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1 INTRODUCTION

Measurement of water use is vital if the State's water resources are to be properly managed and is the cornerstone of implementing water reforms in Queensland.

While all domestic customers in large towns are metered – as are irrigators who take water in SunWater schemes - most water users who draw water straight from rivers and from underground (unsupplemented users) are not.

Meters are needed for a number of reasons, including:

- equitable water use – metering ensures that a valuable resource is taken according to people's entitlements. This is a policy supported by farmers groups.
- compliance monitoring – to ensure water users are complying with the conditions of their entitlements. Water allocations are increasingly valuable assets that need to be protected by effective compliance. Water use monitoring aims to ensure that excess or unauthorised water use does not erode the security of these valuable assets;
- water planning activities – to determine whether water resource plans are achieving the water allocation security objectives through monitoring the performance of individual's entitlements;
- management activities – to properly manage the resource, there is a need to be able to monitor how much water people take, from where and when. This is even more important now that the *Water Act 2000* provides for the creation of tradeable water allocations. Water meters and related monitoring are necessary to support water trading; and
- on farm management – as water becomes more valuable, and tradeable, the amount of water being used is important information for the management of a farm.

Currently, there are about 42,000 entitlements which involve the taking of water. Metering arrangements for these entitlements include the following:

- about 6,000 entitlements are metered by SunWater for the supply of supplemented water;
- about 3,000 entitlements are currently metered by the Department of Natural Resources and Mines (NR&M) for the supply of unsupplemented water;
- the metering policy will require approximately 16,000 additional meters to be installed over a period of seven years (this would affect an estimated 8000 to 10,000 water users); and
- the remaining 21,000 entitlements will generally not be metered because about 14,500 are for stock and domestic use (and will

- generally not require meters) and the other 6,500 do not meet the requirements/triggers for metering as outlined in the policy paper.

In view of the increased need for water meters, this policy has been developed to clearly articulate the State Government's position on a number of metering issues such as the requirement to meter, installation, maintenance, standards, responsibility for costs and ownership.

This metering policy provides a framework for metering in rural Queensland and a standard process from needs assessment through to implementation and ongoing maintenance and reading of meters. In most circumstances, metering is the most effective way to measure the take of water for resource management, compliance and billing purposes. Every effort will be made to ensure metering is done in the most cost effective way while still meeting the key objectives of good data accuracy and a capacity to upgrade with advancing technologies. In addition, implementation will involve NR&M staff working with local representatives on locally formed metering project teams to ensure that local circumstances are taken into account during implementation.

2 BACKGROUND

A number of changes have recently occurred in the water industry in Queensland. These changes - such as new legislation, revised water resource planning and resource management systems and increased community demand for effective resource management - will all have an impact on metering practices. Specifically, an increase in the number of meters installed will be required to cater for:

- equitable water take;
- compliance monitoring;
- water planning activities;
- water trading; and
- management of water use.

The expected increase in use of water meters intensifies the need for an NR&M position on a range of metering issues, because increased meter numbers will have significant implications in terms of cost structures, installation processes and ongoing maintenance and ownership arrangements

3 DEFINITION OF A "METER"

For the purposes of this paper, a meter is defined as: "a device for measuring, or giving an output signal proportional to, quantities of water passed and/or the rate of flow in a pipe or channel." This policy uses the term "metering" to include water meters plus other measurement tools, such as, depth measurement gauges which would be used for taking continuous readings of

water levels in overland flow storages. Where alternative measurement tools are installed the key policy components will still apply.
Depending on the particular metered location and its appropriate water use parameters to measure and record for that situation, the meter and its supporting equipment may be required to perform all or some of the following functions:

- measure cumulative flow volume;
- memorise and continuously display cumulative flow volume;
- measure instantaneous flow rate;
- continuously display instantaneous flow rate;
- memorise history (time of day, date, month, year) of instantaneous flow rate;
- measure depth of flow; and
- measure depth of storage.

Note that the definition of a meter for ownership purposes shall include the physical meter and any supporting equipment (associated data recording and transmitting devices) connected to the water user's equipment/ works necessary to ensure the required accuracy and/or durability of the meter.

Installation cost estimates, may also include any site or pipe work modifications to existing works necessary to ensure a safe and effective implementation. Such modifications may be undertaken by a contractor or the user, but this will be determined by the metering implementation team on an area basis and installation costs calculated accordingly.

The pipe work surrounding the meter that affects its accuracy, (i.e. the straight lengths of pipe connecting to the upstream and downstream ends of the meter) will generally be owned by the water user. However, the Department will provide strict guidelines on the specifications, access conditions and use of those particular lengths of pipe.

4 SUMMARY OF KEY POLICY COMPONENTS

This policy establishes a framework for metering in rural Queensland. The specific policy details are outlined under the following headings. The rationale (where required) for each policy component is outlined in a shaded box following each section:

