

Queensland State Implementation Plan for Non-Urban Water Metering

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Prepared by:

Strategic Water Initiatives, Water and Corporate Services

Department of Environment and Resource Management

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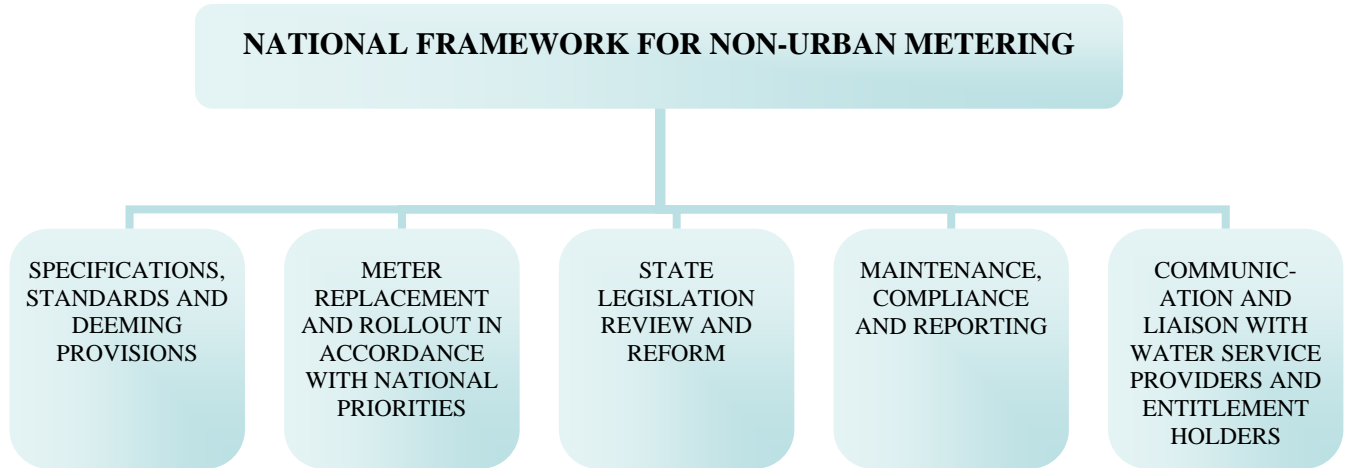
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Key areas of work associated with the full implementation of the National Framework

The Queensland State Implementation Plan for Non-Urban Water Metering outlines the key actions, target dates and estimated costs for Queensland to implement the National Framework for Non-Urban Water Metering as endorsed by the Council of Australian Governments in December 2009.



Introduction

This plan has been developed by the Queensland Department of Environment and Resource Management (the department) in response to implementation of national metering standards required under the National Water Initiative.

The purpose of the plan is to provide all stakeholders with a clear framework within which non-urban water metering is to be implemented in Queensland in accordance with the National Policy. The plan outlines proposed timeframes and identifies the estimated costs of implementation. The plan will ensure that all stakeholders have a clear and common basis for any future negotiations regarding funding and other implementation issues.

The plan has been developed in consultation with Queensland water service providers, relevant Local, State and Commonwealth Government agencies, and national water associations

Section 2 provides background information relevant to implementing national metering standards in Queensland.

Sections 3, 4 and 5 set out implementation actions, resource requirements and associated costs.

Section 6 contains a glossary of terms.

Background

National Water Initiative

In June 2004, Queensland became a signatory to the National Water Initiative (NWI) agreement. The overarching objective of the agreement is to achieve 'a nationally-compatible market, regulatory and planning based system of managing surface and groundwater resources for rural and urban use that optimises economic, social and environmental outcomes'¹.

Under the agreement, Commonwealth, State and Territory Governments have agreed to implement a nationally consistent framework for water metering and measurement. Paragraph 88 of the Agreement specifies:

Recognising that information available from metering needs to be practical, credible and reliable, the Parties agree to develop by 2006 and apply by 2007:

- i) *a national meter specification;*
- ii) *national meter standards specifying the installation of meters in conjunction with the meter specification; and*
- iii) *national standards for ancillary data collection systems associated with meters.*

In addition, paragraph 87 specifies:

The Parties agree that generally metering should be undertaken on a consistent basis in the following circumstances: for categories of entitlements identified in a water planning process as requiring metering;

- i) *where water access entitlements are traded;*
- ii) *in an area where there are disputes over the sharing of available water;*
- iii) *where new entitlements are issued; or*
- iv) *where there is a community demand.*

Lastly, paragraph 89 (i) specifies:

The Parties agree to develop by mid 2005 and apply national guidelines by 2007 covering the application, scale, detail and frequency for open reporting addressing:

- i) *metered water use and associated compliance and enforcement actions.*

The Queensland Government is committed to implementing the national metering standards in accordance with the NWI Agreement.

Metering Expert Group

The Metering Expert Group (MEG) was tasked by the National Water Initiative Committee (NWIC) under the auspices of the NRM Ministerial Council with implementing the national metering standards in accordance with the NWI Agreement. Representatives include Commonwealth, State and Territory resource management and trade measurement agencies, the National Measurement Institute, Standards Australia, rural water service providers and the irrigation industry.

The department has actively contributed to the MEG's work developing the national metering standards framework, ensuring that implementation is practical and feasible for Queensland's non-urban water users.

National trade measurement system

In April 2007 the Council of Australian Governments (COAG) agreed the Commonwealth Government would assume responsibility for the national trade measurement system, commencing on 1 July 2010. The national trade measurement system will cater for non-urban meters through amended trade measurement legislation and water legislation.

At present, meters and measuring devices used for trade, unless exempted, must meet the requirements of the *National Trade Measurement Act 1960* (Cth) and Uniform Trade Measurement Legislation administered by State and Territory Governments. Currently, meters > 4000l/hr in reticulation systems are exempt.

Requirements of trade measurement legislation include:

- Pattern approval by the National Measurement Institute (NMI), and
- Laboratory verification by a verifying authority, and

¹ Paragraph 23, *Intergovernmental Agreement on a National Water Initiative*, COAG, 25 June 2004.

- Marking the meter with a verification mark.

These requirements would ensure compliance with minimum design and performance parameters. In addition, meters may also be verified in situ (in field) conditions. However, applying trade measurement requirements and implementing the national metering standards for all non-urban meters is not easily achieved:

- In situ verification is not yet viable as technology is still under development
- Pattern approval of a measuring system may not be possible where component parts cannot be laboratory tested
- Laboratory verification of very large, high capacity meters may not be possible due to the size limitations of existing testing laboratories.

In recognition of this, the national trade measurement system will provide exemptions for non-urban meters; and state water legislation will mandate the use of pattern approved and laboratory verified meters or contemporary meters (i.e. meters that are considered to meet minimum design and performance requirements where pattern approval and/or laboratory verification is not possible).

To address difficulties² in verifying meters in situ, the national trade measurement system will recognise the alternative quality assurance based approach named the Metrological Assurance Framework.

National metering standards

National Measurement Institute Standards

Mandatory metrological and technical requirements for pattern approval and initial laboratory verification of non-urban meters are administered by the National Measurement Institute (NMI). These requirements are established under national trade measurement legislation.

NMI M 10 - Meters intended for the metering of non-urban water in full flowing pipes includes three sections:

NMI M 10-1 specifies metrological and technical requirements for non-urban meters

NMI M 10-2 specifies methods of testing for pattern approval and initial verification of non-urban meters

NMI M 10-3 contains a model test report.

