

Report No:	REP11-06-05
File No:	W515
Date:	20 May 2011
Decision Required	

REPORT SUMMARY

Report to: Environment & Planning Committee
Meeting Date: 2 June 2011
Report Author: Mary-Anne Baker - Policy Planner
Joseph Thomas - Resource Scientist Water/Special Projects
Rob Smith - Manager Environment Information

Subject: **MEASUREMENT AND REPORTING OF WATER TAKES
REGULATION 2010**

EXECUTIVE SUMMARY

New regulations have been passed by Central Government about the Measurement and Reporting of Water Takes. The Council is required to implement and monitor the regulations.

The Council has a number of water measuring and metering requirements already in its Tasman Resource Management Plan. The provisions of the regulations apply although the Council may have more stringent provisions in addition to the regulations.

There are a number of differences between the regulations and what is currently required by the Council in respect of water measuring and metering. The differences include aspects relating to:

- a) metering requirements for takes less than 5 litres per second
- b) metering requirements for takes from storage
- c) rates of taking
- d) compliance with regulations
- e) water meter specifications including verification requirements
- f) reporting information including timing and methods

This report advises the Council on options, including plan changes, to deal with the issues arising.

RECOMMENDATIONS

1. *That water meters continue to be required for all consented takes (including those less than 5 litres per second) as per existing Council policy.*
2. *That consent holders be advised of the outcome and implications of the calculation of the rate of take in litres per second and if the consent holder wishes to change the calculated rate to reflect an actual rate that is different than the calculated rate, the review of the consent will be at the cost of the consent holder.*
3. *That all water takes (including those less than 5 litres per second) be subject to a water meter requirement that is consistent with the regulations and:*
 - *review the TRMP to amend the water meter specification and*
 - *require installation of a compliant meter for all takes less than 5 litres per second by November 2018 and*
4. *That electronic data recording and reporting procedures and systems continue to be developed and to promote electronic measurement and data submission especially for large water takes.*
5. *That Council require the installation of meters and the verification of the accuracy the meter water meter be carried out by an appropriately qualified person accredited by industry.*
6. *That Council:*
 - *Advise all consent holders in writing that weekly readings continue to be required and not impose a daily reporting requirement.*
 - *Advise all consent holders that Council will continue to maintain manual reporting systems; however, it is seeking to move towards electronic monitoring and reporting over time.*
 - *Include a description of the water meter data recording and reporting system in the Plan with any other changes necessary to update water metering requirements.*
 - *Forward a copy of this report to the Water User Committees for discussion regarding implementation.*

DRAFT RESOLUTION

THAT the Environment & Planning Committee receives the MEASUREMENT AND REPORTING OF WATER TAKES REGULATION 2010 Report REP11-06-05 and adopts the recommendations

Report No:	REP11-06-05
File No:	W515
Report Date:	20 May 2011
Decision Required	

Report to: Environment & Planning Committee
Meeting Date: 2 June 2011
Report Author: Mary-Anne Baker - Policy Planner Joseph Thomas -
Resource Scientist Water/Special Projects
Rob Smith - Manager Environment Information

Subject: **MEASUREMENT AND REPORTING OF WATER TAKES
REGULATION 2010**

1. Purpose

- 1.1 Central Government has passed the Resource Management (Measurement and Reporting of Water Takes) Regulation 2010 which came into effect on 10 November 2010. The Council is required to implement and monitor the regulations.
- 1.2 This report provides information about the implications of the new regulations for Council and water users in Tasman and assesses options for management.

2. Background

2.1 Summary of the Regulations

New regulations in respect of water metering and reporting apply to the taking of water. The key features of the regulations are specifications for:

- a) Where regulations will apply
- b) Water meters
- c) Reporting of information

The regulations prevail over a regional rule or condition of a water permit. However, a rule in a plan or a resource consent condition that is more stringent will prevail over the regulations. The only exception is the requirement to report annually to the Council, which will apply in addition to any other reporting requirement by the Council or through a consent.

Unlike the National Environmental Standards which often require either plan changes or consent conditions reviews, regulations under s360 of the Resource Management Act (RMA) will apply automatically from the effective date to 67% of current water permits and immediately to new applications.

2.2 How the Regulations Apply

The regulations only apply to water takes that need a resource consent. Permitted activity takes under the TRMP Tasman Resource Management Plan (the Plan) do not need meters under the regulations. The regulations also do not apply to consented takes:

- a) taking less than 5 litres per second, or
- b) for geothermal or coastal water, or
- c) that are non-consumptive (i.e. when the same amount of water is returned back to the same water body, at or near the location from which it was taken, without significant delay).

3. Summary of Present Situation/Matters to be Considered

3.1 Tasman District Council Provisions for Metering

TRMP Policy 30.2.3.13 and rules through Schedule 31.1B currently require the majority of consented takes to install a meter although installation is according to a timed schedule depending on which zone the take point is in.

A decision was made by Council in 2008 to suspend requirements for metering as specified in Schedule 31.1B to await the outcome of the water metering regulation. (Schedule 31.B attached as Appendix 1)

As can be seen in Schedule 31.1B, the Aorere, Buller and Takaka consents are not required by the Plan currently to install meters, although a number of these takes have been required to install meters through consent conditions.

The Plan does not require takes from storage to be metered but it does often require meters on takes from surface water or bores **to** storage. The regulations require meters on consented takes from storage.

The Plan describes the performance requirements for a water meter in the meanings given in Chapter 2. (A copy is given in Appendix 2 to this report). The water meter required by the Plan is different from that required under the regulations.

A summary of water permit statistics in relation to the current provisions and those of the regulations is provided in Tables 1-4 below and in Appendix 5.

Staff have reviewed the Council's water permit database and have carried out analysis on the numbers of consents needing to comply with the national regulations.