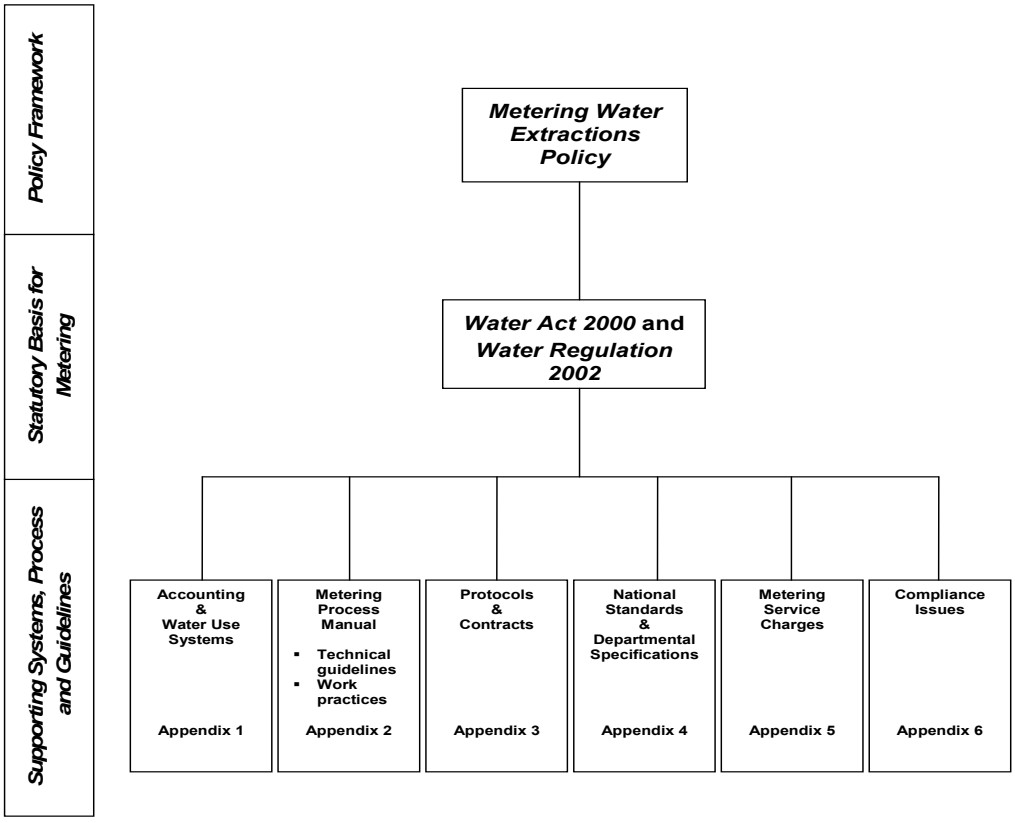
- statutory basis for metering;
- triggers for meter installation;
- water service providers and metering;
- specifications for meters and their installation and maintenance;
- meter ownership;
- funding;

- user involvement in oversight of meter installation;
- purchase and installation;
- maintenance and reading;
- data collection;
- manifold metering;
- user obligations in regard to metering;
- compliance; and
- other issues.

Implementation and management of the metering policy will require development of detailed processes and systems and co-ordination across a range of areas within NR&M.

The following diagram outlines the implementation framework and illustrates the relationship between the metering policy, the statutory provisions and the supporting systems, processes and guidelines that will ultimately be developed to facilitate implementation.

Diagram 1: Metering Policy Implementation Framework



5 STATUTORY BASIS FOR METERING

The *Water Act 2000* provides three bases upon which metering can be given effect:

- In respect of water licences section 214 (b) provides for water meters to be made a condition of licence. This is a continuation of the previous arrangements under which existing meters have been installed;
- In respect of development permits for existing works (section 968). This section may be used to ensure the preparation of onsite works is suitable for metering installation; and.
- The general regulation making power, section 1014 (2)(d).

To implement the metering policy the Water Regulation will provide the necessary powers. In summary, the water regulation will:

- Define how water entitlements and statutory authorisations will be declared a metered entitlement;
- Require a metered entitlement to take water through a meter;
- Clarify that the meter is to be owned by the State and not the holder of the metered entitlement;
- Provide power to transfer ownership of existing meters;
- Provide powers for the installation, maintenance and reading of meters; and
- Provide a charging regime for the installation, maintenance and reading of the meters.

The water regulation will also need to be intermittently amended to identify 'metered entitlement areas' and to provide for the associated charging regime.

Rationale

The Water Act 2000 provides the Department of Natural Resource and Mines with the power to meter water extractions. The metering policy provides the framework for how those powers will be applied. A regulation will be made to provide powers for some of the specific aspects of implementation, e.g. conditions of entry, charges to apply etc.

6 TRIGGERS FOR METER INSTALLATION ON UNSUPPLEMENTED SUPPLY

An obligation to meter water use will be imposed if any of the following 'trigger' requirements are met. The level of use as represented by existing water authorisations will be assessed against the triggers when a Water Resource

Plan (WRP) or Resource Operations Plan (ROP) is drafted or at the Chief Executive's discretion. If the situation proves to meet a trigger, then metering will be implemented.

In summary metering will be required in the following situations:

- Where water allocations are created;
- Where water licences are volumetric;
- Where new licences are issued (generally);
- For the taking of floodwater or where volumetric entitlements are granted for taking overland flow water;
- In at-risk areas (e.g. areas where environmental damage or noticeable water depletion is occurring, or needs to be determined/confirmed through monitoring);
- Where there are water sharing disputes;
- Where there is community demand for metering;
- Where water is relocated using the watercourse as a conduit; and
- Where existing works have no allocated authorisation but meet one of the above triggers.

The following sections provide further explanation regarding the metering triggers.

6.1 Unsupplemented supply – Water Resource Plan (WRP)/ Resource Operations Plan (ROP) areas

Water allocations

When a water allocation (WA) is created under a Resource Operations Plan, a meter will be required before water can be used. In addition, metering will be required irrespective of the tenure of the WA. For example if water is sold, leased or is assigned under a WA, then the water take will have to be metered.

Existing and new licences

Existing and new licences would be subject to the requirements in the WRP/ ROP and /or the Chief Executive's determination. Generally, all water licences that have a volumetric limit will require metering.

Overland flow

Measurement or other regulatory requirements will be specified within each ROP or at the discretion of the Chief Executive.

Rationale

WRPs and ROPs are the primary water resource management tools of the Department. When a ROP is prepared, issues associated with metering are considered and appropriate areas are identified for metering. It is important to note, however, that when a plan does not mention metering, this does not mean metering won't occur now or in the future. WRPs and ROPs are two ways to determine a metering requirement. The Chief Executive can also decide that metering is required for example, for compliance or resource monitoring purposes. Ultimately, all metering requirements will be identified in the Water Regulation.

