MASTER BUILDERS QUEENSLAND

Review of the Queensland Development Code MP 4.2 Water Saving Targets

Submission to
The Department of Infrastructure and Planning

ABN 96 641 989 386

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Introduction

Master Builders is Queensland's premier building and construction representative organisation. Master Builders represent over 11,000 businesses within the Industry, including builders, subcontractors, supplier / manufacturers, certifiers, consultants and students.

Due to the depth and scope of Master Builders' members spanning the spectrum of the building and construction industry (including development) we are able to offer a unique perspective on all facets of the operation and effectiveness of the Queensland Development Code MP 4.2 Water Savings Targets (The Code) together with recommendations for its improvement.

In this submission Master Builders comments on the present operation of The Code. Following our assessment of these matters Master Builders then makes recommendations for amendment to The Code and adoption of additional acceptable solutions to achieve water saving targets throughout Queensland.

This submission is dissected into four discrete parts:

Part One: Submission Overview

Part Two: Review of the Queensland Development Code MP 4.2 Water Saving Targets

Part Three: Proposed New Measures and Acceptable Solutions

Part Four: Conclusion

Master Builders would be pleased to make our policy analysts available to discuss this submission and our views in more detail.

PART ONE: Submission Overview

1.1 BACKGROUND TO THIS REVIEW

Subsequent to the implementation of the water saving targets, Master Builders has noted concerns as voiced by industry participants in regard to various aspects of The Code. The underlying intention and operation of The Code has been questioned and the following issues have been raised;

- Maintenance concerns for current acceptable solutions;
- Limited acceptable clearly defined solutions to satisfy the performance criteria;
- A level of acceptable contribution is not defined for an alternative water substitution measure; and
- Disparity between specified water target levels.

Under the present code format industry is confined to a limited range of acceptable solutions that can be overly complicated from a construction perspective and at times inadequate. There is also limited scope or guidance to quantify alternatives which may satisfy what is seen as questionable water saving target levels. In real terms the larger proportion of acceptable solutions under The Code are not clearly identified. Therefore industry is constrained to options which significantly decrease the amenity and affordability of a class 1 building.

Master Builders view is that the current available options under The Code fall short in supporting the needs of both industry and the community. Further investigation and clarification is necessary for the adoption of specific solutions in order to assist an industry which is overly burdened by multiple levels of regulation.

For this reason, Master Builders provides this submission as a means to revise the present operation of The Code. The intention being to establish acceptable solutions that are tangible and conducive to the building approval process, as the criteria for various solutions are presently not defined to allow adoption by simple reference to The Code.

It is envisaged that this will enhance compliance in achieving the water saving targets and reduce costs to both industry and the community.

1.2 ISSUES TO BE ADDRESSED

At the commencement of this review Master Builders maintains that both government and industry are responsible to ensure that the adoption and enforcement of codes is actually providing a benefit to the community. For this reason Master Builders is resolute that industry must also be given a balance of options which reduce where possible cost impacts and poor/ ineffective construction practices.

The Code should be viewed as a pathway to solutions which are measurable and evolve over time. It is also prudent then to appreciate that The Code may not always deliver solutions or outcomes as anticipated and that further refinement may be required. The experiences encountered at the construction coal face are the true indicator of whether the present solutions are effective or a costly distraction from the desired outcomes.

Further to this, it is apparent that The Code has attempted to mitigate the need to preserve water resources by using a blanket one fits all solution approach across the residential construction sector. Master Builders maintains that water conservation should be balanced across all sectors of industry and the community, and not predominately foistered upon the residential construction sector.

The very real perception exists that the residential sector is committed to a restrictive compliance regime with little or no gain when compared to the broader issues faced by the community. It was clearly evident throughout the recent water restrictions in South East Queensland that each individual's own self management of their water usage was the trigger which enabled preservation of our overall water resources.

The outcome desired was clearly not dependent upon the questionable benefit a code compliant building with a rainwater tank or grey water system may have provided throughout the water restrictions. It is the case that a broad range of existing dwellings, due to a combination of financial and technical restraints, remain with no means whatsoever to store rainwater or treat grey water for dispersal. Due to climate cycles it is probable that we will again be faced with high level water restrictions at some future point within the South East. At that time it will be the actions of the individual, not the contribution made from an empty rainwater tank or the distribution of our grey water which will dictate the outcome. This is why further bulk water storage infrastructure is required.

In addition to this The Codes criteria is not perceived as equitable when the broader infrastructure problems such as leaking services or the inadequacy / non provision of water catchments are considered. Over arching all of this is the impact generated by the industrial and rural industries upon our water resources. The residential construction sector maintains that it should not be burdened with a system where the criteria and benefits cannot be defined as having substance or that they even contribute in real terms to water conservation.

