

FINAL REPORT

2016-20 Review of Water Prices for Goulburn-Murray Water

Tariff Structure Proposals

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EXECUTIVE SUMMARY

Background

The Essential Services Commission (Commission) has engaged Indec to provide it with advice on Goulburn-Murray Water's (G-MW) proposed tariff structures related to gravity irrigation and diversion services submitted in G-MW's 2016 Price Submission.

The Commission is responsible for the economic regulation of the services provided by G-MW under the accreditation from the Australian Competition and Consumer Commission (ACCC). The Commission's role is to assess the price arrangements proposed by G-MW and approve them if it is satisfied the prices comply with the *Water Charge (Infrastructure) Rules 2010 (Commonwealth)* (WCIR) and the ACCC's pricing principles.

Scope of Consultancy

The engagement involves Indec providing the Commission with high level advice on whether:

- the proposed tariff reforms for G-MW's gravity system are underpinned by changing cost structures or whether district costs remain significant; and
- the proposed breakdown of fixed and variable components of tariffs reflect underlying costs of services for diversion customers.

Proposed Tariff Reform

G-MW released its Blueprint in April 2013 with the aims to stabilise prices for customers and save \$20 million in operating costs. The Blueprint introduced a proposal to simplify billing and tariffs for all of G-MW's charges with a major focus on transitioning to uniform gravity irrigation delivery charges and developing a Diverters' Tariff Strategy.

G-MW's delivery infrastructure is being modernised with the commissioning of the Connections Project, a \$2 billion investment funded by the State and Commonwealth governments and the Melbourne water businesses. This project is expected to be completed in 2018. The Connections Project will deliver a fully automated backbone of major channels and modernised customer service points. G-MW expects a reduction in the variance in service levels between districts.

Gravity Irrigation Tariffs

The most significant tariff change proposed by G-MW in its 2016 Price Submission is a move to a common or uniform delivery charges in relation to gravity irrigation services. This tariff proposal would result in all gravity customers paying the same delivery charges regardless of their location and discontinue the current arrangements where the six irrigation districts pay different charges.

The Commission has recognised that locational pricing often reflects a less integrated network with large differences in costs between different water networks. The Commission also has recognised that the substantial alterations to G-MW's infrastructure will lead to a more inter-connected network with increasingly more uniform service across the customer base. The expectation is that this will likely lead to streamlined tariffs and charges. The Commission noted that where differences in costs for different customers remain, it expected G-MW to clearly articulate the basis for any differences in tariffs and charges for its customers.

Results of Gravity Irrigation Tariff Analysis

Our analysis indicated that the definitions of district and centralised costs have significant impact on the G-MW's gravity irrigation operating cost structure.

Definition of District and Centralised Cost

Indec does not support G-MW's definitions of district and centralised labour costs. G-MW's definitions restrict a district labour cost to those resources working exclusively in a single district and centralises district resources working across more than one district. In our opinion, for a district based resource to be defined as a centralised cost it would need to be incurring costs across all districts without being able to distinguish in which district labour costs are incurred.

The definition of a centralised cost is a cost associated with a business wide activity which is concentrated in a particular location, such as a head office. The process of centralisation generally involves moving similar business activities in each business unit to the centre of the organisation. An example of centralisation would be a business that decides to combine its separate product based customer service centres into a single customer service centre that deals with all incoming customer enquiries.

Indec analysed G-MW's 2015-16 district labour cost data to measure the extent of resource use across multiple districts. We identified that on average a district staff member incurs labour costs across 1.7 districts. This result highlights that district based resources have limited capacity to work across more than two or three districts due to the requirement of being physically located within the particular district to carry out their duties. Moving across districts requires travel time and significant travel time reduces the productivity of the staff member. This demonstrates that these resources are not centralised, but rather are pooled across some, as distinct from all, districts.

A more applicable definition of a district labour cost is a resource working directly in a district with labour cost data available to capture the labour costs incurred in each district. It is possible that some district based resources may be classified as a centralised resource as these incur labour costs across multiple districts and no labour cost data, which distinguishes the labour cost incurred in the relevant districts, is recorded.

A centralised resource would be defined as any resource that does not operate directly in a district and incurs labour costs across multiple districts without detailed cost data available.

District and Centralised Operating Cost Analysis

Figure A compares the outcome of the district and centralised operating cost analysis based on G-MW's and Indec's definitions of district and centralised costs.

G-MW's analysis showed that 67 per cent of gravity irrigation district costs are centralised and 33 per cent are district based. Indec's analysis demonstrated that 44 per cent of gravity irrigation district costs are centralised and 56 per cent are district based.

Indec is of the view that, based on the 2015-16 budgeted cost data provided by G-MW, the district based operating costs currently remain significant.

Figure A – District and centralised operating costs – gravity irrigation districts (2015-16 budget forecast)

Operating Cost	G-MW's Analysis	Indec's Analysis
District	33%	56%
Centralised	67%	44%
Total	100%	100%

Source: Indec

Historical District and Centralised Operating Cost Analysis

Our analysis was unable to verify if the proposed tariff reforms for G-MW's gravity system are underpinned by changing operating cost structures due to the limitations in the data provided by G-MW. The structure and level of detail between historical actuals and 2015-16 budget forecasts were not consistent due to a structural change in the accounting system.

As G-MW did not provide all the organisational charts requested, Indec was unable to verify how activities have been centralised from reviewing organisational changes. Any significant centralisation of activities would be identifiable in the comparison of detailed organisational charts before and after the business transformation.

Based on its definitions of district and centralised costs, G-MW's analysis indicated that its operating cost structure is changing. Figure B below summarises G-MW's results which indicates that the proportion of centralised costs has increased from 48 per cent in 2011-12 to 63 per cent in 2014-15, and is forecast to further increase to 67 per cent in 2015-16.

We view that this analysis has the potential to produce biased results due to G-MW's definitions of district and centralised costs. This analysis captures both the increase in any centralisation of activities as well as any increase in the resources being shared across multiple but not all districts.

Figure B – G-MW's operating cost structure trend analysis – gravity irrigation

Operating Cost	2011-12 actual	2014-15 actual	2015-16 budget
District	52%	37%	33%
Centralised	48%	63%	67%
Total	100%	100%	100%

Source: G-MW – central vs district 11-12 v 14-15 high level

Gravity Irrigation District Operating Cost to Serve Analysis

Indec mapped the operating costs based on the 2015-16 budget data to the six gravity irrigation districts and calculated a unit cost to serve based on delivery shares. The purpose of this step was to identify if the operating cost structure across the districts are underpinned by uniformity of costs or if district costs remain significant. This analysis does not attempt to calculate a tariff and should not be interpreted as a tariff calculation.

Figure C below presents a comparison of results based on G-MW's and Indec's definitions of district and centralised costs.

The operating cost to serve per delivery share based on the G-MW's approach varies from \$4,706 (Murray Valley) to \$2,201 (Shepparton), or a difference of \$2,505 between highest cost and lowest cost to serve.

Indec's analysis included calculating the cost to serve based on two approaches. The first approach included all operating costs. The second approach was based on operating costs excluding the estimated operating costs associated with customer account administration and site compliance activities (meter maintenance and meter reading). The objective of the second approach was to understand if the number of customers and the number of service points per customer impact on the cost to serve analysis.

Figure C – Gravity irrigation district operating cost to serve analysis

Gravity Irrigation District	G-MW's Definition – Total Operating Costs	Indec's Definition – Total Operating Costs	Indec's Definition – Total Operating Costs excluding Account Administration & Site Compliance Costs
Central Goulburn	\$4,444	\$3,145	\$2,627
Loddon Valley	\$2,611	\$3,185	\$2,857
Murray Valley	\$4,706	\$3,522	\$3,113
Rochester	\$3,324	\$3,245	\$2,759
Shepparton	\$2,201	\$4,143	\$3,534
Torrumbarry	\$3,256	\$3,151	\$2,771

Source: Indec

The first approach applied by Indec, based on total operating costs, indicated that the operating cost to serve per delivery share displayed reasonable uniformity across four districts – Central Goulburn (\$3,145), Loddon Valley (\$3,185), Rochester (\$3,245) and Torrumbarry (\$3,151). The operating costs to serve on a per delivery share basis for Murray Valley (\$3,522) and Shepparton (\$4,143) did not show reasonable uniformity with the other four districts.

Under Indec's second approach, based on operating costs excluding estimated account administration and site compliance costs, the operating cost to serve per delivery share demonstrated reasonable uniformity across the same four districts with the exception of Murray Valley and Shepparton. Four districts, Central Goulburn, Loddon Valley, Rochester and Torrumbarry, have an operating cost to serve of between \$2,627 and \$2,857 per delivery share. Two districts, Murray Valley (\$3,113) and Shepparton (\$3,534), have an operating cost to serve per delivery share higher than the other four districts.

The exclusion of estimated operating costs associated with customer account administration and site compliance activities did not significantly impact on the uniformity of operating costs across the districts. Similar results were observed with and without estimated customer account administration and site compliance operating costs included. The same four districts demonstrated a reasonable level of operating cost uniformity, Central Goulburn, Loddon Valley, Rochester and Torrumbarry, with two districts, Murray Valley and Shepparton, not demonstrating cost uniformity with the other districts.

