductions from the operation of Public Pumps down to 0.1 m. General groundwater level short term fluctuations are in the order of 0.2m, consequently to be really sure of the pumping effect the area identified as directly benefiting was very conservative (probably underestimated by 30-50%). This was done in the context all irrigators paid 50% of costs.

Further, in the Campaspe Irrigation Area, the service level is defined by whether a property used for irrigation in the Campaspe West Salinity Management Plan area derives a benefit as a result of salinity dilution flows from the Waranga Western Channel.

6.4 Factors That Impact on Level of Service

6.4.1 Surface Drainage

The level of service for GMW and community surface drains is defined by the period of time over which the drain is designed to remove a specific rainfall event from properties. The design capacity is based on the total amount of land serviced by the drain at the time of construction.

There are a number of factors that impact on the level of service. These include:

- Variability of service level over time - while the design capacity provides a guide to how much water can be moved by the drain and how quickly, there are a number of factors outside of GMW's control, specifically, significant changes in the amount of land that drains to them. In some cases, due to removal of irrigation this may have decreased while in other cases, with changes in farm design, this may have increased;
- the speed at which the water can drain from a property will depend on what access a property has to the drain. For example, properties which have open cut access or multiple inlets will drain faster than those with a single inlet;
- factors on the property that may inhibit water movement to disposal point; Monitoring and management – currently there is no monitoring being performed to determine if service standards are being met; and
- Although design standards are used to define the level of service, it is not directly reflected in pricing but instead captured to some extent by consideration of the equivalent area of property drained.

- The risk (and the need for drainage) is driven by the interaction of rainfall and irrigation. Climate variability, changes to the irrigation footprint and on-farm changes mean when and where drainage is needed is highly variable.
- Levels of service and rating divisions are no longer meaningful (because they were based on “snapshot” in time and catchment conditions are greatly changed)

For drainage diversion customers there are no defined levels of service and customers acknowledge that they take water at their own risk.

6.4.2 Sub Surface Drainage

In the Shepparton, Murray Valley, Central Goulburn and Rochester Irrigation areas the defined levels of service is based on lowering groundwater pressure levels. While a pump may be triggered to operate there may be factors that influence the level of service provided. These include:

- operational issues such as power failure or breakdowns or lack of dilution flows in channel and river flows to allow disposal of discharge.
- For Service Level A, due to hydraulic loading from rainfall and irrigation and the hydrogeological conditions at site (e.g. permeability) it is not possible to ensure groundwater levels are held greater than 2 m below the surface at all times

Levels of service for public pumps were established in the context of on-going high watertables. However the onset of more variable climate conditions have resulted in periods of years and even decades where the only service being provided to some customers is insurance that pumping can be done when and if high watertables return.

In relation to the Campaspe Irrigation area, the service level is no longer applicable as the Campaspe West Salinity Management Plan is no longer being implemented.

The following table summarises the defined levels of service for surface and subsurface drainage provided by GMW.

Classification	Service	Abridged Summary of Levels of service
Surface Drainage	Disposal to GMW and CSDs	Defined by the period of time over which the drain is designed to remove a specific rainfall event from properties
	Drainage Diversion	None defined
Subsurface Drainage	Shepparton, Central Goulburn, Murray Valley and Rochester	There are different levels of service based on land use, amount of groundwater level drawdown and duration.
	Campaspe West	Defined as whether a property benefits as a result of salinity dilution flows from the Waranga Western Channel

Table 5: Summary of defined levels of service for surface and subsurface drainage

6.5 Level of Service Utility

6.5.1 Surface Drainage

The need for surface drainage is driven by the interaction of rainfall and irrigation. Climate variability, changes to the irrigation footprint and on-farm changes mean when and where drainage is needed is highly variable.

Levels of service and rating divisions may not still be relevant because they were based on “snapshot” in time and catchment conditions have changed.

6.5.2 Subsurface Drainage

Climate variability and the resultant fluctuations in groundwater levels have resulted in public pumps not operating for prolonged periods of time and only effectively providing insurance.

Many customers have their own groundwater pump and interact with public pumps.

1. Are the current defined service standards appropriate and can they be adequately defined and measured?
2. Are the current levels of service appropriate and can they be adequately defined and measured?
3. Should there be delineation in the levels of service provided?
4. Are there any issues specific to each service that warrants particular attention?
5. What pricing principles should guide the setting of drainage charges for customers receiving different levels of service?

Part 4

7 Drainage Tariff Structure and Pricing

7.1 Introduction

The current tariff structure aimed to meet the principle of transparency by allocating costs precisely to properties who received a benefit. However, rates and charges for various services were introduced over time and often independently of each other. This has resulted in the current tariff structure being complex, costly to manage and deliver.

7.2 Surface Drainage

7.2.1 Application of the Drainage Tariff

As discussed in section 4.3.1 and 4.3.2 the following charges apply:

- Service Fee;
- Area Fee;
- Water Use Fee; and
- A maintenance charge for GMW managed CSDs

In the application of the area and water use fees to each holding, a proportion of the tariff is applied based on the drainage division that the holding[9] is assigned. Table 6 below shows the various drainage divisions, percentage of total area of holding and proportion of tariff applied.

The drainage divisions are generally based on the equivalent area of the holding drained. The equivalent area drained for each holding is determined by considering the holding connectivity to the drain.

Drainage Division of the Holding	Equivalent area of holding drained (% of total area of holding)	Proportion of Tariff to be applied
1	More than 67%	100%
2	51% to 66%	75%
3	26% to 50%	50%
4	16% to 25%	25%
5	11% to 15%	15%
6	6% to 10%	10%
7	1% to 5%	5%
8	0%	0%

Table 6: Drainage Division classifications applied to surface drainage area and water charge calculations

The applicable tariff is calculated by determining the area of the holding which falls into each of the five categories shown in Table 7, multiplying these areas by their respective drainage factors for each category specified in the table and summing the figures. This total is then used to determine the drainage division for the holding.

The equivalent area of holding drained (and the corresponding drainage division assigned) are based on a snapshot in time (i.e. at the time the drain was constructed) and are generally not updated unless an application for a land transaction is made or a whole farm plan is submitted.

Therefore in some cases the drainage division does not reflect actual changes in property layout etc. over time.

[9] A 'holding' is defined as the lands shown in any single entry in the water register i.e. all land under one Service Identification

Level of Connectivity	Drainage Factor
Directly into Corporation drains or can be so drained by the construction of internal works	1.00
Via community, private or road drains more than 61 m in length	0.25
Indirectly into Corporation drains	0.25
Discharging into Corporation supply channels	0.125
Not drained or not drained to Corporation works	0

Table 7: Level of connectivity to primary drain and corresponding drainage factor

However there are some qualifiers that apply to the application of drainage division which are independent of the area of the holding draining. These are:

- All holdings which receive protection from Corporation intercepting drains are classified as Division 3;
- Where Community Drains outfall to GMW primary drains, properties have a maximum drainage service rating of 4;
- All holdings having areas of land which can be drained directly into the Corporation's works or can be so drained by the construction of internal drains but which is adversely affected to a substantial degree by flooding from the Corporation's drains shall be classified one drainage division lower than would otherwise be determined;
- All holdings, not included in 1st, 2nd or 3rd Division or part (a) of 4th Division which as a result of any of the Corporation's works receive protection are classified as Division 4; and
- Disposal of stormwater to drains under agreement is classified as Division 6.

In applying the water use charge, there are complications with properties which straddle irrigation area boundaries. In these situations the water used is proportioned on the basis of the area in each irrigation area and the rate for which larger area of the property is situated.

As well as benefits to rural roads, drainage works also provide benefits to urban areas. Many towns in the irrigation areas rely on the outfall drainage infrastructure. These towns may generate relatively large amounts of runoff to the drains and receive significant benefits. Currently some municipalities are charged for the use of drainage infrastructure. These charges are based on having a notional water right of 6 ML per hectare of town area. This equates the runoff characteristics of urban areas to the water demand of high runoff perennial pasture and assumes the whole area is commanded and suitable.