Master Builders however is supportive of minimum regulation which provides solutions based upon strategies which encourage and support contribution from all sectors of industry and not just housing. The answer to a real balance for all concerned in part hinges upon the continual analysis of whether the criteria for this code is correct and the intent has been delivered.

Upon that basis this submission will:

- Review the Queensland Development Code MP 4.2 Water Saving Targets and discuss in detail the noted issues with the Current Regulatory System and provide recommendations where applicable to amend The Code; and
- Propose the adoption of new measures and acceptable solutions for inclusion within The Code

PART TWO: Review of the Queensland Development Code MP 4.2 Water Saving Targets

2.1 Current Regulatory System

The current regulatory system offers the following options as acceptable solutions that are provided to meet the performance criteria. In this submission we provide an overview of those systems and the problems which are presently created. In summary, Master Builders provides a recommendation to amend each of the following water saving measures where applicable.

- Rainwater tanks;
- Greywater treatment plants;
- Alternative water substitution measures; and
- A combination of these solutions as specified in a local planning instrument, State Code or State Planning Policy.

2.2 Rainwater tanks

Water Saving targets were introduced to conserve a natural resource (ie water) which is regularly limited in supply. Subsequently due to limitations in the acceptable solutions under The Code a large proportion of the industry was resigned to using a rainwater tank to achieve compliance with the performance criteria of The Code.

The installation of a rainwater tank has reinstated a model that had already been removed from suburbia where the homes were serviced by a reticulated town water supply. The primary reason for this removal policy was a combination of inadequate owner maintenance together with public health concerns, primarily focused upon mosquito related and carried disease. Since their reintroduction it is now apparent that the introduction of rainwater tanks has caused some unique issues from a construction, maintenance and health perspective.

In particular, the following concerns for rainwater tanks were noted;

- Termite management;
- Boundary clearances;
- Wet charged systems; and
- Health issues.

2.2.1 Termite Management

Due to onsite limitations, rainwater tanks are typically positioned adjacent the building structure. The visual zone of inspection for termite management is 75mm as stated within Australian Standard 3660.1 Termite Management New Building Work. For this reason problems were initially encountered attempting to position the tanks and by default they have been placed no closer than 75mm to the structure.

Unfortunately this only provides an inspection zone and does not allow access to address a termite infestation if it were to occur. Effectively the perimeter of the structure is obstructed by a water storage device. Therefore the hardstand area for the rainwater tank is not accessible to allow maintenance of the termite barrier. For example, when a chemical barrier fails or requires reinstatement, the drilling and reapplication of a termiticide barrier cannot be readily achieved without removal of the rainwater tank and associated services.

For this reason rainwater tanks support an environment conducive to termite infestation adjacent the structure. The ingress of moisture into the ground soils and at times back into the structure itself provides conditions which actively encourage termite activity. The installation requirements for rainwater tanks prescribe that screened rainwater heads, tank inlets, first flush devices and overflow outlets into field gullies are required. These are connections that are easily obstructed by debris and therefore cause flooding and/or ponding of water adjacent the dwelling.

It is our belief that the legacy of the rainwater tank solution over time will prove to be detrimental to the structural adequacy of the dwelling itself.

Master Builders proposes that the recommendations as noted throughout this submission will provide a suitable alternative to using a rain water tank and the complications associated with termite management.

2.2.2 Boundary Clearances

Queensland Development Code Parts MP 1.1 and MP 1.2 Design and Siting Standards for single detached housing requires tanks more than 2.4m high including any supporting structure such as a stand to be setback at least 1.5m from a side or rear boundary. Tanks no more than 2.4m in height are permitted within these boundary setbacks. Tanks generally must also be at least 6m from the road boundary.

The Building Code of Australia (BCA) per section 3.7.1.7 allowable encroachments currently requires tanks to be located no closer than 450mm to a side or rear boundary. Non combustible tanks may be located closer than 450mm to the boundary. It is proposed that this will again change within the BCA 2009 edition, whereby tanks may be combustible within any distance.

Further to this, local governments at their discretion through planning schemes have and can adopt varying standards in addition to the Building Codes allowable encroachments and Queensland Development Code requirement for rainwater tank boundary clearances. The use of this discretion is problematic and costly when working across jurisdictions. Costly non compliance issues have occurred when rainwater tanks installed in accordance with the Building Code and Queensland Development Code fail to achieve the alternative requirements of a local government body.

The prescriptive requirements of the Building Code and Queensland Development Code are considered sufficient to prescribe the applicable standards with regard to the installation of a rainwater tank. It is not practical then that a development / building application must also comply to inconsistent and differing requirements as dictated by discretion throughout local government planning schemes.