3.1.2 Overview Statistics

Table 1 Total number of consents and water meter status

	>20litres/ second	10-20 litres/ second	5-10 litres/ second	Takes <5 litres per second (regulation does not apply)	Total
Total with Meter	117	239	169	215	740
Total without Meter	84	146	172	229	631
Total	201	385	341	444	1371

Table 2: Groundwater consents and water meter status

	>20 litres/ second	10-20 litres second	5-10 Litres/ second	Takes <5 litres per second (regulation does not apply)	Total
Total with Meter	87	214	149	201	651
Total without Meter	28	78	72	86	264
Total	115	292	221	287	915

Table 3: Surface water consents and water meter status

	>20 litres/ second	10-20 litres/ second	5-10 litres/ second	Takes <5 litres per second (regulation does not apply)	Total
Total with Meter	28	24	19	12	83
Total without Meter	48	44	47	73	212
Total	76	68	66	85	295

Table 4: Takes from Storage consents and water meter status

	>20 litres/ second	10-20 litres/ second	5-10 litres/ second	Takes <5 litres per second (regulation does not apply)	Total
Total with Meter	2	1	1	2	6
Total without Meter	8	24	53	70	155
Total	10	25	54	72	161*

* There could be up to 187 takes from storage

Staff have also carried out detailed analysis of the breakdown of each category of the regulation for all the water management zones in the TRMP this would be useful for the implementation phase.

3.2 Implications for Tasman

There are a number of differences between the regulations and what is currently required by the Council in respect of water measuring and metering. The differences are explained in more detail below and include differences in respect of:

- a) metering requirements for takes less than 5 litres per second
- b) metering requirements of takes from storage
- c) specification of rates of taking in litres per second
- d) timelines for compliance with regulations
- e) water meter specifications including verification requirements
- f) reporting information

The Council will need to consider options, including plan changes, to deal with some of the issues that have arisen.

4. Specific Matters to be Considered

4.1 Application to Take More Than 5 Litres Per Second (Regulation 4)

The regulation only applies to takes more than 5 litres per second.

4.1.1 Implications

Apart from permitted takes, the TRMP rules for consented takes do not distinguish between sizes of the water take. The Plan applies the need for water meters evenly for all consented takes, with differences presently depending only on the location and the timing of the requirement for the meter by water management zone. A water take of 5 litres per second can irrigate up to 10 hectares and smaller rates of take are common across the District (refer Table 1). They can also have a significant cumulative impact on water resources. Nearly one third of all consented takes are less than 5 litres per second.

One situation where permitted takes are required by TRMP rules to be metered is for takes from the Moutere Groundwater Zones, where the aquifer is very sensitive to damage by over-extraction of water and the exact environmental limits are not precisely known. Meter data is collected annually from users. This report does not review the need for meters or any changes to the installed meters for permitted takes in this case.

The Council will firstly need to make decisions about water meter requirements for **takes less than 5 litres per second** in situations where:

- (i) existing takes that currently have a water meter which does not meet the regulation specifications

(ii) existing takes that currently have no meter, but are required to install one through Plan provisions /consent conditions (Schedule 31B)

(iii) new applications

The type or specification of the meter subsequently required and the transitional timing requirements is discussed further in section 4.5.

4.1.2 Options

Option 1. Water meters continue to be required for all consented takes as per existing TRMP policy – (but compliance dates amended as necessary to provide for transition consistent with both the regulations and existing provisions, see 4.5.3.)

Option 2 No water meters will be required for takes less than 5 litres per second.

	Costs and risks	Benefits
<p>Option 1</p> <p>Water meters for consented takes taking less than 5 litres per second</p> <p>444 current water takes potentially affected.</p>	<p>Costs dependant on whether the meter specifications continue to be the same or be required to be upgraded to the new regulation specification and on timing of requirements (see section 4.5.3)</p> <ul style="list-style-type: none"> • No additional costs if no change made to water meter specifications. • Additional costs of new meters if upgrades required as per the regulation. <p>Many meters will requiring upgrading and all will need verification and calibration</p>	<p>Continues with accepted and equitable approach to water management.</p> <p>Cumulative effects of small takes continue to be managed by Council</p> <p>Meter data assists in modelling effects of water takes on water resources.</p> <p>Compliance with consent conditions continues to be effective.</p> <p>Efficient water use able to be monitored by users.</p>
<p>Option 2</p> <p>No water meters for takes less than 5 litres per second</p>	<p>Information about significant proportion of water takes lost to Council especially during droughts and where meter needed for water resource modelling</p>	<p>Added costs to upgrade water meters over time not imposed on small water takes.</p> <p>Where existing takes currently have no meter, future costs of water meter</p>

	<p>Option may be seen as inequitable as water users are not all subject to same constraints and costs</p> <p>Some water users may not monitor for efficient use of water</p> <p>Management of cumulative effects reduced.</p> <p>Compliance with consent conditions much more difficult to measure /enforce</p> <p>If no meters required, it may lead to pressure for less regulation or less over view of cumulative effects through consents</p>	<p>may be avoided.</p>
--	--	------------------------

4.1.3 Recommendation

Option 1 (in conjunction with recommendation 4.5.3 for water meter specification):

That water meters continue to be required for all consented takes (including those less than 5 litres per second) as per existing Council policy.

4.2 Takes from Storage (Regulation 4)

The regulations as currently worded require that takes from storage (dams) that are subject to a resource consent also be metered.

4.2.1 Implications

Council staff have been in discussion with Ministry officials concerning the requirements for water meters for takes from dams, especially those on ephemeral streams, such as those in Moutere terrain. These make up the majority of all dams in Tasman District Council.

We understand that there is a possibility that the regulations may be changed so that takes from storage from dams on ephemeral streams are not included in the regulation. If that is the case, then most takes from dams in Tasman will not need water meters, and the regulations will have minimal impact in Tasman.

However, in the event that the impact of the regulations on takes from storage are not amended, then the Council may consider changes to the regulatory regime for dams to ensure that both consenting and water metering requirements for dams are not excessive.

Information about the current requirements for dams and options for amendments are described in Appendix 6.

4.3 Rate of take (Regulation 5)

The regulation states that if the consent specifies a maximum rate in litres per second then that is the applicable rate. If hourly, daily or other volumes are specified in the permit, they are to be converted to litres per second with the highest value calculated applying.

4.3.1 Implications

Water permits issued by the Council can vary in how the take rates are specified and the Council has reviewed some water permits to calculate whether the regulation applies or not (this is reflected in the summary tables 1-4).