As discussed previously, CSDs and surface drainage services are administered as two separate services. This is due to:

- Existence of different landowner cost sharing arrangements;
- Application of different drain design standards; and
- the requirement to achieve full cost recovery of operations, maintenance, administration, and renewal costs from the benefiting CSD.

Although, CSD and Surface Drainage financial administration is managed separately all drainage customers receive a minimum level of service of 1in 2 service level.

For Private Community Surface Drain groups are responsible for their own collecting of monies and maintenance of the drains.

7.2.2 Administration Complexity & Cost

The requirement to keep CSD customer groups separated financially from primary surface drains results in complex accounting practices and added cost.

In 1993, the number of drainage divisions was extended from 5 to 8 to accommodate for the implementation of privately owned Community Surface Drains (CSDs). While approximately 5900 customers pay drainage rates (those with a drainage division between 1 and 7) 85 percent of these are either in division 1 or 4. Figure 13 below shows the distribution of customers in each drainage division.

The results show that the anticipated demand for CSD's have not been realised, and the 8 divisions are not widely used. Retaining 8 divisions adds to the administrative complexity for rather limited benefit.

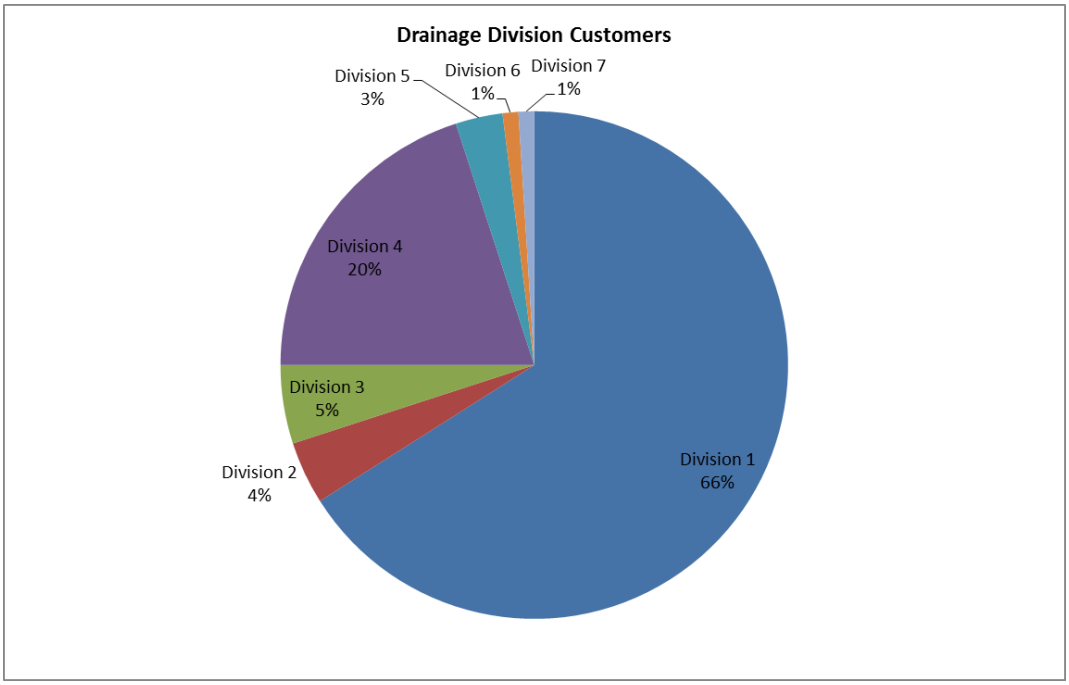


Figure 13: Distribution of customers in each drainage division

7.2.3 Customer Feedback

The calculation of drainage divisions is seen by customers as complex and difficult to understand. Further issues arise when subdivisions and amalgamations of properties occur.

A long standing issue with amalgamations has been due to the aggregation of the two properties placing the amalgamated property in a higher drainage division. As a result properties that have not attracted drainage rates are moved into first division with rates now being applicable. Where properties have significant on farm recycle facilities, customers have told us that they do not use the drainage system for irrigation induced drainage run off and feel that they should receive a discounted tariff to reflect that benefit.

7.3 Drainage Diversion

Drainage Diversion tariffs were reviewed recently and the change have been well accepted by customers.

However, separate financial accounting for each customer group continues to create additional recording and reporting workload and this is disproportional to the revenue generated.

Total revenue of the service and customer numbers is small and this leaves customers vulnerable to large price shifts.

In majority of cases, Drainage Diversion Agreements are issued under s.124 (7) of the *Water Act 1998*. S.124 agreements are not transferable, therefore, where a property changes hands, the agreement is cancelled and a new agreement issued to the purchaser. In addition drainage diversion agreements convey only very limited rights to the Agreement holder, for example, they are not transferable, and have no defined tenure.

Generally the volume of water for diversion in drainage systems is reducing due to improved irrigation efficiency, less water used for irrigation and the GMW modernisation program.

7.4 Sub Surface Drainage

7.4.1 Application of Charges

The current subsurface drainage tariff varies significantly both in who pays and how it is charged. In the Shepparton irrigation area all water share holders contribute, while in the Campaspe Irrigation area only beneficiary pay whilst the Murray Valley, Rochester and Central Goulburn Irrigation Areas all irrigators and beneficiaries pay.

In the Shepparton Irrigation Area, cost recovery is based on water share only. In other irrigation areas, such as the Campaspe Irrigation Area it is based on water use only and water use and land area in the Murray Valley, Rochester and Central Goulburn Irrigation Areas.

Beneficiaries in the Murray Valley, Rochester and Central Goulburn Irrigation Areas pay two charges, a Service Fee and Local Benefit Water Use Fee based on water use. Table 8 below shows the application of charges for subsurface drainage services across the irrigation areas.

Irrigation Area	Fixed Charges		Variable charges	
	Charge	**Who pays?**	**Charge**	**Who pays?**
Shepparton	Subsurface Drainage Fee is based on the number of ML of high reliability water shares associated with a property	All water share holders		
Murray Valley; Rochester; Central Goulburn	Local Benefit Area Fee is based on amount of land within the area of influence of a pump	Beneficiaries of service	Service Fee is based on ML of water delivered to a property	All irrigators
			Local Benefit Water Use Fee is based on ML of water delivered to properties within the area of influence of the pump.	Beneficiaries of service
Campaspe			Subsurface Drainage Fee based on ML of water delivered to properties	Beneficiaries of the service

Table 8: Application of charges to subsurface drainage services in various irrigation areas

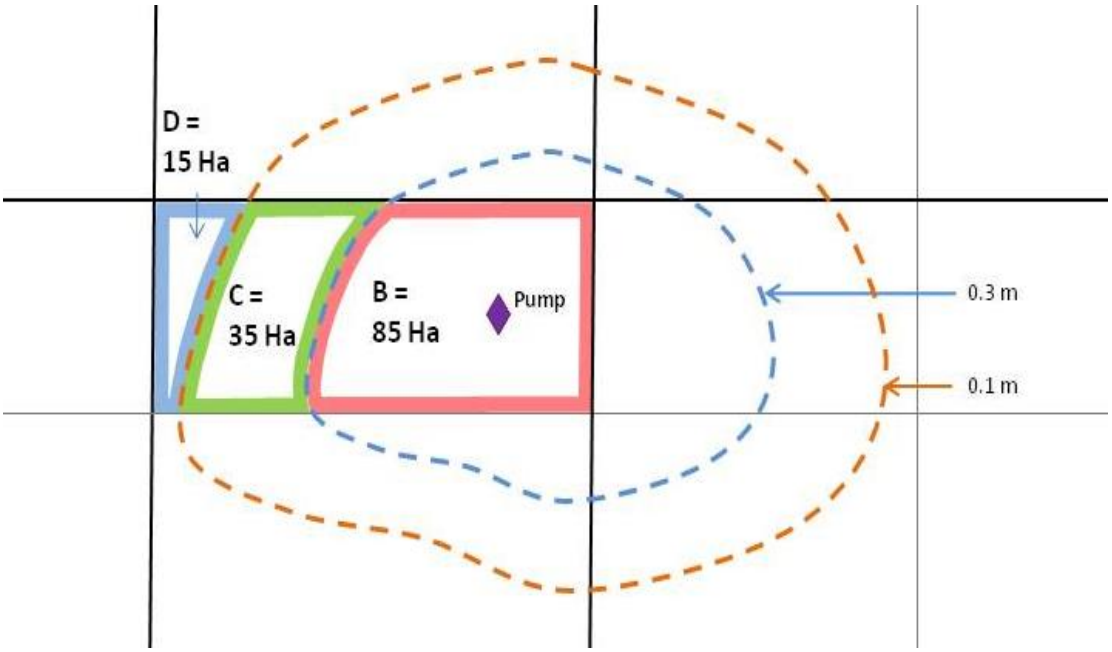
In calculating beneficiary charges, different levels of service have are defined based on land use, amount of groundwater level drawdown and duration. The agreed relative benefits of Service Levels of A, B, C and D are 5, 3, 1 and 0 i.e. Service Level A is 5 times better than