Transferability of water allocations creates more flexibility and is a benefit to the water user. Meters are required to calculate total water use for water trading (i.e. so that a water buyer knows how much of an allocation is available for that water year).

As water allocations are to be metered, it is only logical that all derivatives of that WA should also be metered to ensure that water usage is measured. For example, Water Permits that arise from a Water Allocation will require a meter.

The concept of measuring overland flow is very new and the consequences and practicality of doing so are still being determined. New information may arise after a ROP is completed which influences the decision to measure or regulate overland flow.

6.2 Unsupplemented supply – other areas

Existing licences

Existing licences, that have an area allocation or a volumetric limit and currently require a meter, will continue to require a meter.

Area-based licences converted to volumetric limit licences under an authorised strategy for an area, will require a meter.

New licences

New licences will be treated the same as existing licences in a given area.

Rationale

Monitoring water use is important for collecting water use data for licence compliance, resolving/preventing water disputes, future water modelling and increasing users' awareness of - and efficiency in - the use of water. Metering can influence water demand in areas of overuse causing water shortages, adverse impacts on the environment (such as excessive drawdown, increasing salinity, saltwater intrusion) or other water quality problems.

ROPs establish volumetric allocations for supplemented and unsupplemented water supplies. In addition, the Water Act 2000 establishes a framework for introducing volumetric allocations for areas outside of ROPs. Consequently both the ROP and the Chief Executive's discretion have the power to require metering.

6.3 Additional Triggers Applicable to All Unsupplemented Supply

At-risk areas

Metering will occur in 'at-risk' areas when water entitlements are identified by the Chief Executive of NR&M or the WRP/ROP process as:

- Contributing to environmental damage or noticeable water depletion (on the basis of biological monitoring, stream gauging and water use history); or
- Requiring monitoring to confirm environmental impact.

Water use conflict

Metering will occur in areas where water entitlements are identified by the Chief Executive as being:

- subject to disputes over sharing available water; or
- subject to suspected water stealing.

Community demand

Metering will generally be introduced where water users request the installation of meters. They may do this to ensure the equitable distribution of water and to provide certainty where there is potential for water sharing disputes.

Water permits for mining purposes

Non-volumetric licences issued to petroleum miners, for secondary use, will require metering.

Relocated water

Where water is relocated to a downstream location (using the watercourse as a conduit), a meter will be required at both the point of entry and the point of exit from the watercourse.

Statutory authorisations

A meter may be required on statutory authorisations (such as riparian stock and domestic users), as determined by the Chief Executive or WRP/ROP process in accordance with identified metering triggers.

Existing and new licences

Generally, all water licences that have a volumetric limit will require metering. (This policy may not apply to major users, however, if a protocol is established by NR&M for the user - as in the case of Century Zinc Mine).

Approved works with no allocated authorisation

A meter may be required on all works (regardless of the associated water authorisation) unless the owner of the works, decides to disable the works.

Rationale

At-risk areas, water use conflict and community demand:

These triggers are all self-explanatory.

Water permits for mining purposes:

Secondary use water will require metering to ensure take does not increase to levels that may negatively affect the resource.

Relocated water:

The use of a watercourse as a conduit occurs when water is taken and/or stored and then released into a watercourse at a later date to be taken up at a separate downstream property.

An interim policy being prepared on this issue will allow the use of a watercourse to relocate water not attached to land provided the person is authorised to take and/or store the water initially and has an authorisation to take water at the downstream location.

The downstream authorisation will reflect the amount of water to be relocated. Meter readings (pre and post relocation) will be a critical component of the process. Consequently, metering will be required at both the point of entry and point of exit from the watercourse.

Statutory authorisations:

Generally stock and domestic authorisations will not be metered, although the Chief Executive may require metering to address particular issues, such as environmental degradation. Other statutory authorisations may also be metered if determined by the Chief Executive or the ROP to meet triggers outlined in this policy, e.g. At-risk areas.

Existing and new licences

There may be instances where for large users in isolated areas, it is more appropriate to establish a protocol for the collection of water use information, than to use standardised maintenance and reading contracts.

Metered works:

Due to the industry reforms provided for in the Water Act - and the introduction of water trading - there is increasing flexibility in the provision of water to users.

A user can now have works approved on the basis that water is available from a number of sources, (i.e. the department, a water service provider or a private seller).

From a compliance perspective, the department is moving to a position where in areas where meters are required, all works in certain areas should be metered as soon as they are installed. This is to prevent unauthorised take of water.

6.4 Summary of triggers

In summary, a metering obligation will exist if the user has what is determined to be:

- A metered entitlement (ME); or
- A metered works (MW).

Water users' authorisations will be assessed for compatibility with the triggers either during the ROP process or at the Chief Executives discretion. The Water Regulation will then provide the statutory mechanism to implement ROP and Chief Executive decisions.

7 WATER SERVICE PROVIDERS AND METERING (INCLUDING LOCAL GOVERNMENTS)

One of the basic principles underpinning the metering policy is that the primary take from the natural resource should be metered. Consequently the policy more specifically applies to unsupplemented water users that take water directly from a watercourse or aquifer.

The approach for dealing with Water Service Providers and supplemented water users in regard to metering is as follows:

Metering of customers within a system or water supply scheme

The water service provider will be responsible for metering / or measuring their customers and this will be a condition of the water service provider's licence or alternative authorisation. The exception to this would be where a water service provider customer is a Distribution Operations Licence (DOL) holder. In these cases the DOL holder could be the owner of the meter, however, the ROL holder would be able to undertake audit and compliance checks.

Where meters are not in place (and are not specifically required as a licence condition), the water service provider will be required to report on the estimated water use and the basis on which estimates are made.

Rationale

A water service provider is responsible for managing the water within their system. In order to do this effectively, its customers will generally need to be metered. As the water use data will be a significant input for managing its business, it is appropriate that the water service provider is responsible for the meters that provide the data.