Conceptually, these results are not inconsistent with the current status of G-MW's business transformation as the Connections Project is yet to be completed. The business is yet to achieve the full benefit of the \$20 million savings initiative and the outcomes associated with service point rationalisation which may result in a greater uniformity of operating costs.

Future Operating Cost Structure

As the Connections Project is in delivery phase, the full benefits of the Connections Project will materialise after the project's completion in 2018. The \$20 million savings program included a 2018 delivery timeframe. G-MW was unable to provide detailed operating cost forecasts beyond 2015-16 which included the impacts of these initiatives. Indec was unable to analyse if G-MW's district irrigation operating cost structures will change in the future.

Diversion Tariffs

G-MW reviewed its tariffs for its diversion services during the current regulatory period and released a Diverters' Tariff Strategy in September 2013. The implementation of the new tariff structure established under the Diverters' Tariff Strategy commenced in 2014-15.

The strategy committed to achieve the following outcomes:

- a reduction in the number of customer pricing groups from ten to four;
- a tariff structure based on the key cost driver of delivering the service. This involved a change in the levying of the Access Fee from customer size to service points; and
- lower costs across the entire business.

G-MW's tariff structure for diversion services was reviewed as part of the Diverters' Tariff Strategy. The review established the following four charges associated with the key activities for delivering diversion services:

- Service fee – account management services;
- Service point fee – site compliance services;
- Access fee – access compliance services; and
- Resource management fee – resource management services.

The outcome of this review was a recommended structure for charges; where charges are common across the four diverter customer groups for accounts management and site compliance, but differ across customer groups for access compliance and resource management.

The most significant tariff change for diverters is the transition of an Access Fee, from being based on the customer's volume of entitlement to being based on the number of service points, which according to G-MW better reflects the way costs are incurred.

Results of Diversion Tariffs Analysis

Fixed and variable costs

G-MW provided cost data which demonstrated that the operating cost base related to the diversion services is fixed and does not vary with the volumes of water usage of diversion customers.

Key cost drivers

G-MW was unable to provide cost data and analysis to support the key cost drivers identified for the major diversion services. Our qualitative analysis did not identify any issues associated with G-MW's cost drivers for each of the four charges associated with diversion services.

Figure D below shows for each key charge, the key activity, associated costs, the G-MW identified cost driver and the charging basis of the tariff.

Figure D – Proposed tariff changes for diversion services

Charge name	Key activity	Associated costs	GMW identified cost drivers	Tariff charging basis
Service Fee	Account management	A share of the total cost of keeping records, managing accounts and maintaining and improving G-MW's accounts system	<ul style="list-style-type: none"> Number of customer accounts 	\$ per licensee
Service Point Fee	Site compliance	The cost of compliance monitoring, measuring use and meters at each diversion site (service point)	<ul style="list-style-type: none"> Checking service point compliance Meter reading/deeming of usage Maintenance and replacement of meters 	\$ per service point – Small or Large
Access Fee	Access compliance	The cost of ensuring water is accessed in line with management rules and plans. The access fee includes managing allocations, rosters, restrictions and water ordering.	<ul style="list-style-type: none"> Flow monitoring Water ordering Roster management Flow assessments 	\$ per service point
Resource Management Fee	Resource management	For groundwater and unregulated surface water diverters, the resource management costs include developing and reviewing resource management plans, data management related to water sharing arrangements, resource caps, trading rules and water resource monitoring.	<ul style="list-style-type: none"> Resource identification Monitoring and assessment Development of resource management plan Making of allocations Setting of caps 	\$ per ML of entitlement

Source: Indec

Operating costs to serve

Based on the data provided by G-MW, our analysis of operating costs indicated that the operating costs for account management and site compliance activities are common across all diversion customer groups.

G-MW demonstrated that site compliance costs differ between sites with and without a meter. A site without a meter is defined as small and a site with a meter is defined as large. G-MW advised that the type of meters used varies across the diversion customer base; however, the costs of meter installation and maintenance are broadly the same regardless of the diverter customer classification. Indec is unable to verify if the cost of sites with differing meter types is broadly the same across the diversion customer base as G-MW did not support this position with analysis of cost data.

The data provided by G-MW indicated that the operating cost to serve for access compliance and resource management activities is not common across all diverter customer types.

Figure E below summarises our key findings associated with the diversions tariffs analysis.

Figure E – Diversion tariffs analysis

Tariff	Key service	G-MW Cost driver	Uniform Tariff	Uniform Operating Costs
Service Fee	Account management	\$ per licensee	✓	✓
Service Point Fee	Site compliance	\$ per service point based on small or large meter	✓	✓
Access Fee	Access compliance	\$ per service point	×	×
Resource Management Fee	Resource management	\$ per ML of entitlement	×	×

Source: Indec

1 BACKGROUND

The Essential Services Commission (Commission) has engaged Indec to provide it with advice on Goulburn-Murray Water's (G-MW) proposed tariff structures related to gravity irrigation and diversion services submitted in G-MW's 2016 Price Submission.

G-MW submitted its 2016 Price Submission to the Commission in September 2015 and has proposed substantial tariff reforms in its gravity districts and diversion services. The 2016 Price Submission encompasses a four year pricing period commencing on 1 July 2016.

1.1 ECONOMIC REGULATORY FRAMEWORK

The Commission is the primary economic regulator of essential utility infrastructure services in Victoria. The Commission is responsible for the economic regulation of the services provided by G-MW under the accreditation from the Australian Competition and Consumer Commission (ACCC).

The Commonwealth is responsible for the regulation of G-MW's water charges following agreement among states in the Murray-Darling Basin to manage the shared water uniformly across jurisdictions. In Victoria, the referral of powers is achieved by the *Water (Commonwealth Powers) Act 2008 (Victoria)*.

The ACCC is responsible under the *Water Charge (Infrastructure) Rules 2010 (Commonwealth)* (WCIR) for approving or determining the regulated charges of water entities in the Murray-Darling Basin. Accreditation of arrangements are made under Part 9 of the WCIR to transfer responsibility to a State agency from the ACCC for approving regulated charges under the WCIR.

The Commission received accreditation to regulate G-MW's and Lower Murray Water's (rural) charges in 2012 for a ten year period from 17 February 2012. A condition of the accreditation requires the Commission to apply pricing principles developed by the ACCC when approving regulated charges under the WCIR.

The majority of G-MW's infrastructure-related services are regulated under the WCIR and ACCC pricing principles. G-MW's infrastructure services covered by the WCIR account for the majority of G-MW's total regulated costs.

The tariff objectives of the ACCC's pricing principles are shown in Figure 1-1 below.

Figure 1-1 – ACCC pricing principles

The ACCC pricing principles made under the WCIR require tariffs to:

- promote the 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.

Source: ACCC Pricing Principles.

1.2 ROLE OF THE ESSENTIAL SERVICES COMMISSION

The Commission's role is to assess the price arrangements proposed by G-MW and approve them if it is satisfied the prices comply with the WCIR and the ACCC's pricing principles.

The Commission must be satisfied the expenditure forecasts contained in the price submission reflect the efficient delivery of the proposed outcomes and account for a planning horizon that extends beyond the term of the price submission.

The Commission's role includes considering the interests of customers of the regulated entity, including low income and vulnerable customers.

1.3 GOULBURN-MURRAY WATER'S PROPOSED TARIFF REFORMS

G-MW released a Blueprint in April 2013 which was a targeted strategic engagement plan with the aims to stabilise prices for customers and save \$20 million in operating costs. The Blueprint proposed to introduce simplified billing and tariffs for all of G-MW's charges with a major focus on transitioning to uniform gravity irrigation delivery charges and developing a Diverters' Tariff Strategy.

G-MW indicated in its 2013-15 Price Submission that it would propose substantial tariff reform at the next price review to:

- better match its resized irrigation infrastructure; and
- move to a tariff structure with greater commonality of charges for irrigators.

The Commission recognised in its Guidance Paper released in August 2014 that locational pricing often reflects a less integrated network with large differences in costs between different water networks. The Commission also noted that the substantial alterations to G-MW's infrastructure will lead to a more inter-connected network, which will mean that customers will increasingly have more uniform service. The expectation is that this will likely lead to streamlined tariffs and charges. The Commission noted that where differences in costs for different customers remain, it expected G-MW to clearly articulate the basis for any differences in tariffs and charges for its customers.

The Commission's view is that G-MW, in consultation with its customer committees and customers, is best placed to design tariffs and tariff structures that meet its customers' needs, and manage its risk and deliver its desired business outcomes. G-MW is also best able to coordinate and integrate its tariff structures with its broader risk management policies, which include the form of control and management of service standards, among others.

The Commission's Guidance Paper highlighted that a key consideration in tariff reforms is the ACCC's pricing principles requirement to consider efficiency. This could be realised by moving towards cost reflectivity in pricing. The Commission stated it would analyse the extent to which G-MW's tariffs and charges recover the actual costs incurred in the delivery of specific services. This includes providing for a two part tariff to reflect fixed and variable costs where applicable.

1.4 SCOPE OF THE CONSULTANCY

The Commission has engaged Indec to provide it with high level advice on whether the:

- proposed tariff reforms for G-MW's gravity system are underpinned by changing cost structures or whether district costs remain significant; and
- proposed breakdown of fixed and variable components of tariffs reflect underlying costs of services for diversion customers.