Service Level C and Service Level B is 3 times better than Service Level C. No direct benefit has been assigned to Service Level D.[10]

Over time a number of issues have evolved in assigning Service Levels to properties, specifically where private pumps have been installed. In cases where private pumps had been installed prior to 1996, recognition was given to the potential benefit that these pumps provided, resulting in a reduction in the Service Level attributed to the property. Where private pumps were installed after 1996 no adjustment is made to the Service Level for the property.

As a result an average level of service is calculated for a property using the defined levels of service. This is done by assigning the appropriate relative benefit to the area within each service level and the total of benefits is then averaged over the whole property. Figure 14 below shows how the average level of service is calculated.

The calculated average level of service is used in applying the beneficiary charges (both land and water) to each property. The average level of service can be calculated on individual properties or on multiple non-contiguous properties owned by the same landholder. In cases where there are multiple non-contiguous properties, landholders can potentially reduce the amount they pay by getting the average property service level calculated on an individual property basis. While this has no implication for the land beneficiary charge, it can reduce the amount charged for the water beneficiary charge if there is a significant difference in water usage between properties.



B: 85 (area ha) x 3 (Service Level) = 255; C: 35 (area ha) x 1 (Service Level) = 35; D: 15 (area ha) X 0 (service Level) = 0; Average Service Level: 290 (total of above) divided by 135 (total property area) = 2.15

Figure 14: Calculation of Average Service Level for a Property

The administration and monitoring of pumps installed pre and post 1996 and the uncertainty regarding their service and operation has introduced administrative costs and inefficiencies.

There are significant costs that are incurred in determining the levels of service provided by the pumps.

The area directly benefiting from a public groundwater pump is assessed by conducting a two month pump test and monitoring groundwater levels to estimate falls in levels due to the pumping test. This work has been undertaken for many of the installed pumps however, pumps in the Shepparton Irrigation Area remain untested.

In addition, a number of pumps have been rated as a 'cluster of pumps' rather than as individual pumps. In the event that one or several of the pumps were to be removed or

[10] A full description of calculation methodology is provided in Chapter 5 above.

decommissioned from the cluster this would require a reassessment to be made incurring additional costs.

Beneficiary charges apply to a property regardless of whether the pump for which they are defined a beneficiary is operating or not. This is due to the component contributed by beneficiaries in each irrigation area that is based on the cost of running all the pumps in that area and not on the cost of running the pump for which they are a beneficiary.

Further, where a landholder dries off property and no longer irrigates the landholder is still required to pay the beneficiary fees due to the Local Benefit Area Fee being applicable. However, the Local Benefit Water Fee is reduced in proportion to the amount of reduction in water deliveries.

In some instances an exemption from beneficiary charges for small properties exists, however this is not applicable if a property is within Service levels A & B, as all properties are subject to local beneficiary rating. Nonetheless, the minimum rating entity within Service Level C is 2.5 ha (i.e. Properties < 2.5 ha within Service Level C are assigned a level of service of zero).

While Service Level A is exclusive to perennial fruit tree orchards or vineyards this does not imply that all properties with these crops receive this level of service. This level only applies if water levels are held greater than 2 metres by operation of the pump. Other orchards and vineyards may receive a lower service level. As GMW does not monitor land use change, properties in Service Level A that remove their orchards or vineyards need to notify GMW to have their service level reassessed.

Although there is provision for GMW to apply Municipal Local Benefit Area Annual Fee on local government entities, GMW has not done so. However, local government contribute to the cost of the service through local government contributions to the operation and maintenance costs for works installed under the Shepparton Irrigation Region Land and Water Salinity Management Plan.

The Shepparton Irrigation Region Land and Water Salinity Management Plan was developed in 1989 resulting in the Campaspe, Moira and Greater Shepparton councils contributing 17 percent of the operations and maintenance costs of all works installed under the plan that provided public salinity control benefit.

Although the method of calculating the amount payable in the Murray Valley, Central Goulburn and Rochester Irrigation areas are the same, there are significant differences in the amount payable for the same service between irrigation areas. This is illustrated in the table below where the differences between total annual charges for a similar property in each irrigation area range between $5,400 in the Central Goulburn Irrigation Area to over $15,000 in the Rochester Irrigation Area. The variation in tariffs applied between the Shepparton Irrigation Area and the other three regions shows that customer receiving the same service pay very different charges.

Irrigation Area	Local Benefit Charge			Service Charge	Total Charges
	Land	Water Use	Total		
Murray Valley	$1,425	$3,934	$5,359	$1,095	$6,454
Shepparton	N/A	N/A	N/A	$835	$835
Central Goulburn	$1,062	$2,247	$3,309	$2,295	$5,604
Rochester	$4,760	$9,890	$14,650	$990	$15,640

(Assumptions – Property size =135 Ha; Average property service level = 2.15, Water use if property located in Murray Valley, Central Goulburn or Rochester Irrigation Areas = 500 ML; High Reliability Water Share if located in Shepparton Irrigation Area = 500ML)

Table 9: Variation in Charges for each Irrigation Area

As previously mentioned, there are disposal of discharge from private tile drains and pumps via a pipeline to drains in the Campaspe Irrigation Area and from private tile drains to drains in the Shepparton Irrigation Area. In Campaspe Irrigation Area this is charged according to

the principle of 'beneficiary pays' while in the Shepparton Irrigation Areas it is based on an all irrigators pay model. In addition the Campaspe subsurface drainage charge is based on ML of water delivered to properties from the Campaspe system. However, with the rationalization of the Campaspe Irrigation District there is no water delivered from this system. Therefore, irrigation in the area is either groundwater or from the Goulburn system, as a result, no revenue is currently been raised.

7.4.2 Administration Complexity & Cost

Due to the complexity of the current tariff structure, there is requirement to store and update a large amount of data. For example when a property is amalgamated or sub-divided there is a requirement to recalculate the average property service levels. While the applicant pays a general amalgamation or subdivision fee to GMW, the actual cost of the work involved to do this is not appropriately reflect the costs incurred in providing the service.

Further, public pumps were initially installed to provide protection from waterlogging for horticultural crops, (referred to as Phase A pumps) and were later installed to provide salinity control (referred to as Salinity Control Pumps). The municipal contribution only applies to works installed under Shepparton Irrigation Region Land and Water Salinity Management Plan. The Phase A pumps were installed prior to the plan so this is not applicable to them. All the pumps in Shepparton Irrigation Area are Phase A pumps so there are no municipal contribution for these pumps. In the Central Goulburn, Rochester and Murray Valley Irrigation Areas, the municipal contribution is charged in one financial year for the operational and maintenance costs of the salinity control pumps in the preceding year. Due to the municipal contributions there is a different cost share ratio between irrigators and beneficiary contribution is setting annual charges for the two types of pumps.

7.4.3 Customer Feedback

In the Shepparton Irrigation Area, where no beneficiary charges apply and the cost of the service is spread across all high reliability water share holders, customers have expressed a general acceptance of the subsurface drainage charges. However, the beneficiary charges have not been well received by customers as they find them difficult to explain and understand. Significant resources are invested in addressing customer queries relating to how much they are paying, why they are paying and why others are not paying.

Some other more specific concerns are:

- Why customers are charged the beneficiary fees when the pump for which they are defined a beneficiary is not operating; and
- Where a landholder dries off his property and no longer irrigates, why they continue to pay the beneficiary fees.