Similarly, *NMI M 11 - Meters intended for the metering of water flowing in open channels or partially filled pipes* contains the metrological and technical requirements, testing methods and model test report for open channel meters and measuring devices.

Australian Standards

In addition to the NMI documents, there are also Australian Standards for non-urban water meters under development. These standards (initially released as technical specifications) are administered by Standards Australia, and consist of best practice guidelines designed to ensure meters are installed and maintained to perform to an acceptable standard. Australian Technical Specifications *ATS 4747 Meters for Non-Urban Supply* currently includes:

- Part 1: Glossary of Terms
- Part 2: Specification of meters for closed conduits fully charged
- Part 3: Specification of open channel meters
- Part 5: Installation, commissioning and maintenance of meters for closed conduits fully charged
- Part 6: Installation and commissioning of open channel meters
- Part 8: Code of practice for in-service metrological assurance of non-urban water meters in full flowing pipes (closed conduit in-service compliance)
- Part 9: Code of practice for in-service metrological assurance of non-urban water meters in open channels and partially filled pipes (open channel in-service compliance).

The specifications are being reviewed, after which they will be republished as Australian Standards.

Parts 2 and 3 specify design and testing requirements, ensuring meters are capable of withstanding environmental and operational conditions. Parts 5 and 6 specify installation, commissioning (including validation) and maintenance. Part 7

² due to site-specific issues and the current lack of available, cost-effective *in situ* testing technology and facilities

specifies capability requirements for meters to interface with, transmit and receive information from data loggers, telemetry and other ancillary equipment.

Parts 8 and 9 are codes of practice specifying general requirements under the Metrological Assurance Framework. Governments and WSPs are to 'base the development of their quality, administrative and technical systems that govern their operations in relation to [non-urban] meters' on these codes of practice. The codes are 'designed to ensure ongoing compliance with the water audit requirements' of national and state jurisdictions.

Departmental Specifications

Departmental specifications will require meters to meet NMI and Australian Standards. In addition, the department may specify further requirements for non-urban meters to satisfy resource management criteria. The department's specifications are available on the website <http://www.derm.qld.gov.au/water/use/index.html> /

National Policy – Metrological Assurance Framework

To enable national metering standards to be implemented, the *National Framework for Non-urban Water Metering Policy* has been developed. The purpose of the policy is to provide a nationally consistent framework for non-urban water meters encompassing implementation priorities, meter standards and specifications and the Metrological Assurance Framework.

The Metrological Assurance Framework incorporates national measurement standards and best available practices to ensure adequate meter performance, including:

- Use of pattern approved, laboratory verified meters as per the NWI agreement and trade measurement requirements
- Installation in accordance with the pattern approval certificate and Australian Standards
- Post installation validation by a certified validator, ensuring the meter is pattern approved and correctly installed and is likely to perform adequately in field conditions
- Maintenance in accordance with the pattern approval certificate and Australian Standards
- Ongoing validation by a certified validator, ensuring the meter is correctly maintained, and continues to perform adequately
- Adoption of in situ verification when and where appropriate
- Auditing by the relevant State Agencies and reporting of non-urban metering activities and outcomes to the Commonwealth Government.

The framework has been identified as the best available means of ensuring meters perform adequately whilst catering for a range of different jurisdictional metering policies. To further ensure performance through meter, installation and maintenance quality, the framework allows jurisdictions to use certified installers and maintainers, or in lieu of this, undertake more frequent or intensive maintenance, validation and auditing activities.

Irrigation Australia Limited (IAL) was contracted by the Commonwealth Government to develop a cost-effective, national, industry-based certification scheme to accredit meter installers, maintainers, and/or inspectors or validators for meters for non-urban water supply. The program for meter installer is now complete and IAL is providing certification for meter installers of meters for non-urban water supply (www.irrigation.org.au).

National Policy – Implementation priorities

National priorities and targets for the installation of new meters and replacement of existing meters will be guided by the following:

- All new meters installed from 1 July 2010 will comply with the National Framework.
- Existing meters that are within the +/-5% tolerance limits may be deemed to be compliant.
- All existing non compliant meters shall be upgraded progressively according to the significance of the metering installation, as follows:
 - i) *Largest bulk water meters:* all non-compliant meters on river flow control works or offtakes to irrigation networks of 5000ML/year or more capacity to be replaced with compliant meters by 30 June 2014;

- ii) Smaller bulk water meters: all non-compliant meters on river flow control works³ or offtakes to irrigation networks of less than 5000ML/year capacity to be replaced with compliant meters by 30 June 2016;
- iii) Other meters not in irrigation networks: all other non-compliant meters used to extract water directly from rivers or aquifers (i.e. not within an irrigation network) to be replaced by 30 June 2016;
- iv) All other existing meters: all other non-compliant meters to be replaced with conforming meters at the end of the expected life of the meter or by 30 June 2020, whichever occurs first.

Non urban water metering in Queensland

Metering of non-urban water use in Queensland applies to holders of water entitlements (and related water authorisations, allocations, licences and permits) administered by the department under the *Water Act 2000* and *Water Regulation 2002*. These entitlement holders generally include:

- Individuals and corporations undertaking irrigation, industrial and commercial activities
- Rural industries and services such as abattoirs, mines, quarries and power stations
- Water Service Providers (WSPs), water authorities, water boards, and local governments that take and distribute water to customers.

Historically, non-urban water metering has been undertaken in response to local resource management, compliance or WSP requirements. These meters have been installed by departmental staff, WSPs or entitlement holders to various standards and competencies.

In 2003, the department commenced the State-wide Metering Services Program to expand its non-urban metering network. The program involves installing new meters and replacing non-compliant existing meters across the state, limited to works taking unsupplemented water. Under this program, the department has implemented interim standards for the installation of departmental meters. The interim standards are based on best practice and have been developed in consultation with meter manufacturers and the irrigation industry. The interim standards are compatible with the Australian technical standards (ATS4747) and specify minimum design and construction requirements for meters and installations. SunWater has also adopted the Australian technical standards (ATS4747) for new meter installations in its distribution systems.

Queensland Metering Policy and Arrangements

Queensland's Metering Water Extractions Policy was endorsed by the Queensland Government in May 2005. The policy sets out the key aspects for non-urban metering, summarised in Table 1 below.