Metering the main point of take of water service providers

Surface water -Where a water service provider owns a bulk water storage facility and or major infrastructure within a watercourse, then they will be responsible for metering/measuring the primary take from the water course

(unless determined otherwise by the Department of Natural Resources and Mines). This will be a condition of the water service provider's licence or alternative authorisation.

Rationale

A water service provider that has a storage or major infrastructure within a watercourse would generally have the staff and the expertise to install and maintain a suitable meter. In addition, the information collected by the meter would be a significant business input for the enterprise.

Where a water service provider does not own a storage or major infrastructure within a watercourse, but only has a pump in a watercourse, then the Department of Natural Resources and Mines will generally be responsible for metering the primary take from the watercourse (however this will be assessed on a case by case basis).

Rationale

A water service provider that only has a pump in a watercourse will generally be treated like all other unsupplemented water users.

Groundwater – Where a water service provider uses groundwater they will also be required to meter their bulk groundwater take and this will be a condition of their licence or alternative authorisation.

Data sharing arrangements

Where unsupplemented users are located in sections of a watercourse, where a water service provider supplies supplemented water, an agreement will be developed between NR&M and the water service provider to establish the terms and conditions of meter ownership, maintenance and data sharing arrangements.

To date, meter ownership has primarily been linked to the water product obtained by the user. For example, if the first water product a water user obtains is a water harvesting licence, the meter has been owned and installed by NR&M, even though they may be located within a supplemented system. If the second product the user obtains is supplemented water, then arrangements will have been established between the water service provider and NR&M regarding data sharing.

In the future, generally such arrangements are likely to be more frequently negotiated on a scheme by scheme basis to ensure appropriate cost-sharing arrangements are established that reflect the multiple uses of meters for the taking of supplemented and/or unsupplemented water. It is likely that as water trading increases and the amount of each type of water through specific meters becomes more dynamic, there will be a need to put in place simple cost sharing arrangements.

Rationale

The increasing flexibility in provision of water products causes a number of potential problems such as difficulty in monitoring the different products that can go through the meter.

The arrangements proposed in this policy are to ensure that administrative arrangements for managing water use are efficient, effective and avoid duplication. Alteration of these arrangements may be necessary in the future to accommodate changes in the industry.

8 SPECIFICATIONS FOR METERS

Where a meter is required, it shall be:

- a meter approved by NR&M; and
- installed, maintained and configured to specifications determined by NR&M and by an NR&M approved contractor.

A meter installed in accordance with the policy will comply with department specifications set out in Appendix 4. The specifications may be revised from time to time in consultation with meter manufacturers and counterparts from other States to facilitate national standardisation.

Work is proceeding on the development of national standards through the National Measurement Institute and NR&M is contributing to this development to ensure the metering standards will be compatible with the current NR&M meter specifications. An inter-state working group will be formed to ensure suitable national standards are developed. Once this occurs national standards will be adopted at the state level and as part of this process NR&M will work with the Office of Fair Trading to develop appropriate auditing procedures.

It is important to note that where meters are required existing meters will be considered satisfactory only if they meet the NR&M specifications/ National Standards. In some cases, water meters have already been installed by water users to improve farm management practices. If these meters do not meet department specifications then an additional meter will have to be installed. For example, this may occur where water users have installed Irrigation System Control Meters that have solenoid controls attached. These meters are considered inappropriate as they often require immediate attention if they fail and generally require a level of maintenance that is higher than NR&M's proposed maintenance schedule.

Rationale

If meter data is to be useful and the expense of purchasing, installing, maintaining and reading a meter is to be justified, then meters must be installed, configured and maintained correctly. The adoption of suitable specifications will assure licence holders and NR&M that the meter operates as accurately as possible, that it remains accurate over time and that this can be readily verified.

The specifications will be publicly available and will be used as the basis for tenders for meter supply and installation and by NR&M officers undertaking compliance activities.

9 METER OWNERSHIP AND UNSUPPLEMENTED SUPPLY

9.1 New meters

All new meters for users of unsupplemented supply will be owned by NR&M.

9.2 Existing Meters

Currently throughout the State there is a variety of arrangements with respect to meter ownership and compatibility with NR&M specifications. Some meters are owned by users, others are owned by NR&M, and others are the subject of more ambiguous arrangements where they were bought and installed by the user, but owned by NR&M as a condition of licence.

The principle influencing all decisions on existing meters is 'all meters should comply with NR&M specifications and be owned by NR&M'. Furthermore all existing meters will be assessed for compliance with NR&M specifications at the same time that meter implementation processes are undertaken for new meters, (where existing meters fall within a ROP or trigger area).

Where existing meters are outside of a ROP area, the timeframe/priority for assessing these meters for consistency with NR&M specifications will be developed in consultation with regional staff. Meters that fail prior to meter implementation occurring in that area will be replaced with new compliant meters in accordance with the Meter Process Manual guidelines.

In order to standardise metering arrangements across the State, the following approach will apply to existing meters when they fall within a ROP or other meter implementation area:

- NR&M ownership of existing meters will be confirmed by using the NR&M asset register;
- NR&M meters that do not comply with NR&M specifications will be made compliant or replaced, with all costs being covered by the user;
- Where a meter is not owned by the department, but does comply with NR&M metering specifications (as identified in the Metering Process

Manual – Procedure for Dealing with Existing Meters), the user will not be required to purchase a new meter, if they transfer ownership of the meter to the department. The user will only be required to pay maintenance, reading and administration charges for the metering service. Unsuitable meters can be retained by or transferred to the landholder for use on-farm. The Water Regulation will be amended to provide for the transfer of suitable meters to NR&M. This will be achieved by enabling the Chief Executive to waive a component of the metering service charge (the 'meter use charge' component) on agreement that the holder transfers meter ownership to the State. However, if the existing meter fails and ultimately needs replacing, then a new meter will be fitted and both the meter use charge and the operating charge will apply to the user;

- Where a meter is not owned by the department and does not comply with NR&M specifications, then a new meter will be installed in accordance with the metering policy. The landholder may retain the existing meter for use elsewhere on the property as determined by the landholder.
- Where a new meter is not owned by the department, does not comply with NR&M specifications but could comply with minor alterations (in accordance with the Metering Process Manual), then the cost of alterations will be charged to the user along with the other maintenance, reading and administration charges. Prior to alterations, ownership of the meter would be transferred to the department.