The different applications of charges continue to confuse customers and the complexities difficult to administer.

7.5 Asset Management

GMW uses information about the infrastructure that indicates the condition, cost, risk, level of service, history and projected remaining serviceable life to systematically identify which parts of the drainage system have the greatest need for renewal or replacement. This enables GMW to look for opportunities to maximise value for money opportunities.

This level of planning enables well thought out investments for today and will ensure that future generations will inherit infrastructure that has been well maintained, and operates efficiently and effectively.

7.5.1 Decommissioning Assets

The changing irrigation footprint resulting from modernisation program and land use changes have left drainage infrastructure in areas that are no longer irrigated or as intense. Examples of these are in the Campaspe Irrigation District where a large area of irrigation land has been

retired from irrigation but the surface and subsurface drainage infrastructure still exists in varied forms of readiness, is maintained at a cost and may or may not be required in the future.

Similarly for the sub surface drainage services in the Murray Valley, Rochester and Central Goulburn irrigation areas there are public pumps where the service is no longer required due to land use change. Currently, GMW is assessing the future requirements for all channel disposing pumps, to determine whether pumps are no longer required, decommissioned or privatised.

However, there are a number of issues that need to be addressed to enable decommissioning of unwanted assets, for example, when decommissioning unwanted public pumps:

- GMW unable to remove the service provided by a rated pump unless all landholders who receive a service from that pump agree; and
- Uncertainty about how removal of the asset should be funded.

Therefore as part of the development of a new tariff structure, consideration needs to be given to how assets will be decommissioned, including cost and future revenue implications.

7.5.2 Investments in New Drainage Infrastructure

Although modernisation program and land use changes may impact on the irrigation footprint, demand for surface and subsurface drainage will continue.

New assets may need to be installed to address future changes and demand.

In the SIR it is estimated that 123,400 ha of land within 2 km of GMW Connections Backbone (i.e. potential future irrigated footprint) will require drainage services. It is estimated that new investments of $120M for surface drainage works will be needed.[11] Similarly, there are areas which will require new investment in subsurface drainage.[12]

Historically, these types of new investments were funded by government but in the future this is uncertain.

1. Does the structure of GMW's tariffs and pricing provide the right balance between efficiency, and the ability of customers to respond, simplicity and equity?
2. What tradeoffs should there be between equity and complexity?.
3. Are there any other issues with GMW's drainage tariffs and prices that need to be considered as part of this review?
4. Are there any changes required in the approach to determining tariffs and prices having regard to the experience in the last Price review period and the proposed pricing principles?
5. How important is that the tariff structure allow a flexible and adaptive approach to address the salinity and waterlogging risks that could limit future agricultural production?

[11] Appendix D: Figure 16 illustrates areas for new investment in surface drainage infrastructure.
[12] Appendix E: Figure 17 illustrates areas for new investment in subsurface drainage infrastructure.

8 Revenue Requirement

8.1 Form of Price Control

From 1 July 2013, GMW has a revenue cap form of price control with a rebalancing constraint of 10 percent. This means that GMW may alter its prices to raise the revenue allowed by the Essential Services Commission at the last Price Review, but it must limit individual price changes to plus or minus 10 percent in any single year.

The form of price control is an important means of managing risks and also has implications for how price changes will affect GMW customers.

The ESC uses the 'building block' approach to assess GMW's prices as specified by the Water Charge (Infrastructure) Rules and the ACCC's pricing principles. The building block approach has three steps.

Step one involves confirming the service outcomes that GMW proposes to deliver over the Regualtory period. These outcomes reflect obligations imposed by the Minister for Water through the Statement of Obligations, the Department of Health, the Department of Environment and Primary Industries, the ESC and other agencies and also reflect customer preferences.

The second step assesses the revenue required by GMW to meet the service obligations and expected outcomes.

Step three assesses the prices that GMW will apply, ensuring that GMW will generate sufficient revenue based on demand forecasts.

8.2 Drainage Costs

8.2.1 Surface Drainage

The main costs for surface drainage are maintenance of the drainage infrastructure, which accounts for over half of the total cost of surface drainage. The other costs are associated with the operation of the system being mainly labour costs and power costs where pumping is required.

8.2.2 Sub Subsurface Drainage

The main component of sub-surface drainage costs is the cost of operating and maintaining pumps. There are also costs of using the surface drainage system for outfalls. Other important costs include:

- Operating pumps, and managing disposal of groundwater;
- Electricity costs;
- Monitoring groundwater and service coordination;
- Environmental contributions and Salt Disposal Entitlement to government;
- Management of legacy issues and management of leases and licensing issues relating to land tenure and access pump sites;
- Plant and equipment hire;
- Repairs to pumps, motors, header lines and discharge lines; and
- Replacement of motors and pumps, including mechanical inspections

Channel outfall expenses covers the costs associated with surface drain maintenance, for example, the cost of weed control as a result of discharging to them.

8.3 Fixed Versus Variable Costs

There are two types of charges: fixed charges, which do not vary with usage, and variable, which do vary with usage and fluctuate from year to year.

Variable charges are aligned with costs that vary with usage, while fixed charges make up the remainder of charges.

The majority of drainage costs are fixed from year to year. Variation in the remainder of costs is primarily driven by rainfall. For sub-surface drainage, higher rainfall results in additional pumps operating, incurring electricity, and monitoring and maintenance costs. For surface drainage rainfall entails higher costs through more drain maintenance related to erosion and weed control. It is estimated that 10 percent of surface drainage and up to 30 percent of sub-surface drainage costs vary with rainfall.

The following figure illustrates how sub-surface drainage costs vary over time, with wetter conditions in 2009/10 and 2012/13 imposing higher costs.

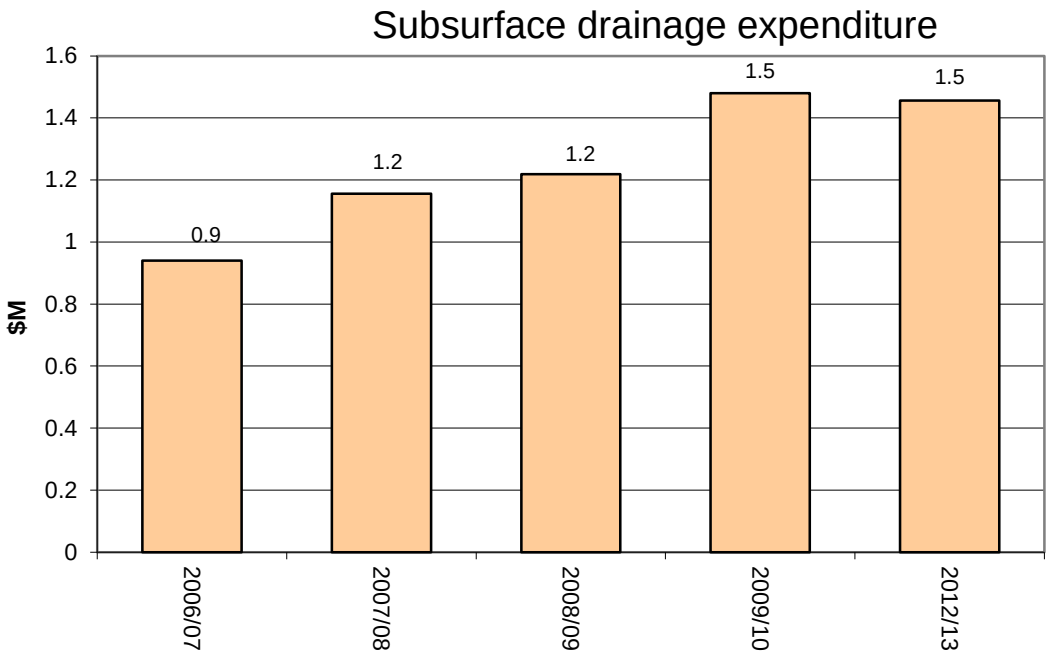


Figure 15: Sub-surface drainage expenditure (note: broken series)

A 'variable cost' is one which varies with usage, e.g. irrigation water usage. This is not the case for drainage variable costs which vary according not to water usage, but according to an external factor, rainfall as noted above.