In providing advice on the above, the Commission has asked Indec to have regard to:

- the two guidance papers issued by the Commission on how it will assess G-MW's price submission;
- the information in the G-MW's price submission (and accompanying information templates) and any explanations it provides on how it derived the forecasts; and
- any data and information the consultants have available to assess expenditure forecasts.

In assessing these proposals the Commission is required to have regard to its objectives under the *Essential Services Commission Act 2001*, including the main objective to "promote the long term interests of Victorian consumers".

1.5 RELIANCE ON G-MW DATA AND INFORMATION

Indec has relied on the data and information provided by G-MW in completing this report. As part of its analysis Indec conducted high level reasonableness checks to complete its high-level analysis. Indec has not undertaken detailed checking and verification of the data provided by G-MW.

1.6 BASIS OF COST ANALYSIS

Operating costs represent about 80 per cent of G-MW's cost base under the Commission's building blocks approach to regulate G-MW's charges. In order to simplify the analysis, we have based the analysis on operating costs. Capital costs (return on and return of capital) were excluded from our analysis.

1.7 REPORT STRUCTURE

The report considers the proposed reforms to the gravity irrigation tariffs in Section 2.

The review of the proposed diversion tariff reforms is outlined in Section 3.

2 GRAVITY IRRIGATION TARIFFS

2.1 BACKGROUND

The current tariff structure in place for G-MW's gravity irrigation services is an area-based approach whereby charges for gravity irrigation services are location based. In practice this means that each irrigation district has different levels of charges, for example irrigators in the Central Goulburn district pay different charges to those in the Murray Valley district.

2.2 PROPOSED TARIFF REFORM

The most significant change proposed by G-MW for its gravity irrigation services is a move to a common or uniform delivery charges. This would result in all gravity customers paying the same delivery charges regardless of their location and discontinue the current arrangements where the six irrigation districts pay different Infrastructure Access Fees and Infrastructure Use Fees.

The other change proposed is cost reflective tariffs for modern service points (Remote Read and Remote Read and Operate) installed as part of the Connections Project.

G-MW expects that the introduction of uniform gravity irrigation tariffs will lead to annual cost savings of between \$0.85 million and \$1 million per year through lower labour costs related to pricing, budgeting and customer service.

2.3 BUSINESS TRANSFORMATION

G-MW is undertaking a significant business transformation with major changes to its gravity irrigation delivery infrastructure, which will significantly impact on how the business is operated. These changes involve new automated assets delivering services and existing assets either being modified or retired, resulting in organisational restructuring and changes in operating practices. These changes are expected to introduce common service levels across the gravity irrigation districts and are driving the gravity irrigation tariff reform proposals.

G-MW's reform of its gravity irrigation tariffs is based on the expectation that its cost structures will be changing, with more of its costs incurred centrally and becoming shared costs. G-MW expects this to translate to a uniform cost structure across its gravity irrigation districts whereby the cost to provide services in each district becomes similar.

Indec has identified three major areas of change which are likely to impact on G-MW's operations and cost structures:

- modernisation and automation of the delivery infrastructure;
- change in gravity irrigation district management and operating model; and
- \$20 million business wide savings initiative (2013 Blueprint).

2.3.1 Connections Project

The modernisation of the delivery infrastructure is being implemented through the Connections Project, a \$2 billion investment funded by the State and Commonwealth governments and the Melbourne water businesses to modernise, upgrade and improve the irrigation water delivery network.

The Connections Project involves three major components:

- Upgrading backbone channels and reducing the length of the network by 44 per cent from 6,300 kilometres of channels to 3,500 kilometres;
- Reconnecting customers to the upgraded backbone channel and in many cases creating individual pipeline connections rather than the local spur channel; and
- Several projects including the East Loddon Pipeline and Shepparton East projects.

The Connections Project is currently in the implementation phase and is expected to be completed in 2018. On the completion of this project, a fully automated backbone of major channels and modernised customer service points will be in place. The new backbone will improve service levels offered to customers and it will ensure a minimum level of service that will apply across the Goulburn-Murray Irrigation District. G-MW expects these changes will reduce the variance in service levels between districts.

As the Connections Project is in delivery phase, G-MW is yet to determine its full impact on its operating environment. The full benefits of the Connections Project will materialise after the project's completion in 2018.

2.3.2 Gravity irrigation district management and operating model

A further significant operational change involved G-MW no longer operating the six gravity irrigation districts as separate entities. In the past, each district was managed separately with its own funding and bank account, making its own financial recommendations based on capital and operational expenditure needs.

G-MW has advised that the change in the gravity irrigation district management and operating model will introduce greater operational flexibility and efficiencies with district based resources utilised across multiple districts. G-MW expects that operational efficiencies will emerge, with benefits from combined procurement activities and the pooling of staff, plant and equipment across multiple districts.

2.3.3 2013 Blueprint

G-MW has committed to a business wide initiative to deliver a reduction in total operating expenditure of \$20 million per year by 2018. This commitment is expected to deliver savings to both prescribed and non-prescribed services. The initiatives to deliver the targeted savings include an organisational restructure to refocus labour resources on servicing the changing needs of customers, particularly with a changing asset base and the increasing use of automated systems. This restructure has involved the pooling of resources across the entire business rather than having dedicated teams to serve particular customer groups. An example of this is the removal of the Diversions Support Team with their activities now undertaken by the business wide customer support team. Cost reduction initiatives include changes to procurement practices and the review of contracts and services.

G-MW expects that by the end of the current regulatory period (2015-16) it will achieve \$8.4 million of the \$20 million in annual savings, of which \$7.1 million is related to prescribed services. G-MW has included the \$7.1 million of expected savings up until 2015-16 into its future expenditure forecasts. The expenditure forecasts, however, do not include the prescribed services share of the full savings target of \$20 million expected to be achieved by 2018.

2.3.4 Impacts on tariffs

G-MW expects that these operational changes will have a significant impact on G-MW's cost structures and enable its tariff reforms to better meet the requirements of the ACCC pricing principles. Page 88 of G-MW's 2016 Price Submission states the following:

'GMW considers a uniform GMID Delivery Charge reflects an appropriate balancing of the objectives provided for in the ACCC's pricing principles. In particular, pricing which will achieve cost reflectivity at a GMID level to reflect the minimum level of service provided, and as a result the promotion of the efficient use of water infrastructure / water, as well as simplicity, transparency and lower administrative cost.'

2.4 SCOPE OF ANALYSIS

The scope of Indec's analysis is to consider if the proposed tariff reforms for G-MW's gravity system are underpinned by changing cost structures or whether district costs remain significant.

Indec's analysis will assist the Commission address whether the six irrigation district gravity system tariffs are underpinned by a uniform cost structure associated with an integrated network or whether district costs remain significant. Our analysis will also assist the Commission's assessment of the appropriateness of the gravity irrigation tariffs in meeting the ACCC's pricing principles.

2.5 METHODOLOGY

Indec's methodology involved gaining an understanding of G-MW's tariff reforms and the drivers behind the proposed changes. Our initial understanding was based on G-MW's 2016 Price Submission and accompanying information templates.

As agreed with the Commission, the tariff review was based on a high-level assessment to identify any anomalies and inconsistencies with G-MW's statements and assumptions made in its 2016 Price Submission.

Indec's approach included spending about a week in G-MW's offices to gain a deeper understanding of the proposed tariff reforms and to identify the data required to complete our analysis. We interviewed the key G-MW personnel to obtain a better understanding of the key issues, such as the collection and recording of cost data, cost allocation methodologies and the assumptions underpinning the forecasts. We sought an overview of the Connections Project to understand how the G-MW business will change. In particular, we wanted to understand how new and existing assets will be utilised, operated and maintained. This would further assist our understanding and reconciliation of the cost drivers of the integrated network.

We requested further information, including more detailed data, from G-MW to verify the extent of district based costs in the gravity system.

The key question was to determine if the new tariff structure reflects how costs are incurred and meets the requirements of the ACCC's pricing principles.

G-MW commented in its 2016 Price Submission (page 88) that:

'Further, today around 65% of the gravity irrigation system operating costs, which reflect 85-90% of customer prices, are incurred or shared on a system wide or multiple district basis. This is due to the comprehensive changes occurring as part of the Connections Project, where modernisation is leading to more standardised service levels. This supports the move to uniform cost reflective GMID Delivery Charges.'

Our analysis pursued these comments further and obtained a greater understanding of how cost structures will change with the implementation of the Connections Project and the assumptions made by G-MW.

2.6 G-MW'S OPERATING COSTS STRUCTURE ANALYSIS

Indec requested G-MW to provide supporting data and analysis which demonstrate that currently around 65 per cent of the gravity irrigation system operating costs are incurred or shared on a system wide or multiple district basis.

The results of G-MW's analysis is summarised in Figure 2-1 below, which indicated that 67 per cent of gravity irrigation operating costs are deemed to be centralised and 33 per cent are considered to be district based.