In most cases Tasman consents have hourly, weekly and average daily volumes specified. Daily rates are the average rate based on the consented weekly rate. Daily rates are the basis for Section 36 annual charges. Maximum daily rates are only critical in cases of surface takes from rivers where management techniques such as rostering require them to be more exact. Hourly rates are instantaneous maximum rates but are expressed as cubic metres per hour rather than litres per second.

Most water takes in Tasman are from groundwater - see Tables 2 and 3. For most groundwater consents the instantaneous or the hourly rate are often unknown in the absence of a water meter and are unlikely to accurately reflect the actual pumping rate when a consent is applied for. These rates can also vary for scheme efficiency reasons and the groundwater level. The instantaneous or hourly rate varies depending on factors such as the efficiency of the pump, the distance from the pump to the water level etc.

Calculating the instantaneous rate from the daily and weekly rates specified on the permits will often result in a different rate than the water user is actually taking. (Furthermore, it is currently of little interest as Council monitors weekly use and it is the accuracy of weekly data that is particularly relevant to the Council at the moment).

It is possible that some permit holders will seek to review consents to reassess rates of take calculated as per the regulations. This will most likely depend on how Council addresses the overall approach to requiring water meters for all takes.

Varying a water permit is at a cost to the consent holder. However, the consent holder needs to be sure that the take rate specified in litres per second is the actual amount - so compliance issues do not arise and the requirements of the regulations are certain.

No Plan amendments are required but staff time to update consents and advise consent holders is required.

The need for a water permit to accurately state the instantaneous rate of take will be of most significance if the Council also makes a distinction for water meter requirements for takes more than 5 litres per second similar to the regulations.

If the Council continues to require meters for all consented takes, this rate of take issue is most relevant to the timing requirements for new or replacement meters on existing takes.

4.3.2 Options

No changes to the Plan are required to manage this aspect of the new regulations.

There is likely to be a need for staff time to advise permit holders and to vary details of the rate of take specified on permits in some situations.

These details will be needed to determine **when** the new meter is required.

Should Council chose to apply the regulations only for **takes greater than 5 litres per second**, the calculations are also required to determine **what permits** are subject to the new regulations.

4.3.3 Recommendation

That:

- consent holders be advised of the outcome and implications of the calculation of the rate of take in litres per second and
- if the consent holder wishes to change the calculated rate to reflect an actual rate that is different than the calculated rate, the review of the consent will be at the cost of the consent holder.

4.4 Commencement of Regulation (Regulation 13)

Application of the regulation depends on the date consent is granted. Consents granted from 10 November 2010 onwards must comply straight away.

There are transitional provisions for consents granted before 10 November 2010 which depend on the allowed rate of take in litres per second as assessed as per the requirement of the regulation. Takes of:

- a) 20 litres per second or more: need to comply by 10 Nov 2012
- b) 10 to 20 litres per second: need to comply by 10 Nov 2014
- c) 5 to 10 litres per second: need to comply by 10 Nov 2016

The regulations replace in part the TRMP provisions of Schedule 31B.

4.4.1 Implications

The Plan provides a metering schedule (Schedule 31.1B) for the different catchments/Zones in the district. Implementation of water meter requirements according to this schedule was put on hold by Council two years ago pending the outcome of the regulation.

Currently only the Upper Buller, Takaka and Aorere/West Coast Catchments are not listed in the schedule (a total of about 105 consents). However, many of these are already metered including where the resource is approaching or has reached the default allocation thresholds such as for the Mangles and Owen Rivers and the Marble Aquifer recharge in Takaka. Specific water management provisions for Takaka are in development.

Depending on other decisions for takes less than 5 litres per second (see 4.1.3), Council may need to review Plan provisions for the dates by which meters are required for the remainder of takes affected by Schedule 31.1B and those in Golden Bay and Buller with the view to align the schedule and the standard over time.

A further issue is the status of consents subject to renewal before the above dates. For example, the consents in the Delta and Hope Aquifer Zones are due for renewal in May this year. Both zones are metered (Delta Zone since 2001 and Hope Aquifers since approx 2007). It is not certain whether existing meters comply with the regulation specifications and they would need to be verified in any event.

A renewal application is a new consent for the purposes of the Act and will require installed meters to comply with the regulations, despite the transition provisions in the regulations.

Staff are in discussion with the Ministry as to whether these (renewal) consents can be provided with the same transitional timeframes as other existing takes.

It is essentially a matter of equity in that some existing users have a lead in time to comply with the more stringent water meter requirements while other existing users (by virtue of an expiry date unrelated to the regulations) must immediately comply with the regulations. A second complication relates to demand for a potentially large number of water meters and having them installed and verified before the irrigation season presents practical and logistical difficulties. Industry lead installer and verifier accreditation has not yet occurred although this will be addressed soon.

In addition, decisions about historical water meter requirements and their relationship to the new regulations (especially in relation to the smaller takes and the specification for the meter) also present timing difficulties as these may involve Schedule 1 Plan processes.

However, staff consider that the process for renewal of consents and the practical difficulties in respect of the metering requirements can be managed.

4.5 Water Meter Specifications (Regulations 6, 7 and 10)

The regulations replace specifications given in Chapter 2 of the Plan for takes greater than 5 litres per second. (The Plan requirement is given in Appendix 2).

Where the regulations apply (takes greater than 5 litres per second) then the consent holder must install and maintain an accurate water measuring device or system (water meter) and:

1. take continuous measurements
2. keep daily records of cubic metres (Regional Council could give written approval for weekly records see section 4.6 below)
3. keep records specifying “zero” when no water is taken
4. keep records in an auditable format
5. bring daily records together into a set of annual records, and provide (report) those annual records to the regional Council
6. the water measuring device needs to be verified as accurate by a person who is qualified in the regional council’s opinion. Verification is required initially, and then every five years (regulation 7)
7. be installed at the point where water is taken or seek written approval from the regional council to locate the device *as near as practicable* to this point (regulation 10)
8. measure water within +/- 5% for takes from a full pipe, or +/- 10% for takes by open channel or partially full pipe

9. be able to provide data in a form suitable for electronic storage. This is not a requirement to fit an electronic data logger. However, the meter must be capable of being fitted with an electronic data logger, i.e. the meter must provide a suitable output signal that can be measured by electronic data loggers, and must have suitable data transfer port(s).
10. be suited to the water being measured (e.g. cope with the waters sediment content); be sealed; and be as tamper-proof as practicable

MfE, in association with Irrigation NZ and Water NZ, is developing a New Zealand Qualifications Authority (NZQA) based certification process. Once developed, verifiers of water meters will be required to certify under this process. The above parties are confident that the certification process will be in place before the end of this year and certifications will be completed by early next year.