Table 1: Key aspects of Queensland metering policy

	DERM Meters	WSP Meters
Ownership	<p>Meters are owned by the Queensland Government.</p> <p>Entitlement holders may not own the meter.</p> <p>In departmental managed areas, existing compliant meters owned by entitlement holders are transferred to the Queensland Government or replaced with an approved meter owned by the Queensland Government.</p>	<p>Meters are owned by the Water Service Provider.</p> <p>WSP clients may not own the meter.</p>
Meter Selection and Supply	<p>Site assessments are undertaken by trained contractors or departmental officers, enabling suitable meter types to be determined. Meters are selected by the department to suit the application and operating conditions.</p>	<p>Depending on the WSP's technical capacity, meter selection and installation may be undertaken in-house or outsourced.</p> <p>Meter selection is generally based on operating conditions and/or existing</p>

³ As defined in the *Water Act 2008* (Cth)

	<p>Meters are supplied by pre-qualified meter manufacturers under a Standing Offer Arrangement (SOA). This ensures that all meters meet the department's interim specifications and are likely to comply with national standards once they have been implemented.</p>	<p>meter types within the scheme area.</p> <p>Meters are generally supplied under SOAs or contracts. New meters must comply with the department's interim specifications.</p>
Installation	<p>The department's meters are installed by manufacturer certified contractors engaged from a panel under a Pre-qualified Supplier Arrangement (PSA).</p> <p>Entitlement holders are not permitted to install resource management meters which measure their take of the natural resource.</p>	<p>Installations are undertaken by appropriately trained WSP staff or contractors in accordance with WSP's specifications.</p> <p>WSP clients are not permitted to install meters to measure their take.</p>
Maintenance and Reading	<p>Maintenance is undertaken by a manufacturer certified contractor under the department's Meter Reading and Maintenance Contract.</p> <p>Meters are routinely inspected during reading rounds. Maintenance is undertaken as required. The condition of each meter is checked on a biennial basis.</p>	<p>Maintenance and meter readings are undertaken by appropriately trained WSP staff or contractors.</p> <p>Meters are routinely inspected during meter reading rounds. Maintenance is undertaken as required.</p>
Cost Recovery	<p>The cost of supplying, installing, maintaining and reading meters is recovered from entitlement holders through an annual Metering Service Charge (MSC).</p>	<p>The cost of supplying, installing, maintaining and reading meters is recovered from WSP clients through the WSP's upfront and annual water charges.</p>

Under the policy, non-urban metering generally applies to water taken for agricultural, industrial and commercial uses. However, where resources are stressed or in high demand, the policy allows metering of water taken for stock and domestic purposes.

Implementation Plan

Scope

This plan applies to non-urban water meters in Queensland used to take or distribute surface water and groundwater for any purpose, including meters used to measure:

- Unsupplemented water extractions managed by the department, and
- Supplemented and unsupplemented water taken and distributed untreated by infrastructure managed by water service providers, including relevant local governments, water boards and other water authorities.

The plan applies to non-urban meters and measurement systems including measuring devices, component parts and ancillary equipment required to operate the meter or system. The plan does not apply to meters in reticulated urban systems or to stream gauging stations.

Consultation

The department has developed this plan in consultation with:

- National Metering Expert Group
- Australian Department of Environment, Water, Heritage and the Arts (DEWHA)
- Queensland Office of Fair Trading, Department of Justice and Attorney General
- Queensland Department of Premier and Cabinet (DPC)
- Queensland Treasury
- Queensland water service providers (refer to Appendix 1 for details)
- Queensland Farmers Federation / AgForce and associated irrigation industry groups

Objectives

The objectives of this plan include:

- to achieve the objectives of paragraphs 87, 88 and 89(i) of the National Water Initiative agreement
- to ensure non-urban meters comply with requirements of the National Measurement Act 1960 (Cth), the *National Measurement Regulations 1999* and Uniform Trade Measurement Legislation (UTML) administered by the States and Territories.
- to ensure national standards for non-urban meters are implemented in accordance with the National Framework for Non-urban Water Metering Policy, including the processes, mechanisms and resources required by the Metrological Assurance Framework.

Implementation actions

Stocktake of non urban meters

Marsden Jacob Associates and Sinclair Knight Mertz have undertaken a national stocktake of non-urban meters on behalf of the Commonwealth Government. These stocktakes included meters owned by the department and by a limited number of Queensland WSPs. To supplement this information, the department undertook a further stocktake of metering arrangements for the department and WSPs. Baseline information collected by the department stocktake relates to:

- Existing meters and installations
- New meters to be installed
- Replacement / upgrade priorities for phasing out non-compliant meters and installations
- Uptake of certification and training schemes

This information has assisted in the determination of strategies to be adopted in implementing the national metering standards, including estimates of the costs of implementation. Results of the department stocktake are included in Appendices 1 & 2.

Actions relating to the department stocktake activities are:

<i>ID</i>	<i>Actions</i>	<i>Responsibility</i>	<i>Target Date</i>
1 (a)	Identify relevant stocktake stakeholders	DERM	Completed
1 (b)	QLD stocktake	DERM	Completed
1 (c)	Consultation with Qld WSPs	DERM	Ongoing
1 (d)	Compile departmental stocktake results	DERM	Completed

Uptake of pattern approved, laboratory verified meters

To comply with NWI requirements and trade measurement legislation, new non-urban meters must be pattern approved and laboratory verified prior to use. Where pattern approval and laboratory verification is not possible, for example where pattern approved meters are not available, or in the case of very large, high capacity meters or measuring systems, contemporary meters must be consistent with the department's interim standards/ and or the Australian Standards/Technical Specifications (ATS4747).

Meter manufacturers will be required to provide pattern approved and laboratory verified meters to the department and WSPs as they become available on the Australian market. The department and WSPs will be required to ensure their respective purchasing policies are updated to cater for the procurement of these meters as they become available. The department will also ensure that meter suppliers on its Standing Offer Arrangement (SOA) are made aware of this requirement.

Currently there are no pattern approved meters available on the Australian market. Consequently, continued use of contemporary meters will be permitted until the end of the meter's life, providing the meter and installation comply with the department's interim specifications and /or the Australian Standards/Technical Specifications (ATS4747).

Key actions relating to the uptake of pattern approved, laboratory verified meters are:

<i>ID</i>	<i>Actions</i>	<i>Responsibility</i>	<i>Target Date</i>
2 (a)	Ensure manufacturers are aware of pattern approval and laboratory verification requirements for non-urban meters	Commonwealth Government	Completed
2 (b)	Provide pattern approved, laboratory verified meters	Manufacturers	July 2010
2 (c)	Amend DERM's specifications to include pattern approved meters	DERM	July 2010 ⁴
2 (d)	Update purchasing policies and SOA	WSPs, DERM	July 2010
2 (e)	Advise clients of pattern approval and laboratory verification requirements	DERM	July 2010
2 (f)	Purchase and install new pattern approved, laboratory verified meters	WSPs, DERM	July 2010 / as new meters becomes available. Ongoing.

It is likely that there will be a transition period during which laboratories will be upgraded to NATA specification. Following the upgrade of laboratories meters will be submitted for pattern approval, and sufficient meters will be manufactured to meet Australia's need for new and replacement meters. The auditing and reporting obligations will be key in managing the transition period.

⁴ The target dates for amendment of DERM's specification and updating of purchasing policies will be dependent on the availability of pattern approved meters.

Communicating national metering standards

To increase awareness of the national standards, DEWHA and the Metering Expert Group have developed a national communications strategy. The objectives of the strategy are:

- to inform manufacturers and distributors of the reform to the National Measurement Act and regulatory requirements, particularly relating to pattern approval, installation and compliance requirements and the regulatory framework;
- to inform stakeholders of the national and state implementation plans for non-urban water meter standards; and
- to develop the capacity to meet future metering requirements of WSPs throughout Australia.

In addition, the department will further facilitate awareness of the national standards in Queensland through the departmental website. The department will also maintain ongoing consultation with WSPs to ensure implementation of the national framework. This involves ensuring WSPs are aware of their responsibilities in regard to:

- Install new meters in accordance with the departmental specifications, including the NMI standards and Australian Standards / Technical Specifications (ATS4747);
- Replacing or upgrading non-compliant meters and installations;
- Phasing out the use of inefficient meters in a cost-effective manner; and
- Undertaking a stocktake of existing meters to be deemed compliant for the life of the meter.