Recommendation 1

Master Builders recommends that:

Section 32 of the Building Act 1975 should be amended to include an additional subsection (3) so as to exclude Local Government from making or amending a provision of a local law or planning scheme that alters the prescribed allowable encroachments for rainwater tanks under section 3.7.1.7 Volume 2 building Code of Australia, and / or the design and siting standards within the Queensland Development Code Parts MP 1.1 and MP 1.2.

The new sub section (3) of section 32 of the Building Act 1975 would read as:

(3) To remove any doubt, it is declared that subsection (1) does permit a local government, under IPA, making or amending a provision in a planning scheme that deals with:

(a) Allowable encroaches for rainwater tanks within section 3.7.1.7 Volume 2 Building Code of Australia; and/or
(b) The design and siting standards within the Queensland Development Code Parts MP 1.1 and MP 1.2

In addition to this Master Builders proposes that the recommendations as noted throughout this submission will also provide suitable alternatives to using a rainwater tank and the complications associated with the placement of a rainwater tank.

2.2.3 Wet Charged Systems

Rainwater tanks may be installed using a combination of methods to accommodate the proposed building works. Stormwater is directed from the roof area to the rainwater tanks via a system of pipework that is required to minimize contaminates and the control of vectors which may readily spread disease.

The drainage system to a rainwater tank is often perceived as aesthetically poor and it is for this reason that the drainage system is often installed as a charged wet system. These systems are installed by using a series of subsurface drainage pipes which are intended to hold a head of water as the invert level of the pipework is below the tank inlet. The system is commonly used to conceal pipework which would otherwise be installed as a supported system that would be readily observed.

The Australian Standards for Residential Slab and Footings and Stormwater set out specific guidelines for the installation of subsurface drainage to accommodate the potential differential movement of reactive soils. All subsurface drainage works to a dwelling potentially over time fracture, break, separate at joins or are breached by tree roots. The unique issue for a wet charged system is that it is the only subsurface drainage associated with a dwelling other than drainage traps / sumps that are intended to hold water.

For this reason charged wet systems to a rainwater tank are prone to leaking. This causes any remaining stored water within the system to be contaminated while allowing the ingress of moisture into the service trench itself. Moisture within a service trench readily migrates throughout the granular backfill and effectively causes moisture variations to the foundation material supporting the footing / slab system of the dwelling.

Footing / slab systems to a dwelling are designed to accommodate pre defined degrees of ground soil movement with regard to soil classification and the building design. A wet charged system potentially allows the migration of moisture down to the lower foundation material whereby reactive soils can readily heave and cause detriment to the structure.

The community has expectations with regards to the appearance of a dwelling and this encourages the use of wet charged systems. This however places the structure at risk and burdens both industry and the community with the associated remedial costs.

Master Builders proposes that the recommendations as noted throughout this submission will provide a suitable alternative to using a rainwater tank and the complications associated with installing a wet charged system.

2.2.4 Health issues

In Queensland there are two mosquitoes of concern that can transmit dengue fever, the dengue mosquito and the Asian tiger mosquito. The Asian tiger mosquito is an introduced species that can transmit dengue. It is notorious for rapidly colonizing new geographic areas, including colder climates. If this species becomes established on mainland Australia it would become a pest and create a risk of dengue fever to a much larger part of Australia.

Rainwater tanks pose a public health risk by providing breeding sites for mosquitoes, which can transmit disease. Rainwater tanks will contribute to the potential risk that mosquitoes already place on the community.

The integrity of a rainwater tank to prevent breeding is entirely reliant upon regular maintenance of the system. It is difficult to justify and manage this risk as the onus for ongoing maintenance remains with the individual, who may or may not have an interest in ensuring the integrity of the system. It was due to inadequate owner maintenance that tanks were systematically removed in earlier periods. The Code, while placing a legal obligation for maintenance on owners does not encourage or promote compliance. This is a major yet unrecognized issue in The Code.

In particular Far North and North Queensland are substantially at risk of mosquito borne diseases accelerating to unforeseen proportions. For example, the provision of a simple storm water pit / field gully to capture the rainwater tank overflow discharge or the capillary bleed from the first flush device itself, potentially allows water to pond within the grated gully pit. Providing a graded base within the gully pit does not guarantee positive outflow as differential movement occurs and debris accumulates within the pit and water is able to pond.