As per the regulations, if water meters in the existing consents have been verified there is no need for an additional verification other than the 5 yearly verifications. All new takes granted after 10 November 2010 will require an initial and the subsequent 5 yearly verification.

Information about water meters is given in Appendix 4

4.5.1 Implications

The Council already specifies many of the water meter performance requirements required under the Regulation. However, the regulations are more stringent with regard to the requirement for verification and capability for providing suitable output signal that can be measured by electronic means.

The regulation requires the records to be kept using a device or system that is able to *provide* data in a form suitable for electronic storage. Staff consider that this includes the current system in Tasman of manual recording and reporting, as this information is electronically stored by Council.

It also includes where electronic data or signals are stored or transmitted by data loggers or telemetry systems. A number of water users already provide water meter data in electronic format.

The requirement for verification has cost implications for nearly all permit holders in Tasman and for some water permit holders the costs may be significant if meters are not accurate enough and need replacing.

Having decided whether to continue with water metering for all consented takes (see section 4.1) the Council must now consider if meters for takes less than 5 litres per sec are to be subject to the same meter specifications of the regulation.

It can also consider changing existing Plan requirements (in Schedule 31B) for water meters and provide alternative transitional dates for upgrades and installations for existing permit holders. The Plan provides dates by which meters are required and this is managed by zone. The regulations make these dates redundant except for the small takes, as regulation is now by size and date rather than be zone.

Meters for small takes could be required in association with:

- the permit expiry,
- by zone or
- by a set date.

If linked to permit expiry, the holders may get less time than that allowed for by the transition provisions and it adds to the work load as staff ensure the regulations are applied. Work load concerns also arise of meter upgrades are required by zone. It is for these reasons that a set date is recommended as it fits in with the regulation transition provisions and enables a programmed approach to be taken.

A review of the Plan water meter specifications would be required if all consented takes (including those less than 5 litres per second) were to be subject to the more stringent meter specifications.

Overall 927 consents would have to comply with the new regulations (Refer Table 1). 525 of this are already metered under Council's current provisions. An additional 215 water meters are not subject to the regulations but currently have meters required under plan rules. Staff have no current process or method to determine how many of our existing meters are complying with the +/-5% accuracy but we estimate compliance will be achieved by roughly 50% of existing meters.

A further 229 do not currently have meters, but many would be required to install one under plan rules as zones come up for review (but not the regulations).

Verification of the meter's accuracy is likely to incur a cost to the owner and further costs are likely if the meter is inaccurate and requires replacement.

Electronic Storage and Reporting

The Council can consider whether electronic provision of data is part of the long term strategy of managing water meter data for all users. Neither the Council nor the Regulations are requiring electronic data or signals which can be stored or transmitted by data loggers or telemetry systems, but the regulations enable this to be considered as a management option for all or some water takes.

Many existing water takes are already metered but will not meet the requirement for a suitable output signal. Many meters were capable of being fitted with an electronic data logger when they were first purchased and installed (e.g. Meinecke WP) but electronic data loggers are no longer available for these as they are no longer manufactured.

The regulation requiring a suitable output signal capability while not requiring fitting of an electronic data logger is an additional expense for current permit holders with water meters. Staff consider that most of the older meter will not comply with this requirement and new meters may well be necessary.

Auditing and managing electronic data is different to the mechanical meter reading system currently used by the majority of water users.

Council is currently further developing managing and auditing and securing electronic data as more water users see the benefits of electronic recording and reporting. Of note also is that electronic logging needs security set up so that the data recording is not tampered with and this is likely to be a Council or accredited installer/data consultant role with clear audit requirements.

The benefits of having data loggers or telemetry can outweigh any disadvantages such as additional cost of installation and any ongoing telemetry line cost. All records are stored or transmitted continuously and there is no onus on the water user to record any data manually on a regular basis. In fully or over-allocated catchments, during low surface water flow or low aquifer level conditions, with the assistance of dataloggers or telemetry minimum flows, residual flows, ground water restriction levels and water rostering can be managed efficiently and effectively.

Council will need to manage both electronic and manual water meter readings for some time.

While manual recording of meter data is currently most common and still provided for, the staff recommendation is that Council move towards more automated and electronic systems over time. The regulations provide a good starting point for raising awareness and standards of recording and reporting. Over time, new takes, especially larger takes in sensitive areas will be required to install electronic recording and reporting systems.

No Plan changes are required, although it would be useful to reflect this approach to data recording and reporting in the Plan.

Information about options for water meters is given in Appendix 4.

Verification

The regulation requires that the **water measuring device be verified** as accurate by a person who is qualified in the regional council's opinion.

The regulations do not require that the **installation** is verified or carried out by a qualified person. The proper and appropriate installation of the meter is also of importance in the maintenance of accurate water meter information. The irrigation industry has separately recognised the need for training of installers and is offering training and accreditation for installers as well as for the meter verifiers.

Council is not set-up nor resourced to carry out the accuracy verification on all meters that need to meet the regulation requirements in the Tasman District.

The Council could consider providing this as a service which would require further training and additional resourcing. However, the effort involved in training and accrediting is likely to be considerable. The work being done by the industry and the Ministry means that it would be counter-productive for the Council to do this.

The more cost effective and practical approach is to defer to industry accreditation – Irrigation NZ is already setting accreditation courses on this.

Council also needs to consider the requirements for the installation to be done by a properly qualified person. Again industry is managing this need also.

4.5.2 Options

Option 1 Require **all** water takes (including those less than 5 litres per second) to be subject to a water meter requirement that is consistent with the regulations (see also recommendation 4.1.3).