Actions relating to communicating the national standards include:

<i>ID</i>	<i>Actions</i>	<i>Responsibility</i>	<i>Target Date</i>
3 (a)	Identify relevant communications stakeholders	DERM	August 2008
3(b)	Develop web content	DERM	July 2010 and ongoing
3(c)	Develop and publish information in water industry publications and newsletters	DERM	Ongoing
3 (d)	Liaise with WSPs to ensure implementation actions are progressed	DERM	Ongoing

Uptake of national certification and training

The Metrological Assurance Framework provides for the use of trained or certified installers, maintainers and validators, the extent of application depending on jurisdictional government policy. In Queensland, non-urban meters must be installed, maintained and validated by appropriately certified or trained persons.

The department and WSPs will ensure personnel undertaking and/or supervising installation, maintenance and validation activities:

- Hold certification under the national scheme being developed by Irrigation Australia Limited (IAL) on behalf of the Commonwealth Government, or
- Are trained by a Registered Training Provider (RTP) under a nationally recognised training course.

This approach complements Queensland's current arrangements. Both the department and SunWater currently use manufacturer-certified installers and maintainers.

Key findings from the department's consultation with Queensland WSPs about the national certification scheme are:

- No WSPs are currently employing 'in house' training in regard to metering. Meter installation, maintenance and testing procedures are undertaken by contractors, meter manufacturers or experienced field staff.
- Small WSPs (such as rural water boards supplying stock and domestic water) generally do not employ meter officers. Meter related work is generally undertaken on a part time basis by general field staff.
- Larger sized WSPs may employ several metering technicians, but generally use contractors associated with a meter manufacturer to undertake roll-outs of a number of meters or specialised installations.

The future training and qualification requirements for certified meter installers, maintainers and validators include:

- on the job training
- trade qualification
- TAFE certification
- prior knowledge or experience.

Actions relating to uptake of national certification and training are:

<i>ID</i>	<i>Actions</i>	<i>Responsibility</i>	<i>Target Date</i>
4 (a)	Liaise with WSPs and RTPs to ensure certification and/or training are implemented in Queensland	IAL	Ongoing
4 (b)	Ensure adequate staff are trained and certified	DERM, WSPs	December 2009 and ongoing

Queensland water legislation

The majority of non-urban meters affected by the national standards are associated with water authorisations administered by the department under the *Water Act 2000* ('the Act') and subordinate legislation including the *Water Regulation 2002* ('the Regulation'), water resource plans and resource operations plans.

These authorisations include water licences, allocations, permits held by individuals and WSPs, as well as resource operations licences and distribution operations licences held by WSPs. The Act also provides for works operated by WSPs under Orders in Council.

The Act enforces metering of works owned by individuals and organisations (metered entitlement holders), WSPs and their clients through the following mechanisms:

- Section 1014 (d) (i), a regulation making power, specifies the Regulation may state when a meter must be installed. This requirement applies to metered entitlements declared under the Regulation and held by individuals and organisations who take unsupplemented water under a licence, permit, allocation or Order in Council.
- Section 110 (2), specifies that a WSP may be required to install a meter on water infrastructure as a condition of the WSP's resource operations licence or distribution operations licence. Section 178 (a) (i) also provides for this requirement in relation to interim resource operations licence and distribution operations licence.
- Section 383 provides WSPs with the power to install meters on clients' works.

For private individuals and organisations that hold metered entitlements, Part 7 of the Regulation contains specific provisions for:

- Notification of meter entitlement holders, requiring them to:
 - have a meter installed
 - provide information about the works
 - notify the department if no works are installed
 - notify the department if the works are altered after they have been assessed
 - transfer ownership of acceptable meters to the department
 - undertake site preparation within the stated time frame
 - be aware of penalties that apply for not complying with the requirements.
- Declaration of metered entitlements
- Establishment of metering service charges
- Ownership of meters by the department
- Reading of meters by the entitlement holder or Chief Executive
- Meter assessment charges

- Chief Executive’s specifications for site preparation.

For WSPs and their clients, metering provisions are contained in the WSP’s resource operations licence or distribution operations licence. General metering requirements are also specified in the relevant resource operations plan.

Queensland’s current legislative framework requires entitlement holders and WSPs to install meters, however; current regulation does not mandate how WSPs meter their clients as this is done administratively through consultation. If this approach is ineffective in ensuring the WSPs comply with national standards then legislative amendments will be made.

Work program

Installing new meters in un-metered areas

The department and WSPs will ensure that new meters and installations comply with the department’s interim water meter specifications and/or Australian Standards/ Technical Specifications (ATS4747). New meters will be installed as part of existing rollout programmes or on a case-by-case basis as determined by the organisation’s operations.

Departmental meters

The department will ensure pattern approved, laboratory verified meters are used as they become available on the Australian Market. The department will continue installing new meters under its state-wide metering services program in accordance with the Queensland Government’s *Metering Water Extractions Policy*.

As of April 2008, there were approximately 26,000 active entitlements to take water administered by the department. Approximately 21,000 of these entitlements are not metered, however, it is estimated only 10,500 entitlements will require meter installation. This is due to the various circumstance of each entitlement, for example, in some cases there are no works in place or the works in place are classified as being for stock and domestic supply (which in many cases do not require metering). These factors make it difficult to forecast the numbers and types of meters required.

Based on the department’s existing meter fleet, the majority of new meters are likely to be mechanical. However non-mechanical meters are more likely to be adopted in areas where iron-bacteria is an issue. Meter types are not known until site assessments have been completed and local conditions ascertained.

The department’s plan for rolling out new meters is determined by regional planning and resource management priorities, which are revised routinely in response to changing circumstances. Therefore timeframes for rollouts may change.

Current funding arrangements have allowed the department to prepare a four year work program (Appendix 3) which will result in the installation of approximately 2900 new meters. Future program development will be dependent on funding availability.

WSP meters

The stocktake found that the majority of offtakes in WSPs’ operational areas are already metered and only small numbers of new meters are needed for unmetered offtakes. Estimated costs of new meters for the relevant WSPs are included in Table 2.

Table 2: Estimated new meter requirements for WSPs

WSP	Number	Estimated Cost
SunWater	1100	\$13,000,000
Qld Bulk Water Auth.	140	\$1 500 000
Other WSPs (various sizes)	150	\$2 500 000
Total	1390	\$17,000,000

Note: Institutional reform in south east Queensland has resulted in movement of meter ownership between SunWater and other WSPs.

Actions relating to installing new meters in un-metered areas are:

<i>ID</i>	<i>Actions</i>	<i>Responsibility</i>	<i>Target Date</i>
5 (a)	Install new meters in unmetered areas managed by the department	DERM	As per Statewide Metering Program Priorities
5 (b)	Install new meters in unmetered areas managed by WSPs	WSPs	As per WSP operational requirements

Replacing and upgrading non-compliant existing meters and installations

The department and WSPs will ensure that existing meters and installations are replaced and/or upgraded to comply with departmental specifications and/or the NMI standards and Australian Standards.