Further to this it may not be possible to drain stormwater to the street kerb because of limitations created by the site contours to the building platform. Under these circumstances stormwater is typically dispersed to a onsite stormwater rubble pit. The rubble pit is designed to discharge stormwater through a overflow relief gully. The storage capacity of a stormwater rubble pit is limited, however the design allows residual stormwater to remain within the pit which provides an environment conducive to the breeding of mosquitoes.

Installation of a tank, combined with appropriate owner maintenance over its life does not remove the ponding risk created by the approved installation methods. Importantly existing installation methods create and promote ponding, making water available to mosquitoes in areas where significant public health concerns exist.

Government at all levels remains silent on this issue despite concerns having been raised. Even with the current dengue crisis in Cairns stormwater rubble pits. etc (where water ponds) are physically incapable of inspection and rectification thus rendering Government efforts to stop the spread of disease inadequate – primarily due to water savings having policy primacy over public health.

Therefore no level of community education combined with a government inspection program can guarantee that the condition of a rainwater tank system will be adequately maintained to prevent the breeding of mosquitoes or prohibit the onset of dengue fever. The Code is actually supporting an irrational and dangerous impost on the Far North and North Queensland regions and sadly falls short of addressing the real needs of these communities.

The mandatory requirements under The Code should not apply to the Far North and North Queensland regions. Water conservation in this region should be addressed via the implementation of infrastructure and not the installation of multiple breeding sites within rainwater tank systems that impact heavily on community health.

Recommendation 2

- Remove the requirements for rainwater tanks as an acceptable solution for far North and North Queensland;

- Government to provide a public education and campaign to manage the dengue fever threat; and

- Remove stormwater rubble pits as a means to dispose stormwater overflow by directing the overflow pipe outlet onto a dispersion pad.

2.3 Greywater treatment plants

Grey water treatment plants were introduced at the request of industry to provide owners with additional compliance options for smaller lots where rainwater tanks were unsuitable.

The treated effluent however must be provided within a defined effluent compliance level for end users with a high level of human contact. Due to the specific monitoring and testing requirements which are essential to maintain a grey water system, the treatment plants in the majority of cases are commercially unviable. Any system which relies on the individual to implement a maintenance regime is prone to failure with the outcome being significant health and amenity issues.

Further to this the installation of a grey water treatment plant will normally entail excavation of the ground soils adjacent the structure to install a tank. Compaction of the backfill material to the surrounds of the tank is problematic and typically a sink hole effect will occur. This effectively allows water to migrate down to the lower foundation material whereby reactive soils can readily heave and cause detriment to the structure. Treatment plants may exist as an option however they are not seen as a realistic alternative in the majority of cases to comply with the performance criteria of The Code.

Master Builders proposes that the recommendations as noted throughout this submission will provide a suitable alternative to using a rain water tank and the complications associated with installing a greywater treatment plant.

2.4 Alternative water substitution measures (AWSM)

Alternative water substitution measures are prescribed as an acceptable solution under The Code, however Master Builders is concerned that they are unable to be readily adopted by industry. These alternative measures have been defined within The Code as communal rainwater tanks, dual reticulation or treated storm water.

The ability to use these as an alternative measure for code compliance under a development or building application means that the quantum of contribution to the water saving targets needs to be established. This places the onus upon the designer, planning consultant, building certifier or hydraulic consultant to assess the proposed solution against the performance criteria of The Code.

The performance criteria under The Code in P1 is defined as:

Class 1 buildings supplied directly with water from the reticulated town water supply system, by a water service provider registered under the Water Act 2000, must achieve targets listed in Appendix A. To achieve the targets in Appendix A, water must be sourced by means other than the use of the reticulated town water supply system.

For example the criteria for a rainwater tank is stated in section P2 as;

A rainwater tank must have sufficient storage capacity to provide an acceptable contribution to meet water savings targets listed in Appendix A having regard to;
(a) local rainfall pattern;
(b) roof catchment area; and
(c) area available to site the rainwater tank.

The terminology "acceptable contribution" for rainwater tanks is then supported by a specific benchmark as stated within the acceptable solutions for a rainwater tank. Defined provisions are then given for tank sizes / installation details and catchment areas.

In consideration of an AWSM, The Code does not provide a benchmark which states the acceptable solution values to which a competent person, in this case a designer, planner, building certifier or hydraulic consultant, can make reference and assess the proposed measure. Effectively the ability to allow the use of a communal rainwater tank, dual reticulation or treated storm water system under The Code is unclear and hindered.

Therefore from a risk management perspective this places and enormous amount of responsibility back onto the designer, planner, building certifier and hydraulic consultant when they are to assess whether a proposed AWSM can and does comply with The Codes performance criteria. As The Code provides no guidance, underlying principles or prescriptive details for a AWSM it is understandable why those competent persons are unable to accept proposals in relation to them. They simply do not have a reference point to gauge for comparison and assessment of those alternatives that may genuinely provide the residential construction sector and the community with solutions other than rainwater tanks and greywater systems.