The regulations provide a more robust approach than the Council Plan to ensuring water meters continue to provide accurate information. The regulations are supported by development of an accreditation system for water meter verifiers. The need for meters that allow for future electronic recording will assist Council to manage increasing amounts of data effectively and efficiently.

Applying the more stringent specifications to all water takes ensures equity between users,

A consistent standard across all water takes avoids confusion.

The main (additional) costs are in relation to any upgrades required by permit holders where the take is less than 5 litres per second.

Option 1A The water meter requirements for small takes could be phased in over time. The date suggested is a district wide requirement for meters for smaller takes is November 2018. This is an additional two years beyond the dates specified in the regulations for takes more than 5 litres/sec.

This requires a review of the TRMP for both the water meter specification and the date by which a compliant meter must be installed for all takes less than 5 litres per second.

This provides an ordered and manageable timeline for staff and water permit holders.

Option 2 Continue with the Plan provisions for water meters (phase-in dates, water meter specification and verification is different from the regulations).

The potential for confusion is high amongst users, the irrigation industry and within Council. This approach is less robust and provides potentially less accurate data.

4.5.3 Recommendation

Option 1 and 1A

That all water takes (including those less than 5 litres per second) be subject to a water meter requirement that is consistent with the regulations and:

- review the TRMP to amend the water meter specification and to
- require installation of a compliant meter for all takes less than 5 litres per second by November 2018 and

That Council continue to develop electronic data recording and reporting procedures and systems and to promote electronic measures especially for large water takes.

That Council require the installation of water meters be carried out by an appropriately qualified person accredited by industry.

4.6 Recording and Reporting Information (Regulations 6, 8 and 9)

The permit holder must **record** the volume (in cubic metres) of water taken each day or each week if a Council specifies this frequency in written notice to the consent holder. The weekly reading is required for all 52 weeks of the year. If no water is taken, this has to be recorded as zero cubic metres.

Annual records must be **reported** to the council under the regulations even if the council requires records by a different date or covering a different period. The annual records have to:

- be provided for each year of the consent
- cover the period 1 July - 30 June
- be provided to the regional council no later than one month after this period (i.e. by 31 July)
- be provided (reported) in writing, or electronically if requested by the regional council

4.6.1 1 Implications

Current reporting required by Council is weekly from mostly manually read meters, with records required between 1 November and 30 April every year for irrigation takes. (Zero readings are assumed for the remainder of the year, and this is checked with any meter audit at the beginning of the next irrigation season).

It is likely that as consent holders come under the regulation requirements they may over time opt to install data loggers and submit data electronically. Additionally it is conceivable that some consent holders may install telemetry via cell phone technology to avoid the weekly meter reading requirement. Council does not currently routinely require electronic reporting.

Data management electronically offers both council and water users many advantages and would be more efficient in the long term. However, the Council is unlikely to require data at more frequent intervals than the current weekly readings. This is because consent compliance and water management, during drought conditions is based on weekly totals and this approach has proved effective.

Compliance and management response based on weekly totals has proved sufficient and appropriate so far and staff have no recommendation to change this.

4.6.2 Options

The Council could chose to adopt the more stringent daily recording requirements of the regulations for all consent holders, but this is not considered to be a useful or necessary change at this stage.

The exceptions may be Riwaka River, Brooklyn, Little Sydney and Wai-iti Dam Service Zone etc where rostering is required at low flow. Also for Upper Buller consents to comply with rationing requirements that specify maximum takes are less than 5% of the actual flow Buller River WCO. These situations can be addressed as and when necessary when permits are renewed.

4.6.3 Recommendation

That Council:

- Advise all consent holders in writing that weekly readings continue to be required and not impose a daily reporting requirement.
- Include a description of the water meter data recording and reporting system in the Plan with any other changes necessary to update water metering requirements.

6. Financial / Budgetary Considerations

The regulations will require a range of activities not currently provided for. These include:

1. Review of consents to ensure rates of take are properly specified.
2. Further development of more specialised data recording, auditing and management processes and systems.
3. Advice and information to consent holders
4. Potential need for consent reviews
5. New systems to deal with verification and auditing of water meters.
6. Plan review

Adequate staff resourcing is critical if Council is to implement the regulations as specified. In particular staff have identified resource gaps in relation to the new water meter regime.

Council will need to provide information about, oversee installation and verification of and manage information from water meters to a much higher level of activity than previously.

Depending on the options preferred by Council above, a plan change process will be commenced immediately with public consultation based on this report and draft planning provisions that reflect preferred options.

At the same time, educational material will be prepared explaining the implications of the new regulations for water permit holders (including permits to take water from storage and those with permitted dams).

7. Significance

- 7.1 This is not a significant decision according to the Council's Significance Policy because it implements national regulations and reviews existing Council policy.

It may have a localised impact on some water users because they may need to install or upgrade their existing water meters.

8. Recommendation/s

1. **That** water meters continue to be required for all consented takes (including those less than 5 litres per second) as per existing Council policy.

2. That:

- consent holders be advised of the outcome and implications of the calculation of the rate of take in litres per second and
- if the consent holder wishes to change the calculated rate to reflect an actual rate that is different than the calculated rate, the review of the consent will be at the cost of the consent holder.

3. That all water takes (including those less than 5 litres per second) be subject to a water meter requirement that is consistent with the regulations and:

- review the TRMP to amend the water meter specification and
- require installation of a compliant meter for all takes less than 5 litres per second by November 2018.

4. That electronic data recording and reporting procedures and systems continue to be developed and to promote electronic measures especially for large water takes.

5. That Council require the installation of meters and the verification of the accuracy the meter water meter be carried out by an appropriately qualified person accredited by industry.

6. That Council:

- Advise all consent holders in writing that weekly readings continue to be required and not impose a daily reporting requirement.
- Advise all consent holders that Council will continue to maintain manual reporting systems; however, it is seeking to move towards electronic monitoring and reporting over time.
- Include a description of the water meter data recording and reporting system in the Plan with any other changes necessary to update water metering requirements.
- Forward a copy of this report to the Water User Committees for discussion regarding implementation.