The purpose of matching the ratio of fixed and variable revenue to costs is so that fluctuations in costs are matched by revenue. If drainage variable costs were matched to water usage, fluctuations in revenue would be out of sync with fluctuations in costs. Although there may be some correlation between water allocations and drainage variable costs, with both likely to occur in high rainfall period.

If the tariff structure were made up completely of fixed charges, then revenue would be too high in dry years when costs are low and vice versa.

Currently, drainage charges have a high variable component. This means that GMW over-recovers revenue when water use is high and under-recovers revenue when usage is low.

8.4 Single Service Fee Concept

Customers have expressed dissatisfaction with the multiple services fees applied to the one customer due to the multiple services they receive.

The concept of dealing with a customer that has multiple services from GMW as one business unit has been considered as the appropriate path in the future. This would mean regardless of the services provided a customer would have the option of linking all the services and becoming one business unit to GMW. In some cases customers would benefit by having their service fees reduced from 4 to 1.

Although not expressly a drainage tariff issue, it is timely to address this issue during this review process as with other tariff reforms occurring concurrently it is an opportunity to implement together.

1. What should the balance of fixed and variable charges be for drainage services?
2. Is there a need to further reform drainage charges and, if so, what options exist for further reform that better reflects the underlying cost characteristics of drainage services?
3. Are there efficiency benefits in more cost reflective drainage charges?
4. What are the practical administrative and equity considerations?

Appendix A: Summary of issues

The following section summaries the general issues and the feedback sought from interested parties on matters which impact on the tariffs that apply to the drainage services provided by GMW.

1. These general issues relate to:
    - While the same fee structure applies across the whole Goulburn Murray Irrigation District for surface drainage the charges vary for each irrigation area for very similar operational attention;
    - The relative benefits of surface drainage has changed with improved on farm management with removal of water in extreme wet events now a major function - existing levels of service and rating divisions may no longer be meaningful
    - The current surface drainage fee structure does not differentiate between the design level of service of each drain;
    - An assessment of the need for the broader community to continue to contribute to drainage cost (both surface and subsurface) through Local Government;
    - The recovery of maintenance costs between GMW Community Surface Drains and GMW Primary Surface Drains are currently treated differently although operationally the two types of drains are treated the same;
    - GMW has various external obligations and delivers drainage in partnership with Land and Water Management Plans;
    - The actual drainage charge levied on a property is moderated through the application of a complex assessment of the degree of benefit provided by drainage.
2. In relation to Shepparton Irrigation Region Sub-surface Drainage, these issues relating specifically to it:
    - Unable to predict when and where future salinity will arise because climate variability and increasingly dynamic land use;
    - Current tariff system may not be “fit for purpose” and cost reflective in the context of a variable and unpredictable future;
    - The area subject to direct beneficiary rates is very conservative due to technical constraints, perceived need to be able to demonstrate pumping effect and all irrigators contributed 50% costs in any case;
    - Shallow private groundwater pumping in the Shepparton Irrigation region also provides vital salinity control benefits and Diversion charges for this pumping need to support drainage objectives.
3. Do the proposed principles adequately address customer expectations and preferences and other relevant requirements in relation to pricing matters? What amendments – changes or additions – are needed to ensure the principles are clear, useful and applicable to this Drainage Tariff Strategy Review?
4. Are there any other matters that we will need to consider in applying the tariff review proposed principles?
5. Should the tariff concept be if you receive a service you pay and if you don’t receive a service you don’t pay? And if so how do we deal with ambiguity around defining service?
6. Since the implementation of the tariff there has been significant land use change, increased dry land farming and reduced need for pumping for the purpose of protecting horticulture. Do customers consider subsurface drainage services to be still relevant to their needs?
7. Are the current defined service standards appropriate and can they be adequately defined and measured?
8. Are the current levels of service appropriate and can they be adequately defined and measured?

9. Should there be delineation in the levels of service provided?
10. Are there any issues specific to each service that warrants particular attention?
11. What pricing principles should guide the setting of drainage charges for customers receiving different levels of service?
12. Does the structure of GMW's tariffs and pricing provide the right balance between efficiency, and the ability of customers to respond, simplicity and equity?
13. What trade-offs should there be between equity and complexity?
14. Are there any other issues with GMW's drainage tariffs and prices that need to be considered as part of this review?
15. Are there any changes required in the approach to determining tariffs and prices having regard to the experience in the last price review period and the proposed pricing principles?
16. How important is that the tariff structure allow a flexible and adaptive approach to address the salinity and waterlogging risks that could limit future agricultural production?
17. What should the balance of fixed and variable charges be for drainage services?
18. Is there a need to further reform drainage charges and, if so, what options exist for further reform that better reflects the underlying cost characteristics of drainage services?
19. Are there efficiency benefits in more cost reflective drainage charges?
20. What are the practical administrative and equity considerations?

Appendix B: Operating Tariff Criteria – Drainage

The Operating Tariff Criteria is, among other things, the instrument GMW uses to make tariffs for water shares, its districts and groundwater supply protection areas. Under sections 33 AJ and 260 of the Water Act 1989, the Board is required set a tariff by resolution. Notice of the resolution must be published prior to the commencement of the year in which it is to have effect.

3.3 Surface Drainage

3.3.1 Service Fee – Goulburn Murray (excluding Woorinen Area) District

The Service Fee payable by the owner of a property within a District or Area is the tariff per property set by resolution of the Corporation for that District or Area.

The Service Fee is made and levied for the financial year.

3.3.2 Area Fee – Goulburn Murray (excluding Woorinen Area) District

The Area Fee payable by the owner of a property within a District or Area is calculated by reference to the tariff set by resolution of the Corporation for that

District or Area and is calculated as follows:

A x B x C

Where

A is the tariff per hectare;
B is the total area in hectares of the property; and
C is the Proportion of the Tariff to be Applied relating to the Drainage Division set out in the table in paragraph 3.3.4.

The Area Fee is made and levied for the financial year.

3.3.3 Water Use Fee – Goulburn Murray (excluding Woorinen Area) District

The Water Use Fee payable by the owner of a property within a District or Area is calculated by reference to the tariff set by resolution of the Corporation for that District or Area and is calculated as follows:

A x B x C

` Where

A is the tariff per megalitre of water used;
B is the number of megalitres of water used; and
C is the Proportion of the Drainage Tariff to be applied relating to the Drainage Division set out in the table in paragraph 3.3.4.

The Water Use Fee is made and levied for the financial year.

6.3.4 Table

Drainage Division of Property	Proportion of Drainage Tariff to be Applied
1	100%
2	75%
3	50%
4	25%
5	15%
6	10%
7	5%
8	0%

The Drainage Division of each property shall be calculated in accordance with 'Classification of Lands for Drainage' as set out in *Schedule 1*.

3.4 Community Surface Drainage

3.4.1 Community Surface Drainage Fee – Goulburn Murray (excluding Woorinen Area) District

The Community Surface Drainage Fee payable by the owner of a property within a District or Area, who is a participant in a community surface drainage scheme administered by the Corporation, is calculated by reference to the tariff set by resolution of the Corporation for that District or Area and is calculated as follows:

A x B

Where

A is the tariff per kilometre equivalent of drain; and
B is the kilometre equivalent of drain as recorded and shown in the Water Register in respect to that property.

The Community Surface Drainage Fee is made and levied for the financial year.

3.5 Subsurface Drainage

3.5.1 Subsurface Drainage Fee - Shepparton Area

The Subsurface Drainage Fee payable by the owner of a property within the Area is calculated by reference to the tariff set by resolution of the Corporation and is calculated as follows:

A x B

Where

A is the tariff per megalitre of high reliability water share; and
B is the number of megalitres of high reliability water share associated with the property.

The Subsurface Drainage Fee is made and levied for the financial year.

3.5.2 Subsurface Drainage Fee – Campaspe Area

The Subsurface Drainage Fee payable by the owner of a property within the Area is calculated by reference to the tariff set by resolution of the Corporation and is calculated as follows:

A x B x C

Where

A is the tariff per megalitre of water used:
B is the number of megalitres used; and
C is the service level for a direct beneficiary property defined as 1.0 in Part B of *Schedule 2.*

The Subsurface Drainage Fee is made and levied for the financial year.