Rationale

NR&M ownership of water meters is consistent with the treatment of utility meters (eg gas and electricity) and meters in SunWater systems. It is also consistent with the majority of situations where unsupplemented users are currently metered.

The adoption of NR&M ownership of water meters, rather than user ownership, is to prevent the rise of inconsistencies in types of meters, standards of installation, and levels of maintenance. All of this can result in data that is of limited use and accuracy. User ownership would have meant significant compliance costs in policing installation and maintenance standards – costs that ultimately would need to be borne by users. More importantly, such an approach limits the capacity to upgrade installations as technologies develop.

Assessment of existing meters on a local basis as part of the implementation program will provide the flexibility required to meet both the users' and NR&M's needs.

10 METER CHARGES FOR USERS OF UNSUPPLEMENTED SUPPLY

10.1 Application of the charges

Similar to the approach taken by other utilities such as electricity or urban water suppliers, all metering costs will be clearly identified and met by the water user through a metering service charge.

The annual metering service charge will be made up of two components:

- a meter use charge – initial site assessment, purchase and installation costs, and borrowing costs; and
- an operating charge – maintenance, reading, administration and borrowing costs.

In exchange for the metering service charge payment, NR&M will be responsible for the purchase, installation, reading and maintenance of each meter as part of a metering service that extends for the life of the meter.

Charges will reflect the type and size of meter installed and the associated ongoing costs for maintenance. The use of competitive tendering processes will allow water users to benefit from economies of scale and competition between metering service providers.

Installation cost estimates, may also include any site or pipe work modifications to existing works necessary to ensure safe and effective implementation. Such site or pipe work modifications may be undertaken by a contractor or the user, but this will be determined by the metering implementation team on an area basis and installation costs calculated accordingly.

The metering service charge includes the provision of an operational water meter. Should early replacement of a meter be required, NR&M will install a replacement meter at no further charge to the user as part of the metering service. More details on the charging methodology are outlined in Appendix 5.

Where a user only takes water intermittently, via a seasonal water assignment, lease etc, the user is still required to continue paying the metering service charge even though no water may be used. This is because the meter and associated works provide the potential to access water and the Department would still need to read the meter for compliance purposes where works remain in place.

10.2 Removal of the charges

If the user decided not to take water again, and did not wish to continue paying the meter service charge, then the user could pay an exit fee and the meter would be removed. The works would also be required to be removed or disabled.

The exit fee would be calculated on the cost of removing the meter, and the outstanding value of the meter purchase and installation costs.

Where a user decides to remove or disable their works during the metering installation process, the user will be required to pay the relevant accrued costs, when they have not notified the department prior to installation works commencing. The department will notify users of installation schedules and proposed timeframes so they can inform the department if they do not wish to be metered. In this case they will be required to immediately remove or disable their works.

10.3 Transitional arrangements for replacing current water charges in Water Management Areas

Across the state, a number of Water Management Areas (for surface water and groundwater) have been established for setting water charges and prescribing seasonal assignment and water sharing rules. The varying circumstances of each water management area and the charges within each area require individual consideration when switching from current to new charging arrangements. Where possible, the charges have been grouped by commonality and the proposed approach for transitioning these charges is outlined in the table below:

Water Charges	Management Area	Transition Arrangements
$3 Water Harvesting Charges (These charges were originally introduced to recover some of the resource management costs incurred by the department)	Barker-Barambah Creeks WMA, Barron River-Emerald Creek WMA, Bowen-Broken Rivers WMA, Boyne River WMA, Central Lockyer WMA, Chinchilla Weir WMA, Condamine River and Sandy Creek WMA, Dawson River WMA, Logan River WMA, Lower Balonne WMA, Lower Burnett and Kolan Rivers WMA, Lower Lockyer WMA, Macintyre Brook WMA, Nogoa Mackenzie WMA, Pioneer River WMA, Three Moon Creek WMA, Upper Burnett and Nogoa Rivers WMA and Warrill Valley WMA. Fitzroy WMA	Stay in place until replaced by Water Resource Management Charge. Metering Charge added when metering implementation undertaken
Annual Charges for Meters (These charges were introduced to recover some of the meter reading and maintenance costs in the area).	Gowrie-Oakey Creek WMA, Oakey Creek GMA, Upper Hodgson Creek GMA,	Stay in place until replaced by Metering Service Charge upon metering implementation. Water Resource Management Charge to be added when charges introduced.
Groundwater and Surface Water Management Charges (These charges were introduced to recover a portion of the metering costs and a portion of the resource management costs. However due to the historical nature of the charges it is impossible to work out the percentage contribution toward each component).	Border Rivers GMA, Bowen GMA, Bundaberg GMA, Burdekin River GMA, Callide Valley GMA, Condamine GMA and Cressbrook Creek WMA.	Stay in place until replaced by either the Metering Service Charge or the Water Resource Management Charge, (whichever comes first). The further charge would then be added when it is introduced in the area.

When meter implementation occurs in an area, the new meter service charge will apply. The components of the charge applied will depend on the existing meter as follows:

- Where an existing meter is replaced the meter charge (site assessment, purchase and installation) and operating charge (reading, maintenance and administration) will apply; and
- Where an existing meter complies with department specifications, a smaller meter charge (site assessment and any modifications required) and the operating charge (reading, maintenance and administration) will apply.

Once the department's policy on water resource management charges is finalised, these charges will apply to all users and will be charged in addition to the Metering Service Charge.