Priorities and targets for upgrading meters and installations will generally be guided by:

- All new meters installed from 1 July 2010 will comply with the National Framework.
- Existing meters that are within the +/-5% tolerance limits may be deemed to be compliant.
- All existing non compliant meters shall be upgraded progressively according to the significance of the metering installation, as follows:
 - i) Largest bulk water meters: all non-compliant meters on river flow control works or offtakes to irrigation networks of 5000ML/year or more capacity to be replaced with compliant meters by 30 June 2014;
 - ii) Smaller bulk water meters: all non-compliant meters on river flow control works⁵ or offtakes to irrigation networks of less than 5000ML/year capacity to be replaced with compliant meters by 30 June 2016;
 - iii) Other meters not in irrigation networks: all other non-compliant meters used to extract water directly from rivers or aquifers (i.e. not within an irrigation network) to be replaced by 30 June 2016;
 - iv) All other existing meters: all other non-compliant meters to be replaced with conforming meters at the end of the expected life of the meter or by 30 June 2020, whichever occurs first.

Replacement strategy and exempt meters

Under the *Water Act 2000*, *Water Regulation 2002* or amended resource operations licence, all non-urban meters shall comply with the national metering standards by 30 June 2020, unless otherwise exempted. The following replacement strategy shall apply:

- Any meter installed after 1 July 2010 must comply with the national metering standards, and
- Any meter installed prior to 1 July 2010 shall be replaced with a compliant meter by 30 June 2020. Replacement shall be undertaken at the earliest opportunity, such as when major maintenance is required on the non-compliant meter.

Notwithstanding the above strategy, the following exemptions will apply:

- Any meter installed in good faith to interim standards deemed acceptable by the department with a useful life exceeding the ten-year replacement period may continue to be used until the end of its life or lesser period as determined by the department, and
- Any meter comparable with the department's interim standards and / or the Australian technical standards (ATS4747) and/or designed for a specific purpose (e.g. high capacity, large scale applications) for which no compliant meter is available, may be used in lieu of a compliant meter until such time as a compliant meter is available.

In regard to the department's interim standard, the section below provides details of the interim standard and justification for its adoption in 2003. Where a WSP has applied a contemporary interim standard, which is comparable with the department's interim standard, to its metering prior to 1 July 2010, it will be acceptable.

⁵ As defined in the *Water Act 2008* (Cth)

In regard to approved non-compliant meters, only meters that are contemporary meters installed in accordance with known best practice will be acceptable. Meters which are being used for a specific purpose for which no compliant meter was available upon installation and which are known to be of doubtful accuracy, must be replaced by an approved meter by 30 June 2020, if one is available.

Departmental Interim Standard for Non-Urban Water Metering

Requirement	Description
Accuracy	<p>Water meters must have been tested utilizing a reference flow meter traceable to a NATA accredited laboratory and be certified capable of achieving $\pm 2\%$ accuracy under factory conditions over a specified flow rate range. The flow rate range for achieving this accuracy must also be specified.</p> <p>All meters will be required to operate under “pipe full” flow conditions.</p> <p>Accuracy must be achievable with no more than 10 pipe diameters of straight pipe before the meter and 5 pipe diameters of straight pipe after the meter without flow straighteners.</p> <p>Offerers must provide copies of documentation in regard to these testing procedures – including whether the testing is done individually or on a batch basis.</p>
Pulse or Analogue Output	Water meters must have a pulse or 4 - 20 mA output capability
Display Units	Cumulative totals and rate of flow must be displayed in metric units (e.g. Megalitres, kilolitres, ML/ day, Litres/Sec).
Protection Rating	The primary element, flow display unit and other ancillary equipment associated with the meter must be protected to at least IP65 in accordance with AS1939 (IP Code).
Flow Direction and Serial Numbers	<p>Meters must be labelled so as to show the direction of flow, orientation or any other necessary installation information to achieve the required accuracy.</p> <p>Meters must have a clearly identifiable manufacturer’s serial number securely attached or imprinted.</p>
Flanges	All flanged pieces must be flanged to either AS2129 Table D or AS4087 Class 14. NOTE: Australian Standard AS4087 requires bolt holes on flanges to be equally spaced either side of top centre of the pipe.

In adopting this interim standard, the department’s objective was to achieve an *in situ* accuracy of $\pm 5\%$, which was seen as a reasonable and achievable target. To do so, the department adjudged that it would be necessary to have meters which achieved $\pm 2\%$ accuracy in the laboratory and which were installed in the field in accordance with stringent guidelines.

The department submits that this interim standard is acceptable because it encompasses:

- Laboratory accuracy of $+2\%$, which is more stringent than the national standard of $+2.5\%$
- A target of $+5\%$ in situ accuracy, the same as the national standards
- Installation requirements (10/5 diameter lead-in / lead-out lengths) which are more stringent than any current or past manufacturers’ requirements

- Pulse output, the same as the national standards
- All other elements that align with the national standards.

Compliant meters

A meter shall be deemed compliant by the Chief Executive if the meter:

- is of a design that has been subsequently pattern approved and has been validated as being installed and working in accordance with the relevant pattern approval certificate; and
- has been installed under an interim standard that is deemed appropriate by the Chief Executive; or
- is demonstrated to the satisfaction of the Chief Executive to operate within the maximum permissible limits of error allowable in field conditions ($\pm 5\%$).

Existing meters – departmental

Replacement and upgrading activities will be undertaken in accordance with the requirements of the *National Framework for Non-urban Water Metering Policy* but subject to resourcing capacity.

At the time of development of the State Implementation Plan approximately 4306 meters were installed in 40 management areas administered by the department. These meters are owned by the department and entitlement holders and range in size from 20 mm to 1800 mm.

708 meters have been installed since 2003 and comply with the department’s interim standards. Under the national metering standards policy, these are expected to be exempt and will not require upgrading or replacement until the end of their useful life (2028 – 2033 based on a 25-year meter life).

Replacement of the remaining 3598 will be undertaken by 30 June 2020 (in accordance with the priorities set out under national metering standards policy) where necessary capacity and operating priorities permit.

Existing Meters - WSP

The stocktake undertaken by the department found that 17,790 meters were installed in operational areas managed by WSPs.

It is estimated that approximately 3,000 of the abovementioned meters were installed post 2003. Under the national metering standards policy, these would be exempt and thus not require upgrading or replacement until the end of their useful life (2028 – 2033 based on a 25-year meter life).

Replacement of the remaining 14,790 meters will be undertaken by 30 June 2020 (in accordance with the priorities set out under the national metering standards policy) and as determined by the WSPs operations to ensure cost efficiency. The cost of replacing non-compliant meters is estimated at \$132,000,000.

Actions relating to upgrading non-compliant meters and installations are:

<i>ID</i>	<i>Actions</i>	<i>Priority</i>	<i>Target Date</i>
6 (a)	Replace WSPs’ meters on critical offtakes and dethridge wheels	High	30 June 2020
6 (b)	Replace defunct meters and meters for which spare parts are no longer available	Medium	30 June 2020
6 (c)	Upgrade other meters and/or non-compliant installations	Medium	30 June 2020
6 (d)	Upgrade meters recently installed to approved interim standards	Low	End of Meter Life

Maintenance

The department and WSPs will ensure maintenance is carried out in accordance with the requirements of the *National Framework for Non-urban Water Metering Policy*, NMI pattern approval certificate, Australian Standards (or Technical Specifications) and any additional requirements to meet the department and/or WSP operational needs.