As a consequence, builders and consumers have declined to expend resources engaging consultants to prepare proposals that cannot be readily assessed against detailed criteria under a code. To this end The Code effectively denies the residential construction sector the ability to utilize an AWSM that would have readily provided a real cost benefit, remove multiple construction restraints while ensuring our health interests are protected. In their current state an AWSM is but a token reference that does little to remove the cloud of likely detriment which persists with the current use of rainwater tanks and greywater systems.

Upon that basis, Master Builders is very concerned that the residential construction sector has not been provided with the appropriate tools, detailed accessible options or defined contribution benchmarks within the present format of The Code for a AWSM. For these reasons Master Builders provides the following assessment of the AWSMs as a means to establish and describe the degree of evidence that may be deemed an acceptable solution.

The intention of these solutions is to provide industry with the confidence to propose and use a'n AWSM as it can be effectively referenced / compared to a deemed compliance level within The Code. This will remove the current impost for establishing assessment criteria away from the designers, planners, building certifiers and hydraulic consultants.

2.4.1 Communal rainwater tanks

Communal rainwater tanks are not defined within The Code however it is assumed they are representative of a tank or a rainwater tank which is described as a covered tank or combination of covered tanks. As no criteria has been defined with the code, the benefits that these tanks can provide is essentially lost.

For example, typically within a gated community the operational noise emitted by multiple pumps and rainwater tanks to service the individual units is a constant detraction from the amenity of the complex. The installation of a communal rainwater tank removes the need for multiple pumps and those associated design problems when attempting to place rainwater tanks throughout the complex.

The Code does not reference the design criteria for the installation of a communal rainwater tank to be considered as an acceptable solution. Therefore the option to install these tanks is complicated and restrained from an assessment perspective as the building certifier has no reference criteria to consider pursuant to The Code.

An acceptable solution to define the use of a communal rainwater tank should at the very least be stated as the equivalent accumulative volume of 3000 litres for each unit within The Code.

This would then provide the basis to establish not only the use of a communal rainwater tank to service the townhouses, but other considerations for stormwater reuse across the entire site for irrigation and retention of stormwater with respect to overland flows, the effect of scouring and degradation of water ways.

In addition to this the intended use of a communal rainwater tank is also a proposal that is required to meet substantial planning scheme requirements that may vary across local government jurisdictions. Master Builders also considers that it is the approval of a development / building application under those requirements that should be referenced within The Code as a trigger which subsequently deems the performance requirements of The Code have been achieved.

Recommendation 3

The Code is amended to include reference to a new performance criteria for a communal rainwater tank as:

P13

A communal rainwater tank must have sufficient storage capacity to provide an acceptable contribution to meet water saving targets listed in Appendix A having regard to-

(a) local rainfall pattern;
(b) roof catchment area; and
(c) area available to site the rainwater tank

Recommendation 4

The Code is amended to include reference to a new acceptable solution for a communal rainwater tank as:

A13

A communal rainwater tank has a minimum accumulative storage capacity of 3000 litres for each class 1 building other than a detached class 1 building or as specified by the local government in a local planning instrument; and
(b) is installed to receive rainfall from –
(i) a minimum roof catchment area that is at least one half of the total roof area or 100m2, whichever is the lesser; or
(ii) a minimum roof catchment area that is greater than (b) (i), as specified by the local government in a local planning instrument; and

(c) is connected to –
(i) toilet cisterns and washing machine cold water taps (other than those connected to a greywater treatment plant or alternative water substitution measure); and
(ii) an external use; and
(iii) other fixtures as specified by the local government in a local planning instrument; or

A communal rainwater tank proposed within a development application that is approved pursuant to the planning approval requirements of a Local planning instrument, State Code or State Planning Policy is connected to –

(i) toilet cisterns and washing machine cold water taps (other than those connected to a greywater treatment plant or alternative water substitution measure); and
(ii) an external use; and
(iii) other fixtures as specified by the local government in a local planning instrument.

2.4.2 Dual Reticulation

Dual reticulation (purple pipes) provides a unique challenge which differs in the main from the matters raised so far within this submission. There is no guidance in any form whatsoever within The Code which would suggest the appropriate avenue that may be pursued to implement such a system.

Throughout Australia there are various locations where dual reticulation has been adopted and in particular the recycled water program at Pimpama Coomera development is the most recent and prominent example for the South East Region of Queensland.