9. Timeline/Next Steps

9.1 A draft change to the TRMP as recommended will be prepared for the Committee's August meeting.

10. Draft Resolution

THAT the Environment & Planning Committee receives the Measurement and Reporting of Water Takes Regulation 2010 Report REP11-06-05 and adopts the recommendations

Mary-Anne Baker
Policy Planner

Appendices:

Appendix 1 Tasman Resource Management Plan – Water Meter Requirements

Appendix 2 Tasman Resource Management Plan - Meaning for Water Meter

Appendix 3 Tasman Resource Management Plan - Expiry of Consents

Appendix 4 Water Meter Information

Appendix 5 Water Permit Statistics

Appendix 6 Regulatory Requirements for Dams

Tasman Resource Management Plan – Water Meter Requirements

Not yet operative as at 26 February 2011

Schedule 31B: Water Meter Requirements [Schedule 31.1B Proposed]

Refer to Rules 31.1.2.2, 31.1.2.3, and 31.1.2.5.

The Council will take into account the following schedule when determining the need for water meters.

Water Meter Requirements	
Water Management Zone	Zones where Water Meters are Required
Motueka/Riwaka Plains	
	Riwaka Zone – by 30 November 2010
	King Edward Zone
	Hau Plains Zone
	Central Plains – by 30 November 2010
	Swamp Zone – by 30 November 2011
	Umukuri Zone – by 30 November 2011
Moutere	
	Moutere Coastal, Eastern, Southern and Western Groundwater zones (including takes for domestic use)
Waimea	
	All zones unless the water supply would have failed at the onset of rationing
Upper Motueka	
	Motupiko
	Tadmor
	Tapawera Plains
	Wangapeka
	Middle Motueka – by 30 November 2014
	Dove – by May 2012
	Stanley Brook – by May 2012
	Baton – by 2013
Abel Tasman	All zones – by May 2014

Notes:

- (1) Council retains discretion to impose water meter requirements in any other zone if it is appropriate to do so.
- (2) Policy 30.2.3.13(b) and (d) provide reasons for further zones to be added to this schedule.
- (3) Water meters may not be required if the water supply has failed at the onset of any rationing.

Tasman Resource Management Plan Meaning for Water Meter

Water Meter – in relation to the provisions of Part V, means a device that meets the following specifications:

(a) Meter Accuracy and Registration

- (i) The meter must record water used to an accuracy of plus or minus 5 percent.
- (ii) Meter operating flows must comply with those recommended by the manufacturer and shall be such that the above accuracy is maintained.
- (iii) An easy to read and hermetically sealed register, with a six-figure cubic metre reading, is desirable. As a minimum, it is sufficient to record the annual pumpage without “rolling over” through zero.
- (iv) Registers and mechanisms must be able to be readily replaced with minimal delay or alternatively, in the event of malfunction, a spare meter or some other method acceptable to Council shall be provided, thereby permitting an uninterrupted record of water usage.
- (v) Meters must be so designed that any reverse flows will be measured and be automatically deducted on the register.
- (vi) The meter register must be able to be locked (sealed) to identify and discourage external access by unauthorised people.

(b) Meter Installation and Maintenance

- (i) The meter must be installed in accordance with the manufacturer’s specifications and must be operated and maintained so that Council’s requirements are met.

Tasman Resource Management Plan - Expiry of Consents

Not yet operative as at 26 February 2011

Schedule 31A: Duration of Consents [Schedule 31.1A Proposed]

Refer to Rules 31.1.2.2, 31.1.2.3, 31.1.2.4 and 31.1.2.5.

The Council will consider the following schedule when determining the duration of any permit to take

or divert water. Where appropriate, the duration of the consent will be consistent with the next common expiry date for the relevant water management as shown in this schedule.

Expiry Dates	
Water Management Zones	Expiry Dates
Motueka/Riwaka Plains	
Central Plains Zone	31 May 2015 31 May 2033
King Edward Zone	31 May 2015 31 May 2030
Hau Plains Zone	31 May 2015 31 May 2030
Riwaka Zone	31 May 2014 31 May 2029
Swamp/Umukuri Zones	31 May 2014 31 May 2029
Moutere	
Moutere Coastal, Eastern, Southern and Western Groundwater Zones	31 May 2013 31 May 2027
Moutere Surface Water Zone	31 May 2013 31 May 2028
Waimea	
Delta and Redwoods Zones	31 May 2011 31 May 2026
Wai-iti Zone	31 May 2016 31 May 2031
Lower Confined Aquifer Zone	31 May 2016 31 May 2031
Upper Confined Aquifer Zone	31 May 2017 31 May 2032
Reservoir and Upper Catchments Zones	31 May 2017 31 May 2032
Waimea West Zone	31 May 2017 31 May 2032
Golden Hills Zone	31 May 2017 31 May 2032
Marahau/Abel Tasman	31 May 2015 31 May 2033
Takaka/Aorere/West Coast	31 May 2019 31 May 2034
Middle Motueka	31 May 2018 31 May 2033
Upper Motueka (all zones)	31 May 2019 31 May 2034
Upper Buller	31 May 2020 31 May 2035
Hope Aquifer	31 May 2011 31 May 2028

If an application is made up to three years before the next due date for the relevant zone, the Council may issue the permit for the following expiry date.

Note:

Where no expiry date is specified, the duration of the consent will be a matter for Council's discretion.

WATER METER INFORMATION

The three main types of meters for water take measurements are the mechanical, electromag and the ultrasonic meters. The cost of each type of meters varies.

The **mechanical meter** which is widely installed in Tasman has dials that can be read manually; as water users do at present. When metering began in Tasman in the 1980's mechanical meters were the only recognised option and electromag and ultrasonic meters were not then available. The mechanical meters are the cheapest and initially have accuracy of +/- 1-2% but they have a tendency for the accuracy to reduce with wear of the moving parts. Moutere groundwater is particularly harsh on the mechanical meters.

As an indicative cost (excl GST) only, a 50mm mechanical meter with a pulse (i.e. for electronic signal output) costs between \$400 - \$700.

The **electromag and ultrasonic** meters either give an instantaneous flow or totalised flow on the display panel and pose some challenges to the user in physically recording data.