3.5.3 Subsurface Drainage Fee – Tresco District

The Subsurface Drainage Fee payable by the owner of a property within the District is calculated by reference to the tariff set by resolution of the Corporation and is calculated as follows:

A x B x C

Where

A is the tariff per megalitre of high reliability water share;
B is the number of megalitres of high reliability water share attached to the property; and
C is the Proportion of Drainage Tariff to be Applied relating to the Drainage Division set out in the table in paragraph 3.5.11.

The Subsurface Drainage Fee is made and levied for the financial year.

3.5.4 Service Fee - Central Goulburn, Rochester and Murray Valley Areas

The Service Fee payable by the owner of a property within an Area is calculated by reference to the tariff set by resolution of the Corporation for that Area and is calculated as follows:

A x B

Where
A is the tariff per megalitre of water used; and
B is the number of megalitres used.

The Service Fee is made and levied for the financial year.

3.5.5 Local Benefit Area Fee - Central Goulburn, Rochester and Murray Valley Areas

The Local Benefit Area Fee payable by the owner of a property within an Area is calculated by reference to the tariff set by resolution of the Corporation for that Area and is calculated as follows:

A x B x C

Where

A is the tariff per hectare;
B is the total area in hectares of the property; and
C is the service level for the property as set out in Part A of *Schedule 2*.

The Local Benefit Area Fee is made and levied for the financial year.

3.5.6 Local Benefit Water Use Fee - Central Goulburn, Rochester and Murray Valley Areas

The Local Benefit Water Use Fee payable by the owner of a property within an Area is calculated by reference to the tariff set by resolution of the Corporation for that Area and is calculated as follows:

A x B x C

Where

A is the tariff per megalitre of water used;
B is the number of megalitres used; and
C is the service level for the property as set out in Part A of *Schedule 2.*

The Local Benefit Water Use Fee is made and levied for the financial year.

3.5.7 Municipal Benefit Local Area Fee - Central Goulburn, Rochester and Murray Valley Areas

The Municipal Benefit Local Area Fee payable by Local Government Municipalities within an Area is calculated by reference to the tariff set by resolution of the Corporation for that Area and is calculated as follows:

A x B x C

Where

A is the tariff per hectare;
B is the number of hectares to which the tariff applies for the financial year; and
C is the service level attributed to the municipality by the Corporation.

The Municipal Benefit Local Area Fee is made and levied for the financial year.

3.5.8 Service Fee – Woorinen Area, Woorinen Sub-Area of Torrumbarry and Nyah District

The Service Fee payable by the owner of a property within an Area, Sub-Area or District is the tariff per property set by the resolution of the Corporation for that Area, Sub-Area or District.

The Service Fee is made and levied for the financial year.

3.5.9 Area Fee – Woorinen Area and Woorinen Sub-Area of Torrumbarry

The Area Fee payable by the owner of a property within an Area or Sub-Area is calculated by reference to the tariff set by resolution of the Corporation for that Area or Sub-Area and is calculated as follows:

A x B x C

Where

A is the tariff per hectare;
B is the total area in hectares of the property; and
C is the Proportion of Drainage Tariff to be Applied relating to the Drainage Division set out in the table in paragraph 3.5.13.

The Area Fee is made and levied for the financial year.

3.5.10 Water Use Fee – Nyah District

The Water Use Fee payable by the owner of a property within the District is calculated by reference to the tariff set by resolution of the Corporation and is calculated as follows:

A x B x C

Where

A is the tariff per megalitre of water used;
B is the number of megalitres of water used; and
C is the Proportion of Drainage Tariff to be Applied relating to the Drainage Division set out in the table in paragraph 3.5.12.

The Water Use Fee is made and levied for the financial year.

3.5.11 Water Use Fee - Woorinen Area and Woorinen Sub-Area of Torrumbarry

The Water Use Fee payable by the owner of a property within an Area or Sub-Area is calculated by reference to the tariff set by resolution of the Corporation for that Area or Sub-Area and is calculated as follows:

A x B x C

Where

A is the tariff per megalitre of water used;
B is the number of megalitres of water used; and
C is the Proportion of Drainage Tariff to be Applied relating to the Drainage Division set out in the table in paragraph 3.5.13.

The Water Use Fee is made and levied for the financial year.

3.5.12 Table – Nyah and Tresco Districts

Drainage Tariff Division of the Property	Proportion of Drainage Tariff to be Applied
1	100%
2	75%
3	50%
4	25%
5	0%
6	0%
7	0%
8	0%

The Drainage Tariff Division of each property shall be calculated in accordance with 'Classification of Lands for Drainage' as set out in *Schedule 1*.

3.5.13 Table – Woorinen Area and Woorinen Sub-Area

Drainage Tariff Division of the Property	Proportion of Drainage Tariff to be Applied
1	100%
2	75%
3	50%
4	25%
5	15%
6	10%
7	5%
8	0%

The Drainage Tariff Division of each property shall be calculated in accordance with 'Classification of Lands for Drainage' as set out in *Schedule 1*.

3.6 DRAINAGE DIVERSION

3.6.1 Drainage Diversion Site Fee – All Districts and All Areas

The Drainage Diversion Site Fee payable by the owner of a property within an Area, Sub-Area or District for water supplied for irrigation from any drain is (except in the case of any special agreement with the Corporation) calculated by reference to the tariff per site set by resolution of the Corporation for that Area, Sub-Area or District multiplied by the number of diversion sites.

The Drainage Diversion Site Fee is made and levied for the financial year.

3.6.2 Drainage Diversion Agreement Fee – All Districts and All Areas

The Drainage Diversion Agreement Fee payable by the owner of a property within an Area, Sub-Area or District for water supplied for irrigation from any drain is (except in the case of any special agreement with the Corporation) calculated by reference to the tariff per megalitre set by resolution of the Corporation for that Area, Sub-Area or District and multiplied by the greater of the volume of megalitres specified in the drainage diversion agreement or the volume used.

The Drainage Diversion Agreement Fee is made and levied for the financial year.

Schedule 1: Classification of Lands for Drainage

General

This schedule sets out the drainage divisions for the classification of properties drained to the Corporation's works.

The schedule applies to properties which are:

(a) Drained (by pumping or gravitating) directly into the Corporation's drains or can be so drained by the construction of internal drains (private drains taken over by the Corporation for maintenance purposes shall be regarded as forming part of the Corporation's works).

Properties drained directly include those served by a community, private or road table drain with entry to the Corporation's works and with the closest point of the furthermost properties on the drain not more than 61 m from the Corporation's drain.

(b) Drained (by pumping or gravitating) to the Corporation's drains along a practicable route by either community, private or road table drains.

(c) Indirectly drained (by pumping or gravitating) to the Corporation's drains via a route through private land (without appropriate drainage rights).

(d) Drained by discharging (pumping or gravitating) into the Corporation's supply channels, either individually or as a community group.

Equivalent Area Drained – Goulburn Murray Irrigation District

Application of the drainage fee for the Goulburn Murray Irrigation District requires the determination of the equivalent area drained directly into the Corporation's drains or channels for each property using the following drainage factors:

(a)	Directly into Corporation drains or can be so drained by the construction of internal works	1.00
(b)	Via community, private or road drains more than 61 m in length	0.25
(c)	Indirectly into Corporation drains	0.25
(d)	Discharging into Corporation supply channels	0.125
(e)	Not drained or not drained to Corporation works	0

The equivalent area drained for each property is determined by determining that part of the property which falls into each of the five categories given above and summing the figures determined by multiplying these areas by their respective drainage factors. This total is then used to determine the drainage division for the property.

Drainage Divisions - Goulburn Murray Irrigation District
The drainage divisions together with their respective proportions are as follows:

- **1st Division - 100%**
  All properties for which the equivalent area drained is not less than two-thirds (67%) of the total area of the property

- **2nd Division - 75%**
  All properties, not included in 1st Division, for which the equivalent area drained is more than half (50%) but less than two thirds (67%) of the total area of the property.