Rationale

Under the National Water Initiative provisions, the future direction for all service delivery is toward 'user pays'. Therefore, similar to other utilities such as electricity or urban water, rural water users will be required to pay the cost of meter purchase, installation, maintenance, reading and administration. In addition, the new water resource management charges will reflect some of the costs incurred in managing the resource.

11 PURCHASE, INSTALLATON, MAINTENANCE AND READING OF METERS FOR USERS OF UNSUPPLEMENTED SUPPLY

NR&M will be responsible for administration and control of the metering project, with commercial contractors being appointed for site assessment, installation, reading and ongoing maintenance of the meters.

Generally, all new meters will be purchased, installed, maintained and read through contracts awarded by the department. The department will establish and maintain processes which ensure contracts are awarded on a competitive basis.

Contracts for site assessment, supply and installation of meters will be awarded on a project area by project area basis, whilst reading and maintenance will be awarded for a fixed period and on the basis of the best solution state-wide. All contract costs associated with a project area will be clearly identified and incorporated in the meter service charge.

Meter maintenance will include checking the operation of the meter, (i.e. checking all parts are in good working order and the meter is functioning correctly) to ensure the meter continues to function as well as it did when installed.

Generally, meters will be read and inspected for maintenance purposes quarterly and maintained at other times as necessary. Where required, temporary or permanent replacement meters will be organised by the department, generally through the reading and maintenance contractor.

NR&M staff will undertake spot compliance checks of meters to confirm they are functioning according to the department specifications and have not been tampered with.

Rationale

An effective use of government resources is to develop appropriate metering standards and to outsource the actual service delivery to specialist contractors – similar to current contractual arrangements with SunWater for existing Groundwater Management areas.

The aim of regular meter inspections and maintenance is to ensure ongoing accuracy, minimise the number of failures and lower the overall cost to the end user.

12 DATA COLLECTION OF UNSUPPLEMENTED TAKE

For unsupplemented take, meter reading will be undertaken by an NR&M contractor, except where users are required to carry out meter reading under NR&M's instruction and there is a data logger installed.

Meters will be read in accordance with meter reading schedules determined on an area basis. In addition, NR&M will carry out meter readings for routine or spot audits or other general compliance activity.

Additional readings may be required prior to water trading arrangements being finalised. If so, water users initiating the trade will be charged for the cost of the additional reading.

Rationale

The data from water meters will be stored in NR&M's databases and used to determine bills (where applicable), to analyse patterns of water extraction and to estimate likely future water use. It is planned that individuals will have access to their water use data. Water extraction information will also be made available at an aggregate level (for example, for a whole catchment or a zone of an aquifer) to water management committees, other government Departments, water user groups and other interested members of the public.

13 MANIFOLD METERING OF UNSUPPLEMENTED SUPPLY

Manifold metering refers to metering arrangements for users with multiple works or works with multiple users.

13.1 Users with multiple works

In situations where a user takes their entitlement through multiple works, all works will need to be metered in accordance with department specifications.

The exception to this would be where multiple works are connected to a common pipeline and the total usage from all works can be measured via the one meter. Where this occurs, the meter must be located before the first off-take. The meter must be located as close to the works as practicable to minimise the possibility of concealing off takes before the meter. In the case of groundwater extraction manifolding will only be permissible if the 'take' is from the same aquifer or zone.

13.2 Works with multiple users

In situations where works are shared by multiple users, all users will need to be metered in accordance with department specifications. This is to ensure that all use is measured against a user's entitlement to take. In cases where multiple users share a single storage, any pipeline transporting water to an individual user must have a meter installed. The main point of off-take will also have to be metered to ensure that evaporated losses are accounted for.

Rationale

The information obtained from metered off- takes is required for purposes such as water resource plan (WRP) and ROP evaluations, reporting, modelling and water use billing. Therefore, it is important that each works is clearly linked to a specified water source to monitor the impact of extractions on the water sources and to plan future water management activities.

14 USER OBLIGATIONS IN REGARD TO METERING UNSUPPLEMENTED SUPPLY

The responsibility for effectively managing our water resources rests on all people who take, use or affect water and water sources. Consequently, where water users have rights, they also have responsibilities and these include:

1. Users will be required to read meters for water harvesting purposes when requested by NR&M.

2. Users will be required to notify the department of faults identified in the operation of the meter.

3. Users will be expected to maintain their infrastructure, connected to the meter, in a sound condition so that meter function is not adversely affected.

4. Users will be required to notify the Chief Executive of a proposed sale of water and to arrange to have an additional meter reading undertaken prior to finalisation of the sale.

5. Users will be required to notify the department of any dealing with a metered entitlement (i.e. transfer or lease) so assessment of metering arrangements can occur.

6. Users will be required to notify the department prior to making any changes to works.

7. Where a person purchases a water entitlement, he/she will be obliged to comply with the department metering specifications.

8. Where a user trades away their water entitlement and no longer has a metered entitlement, the user will be required to keep paying the meter service charge, until the user's works have been removed or disabled. An exit fee will also be applicable in this circumstance.

15 COMPLIANCE

NR&M is responsible for ensuring compliance with conditions on licences and permits as prescribed in the *Water Act 2000*. By enforcing compliance, NR&M protects the entitlements of all water users and the environment.

Metering is an effective compliance tool to measure use against the volumetric limits of water users as determined by their water allocation or water licence. Where unauthorised water is used and recorded by a meter, the water user will either receive an infringement notice and be required to pay a fine and/or be subject to prosecution.

Consequently, in regard to metering it will be an offence to:

- Fail to use a meter, when a meter is required by NR&M;
- Fail to comply with NR&M metering specifications;
- Interfere with a meter to cause malfunction; and
- Hinder or obstruct an authorised NR&M officer (or approved contractor) from accessing the meter.

Undertaking the above-mentioned actions may result in a fine, suspension or cancellation of the licence to extract water, or prosecution for ongoing offences.