The electromag meter is more accurate and lasts longer but costs more to purchase.

Ultrasonic meters are not suited to clean water but may well be suitable for use in the Moutere deep bores and some surface takes. Takes from dams would also tend to require a very robust system as the water quality is poor. .

An electromag meter (50 mm) with the pulser would cost about \$3,100.

An **ultrasonic** meter (50 mm) with the pulser would cost about \$.

Meters with electronic data recording capability can have a data logger fitted.

DATA LOGGER

The above indicative costs do not include a logger that would cost approximately \$500 - \$700. Telemetry/GPRS via cell phone network for real time data monitoring would be another cost (~\$650 for the phone modem), as well as the ongoing cost of the line (~\$25 a month). There will also need to be further enhancement and resourcing issues to Council to set up, monitor and manage receipt of real time data through either the telemetry or GPRS systems.

Note: power would be required at the site for telemetry or GPRS - it is assumed if they are pumping there is power to the pump with the exception if a tractor or other diesel powered pump is used. Sites where there is no power may require a solar panel and back-up battery storage costing about \$200 each.

The data logger is an additional cost to the meter cost itself, but if installed will automatically record the water take volumes. This data can then be downloaded electronically and sent to Council. Whilst data logging itself is not a requirement of the regulations, there will likely be many users who would want to use this capability for efficiency of reporting requirements, especially if daily readings are required.

WATER PERMIT STATISTICS

1. Implementation of Regulations

Based on the consent database analysis and the stipulated time frame under the regulations are:

- 201 consents need to comply with the regulation requirement by 10 November 2012,
- 385 need to comply by 10 November 2014, and
- 341 need to comply by 10 November 2016.

The total number of consents that need to comply under the regulations period for Tasman is 927.

However over the six year period as provided by the regulation requirements are for existing consents. New consents that trigger the regulations threshold automatically get captured by the regulations with the regulation taking effect straight away prior to exercise of the consent.

In Tasman District we also have common expiry dates for the water management zones specified in the Plan (Schedule 31.A see appendix 3). When a permit expires and is renewed it is a new permit application and the regulation applies i.e. the regulations take effect straight away requiring a meter that complies prior to exercise of the consent. As noted above, this issue is currently under discussion with the Ministry.

Over the time horizon for implementation of the regulations the Plan water permit expiry dates specified are as follows while those in *italics* are already metered:

Waimea:

Delta Redwood and Hope Aquifer Zones - consents expire 31 May 2011 (except for 10 *Hope Aquifer Zone* consents where it is 2016).

Moutere:

Moutere Coastal, Eastern, Southern and Western Groundwater Zones and *Moutere Surface Water Zone* - consents expire 31 May 2013. There is currently no metering requirement of Moutere Surface Zone water users under the PlanPlan.

Motueka/Riwaka Plains:

Swamp/Umukuri/Riwaka Zones - permits expire 31 May 2014

Hau Plains/King Edward/Central Plains Zones - permits expire 31 May 2015
Expiring consents over the period of the implementation of the regulations changes the number of consents needing to comply, as once a new permit is issued the regulations take effect straight away as long as the threshold of 5 litres per second is breached and depending on other decisions about requirements for meters for takes less than 5 litres per second.

As an example in the Waimea Zones about 158 consents expire on 31 May 2011. The regulations do not apply to 28 of the 158 consents i.e. where take is <5 litres per second. Hence the rest of the 130 consents would have to comply with the regulation prior exercise of the consent for the coming season (i.e. 2012). 155 of the consents already have a meter but these meters now having to comply with the regulations Considering those consents that are being renewed and those that require meters for the >20 litres per second threshold, the total number of consents that will have to comply with the regulations by late November 2012 is 300. This is because of the 201 meters due by November 2012, 31 from the Waimea are greater than the 20 litres per second threshold (hence meters required is 201 less 31 which are greater than 20 litres per second i.e. 170 meters and add 130 of the zones that breach threshold, total 300 meters).

Similar assessments can be made as other consents expire over the stipulated regulation period.

Regulatory Requirements for Dams

1. A number of regulatory requirements apply to dams. These are summarised in the table below.

Table 5: TRMP Rules for dams

	Permitted conditions	Controlled	Discretionary
Dam structures in the beds of rivers (RMA Section 13)	28.2.2.2 <20 ha Less than 5,000m ³ (and several conditions relating to the location, construction and maintenance of the dam) About 111 dams	28.2.2.3 Renewal applications for existing dams. (where >20ha and 5,000m ³)	28.2.2.4 All other dams (i.e new dams >20ha and > 5,000m ³)
Damming water (RMA Section 14)	31.1.4.1 <20 ha	31.1.4.2 Renewal applications for existing damming	31.1.4.3 All other
Taking water (from dams) (RMA Section 14)	31.1.2.1 Up to 5 or 20 m ³ per day, depending on the zone	31.1.2.4 Provided the dam is a constructed structure. (161 in total)	31.1.2.5 Takes from lakes
Discharging water from a dam (RMA Section 15)	36.2.2.8 Discharge during floods does not exceed inflow or not in excess of that required under water permit for damming.		All other

In Tasman District Council, although they require a resource consent (as a controlled activity) very few takes from storage are metered (See Table 3). This is because most dams are in the Moutere gravel terrain and harvest water via runoff in the winter. The rate or timing of the taking from storage is not related to when the water arrives in the dam.

Historically, Council has encouraged storage across the District, but especially in the Moutere terrain where water stored in winter and at times of plenty is used for summer month irrigation when surface water bodies are generally dry. The construction of the dam and the damming of water are both permitted for small catchments less than 20 hectares. Takes from storage are currently a controlled activity in the Plan and are not metered.

This regime is intended by Council to reflect the benefits of water augmentation and the investment decisions made by water users and water use efficiency is left to the irrigator.

The consent to take from storage (required for takes of >5m³/day) enables regulation and control of downstream effects of both the taking from the dam and the damming and, where relevant, may contain conditions relating to the use of the water. Dam safety conditions may also have been applied, but this is rationalised through the Part IV variations. Many “take from storage” consents are subject to a condition related to soil based application rates and specify rates of taking, conditions which are difficult to monitor in practice without a meter.