The dual reticulation system at Pimpama Coomera provides new homes and businesses with two separate pipe networks to supply their water. This means they are connected to both the potable (drinking) water network and the new Class A + recycled water network.

The overall proposal and adoption of the dual reticulation system in this area however preceded the requirements to achieve water saving targets under MP 4.2–Water Saving Targets. The concept does have exceptional merit and is a innovative solution which encompasses a broad range of issues for infrastructure and planning. For the most part it has been innovation which has evolved separately yet has found itself seamlessly coinciding for inclusion as an AWSM within The Code.

As with other measures within The Code there is no reference for an acceptable solution which may be consulted to assist with the determining of a development and building application. The extent of planning and design approvals which are associated with a dual reticulation system is extensive, complex and definitely outside the expertise of an individual designer, planner or certifier.

It is not envisaged or reasonable to assume that these persons would be asked to evaluate such a large proposal for the purpose of an application with regard to a class 1 dwelling. It is therefore considered that the intent of The Code may have been to imply that an approved dual reticulation system can be referenced as the basis to accept an application, without the need to install a rainwater or a grey water tank.

Without clarification on this point the reference to dual reticulation as an AWSM remains ominous and unquantifiable. The Code provides nothing to guide industry on what constitutes a dual reticulation system to allow designers, planners and certifiers to consider its merit for the purpose of a development and building application.

The planning approval requirements for a dual reticulation system within a proposed development are extensive and may include but are not limited to;

- Local government criteria;
- Department of Natural Resources and Water Planning Guidelines for Water Supply and Sewerage Schemes;
- Water Supply Code of Australia; and / or
- Queensland Recycled Water Guidelines.

For this reason Master Builders considers that it is the overall accumulative assessment and approval via these matters which should automatically trigger compliance with The Code as recommended herein:

Recommendation 5

The Code is amended to include reference to a new performance criteria for dual reticulation as ***P14***

A dual reticulation system must have sufficient capacity to provide an acceptable contribution to meet water saving targets listed in Appendix A.

Recommendation 6

The Code is amended to also include reference to a new acceptable solution for dual reticulation as:

A14

A dual reticulation system which is proposed within a development application that is approved pursuant to the planning approval requirements of a Local planning instrument, State Code or State Planning Policy is connected to –

(i) toilet cisterns and washing machine cold water taps (other than those connected to a greywater treatment plant or alternative water substitution measure); and
(ii) an external use; and
(iii) other fixtures as specified by the local government in a local planning instrument.

2.4.3 Treated Stormwater

Treated stormwater provides an option under The Code which is not dissimilar to the problems which are encountered when viewing the merits and problems of dual reticulation.

At the forefront the primary concern is that designers, planners and certifiers are unable to determine the adequacy of treated stormwater as an AWSM if the acceptable solution has not been clearly described within The Code.

In addition to this the re-use of treated stormwater may have specific limitations with respect to water quality pending the level of metal concentrations and end user water quality parameters. For this reason if The Code is to nominate treated stormwater as an AWSM, the acceptable solution needs to be defined or it effectively does not deliver itself as an option.

Recommendation 7

The Code is amended to include reference to a new performance criteria for treated stormwater as:

P15

A treated stormwater system must have sufficient capacity to provide an acceptable contribution to meet water saving targets listed in Appendix A.

Recommendation 8

The Code is amended to also include reference to a new acceptable solution for treated stormwater as:

A15

A treated stormwater system which is proposed within a development application that is approved pursuant to the planning approval requirements of a Local planning instrument, State Code or State Planning Policy.is connected to –

(i) toilet cisterns and washing machine cold water taps (other than those connected to a greywater treatment plant or alternative water substitution measure); and
(ii) an external use; and
(iii) other fixtures as specified by the local government in a local planning instrument.

PART THREE: Proposed new measures and acceptable solutions

3.1 Background to the proposed new measures and acceptable solutions

In consideration of The Codes current format Master Builders is also mindful that The Code should not be limited to its current context as new ideas and products can contribute to the overall efficiency of The Code. Add to this that The Code has essentially been in force since 1 January 2007, there has been ample opportunity to monitor its effectiveness and new measures are warranted.

To this end the following items are provided as options for inclusion within the acceptable solutions of The Code:

- Water recirculation devices;
- Increase of roof collection area; and
- Combination hand basin and cistern.

3.1.1 Water recirculation devices

These devices recirculate cold water in a hot water service reticulated line back to the hot water service until a tempering valve opens flows to the tapware. By ensuring the water in the hot water line is at an optimum temperature before use, circulators reduce or may eliminate draw off, defined as the water allowed to drain away whilst a user is waiting for hot water to reach the fixture at a temperature appropriate for use and not wasted.