Figure 2-1 – G-MW's operating cost structure analysis – gravity irrigation (2015-16)

Gravity Irrigation Cost	\$ millions		
	District	Centralised	Total
Labour (Customer Operations)	10.8	11.2	22.0
Contracts, materials, plant, vehicles and other	5.9	6.1	12.0
Management overhead allocation	3.6	3.7	7.3
Corporate overheads allocation to Gravity (per 2016 Price Submission split)	-	14.1	14.1
Centralised Business Units direct charge to Gravity (i.e. ICT Operations)	-	5.8	5.8
Total	20.3	40.9	61.2
Percentage – District v Centralised	33%	67%	100%

Source: G-MW – centralised vs district cost workings

2.6.1 Assumptions and cost allocation rules

G-MW's operating costs structure analysis is based on the assumption that the Customer Operations labour costs are the key cost driver. Customer Operations labour costs include those positions involved in the delivery of gravity irrigation services.

This assumption is reasonable given that Customer Operations labour costs represent the most significant cost item and these labour costs can be readily traced from the recording of staff activities from time sheets.

The assumptions and cost allocation rules for the allocated cost items in Figure 2-1 are outlined in Figure 2-2 below.

Figure 2-2 – G-MW's cost allocation rules

Operating Cost	Assumption/Cost Allocation Rule
Non Labour Accounts (contracts, materials, plant, vehicles and other)	Allocated to district and centralised costs based on the percentage share between district versus centralised of Customer Operations labour costs
Management overhead	Allocated to district and centralised costs based on the percentage share between district versus centralised of Customer Operations labour costs
Corporate overhead	Deemed a centralised cost
Centralised Business Units direct charge to gravity (i.e. ICT Operations)	Deemed a centralised cost

Source: G-MW – centralised vs district cost workings

2.6.2 Definition of district and centralised cost

G-MW's analysis is based on the definition of labour costs as either a district or centralised costs for the Customer Operations activities. Labour costs for each Customer Operation's position is classified as a district cost if the costs are exclusive to a single district, or as a centralised cost if the costs are incurred over more than one district or area.

Figure 2-3 below includes the definitions of district and centralised labour costs applied by G-MW in its cost structure analysis.

Figure 2-3 – G-MW's district and centralised cost definition

Operating Cost	Definition
District	Staff with time allocated to a single district are assumed district specific costs.
Centralised	Staff budgeted over multiple areas (East, West & Central) or multiple districts (Shepparton, Murray Valley etc) are assumed centralised.

Source: G-MW – centralised vs district cost workings

Indec does not support G-MW's definitions of district and centralised labour costs. G-MW's definition results in a district based position which incurs labour costs in more than one district being classified as a centralised cost. Centralised costs are allocated across all districts based on each district share of district labour.

The weakness of G-MW's approach is that even though a position may incur labour costs in two districts, which is identified and recorded, the labour cost is allocated across all districts. The other issue with G-MW's approach is that it overlooks the nature of the cost. The cost is incurred from a district based activity and not a centralised business wide activity.

Allocating districts based costs should be avoided if reliable data exists that would enable the identification of how costs are incurred in the relevant district.

2.6.3 Extent of district labour costs incurred across multiple districts

We completed further analysis of the 2015-16 budgeted labour cost data provided by G-MW to understand the extent to district labour costs incurred across multiple districts and measure the extent of resource use across multiple districts.

Our analysis identified that on average a district staff member incurs labour costs across 1.7 gravity irrigation districts. Some district staff incur costs across other tasks such as bulk water, diversions and overhead activities.

This analysis highlighted that district based resources have limited capacity to work across more than two or three districts due to the requirement of being physically located within the particular district to carry out their duties. Moving across districts requires travel time and significant travel time reduces the productivity of a staff member.

This analysis also indicated that district resources are not centralised but rather are pooled across some but not all districts.

2.6.4 Indec's alternative definition of district and centralised labour cost

In Indec's opinion, more appropriate definitions of district and centralised labour costs are based on the location of the resource and the availability of data showing how labour costs are incurred. A district resource is any resource located in the district working directly in a district with data available to capture the labour costs incurred in each district.

It is possible that some district based resources, such as district management, may be classified as a centralised resource as these incur labour costs across multiple districts without any data available to distinguish the labour costs incurred in the relevant districts.

A centralised resource is any resource that does not operate directly in district and incurs labour costs across multiple districts without details on the labour costs incurred in each district. An example of this would be all corporate activities, such as finance and management activities, located in the Tatura office.

Some centralised resources located in the head office may incur labour costs in particular districts with details of the time spent in each district recorded in a timesheet. It is possible to classify these costs as district costs if a more granular approach is desired. This approach does lead to a more complex cost recording system and the costs of such need to be considered against the benefits.

Indec completed an alternative analysis of district and centralised costs based on its definitions of district and centralised costs from Figure 2-4.

Figure 2-4 – Indec's district and centralised cost definition

Operating Cost	Definition
District	District based staff with details available on labour costs in each district.
Centralised	<p>Non-district based staff who undertake general activities which are not directly attributable to any district.</p> <p>District based staff who undertake general activities across multiple districts and do not record labour costs incurred in each district.</p>

Source: Indec

The results of Indec's analysis of the 2015-16 budget data are significantly different from G-MW's analysis. Our analysis identifies that the majority of operating costs are district based with 56 per cent considered to be district based and 44 per cent considered to be centralised. The results of Indec's analysis are presented in Figure 2-5.

As outlined in Section 2.6, G-MW's analysis, based on its definition of district and centralised costs, indicated that 67 per cent of operating costs are centralised with 33 per cent classified as district.

Figure 2-5 – Indec's operating cost structure analysis – gravity irrigation (2015-16)

Gravity Irrigation Operating Cost	\$ millions		
	District	Centralised	Total
Labour (Customer Operations)	22.0	-	22.0
Contracts, materials, plant, vehicles and other	12.0	-	12.0
Management overhead allocation	-	7.3	7.3
Corporate overheads allocation to Gravity (per 2016 Price Submission split)	-	14.1	14.1
Centralised Business Units direct charge to Gravity (i.e. ICT Operations)	-	5.8	5.8
Total	34.0	27.2	61.2
Percentage – District v Centralised	56%	44%	100%

Source: Indec

Essentially, under the Indec definition of district and centralised costs, all of the Customer Operations labour costs not classified as overhead are considered as district costs. These resources are working in the districts and G-MW's data provides details in which gravity irrigation district that labour costs would be incurred.

Contract, materials, plant, vehicle and other costs are all deemed to be district costs. These costs are incurred in the district or by the district based labour performing district based duties.

The remaining cost items (management overheads, corporate overheads and centralised business unit direct charge) are considered to be centralised as these are generated from centrally based business wide activities, such as management, corporate and ICT activities.

2.6.5 Historical analysis

Indec requested actual cost data and organisational charts from 2011-12 to 2014-15 to analyse how cost structures and the mix of district and centralised costs have changed over time.

Although G-MW provided the requested cost data, it lacked sufficient detail. The historical data was different to the 2015-16 data due to structural changes in the business structure and accounting system. Moreover, G-MW indicated that significant time and effort would be required to extract historical labour cost data. The differences in the data structure restricted the comparative analysis that could be performed because of the changes in how costs are grouped and recorded.

A high level analysis was conducted. A detailed analysis, including a like for like comparisons across periods, was not possible due to the limitations in the data available.

Figure 2-6 below shows a high level trend of the gravity irrigation operating cost structure based on the data provided by G-MW for 2011-12, 2014-15 and 2015-16. G-MW's analysis indicates that the proportion of centralised costs has increased since 2011-12 from 48 per cent to 63 per cent in 2014-15, and the 2015-16 budget forecasts show a further increase to 67 per cent.

Figure 2-6 – G-MW's operating cost structure trend analysis – gravity irrigation

Operating Cost	2011-12 actual		2014-15 actual		2015-16 budget	
	\$ millions	%	\$ millions	%	\$ millions	%
District	28.9	52%	22.0	37%	20.3	33%
Centralised	26.6	48%	37.3	63%	40.9	67%
Total	55.5	100%	59.3	100%	61.2	100%

Source: G-MW – central vs district 11-12 v 14-15 high level

We view that this analysis has the potential to produce biased results based on G-MW's definitions of district and centralised costs. This result captures both the increase in centralisation of activities and the increase in the resources being shared across multiple districts.

As G-MW did not provide all the requested organisational charts, Indec was unable to verify how activities have been centralised from reviewing organisational changes. Any significant centralisation of activities would be visible in a comparison of detailed organisational charts before and after business transformation.

Indec was unable to conduct an analysis of cost structures over time based on its definition of district and centralised costs due to the data available.

2.6.6 Future operating cost structure

G-MW provided data and analysis based on 2015-16 budget information. G-MW was unable to provide estimates of the operating cost structure for periods beyond 2015-16 and demonstrate how its costs structure is expected to change as the Connections Project further progresses and the prescribed services share of the \$20 million per annum savings initiatives from the 2013 Blueprint are implemented.

Our analysis has been limited as details on estimated cost structures beyond 2015-16 could not be considered.

2.6.7 Gravity irrigation pricing district operating costs to serve analysis

Indec completed a further step to map the operating costs based on the 2015-16 budget data to the six irrigation district gravity system tariffs. This step was to identify if the operating cost structure across the pricing districts are underpinned by uniformity or if district costs remain significant.

2.6.8 Assumptions of Indec's operating cost to serve analysis

District based costs have been recorded against the relevant pricing district with centralised costs have been allocated to each irrigation pricing district based on each district's share of Customer Operations labour costs.