In Queensland, all maintenance is to be carried out directly by, or under the supervision of, personnel certified under the national certification scheme or trained with nationally approved training. Maintenance will be undertaken in accordance with the principles outlined in the *National Framework for Non-urban Water Metering Policy*.

The department and WSPs will ensure adequate records of maintenance activities are kept to meet auditing and reporting requirements.

The maintenance plan (asset management plan) as outlined in the *National Framework for Non-urban Water Metering Policy* will be developed by WSP and the department where applicable.

Actions relating to maintenance include:

<i>ID</i>	<i>Actions</i>	<i>Target Date</i>
6 (a)	Ensure existing maintenance programs include minimum maintenance requirements	completed
6 (b)	Ensure procedures are in place for re-verification as technology becomes available	ongoing
6 (c)	Ensure personnel are certified / trained and aware of minimum maintenance requirements	ongoing
6 (d)	Develop or upgrade an Asset Management Plan	July 2010

Validation activities

Validation shall be undertaken by certified validators in accordance with the requirements of the *National Framework for Non-urban Water Metering Policy* and Australian Standards (or Technical Specifications).

Where a person who is a certified installer or maintainer is also a certified validator, the person may self-validate the meter or measuring system. The department and WSPs will ensure adequate records of validation activities are kept to meet auditing and reporting requirements.

Actions relating to validation include:

<i>ID</i>	<i>Actions</i>	<i>Target Date</i>
7 (a)	Ensure existing installation and maintenance programs include validation requirements	December 2010
7 (b)	Ensure personnel are certified validators	December 2010

In-situ verification

The department and WSPs will ensure *in situ* verification programs are implemented when technology becomes available and where it is cost efficient and practical to do so.

In accordance with national policy, *in situ* verification shall only be undertaken by verifying authorities or certified licensees appointed under national measurement legislation and shall be carried out using NATA accredited testing facilities and NMI verification procedures. Meters verified *in situ* are deemed compliant where they operate within the maximum permissible limits of error allowable under *in situ* conditions ($\pm 5\%$).

Where *in situ* verification is implemented, the department and WSPs may elect to undertake *in situ* verification in place of validation.

The department will work with the Queensland Office of Fair Trading (OFT) to ensure adequate verifying authorities or certified licensees are appointed if/when required.

Actions relating to *in situ* verification include:

<i>ID</i>	<i>Actions</i>	<i>Responsibility</i>	<i>Target Date</i>
8 (a)	Implement <i>in situ</i> verification programs when technology becomes	DERM, WSPs	As required

	available and it is cost efficient and practical to do so		
8 (b)	Ensure adequate verifying authorities or certified licensees are appointed	OFT	As required

Compliance, auditing and reporting

The department and WSPs will ensure audits and reports on their metering activities, including related compliance activities, are undertaken as required by the *National Framework for Non-urban Water Metering Policy*.

Departmental-owned Meters

Departmental-owned meters are subject to the following requirements:

- All priority meters (with capacity of 5000 ML/yr or more or otherwise identified as priority meters for management purposes) are to be self-audited by the jurisdictional government agency based on ongoing operations.
- Other meters (with capacity less than 5000 ML/yr or otherwise not identified as priority meters) are to be self-audited by the jurisdictional government agency based on ongoing operations.

The department will develop an annual audit report, and include the information in the single audit report for public release on a biennial basis.

WSP-owned Meters

WSP-owned meters are subject to the following requirements:

- All priority meters (with capacity of 5000 ML/yr or more or otherwise identified as priority meters for management purposes) are to be self-audited by the WSP based on ongoing operations. However, WSPs may undertake more frequent auditing if they choose to do so.
- Other meters (with capacity less than 5000 ML/yr or otherwise not identified as priority meters) are to be self-audited by the WSP based on ongoing operations and meters actioned during the year.
- WSPs will provide annual audit reports to the department
- The department will collate this information into a single audit report.

The department and WSPs as necessary are to develop databases or upgrade existing asset management systems to enable the recording, analysis and reporting of metering information. The department will do so by extending the functionality of its Water Management System. This is scheduled for July 2010.

Actions relating to auditing and reporting include:

<i>ID</i>	<i>Actions</i>	<i>Responsibility</i>	<i>Target Date</i>
9 (a)	Assess the need to include WSP auditing and reporting obligations in legislative instruments	DERM	November 2010
9 (b)	Implement auditing and reporting procedures	DERM, WSPs	December 2010
9 (c)	Upgrade or develop databases / asset management systems	DERM, WSPs	December 2010
9 (d)	Conduct audits and submit reports	DERM, WSPs	July 2011
9 (e)	Collate annual reports and publish biennial report on the department's website	DERM	July 2012

Implementation Timeframes, Resources and Costs

Implementation timeframes

Key implementation actions and estimated timeframes are outlined in Table 3.

Table 3: Key timeframes for implementing national metering standards

Action	Target Date for Completion
Stakeholder identification and stocktake	Completed
Uptake of pattern approved meters	July 2010, ongoing
Communicating national standards	July 2010, ongoing
Uptake of national certification and training	December 2010, ongoing
Installing new meters in un-metered areas	As per DERM / WSP priorities
Replacing / upgrading non-compliant meters	As per DERM / WSP priorities
Maintenance programs updated	As per DERM / WSP priorities
<i>In situ</i> verification adopted	As available

Resources

Resource requirements for all actions relating to implementation of the national standards are difficult to quantify due to uncertainties regarding timeframes, funding and the extent of work required. The resource requirements identified in this plan relate to key operational activities including meter installation, replacement/upgrading, maintenance, reading and validation activities. In addition, system development costs are also factored in as estimates.

Departmental resource requirements

The department currently has a minimum of one metering officer in each of four regions, together with a central office team to manage the roll-out of meters. To facilitate implementation of the National Framework additional resources will be required for systems development, legislation reform and communication initiatives.

WSP resources requirements

SunWater currently employ staff in 9 offices across the state involved in metering. Some 65 other WSPs will need to seek certification of at least one officer or access a certified contractor/s.

Additional staff and equipment may be required during the period of upgrading and replacement of existing meters. No estimate has been made of these additional resources. Similar to the department WSP will have to allocate resources for systems development and communication initiatives.

Costs

Costs of all actions relating to implementation of the national standards are difficult to identify due to uncertainties regarding timeframes, funding and the extent of work required. Therefore the costs identified in this plan relate to key operational activities including meter installation, replacement/upgrading and validation.

In addition to the costs identified, the department will have an increasing cost of reading and maintenance as the number of meters expands to 10,500 approximately (although new meters are not expected to require substantial maintenance for a number of years); and WSPs will have additional costs of reporting under their resource operations licence.

Funding of key implementation activities shall be through the following mechanisms:

- User pays – where costs associated with metering activities are recovered from users via charges set by the department or water serviced provider, or are the sole responsibility of the user;
- Queensland government funds – where costs associated with supporting metering activities are deemed to be the responsibility of the department;
- Commonwealth government funds – where costs associated with supporting metering activities are deemed to be the responsibility of the Commonwealth Government and/or specific funding has been set aside by the Commonwealth Government.

The breakdown of the estimated costs for the department and WSPs metering implementation is provided below.