Initial testing across various brands would indicate that a water recirculation device can provide water savings ranging from 15 000 to approximately 30 000 litres a year. Upon that basis this device can provide an acceptable contribution to meet the water saving targets.

Variable performance will occur depending on the reticulation design however water savings may be quantified by a hydraulic designers report for the proposed water service through the request for compliance assessment / plumbing and drainage work. This product is unobtrusive, provides a nominated water temperature and will readily contribute to the objectives of The Code. For this reason Master Builders proposes that a device of this type should be included within The Code as an acceptable solution.

It is anticipated that the device could be used as the sole solution depending on the water saving targets which are set for each individual local government area as per Appendix A. More importantly it would provide significant benefit as a contributor to the water saving targets when used in combination with other solutions.

Recommendation 9

The Code is amended to include reference to a new performance criteria for water recirculation devices as:

P16

> *A water recirculation device must have sufficient capacity to provide an acceptable contribution to meet water saving targets listed in Appendix A.*

Recommendation 10

The Code is amended to also include reference to a new acceptable solution for water recirculation as:

A16

The installation of a water recirculation device is supported by a hydraulic designers report stating the installation of the water recirculation device will achieve the performance criteria to provide an acceptable contribution to meet water saving targets listed in Appendix A.

3.1.2 Increase of roof collection area

The nominated catchment area for a roof can impact heavily on the amount of water which can be sourced for a rainwater tank. In some respects and under various conditions no tank size will guarantee that tank water will be available. The Code has accommodated for this through the requirement of a automatic switching device or a trickle top up system to be installed on all rainwater tanks.

Master Builders is of the view that rainwater tanks are not a guarantee of service delivery. In addition to this rainwater tanks can be obtrusive, difficult to maintain and problematic when attempting to position them within the allotment. Master Builders considers that there is no valid reason why a smaller tank with a larger catchment area should not be considered to provide an acceptable level of contribution to the water saving targets.

The benefit being that a larger catchment area collects more rain during infrequent shower periods while a smaller rainwater tank can be readily located to service the dwelling.

Recommendation 11

Part A2 of The Code is amended to also include reference to a new acceptable solution for increased roof collection area as:

Insert as A2 (b)(iii)

Is installed to receive rainfall from a minimum roof catchment area of 200 square metres and provide rainwater tank with capacities of:

- *Class 1 building 2500 litres*
- *Class 1 building other than a detached Class 1 building 1500 litres*

3.1.3 Combination hand basin and cistern

This device is essentially a toilet suite pan and cistern combination. It works by re cycling water that would normally run down the sink. Fresh tap water is first used to wash hands in the basin positioned above the cistern. Water from the basin is then stored in a specifically designed cistern with dual flush which is used to flush the toilet.

Initial testing would indicate that a water recirculation device can provide water savings to approximately 30 000 litres a year. Upon that basis this device may provide an acceptable contribution to meet the water saving targets. The advantages of this product are not dissimilar to those noted for the water recirculation device.

Master Builders also maintains that the assessment of this proposed solution should also take into account that the prescriptive requirements under *MP 4.1 Sustainable Buildings* for flush

ratios and the subsequent water savings for toilet cisterns have not been aligned to *MP 4.2 Water Savings Targets (The Code)* the subject of this submission.
For this reason all calculus for the water savings should be based on benefits that can be gained by comparison to the previous 6/3/ flush ratio. It is anticipated that the combination hand basin and cistern device could be used as the sole solution depending on the water saving targets which are set for each individual local government area. It would also provide significant benefit as a contributor to the water saving targets when used in combination with other solutions.

Recommendation 12

The Code is amended to include reference to a new performance criteria for combination hand basin and cistern as:

P17

> *A combination hand basin and cistern must have sufficient capacity to provide an acceptable contribution to meet water saving targets listed in Appendix A.*

Recommendation 13

The Code is amended to also include reference to a new acceptable solution for combination hand basin and cistern as:

A17

> *A combination hand basin and cistern is installed in accordance with the manufacturers recommendations to achieve their stated water savings.*

Recommendation 14

So as to allow the integration of the water recirculation devices and combination hand basin / cistern to be used within a combination of solutions within The Code to achieve the water saving targets.

Amend the acceptable solutions for A1as:

Class 1 buildings connected to a reticulated town water supply system provided by a water service provider registered under the Water Act 2000 use –
(a) a rainwater tank; or
(b) a greywater treatment plant; or
(c) alternative water substitution measure; or
(d) water recirculation device;or
(e) combination hand basin cistern: or
(f) a combination of (a) and/or (b) and/or (c) and/or (d) and/or (e) as specified in a local planning instrument, State Code or State Planning Policy.