This analysis includes gravity irrigation operating costs only and excludes operating costs associated with pumped irrigation, drainage and stock and domestic services, fees for service and other non-gravity irrigation activities.

Total operating costs for each pricing district were divided by the delivery shares for that district in order to derive an operating cost to serve per delivery share.

The operating cost to serve per delivery share is an estimate of the total operating cost to serve expressed on a per delivery share basis in order to aid comparison across irrigation pricing districts. This analysis does not attempt to calculate a tariff and should not be interpreted as a tariff calculation.

2.6.9 Results of Indec's Operating Cost to Serve Analysis

Figure 2-7 below shows the outcome of this analysis which indicates that operating costs across pricing districts do not presently reflect a reasonable level of uniformity. The operating cost to serve per delivery share varies from \$4,706 (Murray Valley) to \$2,201 (Shepparton) or a difference of \$2,505 between highest cost and lowest cost.

Figure 2-7 – Gravity irrigation district operating cost to serve analysis – G-MW's definitions

Gravity Irrigation District	Total Operating Costs	Delivery Shares	Operating Cost to Serve per Delivery Share
Central Goulburn	\$16,600,621	3,735	\$4,444
Loddon Valley	\$5,237,689	2,006	\$2,611
Murray Valley	\$12,255,548	2,604	\$4,706
Rochester	\$5,982,898	1,800	\$3,324
Shepparton	\$3,892,720	1,769	\$2,201
Torrumbarry	\$9,981,595	3,066	\$3,256

Source: Indec

Figure 2-8 below presents the operating cost to serve analysis based on Indec's definitions of district and centralised costs as defined in Figure 2-4. On this basis, the operating cost to serve per delivery share displayed reasonable uniformity across four districts – Central Goulburn (\$3,145), Loddon Valley (\$3,185), Rochester (\$3,245) and Torrumbarry (\$3,151).

The operating costs to serve on a per delivery share basis for Murray Valley (\$3,522) and Shepparton (\$4,143) did not show reasonable uniformity with the other four districts.

Figure 2-8 – Gravity irrigation district operating cost to serve analysis – Indec's definitions

Gravity Irrigation District	Total Operating Costs	Delivery Shares	Operating Cost to Serve per Delivery Share
Central Goulburn	\$11,745,920	3,735	\$3,145
Loddon Valley	\$6,389,415	2,006	\$3,185
Murray Valley	\$9,172,895	2,604	\$3,522
Rochester	\$5,840,637	1,800	\$3,245
Shepparton	\$7,328,312	1,769	\$4,143
Torrumbarry	\$9,660,932	3,066	\$3,151

Source: Indec

Conceptually, these results are not inconsistent with the current status of G-MW business transformation with the Connections Project still to be completed and the business yet to achieve the full benefit of the \$20 million savings initiative, which may result in a greater uniformity of operating costs.

Our analysis was unable to consider the impact of these initiatives on the gravity irrigation cost structures as G-MW was unable to provide forecasts beyond 2015-16 with the impact of these initiatives included. Consequently, our analysis could not include an estimate of how cost structure may change in the future.

2.6.10 Explaining the differences

The operating cost to serve analysis in Figure 2-7 and Figure 2-8 indicated that the definition of district and centralised costs has a significant impact on the operating cost to serve at the gravity irrigation district level. The operating cost to serve results at the district level vary significantly between the G-MW and Indec approach.

The definition of district cost influenced the level of labour costs at the gravity irrigation district. This in turn determined the proportional share of district labour costs which then drives the allocation of centralised costs.

Figure 2-9 below shows the district based labour costs and the proportional shares under the G-MW approach and the Indec approach.

Figure 2-9 – Gravity irrigation district operating cost to serve analysis – Indec’s definitions

Gravity Irrigation District	G-MW’s definition of district and centralised costs		Indec’s definition of district and centralised costs	
	Customer Operations District Labour Costs	% share of Customer Operations District Labour Cost	Customer Operations District Labour Costs	% share of Customer Operations District Labour Cost
Central Goulburn	\$3,054,940	28.2%	\$4,222,700	19.2%
Loddon Valley	\$963,869	8.9%	\$2,297,018	10.4%
Murray Valley	\$2,255,335	20.8%	\$3,297,689	15.0%
Rochester	\$1,101,007	10.2%	\$2,099,730	9.5%
Shepparton	\$716,360	6.6%	\$2,634,555	12.0%
Torrumbarry	\$1,836,870	16.9%	\$3,473,140	15.8%
Non-gravity irrigation services costs	\$910,626	8.4%	\$3,989,695	18.1%
Total	\$10,839,007	100%	\$22,014,526	100%

Source: Indec

A further influencing factor of the differences between the G-MW and Indec approaches is the extent of non-gravity irrigation services costs. These costs are not related to the delivery of gravity irrigation services such as drainage, stock and domestic, pumped irrigation, fee for service and other non-gravity irrigation activities.

The G-MW and Indec approaches both excluded the same total value of labour costs (\$3,989,695). However, under the G-MW approach the excluded cost of \$910,626 is classified as district based. The Indec approach classified the full excluded labour amount as district based (\$3,989,695). Consequently, under the G-MW approach, the excluded costs attract 8.4 per cent of centralised costs, whereas under the Indec approach the excluded costs attract 18.1 per cent of centralised costs.

It should be noted that under the G-MW approach, a greater proportion of total operating costs are deemed to be centralised (67 per cent) when compared to the Indec approach (44 per cent). This results in a greater proportion of centralised costs being allocated to gravity irrigation pricing districts. Under the Indec approach a greater proportion of the total operating costs are directly charged to the irrigation pricing district with a smaller proportion of centralised costs being allocated. It could be argued that an approach that favours direct charging of costs based on observable data would result in a more accurate estimation of the cost to serve.

2.7 GRAVITY IRRIGATION DISTRICT CUSTOMER CHARACTERISTICS

Indec undertook further analysis to understand if the customer characteristics of each gravity irrigation districts had any impacts on the cost to serve analysis. Our analysis focused on the number of customers and number of outlets per customer and if it impacts on the cost to serve analysis. This was prompted by the Shepparton system modernisation not including the same extent of rationalisation of outlets as is expected to occur under the Connections Project.

Figure 2-10 below shows the ratio of service points per customer for each of the six gravity irrigation districts and the average for all gravity irrigation districts. The number of customers is not forecast to change over the period 2015-16 to 2019-20.

Figure 2-10 – Customers per gravity irrigation district (2015-16 to 2019-20)

Gravity Irrigation District	Customer number	% of total
Central Goulburn	3,956	29%
Loddon Valley	811	6%
Murray Valley	2,039	15%
Rochester	1,733	13%
Shepparton	2,455	18%
Torrumbarry	2,486	18%
Average	2,247	100%

Source: G-MW

The largest gravity irrigation district by customer number is Central Goulburn with 3,956 customers or 29 per cent of the total gravity irrigation district customers. The smallest district is Loddon Valley with 811 customers or 6 per cent of the total gravity irrigation customer base. The other four districts have customer bases ranging between 1,733 to 2,486, or 13 per cent to 18 per cent, of the total gravity irrigation customer base.

Figure 2-11 below shows the ratio of service points per customer for each of the six gravity irrigation districts and the ratio of service points per customer for all gravity irrigation districts for the 2015-16 to 2019-20 period.

For the 2015-16 year, Loddon Valley has the highest ratio of 2.9 outlets per customer with Shepparton having the lowest ratio of 1.6 outlets per customer. The ratio of outlets per customer across all districts is 1.8.

The ratios are forecast to change over the period from 2015-16 to 2019-20 as the Connections Project is rolled out and the number of customer outlets is rationalised. The ratio for Shepparton is not expected to change as it will not be impacted by the Connections Project. The ratios in the other five districts will all decline by varying degrees.

The ratio of outlets per customer across all districts will decline from 1.8 to 1.5 by 2019-20. Once the Connections Project is rolled out in 2019-20, the Loddon Valley District is expected to have the highest ratio of 1.7 outlets per customer and the Central Goulburn, Murray Valley and Rochester districts are expected to have the lowest ratio of 1.4 outlets per customer.

Figure 2-11 – Service points per customer

Gravity Irrigation District	2015-16	2016-17	2017-18	2018-19	2019-20
Central Goulburn	1.7	1.7	1.5	1.4	1.4
Loddon Valley	2.9	2.1	1.8	1.7	1.7
Murray Valley	1.9	1.7	1.5	1.4	1.4
Rochester	2.0	1.7	1.4	1.4	1.4
Shepparton	1.6	1.6	1.6	1.6	1.6
Torrumbarry	1.7	1.9	1.6	1.5	1.5
All Districts	1.8	1.7	1.5	1.5	1.5

Source: Indec

2.7.1 Excluding account administration and site compliance costs

Indec excluded the costs associated with customer account administration and site compliance (meter maintenance and meter reading) to determine if the number of customers and outlets has an impact on the cost to serve analysis.

G-MW provided an estimate of the operating costs associated with customer account administration and site compliance respectively. These estimates are shown in Figure 2-12 below.