Consents to take water from storage are infrequently monitored. Minimum annual charges are applied to these permits. However, regulation and control is important to avoid adverse effects on existing dam users as catchment runoff is limited.

Some of the takes from storage would be from dams with catchments less than 20ha. There are a total of 161 take from storage consents. Of those over 100 do not have a dam consent linked to the valuation and are likely to be permitted dams.

In some cases bores or takes from surface water are used to fill storage. Meters on takes from ground or surface water to fill storage are generally required in most situations. Under the regulations, two meters could be required one for the bore and one meter for the take from storage if it exceeds the 5 litres per second threshold.

The environmental effects of a take from storage dams in the Moutere gravel terrain, where summer water supplies are practically non-existent, are generally beneficial. Dams clearly provide social and economic benefits.

However, cumulative effects of dams across a catchment can be significant, and control of takes from storage is required to avoid conflicts between users. A good understanding of the nature and scale of water takes from these dams is still of benefit to holistic and integrated water management. A permitted rule would prevent costs recovery of monitoring and decrease the options for data collection and management for water resource management purposes.

1.2 Options

The likely options may vary depending on the outcome of the discussions with MfE about the need for meters for takes from storage.

In the event the regulations remain as they are, then Council has an option to amend the status of dam activities. A plan review would be needed if the impact of the regulations on takes from storage was to be changed.

The main options are:

1. Apply the regulations (takes from storage will require a new water meter)

2. Change the status of takes from storage – all or some of the takes from storage could be made permitted to avoid the need for a water meter.
3. Change the status of both takes from storage and the damming of water.

Option 1 The regulations will apply to takes from storage greater than 5 litres per second (85 takes affected)

Costs and Risks

- Double “accounting” may occur as in some cases the both the take to storage and the take from storage is being metered.
- The taking from storage is often unrelated to when the water arrived in the dam and therefore a meter does not manage the environmental effects of the take in “real time”.
- Costs in dam construction and maintenance mean there is already a very strong incentive to use storage efficiently, and the additional requirement for meters is likely to have marginal benefits (irrigators may claim they already have measures in place to ensure efficient water use).
- Residual flow requirements from the dam may already be addressed under the resource consent.

Benefits;

- Water meters enable water users to accurately assess if water is being used efficiently (and dams are nearly all in water short catchments)
- Water meters enable compliance of conditions requiring efficient water use (including application rates that are based on soil characteristics)

Option 2 All takes from storage are permitted activities

The rule could be subject to conditions including requiring notification to council. Any monitoring and water management related costs are covered by Council.

Costs and Risks:

- A loss in regulation and management ability of water takes from dams would remove the security for existing users of dams, as current take from storage permits address effects on downstream water users.
- A loss in the ability to manage cumulative effects of dams and takes from dams in a catchment
- A loss of current management of dam safety and maintenance by Council (although with Part IV changes, the land use consent for a dam will address maintenance and safety)
- Consent renewal of the taking of storage currently provides an opportunity to inspect each dam on a regular basis.
- A small reduction in annual charges gathered to cover water resource investigations.
- Replacing a system of regulation that currently works.
-
-

- Water users not able to accurately measure water use efficiency (irrigators may claim they already have measures in place to ensure efficient water use).

Benefits:

- Water users not faced with double water meter costs
- Resource consent costs reduced for dam owners

Option 2A Some takes from storage are permitted activities.

The permitted regime could be limited to takes from dams:

- with a catchment of less than 20 ha
- with no low flow requirements/low flow bypass

The costs and benefits are as above for a proportion of the dams. But note that since more than two thirds of the dams are permitted dams, this option is very similar to the option above.

Option 3 Amend rules for damming water to controlled or discretionary depending on size of the dam and permit the taking of water from storage from all dams.

This option is shown in Table 7 below.

Table 7: Option 3 for amended regulation of dams

	Permitted	Controlled	Discretionary
Dam structures in the beds of rivers (RMA Section 13)	28.2.2.2 <20 ha <5,000m ³ (and several conditions relating to the location, construction and maintenance of the dam) About 111 dams	28.2.2.3 Renewal applications for existing dams. (where >20ha and 5,000m ³)	28.2.2.4 All other dams (i.e new dams >20ha and > 5,000m ³)
Damming water (RMA Section 14)	31.1.4.1 <20 ha <u>And provided any take from the dam is less than 5 – 20 m³ per day or for stock or fire fighting</u>	31.1.4.2 Renewal applications for existing damming <u>or For any dam (including from small dams where the catchment is < 20ha) and any take from the dam is more than 5 – 20 m³ per day</u>	All other
Taking water (from storage dams) (RMA Section 14)	31.1.2.1 <u>Up to 5 or 20 m³ per day, depending on the zone</u>	31.1.2.4 <u>Provide the dam is a constructed structure.</u>	

	<u>All takes from storage</u> <u>Provided intakes are screened</u>	(161 in total)	
Discharging water from a dam (RMA Section 15)	36.2.2.8 Discharge during floods does not exceed inflow or not in excess of that required under water permit for damming.		All other

Taking from storage continues not to require a meter, but a meter will generally be required where water is taken from a stream or bore to fill the dam.

Costs and Risks:

- new consents required for many currently permitted damming activities.
- without water meters the amount of water being used is not managed and neither the council nor the water users has best information about water use efficiency of water taken from storage.
- does not allow conditions to limit total amount of water taken from a dam where there may be an impact on downstream water users (including downstream dams)

Benefits:

- Existing consents for (controlled takes from storage) no longer required
- Costs of water meters avoided for all takes from storage
- Continues to be consistent with water augmentation policy.
- The (new) controlled status for all damming consents can address any residual flow requirements to address adverse environmental and downstream effects, rather than having these aspects covered in a take from storage consent.

1.3 Recommendation

Option 4

That the rules for managing damming of water be amended so that:

- damming water by small dams (those with catchments less than 20 ha) is a controlled activity if and
- damming water by larger dams (those with catchments more than 20 ha) is a or discretionary activity and
- the taking of water from storage from all dams is a permitted activity