16 OTHER ISSUES

16.1 Great Artesian Basin

For stock and domestic bores throughout the GAB, metering will not be necessary. Any take under a volumetric licence will require metering, e.g. bores used for feedlots or industrial purposes.

Rationale

Aside from the need to effectively manage the resource through increased monitoring, there remains a need to eliminate water wastage from the GAB and control bore discharge - hence the need for the Great Artesian Basin Sustainability Initiative under which bores are rehabilitated and bore drains replaced with piping.

16.2 Overland flow metering

Meters and/ or measuring devices will be adopted to monitor use of overland flow only where the take of overland flow water meets triggers identified in this policy (e.g. volumetric entitlements, resource risk). It is likely licences will only be granted in limited circumstances, such as where there is risk of an increase in take of water by an overland flow dam, or to implement reductions in overland flow take (as will be the case in the Lower Balonne), or for new overland flow dams.

Rationale

The sharing and allocation of water that flows over land ('overland flow') is an issue of increasing importance. To help NR&M manage overland flow use – particularly where the growth in overland flow diversions could compromise the outcomes of Water Resource Plans, (eg. Fitzroy, Murray Darling Basin Streams) - then Water Resource Plans will regulate the take of overland flow. In most instances, this will not involve placing volumetric restrictions on existing works – these works will be limited by the capacity and location of the works. Consequently, it is not intended to measure the take of overland flow water by these works. However, in areas where there is a need for a greater level of regulation - like the Lower Balonne Area - the taking of overland flow would be authorised via a water licence. Such licences are expected to include a maximum daily volume of take and a volumetric limit. In these areas it will be necessary to measure overland flow take to ensure water users comply with their overland flow licence conditions. Generally, licences will also be issued for any new overland flow storages, and it will be necessary to measure take by these storages.

17 IMPLEMENTATION STRATEGY FOR NEW METER INSTALLATIONS

17.1 Metering supplemented supply

IROL/ROL holders

All ROL holder customers will be metered / or measured (as will most IROL customers) and this will be the responsibility of the IROL/ ROL holder. Metering requirements for water service providers will be prescribed in the relevant ROPs. This process will outline what must be metered but not how metering should occur. Therefore, water service providers' metering standards for supplemented water users will not be prescribed by the department at this stage.

However, due to the nature of their business and the fact that national metering standards will probably be developed in the next five years, NR&M will work with IROL/ ROL holders and encourage the gradual adoption of departmental metering specifications.

Non-ROL holders

The Metering Area Project Team will consult with all water authorities in a metering implementation area.

The water authority will be advised of:

- The *Metering Water Extractions Policy*;
- NR&M specifications and guidelines on metering implementation;
- Section 675 of the *Water Act 2000* (provides the Minister with the power to notify water authorities of public sector policies); and
- The proposed development of national water meter standards that will apply to all meters used for water sales.

Where a water authority does not already have metering arrangements in place, the metering area project team will encourage the water authority to introduce metering as soon as practicable. Metering will be the responsibility of the water authority.

Where a water authority has meters in place, the project area team will consult with the water authority to:

- clarify the status of national standards and the timeframe for their introduction; and
- clarify water use data reporting arrangements to NR&M.

17.2 Metering unsupplemented supply

Staged implementation

Metering implementation will be undertaken in accordance with the Metering Process Manual (see Appendix 2) developed by NR&M to ensure a consistent approach to metering.

For new meter installations the policy will be implemented on a ROP by ROP basis or before the implementation of a ROP - as determined by the Chief Executive. For non-ROP areas, metering will be undertaken on an as-needs basis according to metering triggers.

Where meters are proposed, a project team will be established for each implementation area. This team will be made up of NR&M staff and local water users and will ensure the process takes into account local conditions and concerns. It is envisaged the functions of the project team will include:

- Audit existing outlets to assess the scope of the project;
- Assess the planning, compliance and user needs;
- Provide input to the development of contracts to install meters;
- Other appropriate actions to finalise implementation.

To ensure economies of scale and the best price possible, NR&M will let tenders for the supply and installation of all the meters in a given area at one time. NR&M will oversee this tendering process. The successful contractor will install the meters and will be required to sign the Meter Installation Form to confirm that the meter is installed in accordance with NR&M's specifications and is in good working order.

Implementation procedures have been developed, which are transparent, fair, which comply with acceptable measurement practice and aim to ensure a consistent approach is adopted throughout the State.

Methodology for choosing the meter

NR&M's methodology for choosing the appropriate meter for a situation focuses on the operational conditions (water quality, level of silt, etc) in a particular area, and then chooses the meter that meets those needs, is cost effective and meets the NR&M meter specifications.

The type of meter that will be installed will depend on:

- the nature of the specific entitlement conditions;
- the intensity of management required by NR&M as a result of the particular extraction in question;
- the nature and discharge capacity of the pump or diversion itself;
- the cost effectiveness/least expense over the life of the meter;
- the suitability of the technology to the area; and
- type of operating conditions (e.g. water quality, pipework etc).

Generally, the higher the level of water resource management required by NR&M, the higher the level of sophistication that will be required in water extraction data. In most cases, accuracy refers only to the exactness of the meter reading - that is how close its reading is to the real amount of water going through the pump. In some cases, however, accuracy might also mean the frequency and timing with which information is sent to NR&M. In a small number of cases, a metering system may be implemented that relays real time data to NR&M.

Communication and consultation with users

A communication strategy has been prepared to ensure that all community stakeholders are informed of metering implementation processes. Key elements of the communication strategy include:

Initial Consultation - The metering process will tie in with consultations associated with water resource planning (WRP) and resource operations planning (ROP) where possible. This will include integration of metering into WRP/ROP consultation meetings. Where metering is triggered prior to ROP implementation, specific public meetings on metering will be organised.