Figure 2-12 – Gravity irrigation district - account administration & site compliance operating costs (2015-16)

Gravity Irrigation District	Customer Account Administration Operating Costs	Site Compliance Operating Costs	Total Operating Costs – Customer Account Administration & Site Compliance
Central Goulburn	\$395,600	\$1,537,191	\$1,932,791
Loddon Valley	\$81,100	\$577,079	\$658,179
Murray Valley	\$203,900	\$861,516	\$1,065,416
Rochester	\$173,300	\$701,215	\$874,515
Shepparton	\$245,500	\$832,039	\$1,077,539
Torrumbarry	\$248,600	\$918,703	\$1,167,303
Total	\$1,348,000	\$5,427,742	\$6,775,742

Source: G-MW

The operating costs in Figure 2-13 have been excluded from the cost to serve analysis to remove the operating costs associated with customer account administration and site compliance. Figure 2-13 below shows the results of this analysis.

Figure 2-13 – Operating cost to serve analysis – excluding account administration & site compliance costs (2015-16)

Gravity Irrigation District	Total Operating Costs	Delivery Shares	Operating Cost to Serve per Delivery Share
Central Goulburn	\$9,813,129	3,735	\$2,627
Loddon Valley	\$5,731,236	2,006	\$2,857
Murray Valley	\$8,107,480	2,604	\$3,113
Rochester	\$4,966,122	1,800	\$2,759
Shepparton	\$6,250,774	1,769	\$3,534
Torrumbarry	\$8,493,629	3,066	\$2,771

Source: Indec

The results indicated that the operating cost to serve per delivery share demonstrates reasonable uniformity across all districts with the exception of Murray Valley and Shepparton. Four districts have an operating cost to serve of between \$2,627 and \$2,857 per delivery share. The operating cost to serve for Murray Valley is \$3,113 and Shepparton has an operating cost to serve of \$3,534 per delivery share.

2.8 SUMMARY RESULTS FROM GRAVITY IRRIGATION TARIFF ANALYSIS

Figure 2-14 indicates that the definitions of district and centralised labour costs have a significant impact on the G-MW's gravity irrigation operating cost structure.

G-MW's analysis showed that 33 per cent of gravity irrigation district operating costs are district based and 67 per cent of gravity irrigation district operating costs are centralised.

Indec's analysis demonstrated that 56 per cent of gravity irrigation district operating costs are district based with 44 per cent of gravity irrigation district operating costs are centralised.

Figure 2-14 – District and centralised operating costs – gravity irrigation districts (2015-16)

Operating Cost	G-MW's Analysis	Indec's Analysis
District	33%	56%
Centralised	67%	44%
Total	100%	100%

Source: Indec

Indec was unable to analyse if the G-MW operating cost structures will change in the future, particularly upon the completion of the Connections Project, as G-MW was unable to provide detailed cost forecasts beyond 2015-16.

Our analysis was unable to verify if the proposed tariff reforms for G-MW's gravity system are underpinned by changing operating cost structures due to the limitations in the data provided by G-MW.

G-MW's analysis, summarised in Figure 2-15, indicated that its operating cost structure is changing, with the proportion of centralised costs increasing from 48 per cent in 2011-12 to 63 per cent in 2014-15, and is forecast to further increase to 67 per cent in 2015-16.

We view that this analysis has potential to produce biased results based on G-MW's definitions of district and centralised costs. This result captured both the increase in centralisation of activities and the increase in the resources being shared across multiple, but not all, districts.

Figure 2-15 – G-MW's operating cost structure trend analysis – gravity irrigation

Operating Cost	2011-12 actual	2014-15 actual	2015-16 budget
District	52%	37%	33%
Centralised	48%	63%	67%
Total	100%	100%	100%

Source: G-MW – central vs district 11-12 v 14-15 high level

Indec allocated the operating costs based on the 2015-16 budget data to the six gravity irrigation districts. The purpose of this step was to identify if the operating cost structure across the gravity irrigation districts are underpinned by uniformity or if district costs remain significant. Figure 2-16 below presents a summary of the results based on G-MW's and Indec's definitions of district and centralised costs.

Figure 2-16 – Gravity irrigation district operating cost to serve analysis

Gravity Irrigation District	G-MW's Definition – Total Operating Costs	Indec's Definition – Total Operating Costs	Indec's Definition – Total Operating Costs excluding Account Administration & Site Compliance Costs
Central Goulburn	\$4,444	\$3,145	\$2,627
Loddon Valley	\$2,611	\$3,185	\$2,857
Murray Valley	\$4,706	\$3,522	\$3,113
Rochester	\$3,324	\$3,245	\$2,759
Shepparton	\$2,201	\$4,143	\$3,534
Torrumbarry	\$3,256	\$3,151	\$2,771

Source: Indec

The operating cost to serve per delivery share based on the G-MW's approach varies from \$4,706 (Murray Valley) to \$2,201 (Shepparton), or a difference of \$2,505 between highest cost and lowest cost.

Indec's analysis included calculating the cost to serve based on two approaches. The first approach included all operating costs. The second approach was based on operating costs excluding the estimated operating costs associated with customer account administration and site compliance activities.

The first approach applied by Indec, based on total operating costs, demonstrated reasonable uniformity of operating cost to serve per delivery share across four districts – Central Goulburn (\$3,145), Torrumbarry (\$3,151), Loddon Valley (\$3,185) and Rochester (\$3,245). The operating costs to serve on a per delivery share basis for Murray Valley (\$3,522) and Shepparton (\$4,143) did not show reasonable uniformity with the other four districts.

Under Indec's second approach, based on operating costs excluding estimated account administration and site compliance costs, the operating cost to serve per delivery share demonstrated reasonable uniformity across the same four districts with the exception of Murray Valley and Shepparton. Four districts, Central Goulburn, Loddon Valley, Rochester and Torrumbarry, have an operating cost to serve of between \$2,627 and \$2,857 per delivery share. Two districts, Murray Valley (\$3,113) and Shepparton (\$3,534), have an operating cost to serve per delivery share higher than the other four districts.

The exclusion of estimated operating costs associated with customer account administration and site compliance activities did not significantly impact on the uniformity of operating costs across the districts. Similar results were observed with and without estimated customer account administration and site compliance operating costs included. The same four districts demonstrated a reasonable level of operating cost uniformity, Central Goulburn, Loddon Valley, Rochester and Torrumbarry, with two districts, Murray Valley and Shepparton, not demonstrating cost uniformity with the other districts.

Conceptually, these results are not inconsistent with the current status of G-MW's business transformation as the Connections Project is yet to be completed. The business is yet to achieve the full benefit of the \$20 million savings initiative and the outcomes associated with service point rationalisation, which may result in a greater uniformity of operating costs.

3 DIVERSION TARIFFS

3.1 BACKGROUND

G-MW reviewed its tariffs for its diversion services during the current regulatory period and released a Diverters' Tariff Strategy in September 2013.

The implementation of the new tariff structure established under the Diverters' Tariff Strategy commenced in 2014-15.

The strategy committed to achieve the following outcomes:

- a reduction in the number of customer pricing groups from ten to four;
- a tariff structure based on the key cost driver of delivering the service. This involved a change in the levying of the Access Fee from customer size to service points; and
- lower costs across the entire business.

3.2 TARIFF REFORMS

The previous tariff structure had separate prices for 10 different groups of customers. The number of groups was reduced to four as a result of the tariff reforms. The current tariff structure involves the four diversions services as described in Figure 3-1 below:

Figure 3-1 – G-MW diversion tariff structure

Diversion Tariff Group	Reforms Implemented
Regulated surface water diverters	This group of customers was further divided into three groups: Murray, Goulburn and Goulburn (fish farming). As costs to service these groups were not sufficiently different, these groups have been amalgamated into a single group for pricing.
Unregulated surface water diverters	This group of customers was divided into four groups: Murray, Murray (fish farming), Goulburn and Goulburn (fish farming). The costs of servicing these groups were sufficiently similar to allow the groups to be amalgamated for pricing.
Groundwater diverters	All groundwater management areas have similar costs and G-MW has merged the two groups into a single group for pricing.
Shepparton Irrigation Region (SIR) groundwater diverters	The definition of this group is unchanged.

Source: G-MW 2016 Price Submission

3.2.1 Diversion services tariff structure

G-MW's tariff structure for diversion services was reviewed as part of the Diverters' Tariff Strategy. The review established the following four charges associated with the key activities for delivering diversion services:

- Service fee – account management services;
- Service point fee – site compliance services;
- Access fee – access compliance services; and
- Resource management fee – resource management services.

The outcome of this review was a recommended structure for charges; where charges are common across the four diverter customer groups for accounts management and site compliance, but differ across customer groups for access compliance and resource management.

Figure 3-2 below shows for each key charge, the key activity, associated costs, the G-MW identified cost driver and the charging basis of the tariff.