- **3rd Division - 50%**
  (a) All properties, not included in 1st or 2nd Division, for which the equivalent area drained is more than one quarter (25%) but less than one half (50%) of the total area of the properties.
  (b) All properties which receive protection from Corporation intercepting drains.

- **4th Division - 25%**
  (a) All properties, not included in the 1st, 2nd or 3rd Divisions to which the "Rating of Community Surface Drain Catchments" policy adopted by the Corporation on 21 March 1996 applies
  (b) All properties, not included in 1st, 2nd or 3rd Division or part (a) of 4th Division for which the equivalent area drained is more than fifteen percent (15%) but less than one quarter (25%) of the total area of the properties.
  (c) All properties, not included in 1st, 2nd or 3rd Division or part (a) of 4th Division which as a result of any of the Corporation's works receive protection.

- **5th Division - 15%**
  All properties not included in 1st, 2nd, 3rd or 4th Division, for which the equivalent area drained is more than ten percent (10%) but less than fifteen percent (15%) of the total area of the properties.

- **6th Division - 10%**
  All properties not included in 1st, 2nd, 3rd, 4th or 5th Division, for which the equivalent area drained is more than five percent (5%) but less than ten percent (10%) of the total area of the properties.

- **7th Division - 5%**
  All properties not included in 1st, 2nd, 3rd, 4th, 5th or 6th Division, for which the equivalent area drained is not more than five percent (5%) of the total area of the properties.

- **8th Division – 0%**
  All other lands within the District

Special Condition

All properties having areas of land which can be drained directly into the Corporation's works or can be so drained by the construction of internal drains but which is adversely affected to a substantial degree by flooding from the Corporation's drains shall be classified one drainage division lower than would otherwise be determined.

Drainage Divisions - Nyah and Tresco Irrigation Districts

The drainage divisions for the Nyah and Tresco Irrigation Districts together with their respective proportions are as follows:

- **1st Division - 100%**
  All properties of which not less than two-thirds of their areas are effectively drained into the Corporation's works, or can be so drained by the construction of internal drains (private drains taken over by the Corporation for maintenance purposes shall be regarded as forming part of the Corporation's works). Some residential properties not exceeding 0.2 of a hectare which can be effectively drained are excepted. See 3rd Division (c).

- **2nd Division - 75%**
  (a) All properties, not included in 1st Division, more than half but less than two thirds of whose areas are drained directly into the Corporation's works or can be so drained by the construction of internal drains.
  (b) All properties, which are drained directly into the Corporation's works or can be so drained by the construction of internal drains, but which are adversely affected to a substantial degree by flooding from the Corporation's drains.

- **3rd Division - 50%**
  (a) All properties, not included in 1st or 2nd Division, more than one quarter and less than one half of whose areas are drained directly into the Corporation's works or can be so drained by the construction of internal drains.
  (b) All properties, not included in 1st or 2nd Division, the nearest portion of which is within 1.6 kilometres of a drain of the Corporation's works and which can be drained by a surface drain thereto along practicable route, or properties which receive protection from intercepting drains.
  (c) Small residential properties, not exceeding 0.2 of a hectare in area, which can be effectively drained into the Corporation's works.
  (d) In the Nyah District only where more than half the area to be drained is drained by gravity and remainder pumped.

- **4th Division - 25%**
  (a) All properties, not included in 1st, 2nd or 3rd Division, less than one quarter of whose areas are drained directly into the Corporation's works or can be so drained by the construction of internal drains.
  (b) All properties, not included in 1st, 2nd or 3rd Division, which as a result of any of the Corporation's works receive drainage benefit or protection.
  (c) In the Nyah District only where less than half the area to be drained is drained by gravity and the remainder pumped.

- **5th, 6th, 7th and 8th Divisions - 0%**
  (a) Properties traversed by a well-defined depression which provided adequate natural drainage prior to the construction of the Corporation's works, where the level of the water table does not present an existing problem.
  (b) Properties which are indirectly drained by route either through private land (without an appropriate easement) or along a road without the consent of the Municipality.
  (c) All other lands within the District.

Schedule 2: Subsurface Drainage Service Level

Part A – Central Goulburn, Rochester and Murray Valley Areas

- **Service Level A**

  Value = 5 Units

In "orchard areas" where the ground water level is maintained (by pumping) more than two metres below the surface.

An orchard area is any perennial fruit tree or vine plantings that are grown for commercial purposes.

- **Service Level B**

  Value = 3 Units

Where the ground water level is drawn down below its original level by greater than 30 centimetres after a two month pump test

- **Service Level C**

  Value = 1 Unit

Where the ground water level is drawn down below its original level by between 10 and 30 centimetres after a two month pump test

- **Service Level D**

  Value = Nil Unit

Drawdown is less than 10 centimetres (no direct benefit assigned) after a two month pump test.

Part B – Campaspe Irrigation Area

- **Service Level 1.0**
  Where a property used for irrigation in the Campaspe West Area Salinity Management Plan derives benefit as a result of salinity dilution flows from the Waranga Western Channel.

Appendix C: GMW Customer Service Charter - Extract

The Customer Charter is to provide our customers with important information about their rights and responsibilities and those of Goulburn-Murray Water (GMW). The Charter sets out the standard of service customers can reasonably expect to receive and against which GMW's performance can be judged.

The Charter implements the terms of the Rural Water Customer Service Code published by the Essential Services Commission (ESC) under Section 4F of the Water Industry Act 1994, and Clause 15 of the Water Industry Regulatory Order.

In relation to drainage services the charter makes the following references:

Section 3 sets out the following approved service levels:

Irrigation drainage	Year	Year	Year
Availability of surface drainage	98%	98%	98%
Availability of sub-surface drainage	98%	98%	98%

Section 4 provides the following:

1.9. Surface Drainage

GMW provides surface drainage services predominantly in irrigation districts. Customers must not discharge drainage water into a gravity irrigation channel without specific consent. Under certain conditions where formal drainage schemes do not exist, permits to discharge may be given.

Properties that have access to GMW drains are classified into drainage divisions depending on the area of land that has access to the drain. Additional information on the classifications and how rating is applied is available from any of our customer service centers or by contacting us on 1800 013 357.

1.9.1. Level of Service

The level of service provided by each drain is defined by the period of time over which the drain is designed to remove a specific rainfall event from properties. The majority of GMW drains are design to remove from a property the excess runoff produced by a summer storm over an irrigated catchment within 5 days.

GMW drains will provide a reduced level of service for events bigger than the design event with water taking longer to be drained. GMW is progressively declaring the level of service of its drains to provide greater clarity on their intended performance during large rainfall/flood events.

1.9.2. Connection

Discharge to the GMW drains is via authorized drainage inlets only. Operation of drainage inlets is generally the responsibility of the landholder or drainage group.

If a customer is authorized to discharge drainage into a water supply channel (where no alternative drainage service exists); they must act in accordance with the conditions of discharge.

1.9.3. Drainage Water Quality

Water discharged into GMW drains and/or channels (with permit from GMW) must not be polluted, with dairy or piggery effluent or other unauthorized chemical or fuel residues.