Public meetings will discuss all aspects of the metering process such as:

- Site assessment;
- Site preparation;
- Installation;
- Maintenance;
- Reading;
- Metering service charge; and
- Timeframes for implementation

Metering Area Project Teams - As metering is scheduled for each area, a project team will be established. This team will be the primary interface between NR&M and landholders and will deal with logistical and technical aspects of metering implementation. Where a ROP consultation process is in place, members of the existing community reference panel may be nominated. Where there is no ROP consultation process, representatives will be nominated by entitlement holders.

The metering area project team will consist of entitlement holder representatives and metering implementation team members including head office and regional staff.

Points of Contact **-** The following NR&M staff will provide advice to the community about metering:

- Metering Implementation Team (head office)

- Metering project officers
- Metering project support officers
- Regional communications officers (who will refer inquiries to metering project officers)
- Water planning regional officers (who will refer inquiries to metering project officers)

Landholders and interested community members can also contact the department by phone using a toll free number or by visiting their local NR&M office.

Communications Material and Media Releases - In addition to public meetings, the metering process will be communicated to landholders in the following ways:

- A letter notifying the entitlement holder of the department's intention to meter
- Fact sheets (also available on the NR&M website)
- Metering Brochure
- Metering process manual
- Metering policy (also available on NR&M website)

Metering may also be publicised in local newspapers and on local radio and television where it is considered appropriate. Selected NR&M staff involved in metering may be trained in media communications if necessary.

Evaluation **-** The regional metering project officers will report communications issues back to the Metering Project Manager. A departmental communications officer will periodically evaluate all metering communications activities to ensure any emerging issues are addressed.

Additional meters required post implementation

Once meter implementation has been completed in an area, there may be a need for additional meters to be installed after the major installation process has been completed. This situation may arise where:

- A user wishes to sink an additional groundwater bore;
- A user wishes to use additional works to take an existing allocation;
- A user purchases an additional allocation and chooses to take this allocation through new/different works; or
- A new user.

In these cases the department will adopt the following approach:

- A Standing Offer Arrangement (SOA) will exist for the supply of meters and ancillary equipment;

- Installations will be undertaken by contractors for each project area with meters accessed through the Department's SOA; and
- The reading and maintenance contract/s will allow for the relocation of meters and the location of meters associated with new works, (i.e. adhoc new installations in an area will, subject to approval, be carried out by the maintenance contractor).

18 POLICY PERFORMANCE MEASUREMENT

Following implementation, the Metering Water Extractions Policy will be evaluated for effectiveness. Evaluation and performance measurement will occur through a range of qualitative activities such as surveys of entitlement holders and regional staff to assess the meter roll-out process, communication strategy, meter maintenance contracts, reliability of data collection processes etc. and quantitative activities such as assessment of compliance statistics and billing processes. Performance measurement results will, in turn be used to review policy details and implementation processes and will contribute to improving practice in both areas.

GLOSSARY

Groundwater' (GW) is water that flows under the ground in artesian or subartesian aquifers.

'Interim Resource Operations Licence' (IROL) generally reflects the operating arrangements that existed prior to commencement of the Resource Operations Plan.

'Manufacturer Certified Contractor' is defined as a trained person competent to install and maintain the manufacturer's product to perform to the manufacturers specification and to operate within an accuracy range of "+/-5% in the field." (Certification training is competency based.)

'Metering Triggers' are identified in the Metering Water Extractions Policy as specific triggers that lead to the introduction of metering. These include: at risk areas, creation of a transferable water allocation, volumetric licences, new licences, growth in overland flow diversions, evidence of conflict and water stealing, and supplemented systems operated by SunWater or other dam operators.

'**National Standards Commission'** is a Commonwealth statutory authority established in 1950 and operating under the *National Measurement Act 1960.* The Commission is responsible for advising the Government on the scientific, technical and legislative requirements of Australia's national measurement system

'**Overland Flow Diversions'** means water, including floodwater flowing over land, otherwise than in a watercourse or lake after having fallen as rain or in any other way; or after rising to the surface naturally from underground.

'Resource Operations Licence' (ROL) is a licence to operate infrastructure (dams etc) for water supply. A condition of the licence is adherence to the related requirements in the Resource Operations Plan.

'**Distribution Operations Licence'** an authority to interfere with the flow of water to the extent necessary to operate water infrastructure for distributing water allocations.

'Resource Operations Plan' (ROP) means a plan approved under the *Water Act 2000.* The plan contains operation rules for supplemented and unsupplemented water. The ROP is developed to meet the objectives of the Water Resource Plan.

'Stream Gauge Network' is a network of selected remote locations that measure the quantity and quality of the surface water resources of the state.

'SunWater' is a Government Owned Corporation that has been established to run state owned water supply schemes on a commercial basis where practicable.

'**Supplemented Water'** for the purposes of this paper supplemented water means water that is supplied under an interim resource operations licence, resource operations licence or other authority to operate infrastructure.

'Surface Water' (SW) is water that flows in a watercourse, lake, spring, dam or weir managed under a licence or water allocation and is distinct from overland flow.

'Unsupplemented Water' means water that is taken under a water allocation or water licence that is not managed under a resource operations licence, an interim resource operations licence or from a water authority area.

'Volumetric Limit' – means (for an unsupplemented water allocation or a water licence) the maximum volume of water, in megalitres, that may be taken under the allocation or licence in a water year or other stated period.

'Water Allocation' means an authority to take water granted under Section 121 or 122 of the *Water Act 2000.*

'**Water Harvesting'** means taking unsupplemented water during specified high flow events, and generally involves the pumping of water into on-farm storage for later use.

'**Water Resources Plan' (WRP)** means a plan approved under the *Water Act 2000*. The purpose of the plan is to define the availability of water in the plan area, provide a framework for sustainably managing water and the taking of water, to identify priorities and mechanisms for dealing with future water requirements, to provide a framework for establishing water allocations; to provide a framework for reversing degradation that has occurred in natural ecosystems and to regulate the taking of overland flow.