Figure 3-2 – Proposed tariff changes for diversion services

Charge name	Key activity	Associated costs	GMW identified cost drivers	Tariff charging basis
Service Fee	Account management	A share of the total cost of keeping records, managing accounts and maintaining and improving G-MW's accounts system	<ul style="list-style-type: none"> • Number of customer accounts 	\$ per licensee
Service Point Fee	Site compliance	The cost of compliance monitoring, measuring use and meters at each diversion site (service point)	<ul style="list-style-type: none"> • Checking service point compliance • Meter reading/deeming of usage • Maintenance and replacement of meters 	\$ per service point – Small or Large
Access Fee	Access compliance	The cost of ensuring water is accessed in line with management rules and plans. The access fee includes managing allocations, rosters, restrictions and water ordering.	<ul style="list-style-type: none"> • Flow monitoring • Water ordering • Roster management • Flow assessments 	\$ per service point
Resource Management Fee	Resource management	For groundwater and unregulated surface water diverters, the resource management costs include developing and reviewing resource management plans, data management related to water sharing arrangements, resource caps, trading rules and water resource monitoring.	<ul style="list-style-type: none"> • Resource identification • Monitoring and assessment • Development of resource management plan • Making of allocations • Setting of caps 	\$ per ML of entitlement

Source: Indec

3.2.2 Summary of tariff changes

The main tariff changes proposed by G-MW during the next regulatory period are summarised in Figure 3-3 below.

The most significant tariff change for diverters is the transition of an Access Fee, from being based on the customer's volume of entitlement to being based on the number of service points, which according to G-MW better reflects the way costs are incurred.

Figure 3-3 – Proposed tariff changes for diversion services

Tariff	Tariff changes
Service Point Fees	The previous single Service Point Fee was replaced in 2015-16 by two new charges: Small Service Point Fee and Large Service Point Fee, reflecting the cost of compliance and operating each of the two measurement types.
Access Fees	The new service point-based Access Fee was introduced in 2015-16. The existing volume-based Access Fee will be progressively phased out whilst the new Access Fee will be gradually increased.

Source: G-MW 2016 Price Submission

3.3 SCOPE OF ANALYSIS

The scope of Indec's high level analysis was to consider if the proposed tariff reforms for G-MW's diversion tariffs reflects the underlying costs of service and charges, considering the breakdown of fixed and variable costs.

The focus of our analysis was the proposed changes to the Service Point Fee and Access Fee, as highlighted in Figure 3-3 above.

The key question was to determine if the new tariff structure reflects how costs are incurred and meets the requirements of the ACCC's pricing principles.

G-MW commented in its 2016 Price Submission (page 98) that:

'The new tariff structure better reflects how costs are incurred and better meets the ACCC's pricing principles. In particular, the costs of regulating access are primarily driven by the number of service points. Aligning the charge with the way costs are incurred provides an appropriate incentive for customers to rationalise unnecessary service points, and therefore promotes the efficient use of infrastructure.'

Our review sought justification from G-MW which supports this view.

Our analysis will assist the Commission's assessment of the appropriateness of the diversion tariffs in meeting the ACCC's pricing principles.

3.4 METHODOLOGY

Indec's methodology involved gaining an understanding of G-MW's tariff reforms and the drivers behind the proposed changes. Our initial understanding was based on G-MW's 2016 Price Submission and accompanying information templates.

As agreed with the Commission, the tariff review was based on a high-level assessment to identify any anomalies and inconsistencies with G-MW's statements and assumptions made in its 2016 Price Submission.

Indec's approach included spending about a week in G-MW's offices to gain a deeper understanding of the proposed tariff reforms and to identify the data required to complete our analysis. We interviewed the relevant G-MW personnel to obtain a better understanding of the key issues, such as the collection and recording of cost data, cost allocation methodologies and the assumptions underpinning the forecasts.

We requested further information, including more detailed data, from G-MW to verify the cost structure associated with diversion services and to better understand the key cost drivers and the fixed and variable cost structure.

3.5 G-MW SUPPORTING INFORMATION

Indec requested G-MW to provide cost data and supporting analysis which identify what costs are fixed and variable in providing the diversions services and the key cost drivers associated with diversion services.

G-MW indicated that its cost data and analysis are limited in identifying the key cost drivers and which costs are fixed or variable for the delivery of diversions services.

G-MW provided the response shown in Figure 3-4 to our data requests.

Figure 3-4 – G-MW's response on request for detailed data

'As discussed today, the data being sought does not exist in any pure state historically.

The data that was used for further analysis during the Diverters' Tariff Strategy developments was the historic recurrent budget and expenditure (as well as budget/expenditure projections) for the Diversions business broken down by Operations, Maintenance and Management/Admin activity types (so activities 100, 140 and 160).

This data was used to inform discussion with Diversions managers also key staff, and later validation and discussion with the Working Group (which comprised Regional Water Service Committee chairs and a couple of GMW Board members), about the sorts of activities, functions and tasks that were included in each of the 3 'activity' types mentioned above.

This process required applying collective expert knowledge, judgement and assumptions about the mix of activities/tasks, how these could be better categorised or logically grouped to meet the tariff principles of cost reflectivity, simplicity, transparency etc...

From this process it was clear that service point related activities: metering reading, meter maintenance, compliance checks, rostering/ restriction management, water ordering and so on; comprised the single largest cost driver (~60%) of Diversions business recurrent costs in an average year.

In terms of capital costs, as stated previously, nearly all capital expenditure relates to service points (flow meters).

So when Site/Service Point and Access were determined as sensible and logical tariff categories it was clear that service point related activities, linked to each of these categories, were by far the largest single cost driver for the Diversion business (and would continue to be in the future).'

Source: G-MW

Indec was provided with the data and analysis prepared by G-MW to support the Diverters' Tariff Strategy and supporting analysis.

3.5.1 Fixed and variable costs

G-MW's response included a statement that it viewed that the cost structure associated with delivering diversion services is 'relatively fixed' in that it does not vary from year to year or vary in terms of volumes of water use.

The response received from G-MW is shown in Figure 3-5 below:

Figure 3-5 – G-MW’s response on fixed and variable costs

‘The Diversions business deals with fixed cost elements because the service activities required to be undertaken by GMW, to ensure customers are taking water in accordance with their entitlements to access water and works licence operating conditions, are fixed. That is, costs tend not to vary greatly from year to year. Also and fundamentally, costs do not change in the diversions business year to year based on how much water diversion customers use each year.

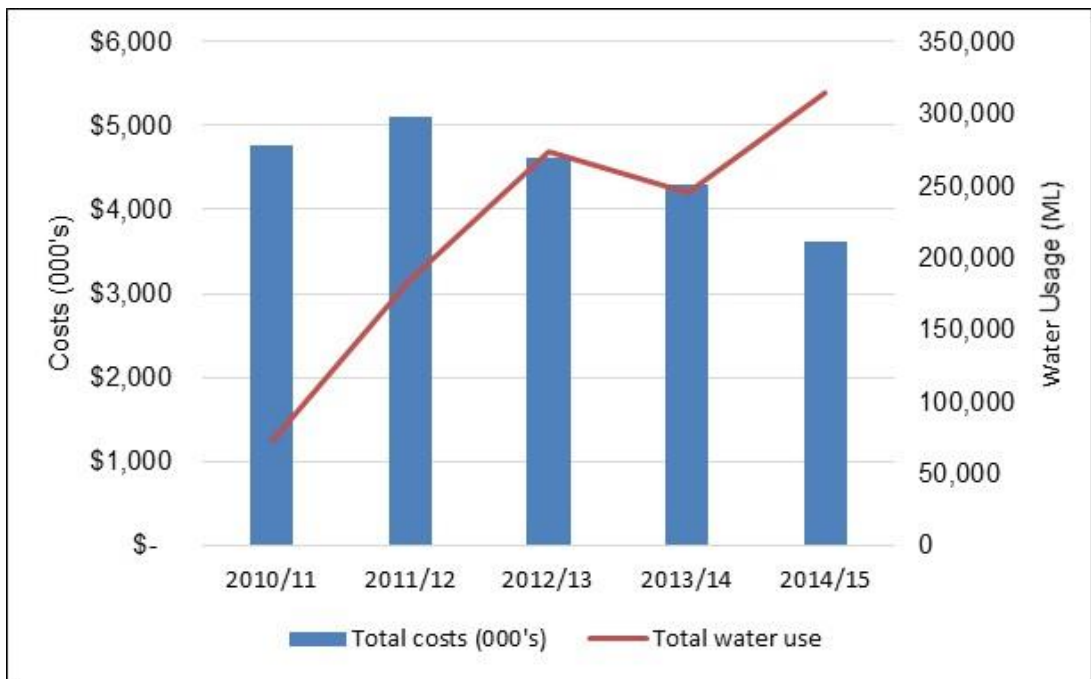
The Diverters’ Tariff Strategy costs and activities were analysed from the bottom up by GMW in consultation with a customer working group. In this tariff strategy development process it was agreed that:

- The functions and activities undertaken by GMW for diversion customers fall into one of four broad categories: Customer, Sites, Access and Resource Management)*
- The costs of providing the activities under each of these categories of service are relatively fixed.’*

Source: G-MW

G-MW provided additional data which verified that its operating costs do not vary with the volumes of water usage by diversion customers. Figure 3-6 below shows the annual water usage and operating costs for the period from 2010-11 to 2014-15 for diversion services.

Figure 3-6 – Operating costs and water usage - diversion services



Source: G-MW

Figure 3-6 shows that annual water usage by diversion customers over the period 2010-11 to 2014-15 has been increasing whilst operating costs for diversion services have not varied significantly from year to year with a declining trend over the same time period. This demonstrates that operating costs for diversion services are not directly linked to the volumes of water usage by diversion customers.