3.2 Water Saving Targets

Appendix A of The Code MP 4.2 Water Saving Targets specifies the water saving targets for Queensland Local Government areas. The introduction of these measures was transitional across the state when The Code was first introduced.

Master Builders has reviewed the prescriptive measures as stated within The Code and considers that the values have not been established on a basis that would actually assist

industry and the community. As previously stated within this submission The Code has attempted to preserve water resources via a blanket approach.

The following concerns have been noted;

- The targets are proportional to represent rainfall data however the acceptable solutions under The Code in particular rainwater tanks storage capacities, are predetermined. No consideration has been given to "end use values ". A tank in FNQ can be refilled several times during a rain event on a weekly basis with the excess overflowing to the stormwater outlet. The benefit for providing a 5000 or 3000 litre tank depending on the class of structure in these locations is questionable as the local climate conditions override the perceived contribution they provide. They are excessive and simply not necessary as the regions conditions are completely separate from the problems evident in South East Queensland.

- The larger majority of dwellings due to financial and technical restraints remain with no means to store rainwater. It is the individual's actions which conserve water. The water saving targets are in fact token measures to which industry has been bound without benefit.

- The target levels and The Code itself imply that the design of new housing stock is a substantial solution to water conservation issues. As industry has proceeded to comply with The Code it has become apparent that the intention of The Code in the bigger picture for Queensland is of little assistance. Major infrastructure shortfalls for water catchment in addition to lack of community education have been given to and dumped on the housing industry to repair.

Recommendation 15

Master Builders recommends:

The Department of Infrastructure and Planning in collaboration with industry stakeholders review the water saving targets under The Code and reestablish the rationale for the levels that have been imposed upon the residential housing sector.

Redefine the rainfall statistics for Queensland to determine those areas which will allow the use of a smaller rainwater tank that is likely to be topped up / refilled on a regular basis due to rainfall intensity in conjunction with varied nominated roof catchment areas.

This will allow compliance through a combination of solutions. For example a class 1 detached dwelling in a designated area would be fitted with a 2500 litre tank on a 100m^2 catchment area. A further increase in the catchment area would also mean that a smaller tank may then be used.

PART FOUR: CONCLUSION

Master Builders maintains that the current regulatory system as prescribed by MP 4.2 Water Saving Targets under the Queensland Development Code is in need of substantive review and amendment.

The Code in its current format is proving to be ineffective. The real needs of the residential construction sector and the community have subsequently been clarified since the implementation of The Code since 1 January 2007.

Master Builders believes that at present the only accessible defined solutions under The Code are rainwater tanks and greywater treatment plants.

Rainwater tanks have extensive maintenance requirements with regard to termite management, leaking subsurface drainage and they potentially pose a threat to the structural integrity of the building. The variances which exist across the Building Code of Australia, Queensland Development Code and local government for boundary clearances are inconsistent and overly complex for industry to use.

Further to this rainwater tanks cannot be adequately maintained to eliminate the serious onset of dengue fever throughout the community.

In addition to this greywater treatment plants have proven to be a limited option. They are restrained by installation costs, maintenance issues and readily cause subsidence / heave to the foundation soils adjacent a dwelling. They fail to provide a real alternative to industry.

Master Builders recommends that additional and clearly defined solutions are provided within The Code as a means to access further options in light of the known limitations for using a rainwater tank or greywater treatment plant.
These additional solutions can be obtained by:

- Amending The Code so as to include the defined criteria for an acceptable solution that may be used to assess the suitability of a proposed Alternative Water Saving Measure (AWSM) within a building application.

- Amending The Code so as to include additional options such as:

    - Water recirculation devices;
    - Increase of roof collection area; and
    - Combination hand basin and cistern.

- Revise and amend the water saving targets

Several modifications to The Code will significantly enhance compliance with legislative requirements while establishing identifiable contribution levels. Ultimately real costs can be reduced for industry and the community to achieve the water saving targets.

Master Builders would be pleased to engage in further discussion of its views as provided in this submission and we respectfully request that the Department of Infrastructure and Planning pursue the following course of action.

Meet with Master Builders for bilateral discussions so as to:

- Amend the current acceptable solutions;
- Adopt alternative acceptable solutions under The Code;
- Review the current code with the view to amend discrepancies and disparity across the water saving targets; and
- Form a working group to commence the implementation of a work program to amend The Code in line with the recommendations contained within this submission.

Annexure 1

Autocirc Hot water Circulation Pump

Annexure 2

Ecosmart Water Guardian

Annexure 3

Caroma Combination Hand Basin Cistern

Annexure 4

The Water Saver Combination Hand Basin Cistern