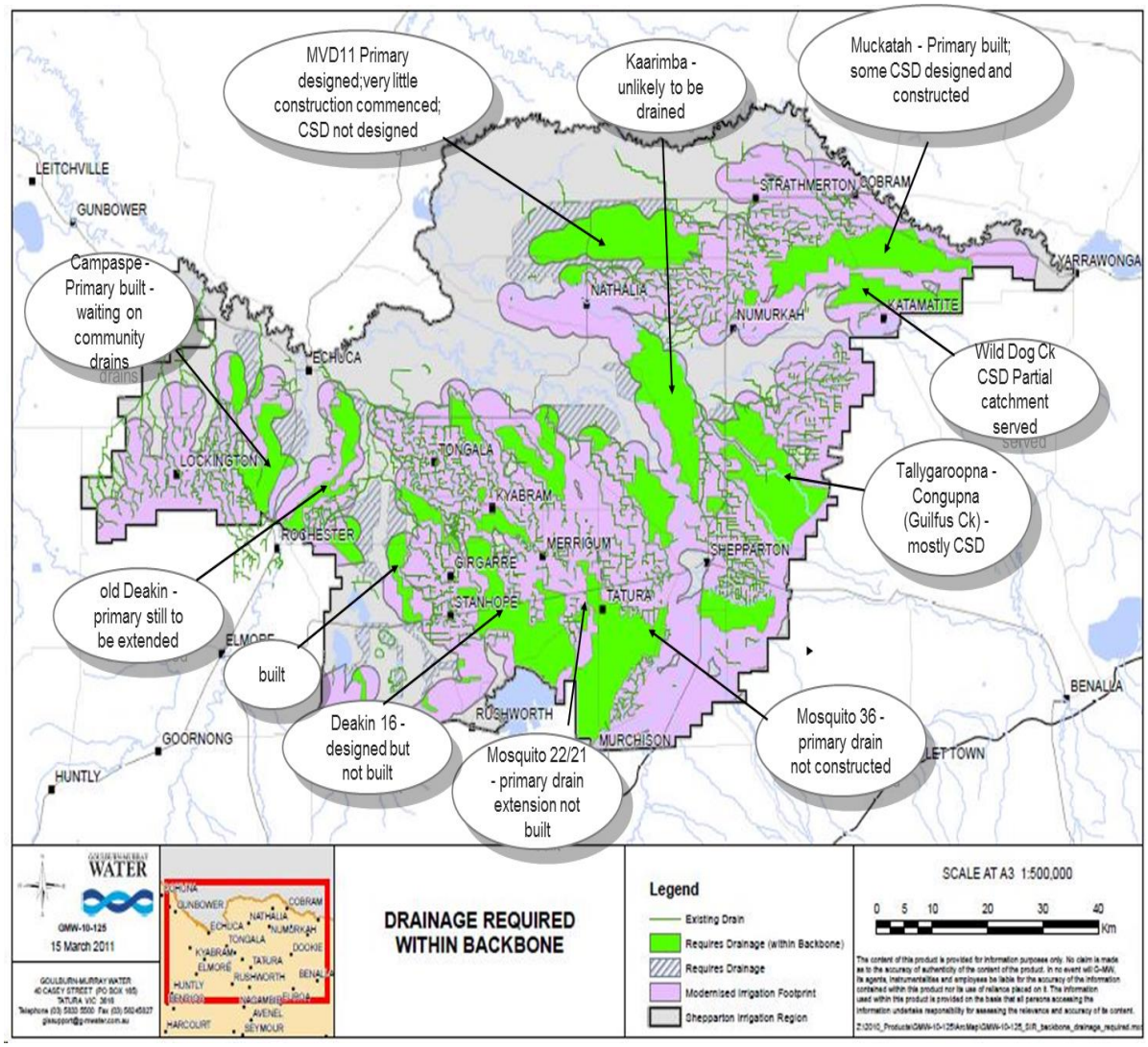
1.9.4. Accessing water from Surface Drains

Water use from GMW drains by customers under certain conditions may be approved. An agreement to access water from the drain may be granted if capacity is available and conditions of water access from the drain are met by diverters. Access, water quality and availability is variable

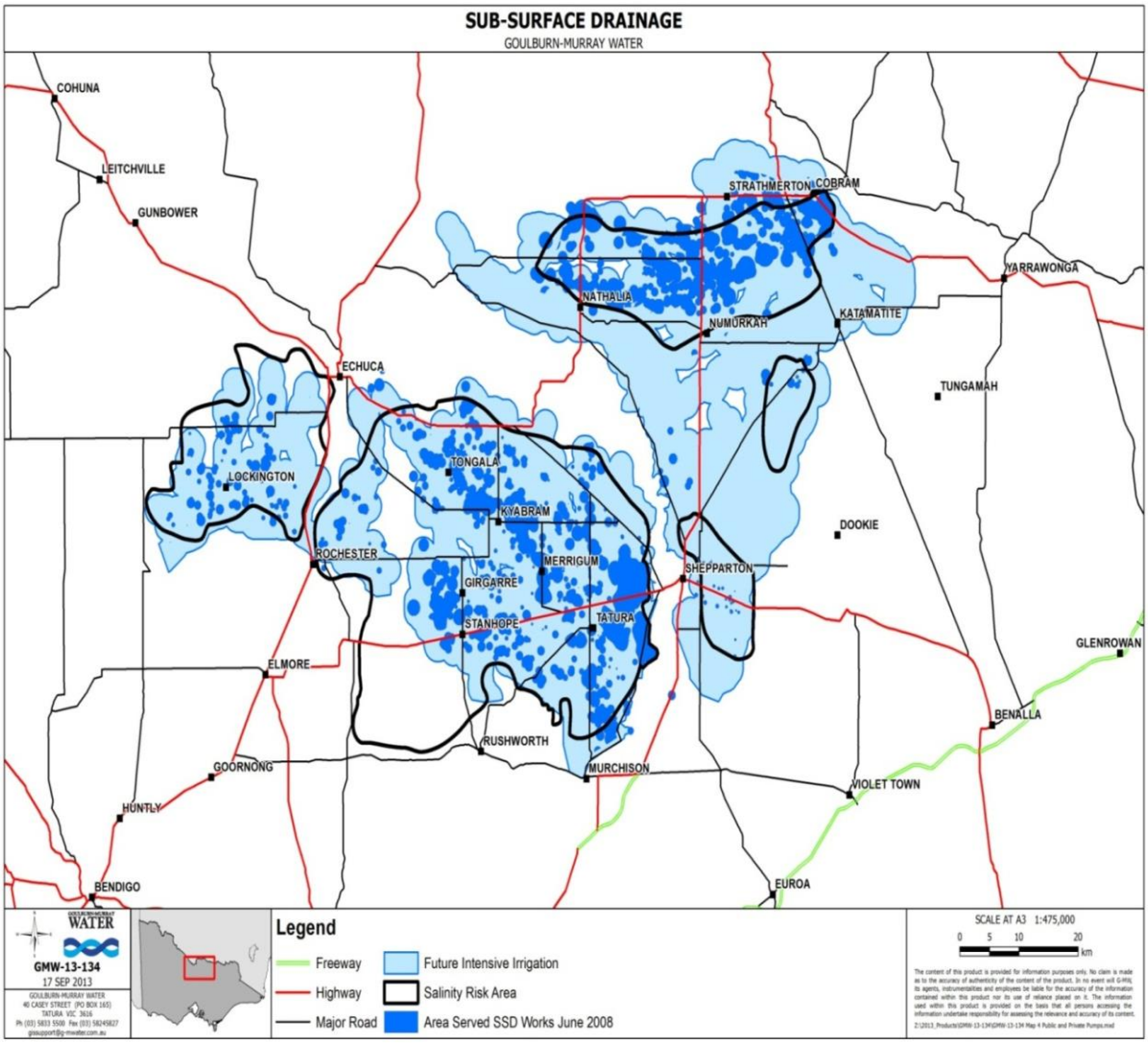
1.10. Sub Surface Drainage

GMW operates and manages a network of groundwater pumps to provide sub surface drainage in the Shepparton Irrigation Region. In the Campaspe West, Nyah, Tresco and Woorinen areas, GMW provides a service to collect sub surface drainage discharge from private properties. The cost of providing this service is recovered from a mixture of all irrigators, direct beneficiaries and local government.

Appendix D: Figure 16 - Future Investment in surface drainage infrastructure



Appendix E: Figure 17 – Future investment in subsurface drainage infrastructure



Appendix F: Glossary

This section defines the terms used throughout the document.

Term/Acronym	Description
ACCC	Australian Competition and Consumer Commission
CMA	Catchment Management Authority
CSD	Community Surface Drain
ESC	Essential Services Commission of Victoria
GMID	Goulburn Murray Irrigation District
GMW	Goulburn-Murray Rural Water Corporation trading as Goulburn Murray Water
IDMoU	Irrigation Drainage Memorandum of Understanding
MDBC	Murray Darling Basin Commission
NCCMA	Northern Central Catchment Management Authority
RAB	Regulatory Asset Base
SEPPWoV	State Environment Protection Policy Waters of Victoria
SIR	Shepparton Irrigation Region
WCIR	Water Charge (Infrastructure) Rules
WIRO	Water Industry Regulatory Order
WSC	Water Service Committee

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