G-MW stated that the fixed operating costs for diversion services are predominantly labour related and that the mix of labour related activities changes between periods of low and high water use.

The comparison of diversion water usage with diversion related operating costs demonstrates that the general functions undertaken by G-MW do not increase or decrease depending on high or low water use.

3.5.2 Key cost drivers

G-MW provided both qualitative and quantitative data to support its analysis of the key cost drivers associated with diversion services.

The qualitative response received from G-MW is reproduced in Figure 3-7 below:

Figure 3-7 – G-MW's response on key cost driver

Service points are the key driver of costs in the diversion business as:

- Meters are really the only diversion-related asset
- Service points (whether metered/ non metered) are the key way of GMW ensuring water is taken in accordance with legal entitlements to water
- The main diversion costs are incurred in meter maintenance, replacement, compliance checks, meter reading (so proportionally a high labour cost involved)
- Diversion customers are located all over GMW's area of responsibility so the geographic spread and travel related costs to undertake service point/ site activities are a significant cost driver.

Source: G-MW

Our analysis of cost drivers for each of the key activities associated with the diversion services is summarised below.

Account management

Account management costs include the cost of keeping customer records, managing accounts and maintaining and improving G-MW's accounts system.

G-MW stated that these costs are generic in nature and apply to all customers regardless of segmentation or scale of operation. These costs would be common to all customers as every customer receives accounts in the same way and frequency, have identical payment options, are serviced by a single billing and accounting system, have similar options of contacting the same call centre and operate under the identical customer charter.

The key cost driver for account management costs is the number of customers. Some of the costs would be fixed, irrespective of the number of customers however some costs would vary with the size of the customer base. The greater the number of customers is likely to result in higher costs to manage the larger number of activities such as account generation, payment of accounts, processing of customer data and managing customer contact via telephone and correspondence.

Indec's expectation is that account management costs would be consistent across customer groups if all customer groups have similar levels of activity relating to frequency of billing, account management and customer interactions and the customer account system is common to all customers.

Site compliance

The cost of compliance monitoring includes measuring water use and meters at each diversion site or service point.

G-MW stated that the key driver of costs in relation to site compliance are service point related and most significantly are made up of checking service point compliance, meter reading, deeming of usage (in cases of no meter), maintenance and meter replacement. These costs are incurred as a result of a service point being installed and not all costs are incurred if a service point is not installed.

Site compliance costs differ between a site with a meter and a site without a meter. A site without a meter is defined as small and a site with a meter is defined as large.

Figure 3-8 below shows that G-MW has estimated that a site without a meter has costs of \$91 per meter and a site with a meter has costs of \$304 per meter. These estimates were based on the 2014-15 budget forecasts, which was the information used for the analysis to support the Diverters' Tariff Strategy.

Figure 3-8 – Site compliance cost to serve analysis – 2014-15 budget

Cost component	Small Site without a meter (\$ per meter)	Large Site with a meter (\$ per meter)
Travel time (average)	42	42
Service point compliance check	21	21
Deeming usage/estimation	7	n/a
Meter reading	n/a	7
Deeming/meter reading data entry	7	7
Meter maintenance	n/a	76
Meter installation	n/a	101
Other costs	14	50
Total per meter	\$91	\$304

Source: G-MW

G-MW advised that costs associated with a site do not differ between customer types. G-MW explained that the same time is taken on average to travel to service points and to undertake service point compliance checks, deeming usage/estimation and meter reading irrespective of whether the activity is for a regulated surface water customer, unregulated surface water or a groundwater customer. Indec found no reason to disagree with G-MW's statement.

G-MW demonstrated that site compliance costs differ between sites with and without a meter. G-MW advised that the type of meters used varies across the diversion customer base; however, the costs of meter installation and maintenance are broadly the same regardless of the diverter customer classification. Indec is unable to verify if the cost of sites with differing meter types is broadly the same across the diversion customer base as G-MW did not support this position with analysis of cost data.

Access compliance and resource management compliance

Access compliance includes the cost of ensuring water is accessed in line with management rules and plans. The costs of access compliance includes managing allocations, rosters, restrictions and water ordering.

G-MW advised that the key cost driver in relation to site compliance are the number of service points which generate costs associated with flow monitoring, water ordering, roster management and flow assessments.

Resource management compliance applies to groundwater and unregulated surface water diverters. The resource management costs include developing and reviewing resource management plans, data management related to water sharing arrangements, resource caps, trading rules and water resource monitoring.

G-MW advised that the key drivers of resource management costs are the resource identification, monitoring and assessment, the development of resource management plans, the making of allocations and setting of caps. These costs are greatest for groundwater aquifers and do not exist for regulated diverters as they pay storage related charges for their water shares.

Indec completed an analysis of the operating cost to serve for the access compliance and resource management compliance related activities for each of the diversion customer groups. This analysis was completed based on the information provided by G-MW. The cost data provided was based on 2014-15 budget estimates, which was the information used for the analysis to support the Diverters' Tariff Strategy.

Figure 3-9 below shows the results of our analysis. It should be noted that this analysis excludes capital costs. The analysis does not attempt to calculate tariffs and the results should not be interpreted as a tariff estimate.

Figure 3-9 – Diversion customer group operating cost to serve analysis – 2014-15 budget

Description	Access compliance	Resource management compliance
	\$ per service point	\$ per ML of entitlement
Groundwater diversions	246.37	4.21
Surface diversions - unregulated	294.36	2.92
Surface diversions - regulated	135.57	n/a
SIR groundwater diversions	59.90	1.26
Average across all diversion customer groups	192.58	2.88

Source: Indec

Based on the data provided by G-MW, the analysis is indicating that the operating cost to serve for the four customer groups varies for the access compliance and resource management compliance activities. The analysis shows that:

- access compliance on a per service point basis varies from \$59.90 (SIR groundwater diversions) to \$294.36 (surface diversions - unregulated); and
- resource management varies from \$1.26 (SIR groundwater diversions) to \$4.21 (groundwater diversions) on a per mega litre of entitlement basis.

3.6 SUMMARY RESULTS FROM DIVERSION TARIFF ANALYSIS

Indec's analysis of G-MW's proposed diversion tariffs is summarised below.

3.6.1 Fixed and variable costs

G-MW provided cost data which demonstrated that the operating cost base related to the diversion services is fixed and does not vary with the volumes of water usage of diversion customers.

3.6.2 Operating costs to serve

Based on the data provided by G-MW, our analysis of operating costs indicated that the operating costs for account management and site compliance activities is common across all diversion customer groups.

G-MW demonstrated that site compliance costs differ between sites with and without a meter. A site without a meter is defined as small and a site with a meter is defined as large. G-MW advised that the type of meters used varies across the diversion customer base; however, the costs of meter installation and maintenance is broadly the same regardless of the diverter customer classification. Indec is unable to verify the accuracy of this statement as G-MW did not support this position with analysis of cost data.

The data provided by G-MW indicated that the operating cost to serve for access compliance and resource management activities is not common across all diverter customer types.

Figure 3-10 below summarises our key findings associated with the diversions tariffs analysis.

Figure 3-10 – Diversion tariffs analysis

Tariff	Key service	G-MW Cost driver	Uniform Tariff	Uniform Operating Costs
Service Fee	Account management	\$ per licensee	✓	✓
Service Point Fee	Site compliance	\$ per service point based on small or large meter	✓	✓
Access Fee	Access compliance	\$ per service point	×	×
Resource Management Fee	Resource management	\$ per ML of entitlement	×	×

Source: Indec

3.6.3 Cost drivers

G-MW did not provide cost data and analysis to support the key cost drivers identified for the major activities associated with diversion services. Indec did not identify any issues with the qualitative analysis provided by G-MW. Figure 3-11 summarises the results of the qualitative analysis of G-MW's cost drivers.

Figure 3-11 – Qualitative analysis of G-MW’s cost drivers for diversion services

Charge name	Associated costs	GMW identified cost drivers	Tariff basis	Basis of charge across diverter groups	Cost driver comments
Service Fee	A share of the total cost of keeping records, managing accounts and maintaining and improving G-MW’s accounts system.	<ul style="list-style-type: none"> Number of customer accounts 	\$ per licensee	Uniform	A causal relationship exists between the number of customer accounts and account management costs.
Service Point Fee	The cost of compliance monitoring, measuring use and meters at each diversion site (service point).	<ul style="list-style-type: none"> Checking service point compliance Meter reading/deeming of usage Maintenance and replacement of meters 	\$ per service point – Small or Large	Uniform	A causal relationship exists between the number of service points and site compliance costs.
Access Fee	The cost of ensuring water is accessed in line with management rules and plans. The access fee includes managing allocations, rosters, restrictions and water ordering.	<ul style="list-style-type: none"> Flow monitoring Water ordering Roster management Flow assessments 	\$ per service point	Non-uniform	A causal relationship exists between the number of service points and access compliance costs.
Resource Management Fee	For groundwater and unregulated surface water diverters, the resource management costs include developing and reviewing resource management plans, data management related to water sharing arrangements, resource caps, trading rules and water resource monitoring.	<ul style="list-style-type: none"> Resource identification Monitoring and assessment Development of resource management plan Making of allocations Setting of caps 	\$ per ML of entitlement	Non-uniform	A causal relationship exists between size of entitlement and resource management cost

Source: Indec