Departmental Costs

Estimated costs of departmental metering is summarised in Table 4 based on the costs experienced to date by the department's metering program. Costs cover upgrading of existing meters, new meters and installations at currently unmetered offtakes, and ancillary activities such as training and certification of staff and the upgrading of the Water Management System database.

Table 4 (a) Estimated meter costs for the department

Meter	Number	Cost
New Meters	6200	\$12,400,00
Replacement Meter (High Priority)	4300	\$8,600,000
Subtotal	10,500	\$21,000,00

Table 4 (b) Estimated ancillary costs for the department

Task	Number	Cost
Upgrade Asset Management Systems	3 system	\$1,100,000
Prepare Asset Management Plan	1 plans	\$200,000
Staff Training and Certification	20 staff	\$30,000
Subtotal		\$1,330,000

Table 4 (c) Total estimated metering costs for the department

Meter	Number	Cost
Meter Installation	10,500	\$21,000,000
Ancillary Cost		\$3,350,000
Subtotal		\$24,355,000

WSP Costs

Estimated costs of WSP metering is summarised in Table 5. Costs cover upgrading of existing meters and installations, some minor future metering of unmetered offtakes, and ancillary activities such as training and certification of staff, development or upgrading of an asset management system and the preparation of an asset management plan. It is assumed that there are eight WSPs in Qld of sufficient size to perhaps warrant an asset management system and asset management plan. A complete tabulation of these WSP estimates is under Appendix 1. The estimates are based on \$1,000,000 to upgrade one large complex system and plan (for SunWater) and \$500,000 for seven less complex systems and plans, with one-third of these costs being required for the plan development.

Table 5 (a) Estimated metering costs for WSPs

Meter	Number	Cost
New Meters	1390	\$17 000 000
Replacement Meter (High Priority)	4106	\$32 000 000
Replacement Meter (Medium Priority)	10127	\$100 000 000
WSPs Failing to Respond to Stocktake	556	\$446 000
Meters Exempt	3	\$0
SubTotal	16,182	\$149 446 000

Table 5 (b) Estimated ancillary costs for WSPs

Task	Number	Cost
Upgrade Asset Management Systems	8 systems	\$3,000,000
Prepare Asset Management Plan	8 plans	\$1,500,000
Staff Training and Certification	140 staff	\$120,000
SubTotal		\$4,620,000

Table 5 (c) Total estimated metering costs for WSPs

Element	Cost
Meters	\$149 446 000
Ancillary tasks	\$4,620 620
Total	\$154 066 000

Glossary

<i>Approved Training</i>	Training that is recognised under the Australian Qualifications Framework and meets the competencies identified by industry. Approved training includes accredited in-house training provided by water service providers or other registered training providers.
<i>Audit</i>	A review of meter installations and operations undertaken by a water service provider, state/territory agency or certified person. Audits report on meter numbers and types, validation activities and overall meter performance and reliability.
<i>Certification Scheme</i>	A national scheme for certifying meter installers, maintainers, validators and inspectors, ensuring minimum levels of competency to carry out activities critical for meter performance in accordance with Australian Standards and best industry practices.
<i>Certified Persons</i> <i>Including certified installers, maintainers and validators</i>	<p>A person certified by an accredited organisation to undertake meter installation, maintenance and validation activities in accordance with best industry practices and Australian Standards or Technical Specifications.</p> <p>Certified persons may include but are not limited to water service provider staff, State/Territory government officers and irrigation industry contractors.</p>
<i>Contemporary Meter</i>	A meter or metering system that due to technical, practical and legislative limits is not of a pattern approved design, however still meets the performance and installation specifications of the relevant jurisdictional department or agency. To be used only when the metering requirements of a particular site are beyond the operating range and capacity of all available pattern approved meters.
<i>Expanded Uncertainty</i>	<p>Degree of doubt associated with measurement accuracy.</p> <p>In relation to water meters and measuring devices or systems, this refers to the degree of uncertainty associated with measuring the volume of water passing through the device and the adequacy of that measurement for trade measurement and resource management purposes.</p>
<i>Grandfathering</i>	The granting of an exception that allows an old rule to continue to apply to some existing situations, when a new rule will apply to all future situations. It is used as a compromise, to affect a new rule without upsetting a well-established logistical situation, and to not retroactively apply the rule.
<i>In situ Volumetric Testing</i>	Volumetric testing of the meter in its normal operating conditions by a certified person. Testing methods include in-line testing against a reference meter or <i>in situ</i> measurement using a known volume. <i>In situ</i> testing for validation purposes must be undertaken by a certified person in accordance with approved guidelines. <i>In situ</i> testing for verification purposes must be undertaken in accordance with approved guidelines by a verifying authority

or certified licensee appointed under the *National Measurement Act 1960*.

Removal and testing of the meter in controlled conditions by a certified person.

Laboratory Testing

Laboratory testing for verification purposes must be undertaken in accordance with approved guidelines by a verifying authority appointed under the *National Measurement Act 1960*.

Periodic condition inspection and maintenance (or replacement) of the meter undertaken by a certified or non certified person in accordance with Australian Standards or Technical Specifications and/or guidelines approved by the relevant State/Territory Government.

Maintenance

The maximum limits of error listed in Schedule 12 of the *National Measurement Regulations 1999* for a particular class of water meter.

Maximum Permissible Error

A measuring device or system (including its component parts) used to measure the volume of water passing through a closed conduit or open channel over a known period.

Meter

A device attached to the meter, couplings and pipe work to prevent the meter from being removed, interfered or tampered with by unauthorised persons.

Seal (Anti-Tampering)

The seal usually consists of stainless steel wire and ferrules joined by a sealing tool and marked with the name and/or logo of the relevant department or agency. The seal is not a verification mark.

Stream gauging refers to the measurement in accordance with AS3778 of stream discharge (flows) past a given point on a watercourse for a range of flow height conditions, enabling calibration of the site and establishment of a rating curve (height-discharge relationship). A stream gauging station is the site for which the rating curve is established, and is generally instrumented with a range of specialised equipment.

Stream Gauging

Mandatory inspection and/or testing of the meter and installation, undertaken by a certified validator to ensure the meter is pattern approved, laboratory verified, correctly installed and there is an acceptable level of confidence that it operates within the maximum permissible limits of error ($\pm 5\%$) allowable under *in situ* conditions. Inspection may include removal of the meter and an internal check of lead in / lead out pipes where necessary.

Validation

Post-installation validation is an initial *in situ* inspection undertaken after a meter is installed, and may also include *in situ* volumetric testing where appropriate.

(Post-installation and Ongoing)

Ongoing validation is undertaken at any time during the meter's operating life and may include an inspection and/or *in situ* or laboratory volumetric testing where appropriate.

Validation does not constitute verification in the meaning of the *National Measurement Act 1960* or re-verification under trade measurement legislation.

In situ volumetric testing after installation.

**Verification
(In situ)**

Verification is testing in accordance with NMI approved procedures and is undertaken by a person appointed as a verifying authority or certified licensee under the *National Measurement Act 1960*, to ensure the meter operates within the maximum permissible limits of error specified by the *National Measurement Regulations 1999* and complies with the pattern approval certificate.

Initial laboratory testing of the meter prior to installation.

Laboratory testing after maintenance affecting the metrological performance of the meter.

The NMI has made provision to allow a verifying authority to use a sampling program for the laboratory verification of water meters. Any such sampling program must be approved by the NMI and the conditions and requirements be noted on the pattern approval certificate under *Test Procedure*.

**Verification
(Laboratory)**

Laboratory verification is testing in accordance with NMI approved procedures and is undertaken by a person appointed as a verifying authority under the *National Measurement Act 1960*, to ensure the meter operates within the maximum permissible limits of error specified by the *National Measurement Regulations 1999* and complies with the pattern approval certificate.

Verification Mark

A mark placed on the meter by a verifying authority or certified licensee to indicate the meter has been verified and complies with the pattern approval certificate in accordance with national measurement legislation.

Verifying Authority

A person appointed as a verifying authority under the *National Measurement Act 1960*.

**Water Service
Provider (WSP)**

A person or entity which owns, operates or controls the operation of works for the supply and delivery of rural water services.

Appendix 1 – Water Service Providers

Table 1: List of WSPs with responses to metering stocktake

Water Service Provider	Response to Stocktake
Avondale Water Board	Yes
Benleith Water Board	
Bones Knob Water Board	Yes
Boondooma Water Board	Yes
Brigooda Water Board	Yes
Callandoon Water Supply Board	Yes
Condamine Plains Water Board	
Coreen Water Board	Yes
Crowley Vale Water Board	
Dundowran-Nikenbah Water Board	
Esk, Gatton & Laidley Water Board	Yes
Fitzroy River Water	Yes
Gladstone Area Water Board	Yes
Glamorgan Vale Water Board	Yes
Grevillea Water Board	Yes
Juandah Water Board	Yes
Kelsey Creek Water Board	Yes

Water Service Provider	Response to Stocktake
Kooingal Water Board	Yes
Lockyer View Water Pty Ltd	Yes
Merlwood Water Board	
Mulgildie Water Board	Yes
North Burdekin Water Board	Yes
Oak Creek Water Board	Yes
Palmgrove Water Board	
Pioneer Valley Water Board	Yes
Queensland Bulk Water Supply Authority	Yes
Roadvale Water Board	
Six Mile Creek Water Board	Yes
South Burdekin Water Board	
SunWater	Yes
Washpool Water Board	
Wide Bay Water Corporation	
Woodmillar Water Board	Yes
Yambocully Water Board	

Note: That further consultation will be undertaken with WSPs in 2010 to ensure they understand their obligations under the National Framework for Non-Urban Water Metering.

Table 2: Costing estimates for WSPs not responding to meter stocktake

WSP	Purpose	Connections	Estimated Cost
Benleith Water Board	Stock and Domestic	23	\$11,500
Condamine Plains Water Board	Irrigation	5	\$7,500
Crowley Vale Water Board	Irrigation	10	\$15,000
Dundowran-Nikenbah Water Board	Irrigation	8	\$12,000
Merlwood Water Board	Stock and Domestic	58	\$29,000
Palmgrove Water Board	Stock and Domestic	5	\$2,500
Roadvale Water Board	Stock and Domestic	268	\$134,000
South Burdekin Water Board	Irrigation	145	\$217,500
Washpool Water Board	Stock and Domestic	22	\$11,000
Yambocully Water Board	Irrigation	12	\$6,000
	TOTAL	556	\$446,000

Note: Estimates were based on the primary supply purpose of the WSP and size of individuals' works. Irrigating sites were priced at \$1500 and stock and domestic sites \$500. Meters installed on 50mm diameter pipes or smaller were assumed to be for stock and domestic purposes.

Appendix 2 – Meter Stocktake

Table 1: Departmental meters by size, type & age

Size (mm)	Numbers	Type	Numbers	Year	Numbers
Unknown	440	Mechanical	4019	1977	752
20	3	Propeller	2	1978	166
25	62	Turbine	9	1979	404
30	1	Jet	97	1985	434
32	36	Paddlewheel	87	1987	210
40	58	Ultrasonic	35	1988	117
50	347	Unknown	57	1990	254
60	6			1994	83
65	5			1995	109
80	403			1996	95
100	1199			1998	32
125	172			2000	530
150	1290			2003	22
200	237			2005	14
225	2			2006	16
350	1			2007	600
375	2			2008	19
400	5			Unknown	449
450	1				
500	2				
590	3				
600	1				
750	2				
850	2				
900	4				
1050	1				
1200	3				
1500	7				
1800	1				

Appendix 3

Table 1: Proposed Program of Work 2009 – 10 to 2011- 12

Project Areas	Region	Estimated number of meters	Preliminary estimated cost	Cumulative total
Central Condamine alluvium (GW) Extension	South West	130	\$260,000	\$260,000
Pioneer WRP Area – Non PIGMA	Central West	220	\$330,000	\$590,000
Moonie/ 4 Pack large	South West	10	\$60,000	\$650,000
GAB – Gatton/ Esk Road	South East	250	\$375,000	\$1,025,000
Central Condamine Alluvium (GW) 392 existing meters	South West	392	\$784,000	\$1,809,000
Don and Dee	Central West	131	\$196,000	\$2,005,200
Dalrymple Creek Alluvium	South West	115	\$172,000	\$2,177,700
Gold Coast (Nerang River subcatchment) – surface water	South East	25	\$37,500	\$2,215,200
Glengallan Creek Alluvium	South West	130	\$195,000	\$195,000
Gold Coast (Nerang River subcatchment) – surface water	South East	25	\$37,500	\$232,500
Burnett – Coastal Burnett (Bundaberg GW) extension	South East	250	\$375,000	\$607,500
Burnett – Coastal Burnett (Bundaberg GW) existing meters	South East	750	\$1,125,000	\$1,732,500
Middle Condamine	South West	248	\$496,000	\$2,228,500
Lower Balonne	South West	86	\$444,000	\$2,672,500
Whitsunday	Central West	208	\$312,000	\$2,984,500
Oakey Creek GMA – 106 existing meters	South West	106	\$159,000	\$3,143,500
Total		3,076	\$3,143,500	

Table 2: Remaining Project Areas to be metered

Project Areas	Region	Estimated number of
120 existing meters	South East	120
Callide Groundwater	Central West	180
Burdekin (replace existing meters)	North	212
GAB – Eastern Downs	South West	450
Border Rivers GMA – 34 existing meters	South West	34
Upper Hodgson Ck GMA – 104 existing meters	South West	104
Pioneer WRP Area – PIGMA existing meters	Central West	462
Gowrie Oakey Ck WMA – 75 existing meters	South West	75
GAP	Central West	330
Mary (remainder)	South East	600
Upper Burdekin	North	161
Logan	South East	375
Baffle	South East	12
Mulgrave – Russell	North	207
Lower Balonne Storage Measurement	South West	80
Gold Coast	South East	158
Dawson R.	Central West	128
Moreton – Lockyer GW (new)	South East	600
Comet R Carnarvon & Teresa Cks	Central West	60
Emerald Groundwater	Central West	87
Gracemere/ Fitzroy Groundwater	Central West	119
Mackay coastal	Central West	250
Mary – Pie/Eel/Calico/Mcintosh Creeks	South East	
Burnett – Elliot, Isis & Gregory	South East	54
Belyando Suttor (large installations)	North	38
Lakeland Downs	North	
Wet Tropics	North	
Water Park Creek	Central West	17
Total		4,913

Note: Preliminary estimated costs for the remaining project areas will not be available until site inspections have been undertaken to ascertain the appropriate meter requirements.